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SD DIGITAL VIDEO RECORDER DN-700

Instruction manual

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Warranty.....	5
Standard Warranty	5
Two Year Warranty	5
Disposal	5
Packing List	5
Product Overview.....	6
Features	6
How to fit a SATA drive to the removable HE-1 enclosure	7
Front Panel DN-700	8
Rear Panel DN-700	10
Switching the unit ON.....	11
Formatting a drive before first use.....	11
LCD Clip Status Display explained	11
LCD Menu Navigation & Selection	12
Main Menu	13
Record Setup	14
Play Setup Level	15
System Setup.....	15
Before recording	17
Transfer any old clips to computer	17
Choose the file system, FAT32 or NTFS	17
Set up the HDD partitions to 1 or 2	17
Set the HDD volume ID	17
Set the signal type.....	17
Select which time code to use	17
How to prepare to record from an analogue input	18
Wired Connections.....	18
Set the unit to record from an analogue source [ANA]	18
Choose the file type for video editing	18
Select the audio sampling rate.....	18
Set the record date (optional)	18
How to prepare to record from a DV25 input	19
Wired Connections.....	19
Set the unit to record from a digital source [DIG].....	19
Choose the file type for video editing	19
Audio sampling rate	19
Set the record date (optional)	19
How to prepare to record from a HDV input.....	20
Wired Connections.....	20
Set the unit to record from a digital source [DIG].....	20
Choose the file type for video editing	20
Audio sampling rate	20
Set the record date (optional)	20
Recording.....	21
Select an empty BIN in which to record.....	21
Recording.....	21
Record Pause	21
Mark a recording	21
Record Stop	22
Special Record Setups	22
Time lapse recording	22
Pre-trigger Record Memory	22
Power on auto record.....	22
Playback.....	23
Select a recorded BIN to Playback	23

Playback.....	23
Playback in BIN or CLIP centric mode.....	23
Pause and go to Mark.....	23
Frame stepping.....	24
Loop Play.....	24
Power on Auto Play.....	24
Transferring files to a computer.....	24
Preparation.....	24
MAKING MEDIA FILES.....	24
Operating File System limitations.....	24
File Organization.....	24
Removing and mounting the HE-1 drive enclosure to a Computer.....	25
Safely dis-mounting the HE-1 drive from a computer.....	26
Updating the Firmware.....	26
GPI Control.....	27
GPI Trigger cabling and circuit.....	27
SET GPI TRIGGER MODE.....	27
PULSE trigger Record process.....	27
LEVEL trigger Record process.....	27
PULSE trigger Playback process.....	27
LEVEL trigger Playback process.....	27
RS-232 Controller Command Set.....	28
Communication Format.....	28
Command Format.....	28
Command Protocol.....	28
Summary List of Commands.....	28
Connector Pin Assignment.....	28
System Control.....	28
Sense Request.....	29
Transport Control.....	29
Dimensions & Weight.....	31
Specifications.....	31
Service and Support.....	32

Disclaimer of Product and Services

The information offered in this instruction manual is intended as a guide only. At all times, Datavideo Technologies will try to give correct, complete and suitable information. However, Datavideo Technologies cannot exclude that some information in this manual, from time to time, may not be correct or may be incomplete. This manual may contain typing errors, omissions or incorrect information. Datavideo Technologies always recommend that you double check the information in this document for accuracy before making any purchase decision or using the product. Datavideo Technologies is not responsible for any omissions or errors, or for any subsequent loss or damage caused by using the information contained within this manual. Further advice on the content of this manual or on the product can be obtained by contacting your local Datavideo Office or dealer.

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 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.

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.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

The following items should be included in the box.

Item No.	Description	Quantity
1	DN-700 Recorder	1
2	Accessory kit *	1
3	Instruction Manual	1

**The accessory kit also contains a packing list.*

If any items are missing please contact your supplier.

Product Overview

The Datavideo DN-700 is a file based video recorder compatible with Composite [NTSC/PAL], or DV25 [NTSC/PAL], or HDV [1080i/720p] signals. The recorder has a rugged case, is 1U high, 19" rack mountable and is 12V DC compatible.

As well as traditional front panel controls, like Record, Play, Stop, FFWD and FREV, the DN-700 also features RS-232 and GPI control interfaces. These connections allow users and system integrators to remotely synchronise and trigger one or multiple DN-700 recorders. The unit can also be used to synchro record from a single IEEE-1394 camera by mirroring the recording actions of the camera's tape deck.

Once the recording session is finished and the files prepared, eject the HE-1 drive enclosure and connect it by USB 2.0 or SATA cable to your editing computer. Use simple drag and drop or copy and paste actions to move the files from the HE-1 drive to the media drive of your editing computer. The transferred video files can then be imported to the time-line of your video editing software pre-wrapped as AVI, MOV or MXF [OP1A] files. HDV files are wrapped as industry standard M2T files.

The DN-700's removable HE-1 drive enclosure can be fitted with 7200rpm 2.5" SATA Hard Disk Drives [HDD] or Solid State Drives [SSD]. With drive sizes up to 750GB the DN-700 is capable of long duration recordings and even SD based time lapse recordings.

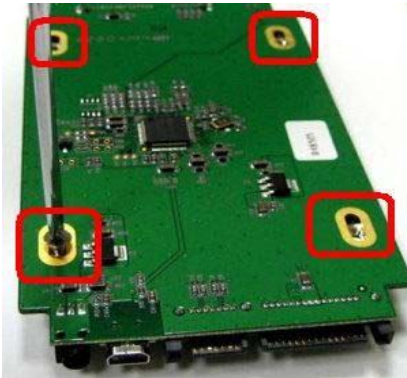
All in all, we feel the DN-700 is well suited to live event recording and post production applications within conferencing, education, science, construction, medical, animation, security and OB van work. That's Datavideo, sharing the value!

Features

- Backlit LCD display and soft keys for track confirmation and menu navigation.
- Normal VTR type transport keys for Play/Pause, Stop, Record, Fast Forward and Reverse.
- Removable HE-1 drive enclosure for standard SATA 2.5" laptop drives.
- Front panel 3.5mm stereo audio jack point and volume control for convenient audio monitoring.
- LED based Audio Peak meter for audio confidence.
- **Input connections:**
Composite video and stereo audio (PAL or NTSC)
IEEE1394 digital video port, supports DV, DVC Pro 25 and HDV [M2T]
- **Output connections:**
Composite video (SD Only) and stereo audio
IEEE1394 digital video port, supports DV, DVC Pro 25 and HDV [M2T]
- Supports NTFS formatting to eliminate 2GB file size limitation
- **File formats supported:**
DV: .AVI, .MOV, .MXF [OP1A]
HDV: .M2T native
- Time-lapse recording down to a single frame [SD recording only]
- RS-232 and GPI Control interface.
- Manually triggered single frame recording, useful in stop motion animation.
- Eight seconds pre-record buffer recording, useful in recording unexpected events especially in science research, outdoor recording or security applications.
- Easy to use play last clip.
- 12V DC Operation allowing OB Van compatibility.

How to fit a SATA drive to the removable HE-1 enclosure

Datavideo recommends using 2.5" SATA HDD 7200 RPM with 8 or 16 MB cache. If your unit was delivered without a hard drive fitted please follow these instructions to fit your drive to an empty HE-1 drive enclosure. Compatible drive information can be obtained from your local dealer or Datavideo office.



1. Remove the two small screws from the connections end of the HE-1 drive enclosure then remove the PCB.

2. Seat your 2.5" SATA HDD on to the PCB and then turn it over so you can secure the drive to the PCB using the four screws holes provided.

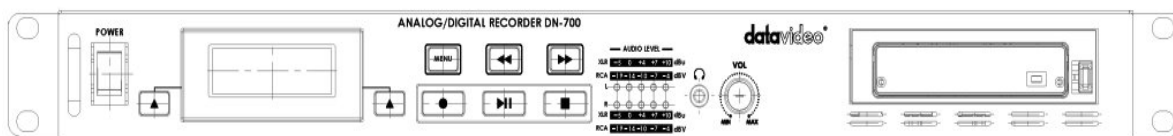
3. Return the PCB, with HDD fitted, to the enclosure, using the slots within the enclosure case as a guide.

4. Re-secure the back plate of the enclosure using the two screws removed earlier.



5. Push the removable HE-1 enclosure into recorder as shown above. Now turn the locking lever from right to the left in order to secure the HE-1 in place.
6. You are now ready to switch the unit on.
7. New drives will be formatted within the recorder on first use. The LCD panel will show BIN or CLIP information once the recorder becomes available for set up and use.

Front Panel DN-700



Power On / Off

Switches the power On / Off



LCD Display

There are four lines in the LCD Display. The first line is used to display icons that reflect some of the current settings of the unit. These settings include:

- ♦ ANA / DIG (Video Source is Analogue / Digital)
- ♦ HDV (Unit is set for HDV mode)
- ♦ Loop Play enabled
- ♦ Time Remaining

The second line will display the recording file type set for the selected bin (eg. .MOV). While playing or recording it also displays the current clip number and the total number of clips in the bin.

The third line will display the bin number (01-99) and a time number (Hr:Min:Sec:Frames). The time number will represent the absolute time address or time code of the frame being recorded or played. When selecting a new bin, the time number will be the length of the content in this bin. The fourth line labels the soft keys.



Menu Navigation Left / Right soft key

The functions of the two Soft Keys found below the LCD are dependent upon the current operation mode. Each function changes with each different operation mode. The Soft Key's current functions are displayed on the bottom line of the LCD panel, alongside each Soft Key.



Menu Navigation Menu key

Use this button to start navigating as well as exiting the various options offered by DN-700. The functions are called out in the bottom two rows of the LCD. Stepping through options is done by following the directions set in the LCD annotations. At any time, exit an option by pressing the menu key.

Note: Main menu selection can be accessed from a Stop or Idle mode. Specialized menu selections are accessed while playing.



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.

Front Panel DN-700 continued



Record

In Idle Mode, pressing the 'PLAY' while the 'REC' button is held down will make the unit ready to record.



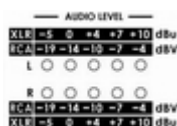
Play / Pause

From the Stop or Idle mode, pressing the 'PLAY' button plays back video from the selected bin. While playing, pressing the 'PLAY' button will toggle between 'PLAY' and 'PAUSE'.



Stop

In PLAY Mode, pressing the 'STOP' button will end play back and enter the Stop mode. In RECORD Mode, pressing the 'STOP' button will end recording and enter the Stop mode.



Audio Level

The Audio Input Level LEDs show the audio input levels from the incoming source.



Level Adjustments

The Audio Level Adjustments allow you to adjust the headphones volume.



Headphones Jack

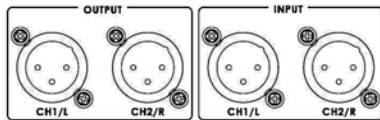
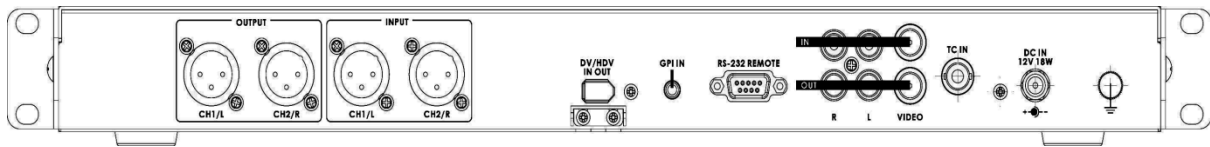
Accepts a stereo mini jack plug for stereo headphones. The headphone volume is controlled by the Audio Level Adjustments.



Drive bay for removable HE-1 drive enclosure

For insertion of the removable HE-1 drive enclosure. The HE-1 drive enclosure can be fitted with a SATA 2.5" 7200 rpm HDD. See page 7.

Rear Panel DN-700



Audio input & output.

2 channels XLR Balanced Audio input & output.



DV/ HDV in out

A standard IEEE1394 port for connecting a DV or HDV Camcorder.

Cannot be used for file transfer to a computer.



GPI IN

The GPI socket can be used for simple external control. The DN-700 can accept pulse or level trigger inputs, which can trigger record or playback and pause commands



RS-232

Used to remotely control the DN-700. See **page 29** for more information on the protocol used.



Composite Video input & output

The connection is composite video input.

AUDIO IN

Accepts a RCA jack plug for audio input (Left & Right).



TC IN

The connection is for time code single input.



DC In Socket

The connection is used for the battery or the AC adapter.



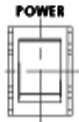
Grounding Terminal

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.

Switching the unit ON

Ensure the DN-700 power supply is connected to the rear panel of the recorder and the HE-1 removable drive enclosure is fitted and locked in place.

The DN-700 has only one power ON/OFF switch which is located on the front panel. To turn the unit ON depress the I side of the switch. The front panel buttons and LCD display will become backlit and the HE-1 drive LED will light before the LCD panel shows the **LCD Clip Status Display**. After roughly five seconds the recorder will be ready for first use.

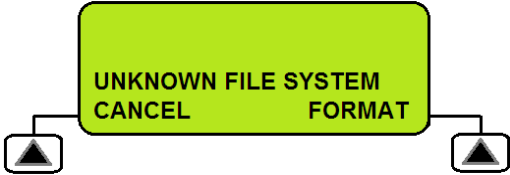

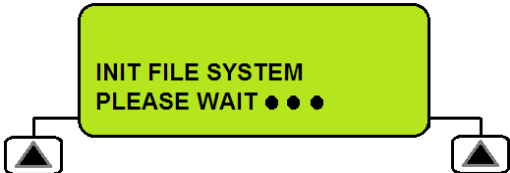
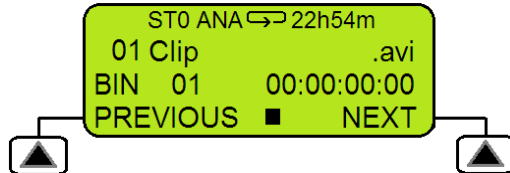


Power On / Off

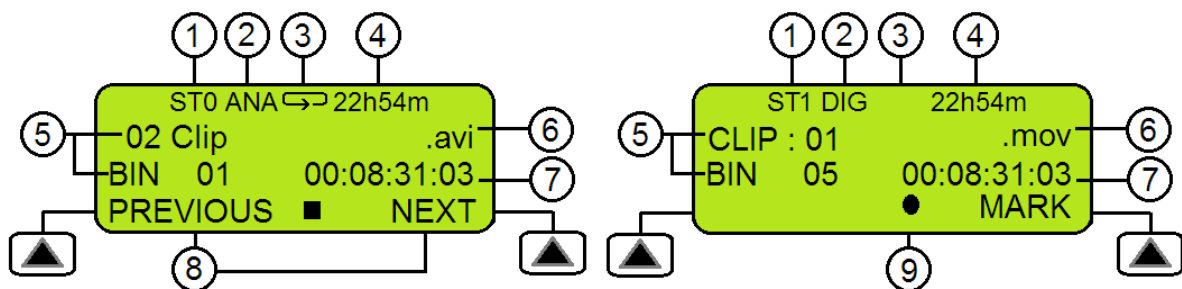
Switches the power On / Off.

Formatting a drive before first use

Once a drive has been installed into the HE-1 drive enclosure as described on page 7 it will need to be formatted in the recorder before first use. The recorder's LCD panel will display options as follows.

1. Choose the FORMAT option.
 
2. Press REC & PLAY at the same time.
 
3. Wait for the drive to be initialised.
 
4. The drive is now ready for first use.
 

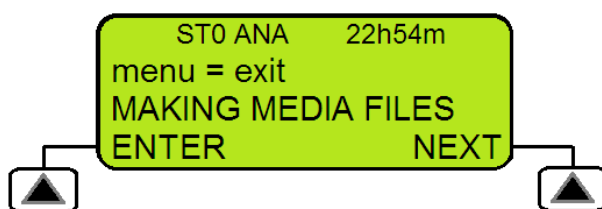
LCD Clip Status Display explained



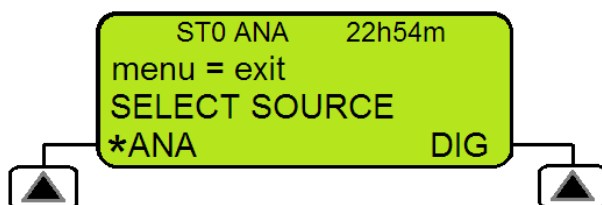
1. Sync to Tape Indicator, ST0=OFF and ST1=ON.
2. Analogue / Digital source indicator.
3. Loop Playback indicator – If not present feature is OFF.
4. Remaining Recording Space in Hours and Minutes.
5. Current Bin and Clip.
6. File type indicator.
7. Current Time Code or total length of clip.
8. Menu or recorder options.
9. Record, Pause, STOP, FFWD, FREV and Playback indication.

LCD Menu Navigation & Selection

Pressing the front panel **Menu button** will change the LCD panel from the **Clip Status Display** [see page 11] to the first menu option instead.



The lower three lines of the LCD Menu display will show the current menu item and below it any choices you have for option selection and or menu navigation. The soft keys to the lower left and right of the LCD display are pressed to select an option or to confirm a chosen value. If you press the right hand soft key marked NEXT twice then the menu options will change from MAKING MEDIA FILES to EMPTY THIS BIN to SELECT SOURCE. When all menu options have been navigated you will return to the first option again.



In some cases the currently selected option will be confirmed by an asterisk symbol next to the chosen setting. In the example above an analogue input is selected as the video source. Pressing the right hand soft key marked DIG would select a digital IEEE1394 input [DV25 / HDV]. The asterisk symbol would then be displayed next to DIG instead.

The Menu button also acts as an exit button. Press the Menu button once to exit the current option selection. Press the Menu button again to exit the current menu level. If there are no higher level menus then you will return to the LCD **Clip Status Display**.

Main Menu

There are 8 options in this first level of the menu system and they are:

MAKING MEDIA FILES
EMPTY THIS BIN
SELECT SOURCE
EMPTY ALL BINS
RECORD SETUP
PLAY SETUP
SYSTEM SETUP
FIRMWARE REVISION

Pressing the NEXT soft key will bring up the next option in the menu. In turn each menu option will be displayed. Choosing NEXT on the last menu item will return you to the first option in the current menu list. **Table 1** below details the actions for each Main Menu Level option.

Menu Option	Action taken
MAKING MEDIA FILES	This action needs to be taken before connecting the removable HE-1 drive enclosure to an editing computer. It prepares the previously recorded video and audio content on the HE-1 drive to be seen by a computer by wrapping the data in a pre-selected file wrapper like avi or mov.
EMPTY THIS BIN	Empties or erases the video and audio content within the current BIN. This step cannot be undone once the final question has been asked.
SELECT SOURCE	When in DV [Standard Definition] mode, the signal to be recorded can be chosen to come either from the Digital DV IEEE-1394 input (DIG) or from the CVBS Composite BNC input as an NTSC or PAL compatible analogue signal (ANA). Note that the current selection will be marked with an asterisk [*]. Also ANA or DIG will be displayed on the first line of the LCD panel.
EMPTY ALL BINS	Empties or erases the content in ALL of the BINS. This step cannot be undone once the final question has been asked.
RECORD SETUP	Enters the Record Setup Menu group detailed in the named section
PLAY SETUP	Enters the Play Setup Menu group detailed in the named section
SYSTEM SETUP	Enters the System Setup Menu group detailed in the named section
FIRMWARE REVISION	Displays the current revision of the recorder's firmware

Table 1 Menu Main Level

Record Setup

When selected from the Main Menu Level, this set of options enable various record related parameters and modes to be setup. The lower three lines will look as below:

There are 8 options and they are:

SET RECORD FILE TYPE
SYNCToTAPE CONTROL
SET RECORD DATE
RECORD PRE-TRIGGER
SET DEFAULT DV AUDIO
SET ASPECT RATIO
TIMELAPSE RECORD
PWR ON AUTO RECORD

Pressing the Next key will bring up the next option down on the list and will return to the top option from the bottom. Table 2 details the actions for each option. Pressing the Menu key will exit to the Main menu level.

Menu Option	Action taken
SET RECORD FILE TYPE	Where the choice of file type is made for all recordings. Note that file types cannot be mixed within a bin. Choices are .mov, 2 types of .avi, .mxf and for HDV, .m2t only. Note that the current selection will be marked with an asterisk [*].
SYNCToTAPE CONTROL	Where the recorder will look to the time code changing to indicate the need to record. If the time code pauses then the recording is paused. With this setting turned off, the record process will continue regardless of the time code behaviour. Note that the current selection will be marked with an asterisk [*].
SET RECORD DATE	This option modifies the date attribute of the created file when the source is analogue CVBS. It is also used when the source is digital if the date in the digital source is invalid.
RECORD PRE-TRIGGER	When enabled, the last 8 seconds of video prior to the record trigger are captured ahead of the video following the trigger. Note that the pre trigger is not remembered across power cycles.
SET DEFAULT DV AUDIO	When the source is analogue CVBS, this option sets the audio sampling frequency. When the source is digital, this option helps the recorder make a correct guess for the incoming audio sampling frequency. Note that the current selection will be marked with an asterisk [*].
SET ASPECT RATIO	When the source is analogue CVBS, this option sets the 16:9 or 4:3 aspect ratio flag in the stream to be recorded. For DV or HDV recordings ensure the source equipment is set correctly for the desired aspect.
TIMELAPSE RECORD	Allows the DV25 recording of video at slower than real time through a choice of one of 6 options. Note that the current selection will be marked with an asterisk [*].
PWR ON AUTO RECORD	When enabled, the recorder will go directly into a record mode in the last BIN selected once power is applied.

Table 2 Record Setup Level

Play Setup Level

Entered from the Main Menu Level, this set of options enable various play related parameters and modes to be setup. The lower three lines will look as below:

There are 3 options and they are:

SET UP LOOP PLAY
PWR ON AUTO PLAY
BIN Centric Mode

Pressing the Next key will bring up the next option down on the list and will return to the top option from the bottom. Table 3 details the actions for each option. Pressing the Menu key will exit to the Main menu level.

Menu Option	Action taken
SET UP LOOP PLAY	When enabled and the last frame has been played, the recorder will start playing all over from the start of the BIN or CLIP. Note that the current type chosen will be marked with an asterisk [*]. Also the loop play icon will be displayed on the first line of the LCD panel.
PWR ON AUTO PLAY	When enabled, the recorder will go directly into a play mode in the last BIN selected once power is applied. It will then play the whole BIN or just the selected CLIP within the current BIN depending on the BIN Centric mode setting.
BIN Centric Mode	When enabled [ON] the play back function plays all the CLIPS recorded in the currently selected BIN. When disabled [OFF] the play back function plays the current CLIP only within the current BIN. Note that the current selection will be marked with an asterisk [*].

Table 3 Play Setup Level

System Setup

Entered from the Main Menu Level, this set of options enables various system related parameters and modes to be setup. The lower three lines will look as below:

There are 11 options and they are:

SET SIGNAL TYPE
SET FAT32/NTFS
MAKE FILE FOR ?
MODIFY HDD VOLUME ID
SET UP DV CHANNEL
SETUP HDD PARTITION
TC DISPLAY FORMAT
SET REMOTE CONTROL
TOTAL SPACE
UPGRADE FIRMWARE
SET GPI TRIGGER MODE
SET FACTORY DEFAULT
NTSC SETUP LEVEL

Pressing the Next key will bring up the next option down on the list and will return to the top option from the bottom. Table 4 details the actions for each option. Pressing the Menu key will exit to the Main menu level.

Menu Option	Action taken
SET SIGNAL TYPE	The recorder can be set to one of three signal types, either DV, NTSC or DV, PAL, or HDV. Note that changing between signal types will mean that ALL video content already recorded will need to be erased. Note that the current selection will be marked with an asterisk [*].
SET FAT32/NTFS	This option chooses the computer's file system to emulate, NTFS or FAT32. Note that FAT32 has a 2GB file size limitation so clips longer than 2GB are split into approximately 2GB files with no frames dropped. The NTFS emulation results in larger files. Note that the current selection will be marked with an asterisk [*].
MAKE FILE FOR ?	User can choose between BIN or DISK. If BIN is selected then only the video in the current BIN is wrapped in the pre-selected file type wrapper. If DISK is selected then ALL video is wrapped in the pre-selected file type wrapper. Note that the current selection will be marked with an asterisk [*].
MODIFY HDD VOLUME ID	When connecting the HDD to a computer, the disk will have for volume name Mediapac xx. This option sets the xx value. A useful feature when connecting multiple volumes at the same time as from a multi-shoot.
SETUP HDD PARTITION	A separate 6GB partition can be set up. The recorder will have no affect on this separate partition so the user is free to name it, format it and store any type of data on it, with complete confidence that the video recorder will not alter it.
SET TIMECODE DISPLAY	During recording and playback, this option chooses to display either the Internal [INT] or the External [EXT] time code. Note that the current selection will be marked with an asterisk [*].
SET REMOTE CONTROL	This option either enables or disables the remote control capability. Note that the current selection will be marked with an asterisk [*].
TOTAL SPACE	Displays the capacity of the drive inserted into the recorder.
UPGRADE FIRMWARE	Allows the user to update the firmware of the recorder, provided a compatible flash file has been copied to the drive.
SET GPI TRIGGER MODE	The GPI socket can be used for simple external control. The recorder can accept pulse or level trigger inputs, which can trigger record/record pause or playback/play pause commands.
SET FACTORY DEFAULT	Recall FACTORY DEFAULT to be loaded into current setup
NTSC SETUP LEVEL	The setup level is set to 7.5 or 0.0 IRE.

Table 4 System Setup Level

Before recording

Before using your recorder, there are a few actions and options that should be considered.

Transfer any old clips to computer

The DN-700 is primarily a capture device, as opposed to an archiving device, and it is best to start out with a fresh DN-700. If you have video clips already recorded on the HE-1 HDD enclosure its best to transfer them to a computer to free up drive space on the HE-1 before starting the next project. See **page 24** for further details.

Choose the file system, FAT32 or NTFS

SET FAT32 / NTFS This SYSTEM SETUP option configures the HE-1 HDD file system seen by the computer. Select NTFS and a clip is recorded as one single file no matter how long the recording. Select FAT32 and the video will be broken up into a series of 2GB files depending on its length. Each 2GB file roughly equates to 9 minutes of video. So a 20 minute recording may be broken up into 3 files under the FAT32 system or just one file under the NTFS system. See **page 16** for further details.

Set up the HDD partitions to 1 or 2

SETUP HDD PARTITION The storage space in the HE-1 HDD enclosure can be broken into 2 partitions or parts; the second partition reserves 6GB and this is not seen or used by the recorder. The second partition will appear as a second drive when the HE-1 is connected to a computer. The user is free to use this second partition to store any data including spreadsheets, metadata and/or production notes. The recorder is guaranteed not to overwrite data in this second partition. Deleting all bins will not erase the data in the second partition either. See **page 16** for further details.

Note: Changing partition count will erase the content in all bins so is best done before a project.

Set the HDD volume ID

MODIFY HDD VOLUME ID When connecting the HE-1 removable drive enclosure to a computer, the drive will have a volume name of Mediapac xx. If your application calls for multiple recorder HDD's to be connected to the computer at the same time, it becomes helpful to have a different volume name for each recorder's HE-1 drive. This option allows the *xx value* to be set between 00 and 99. See **page 16** for further details.

Set the signal type

The recorder can operate in one of two modes, **HDV** or **DV**.

HDV mode is used to record from IEEE1394 sources supplying an HDV M2T data stream.

DV mode is used to record from SD Standard Definition sources including Composite or DV25 inputs. If DV is selected a choice between NTSC or PAL also needs to be made. See **page 16** for further details.

Note: Changing between signal types will erase the existing content on the HE-1 HDD enclosure.

Select which time code to use

SET TIMECODE DISPLAY With DV25, while recording or playing, the time code displayed can be either the externally supplied time code or the recorder's internally generated one.

If the signal is analogue [Composite] input and no time code is supplied to the BNC input labelled TC on the rear panel then internal time code should be selected within the recorder. The frame number of any BIN starts at 00:00:00:00 unless external time code is supplied.

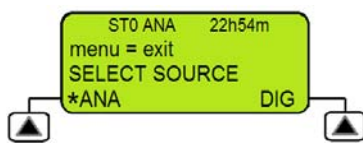
For HDV, the time code displayed is always the External time code. See **page 16** for further details.

How to prepare to record from an analogue input

Wired Connections

Connect the video source to the Composite [CV] BNC input on the rear of the recorder. If you are also recording audio choose between the RCA Phono or Balanced XLR audio wired inputs. If the audio source needs to be delayed, to be in step with the video, consider using the **Datavideo AD-100 Audio Delay box**, in between the recorder and the audio source.

Set the unit to record from an analogue source [ANA]



Press the **MENU** button and use the right hand soft key to navigate to the **SELECT SOURCE** option. Use the left hand soft key to **ENTER** the menu option. Use the left hand soft key to select the **ANA** source setting. An asterix symbol will be displayed next to **ANA** when selected. Press the **MENU** button to exit the option. The top line of the LCD panel should now display **ANA** also.

See **Set the signal type** on page 17 also.

Choose the file type for video editing

The recording should be made in a file type that your editing software can handle. The choices for recording are **Microsoft .AVI type II**, **Canopus .AVI**, both commonly used in Windows based computers. **QuickTime .MOV** files used in Macs and **.MXF [OP1a]** a file format which can be supported by a growing number of editing software packages, Avid being the most well known.

Note: The file format started with one bin will apply to all subsequent recordings in that bin and can only be changed after the bin is erased or emptied.

Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD FILE TYPE** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the file type required. Use the left hand soft key to select file setting. An asterix symbol will be displayed next to file type when selected. Press the **MENU button to exit** the option. The second line of the LCD panel should now display the recording file type chosen.

Select the audio sampling rate

This option will set the audio sampling rate to 48 KHz [16bit] or 32 KHz [12bit] when the video source is analogue [ANA]. An audio sampling rate of 48 KHz [16bit] is preferred by most users. **Note:** Only one type of audio sampling rate can be used within a recording bin.

Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET DEFAULT DV AUDIO** option. Use the left hand soft key to **ENTER** the menu option. Choose between 48 KHz [16bit] or 32 KHz [12bit] audio sampling. An asterix symbol will be displayed next to selected option. Press the **MENU button to exit** the option.

Set the record date

The date attribute of the created file is set to this date value when the source is analogue. Each file representing a clip gets its own date. If the source is digital then the record date is taken from the source digital stream. If that date is invalid or corrupt then the current record date set by this option is used instead.

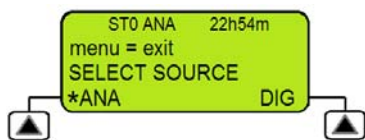
Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD DATE** option. Use the left hand soft key to **ENTER** the menu option. Use the left hand soft key to **ENTER** the **SET YEAR** option. Use the right hand soft key to navigate to the **SET MONTH** or **SET DAY** option. Once an option is selected use the soft keys to change the value to the date required. Once correctly set press the **MENU button twice to exit** the **SET RECORD DATE** option.

How to prepare to record from a DV25 input

Wired Connections

Connect the video source to the DV25 IEEE1394 6pin input on the rear of the recorder. Audio will be taken from the same DV25 IEEE1394 6pin input source.

Set the unit to record from a digital source [DIG]



Press the **MENU** button and use the right hand soft key to navigate to the **SELECT SOURCE** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to select the **DIG** source setting. An asterix symbol will be displayed next to **DIG** when selected. Press the **MENU** button to exit the option. The top line of the LCD panel should now display **DIG** also.

See **Set the signal type** on page 17 also.

Choose the file type for video editing

The recording should be made in a file type that your editing software can handle. The choices for recording are **Microsoft .AVI type II**, **Canopus .AVI**, both commonly used in Windows based computers. **QuickTime .MOV** files used in Macs and **.MXF [OP1a]** a file format which can be supported by a growing number of editing software packages. Avid being the most well known.

Note: The file format started with one bin will apply to all subsequent recordings in that bin and can only be changed after the bin is erased or emptied.

Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD FILE TYPE** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the file type required. Use the left hand soft key to select file setting. An asterix symbol will be displayed next to file type when selected. Press the **MENU** button to exit the option. The second line of the LCD panel should now display the recording file type chosen.

Audio sampling rate

When the video source is digital [DIG] the DN-700 recorder will match the audio sampling rate of the source equipment.

Set the record date (optional)

The date attribute of the created file is set to this date value when the source is analogue. Each file representing a clip gets its own date. If the source is digital then the record date is taken from the source digital stream. If that date is invalid or corrupt then the current record date set by this option is used instead.

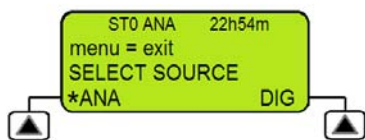
Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD DATE** option. Use the left hand soft key to **ENTER** the menu option. Use the left hand soft key to **ENTER** the **SET YEAR** option. Use the right hand soft key to navigate to the **SET MONTH** or **SET DAY** option. Once an option is selected use the soft keys to change the value to the date required. Once correctly set press the **MENU** button twice to exit the **SET RECORD DATE** option.

How to prepare to record from a HDV input

Wired Connections

Connect the video source to the HDV IEEE1394 6pin input on the rear of the recorder. Audio will be taken from the same HDV IEEE1394 6pin input source.

Set the unit to record from a digital source [DIG]



Press the **MENU** button and use the right hand soft key to navigate to the **SELECT SOURCE** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to select the **DIG** source setting. An asterix symbol will be displayed next to **DIG** when selected. Press the **MENU** button to exit the option. The top line of the LCD panel should now display **DIG** also.

See **Set the signal type** on page 17 also.

Choose the file type for video editing

The only choice for recording HDV video with this recorder is .M2T. This file can now be used with most editing software. However, in some cases the file has to be converted before it can be edited.

Note: The file format started with one bin will apply to all subsequent recordings in that bin and can only be changed after the bin is erased or emptied.

Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD FILE TYPE** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the file type required. Use the left hand soft key to select file setting. An asterix symbol will be displayed next to file type when selected. Press the **MENU** button to exit the option. The second line of the LCD panel should now display the recording file type chosen.

Audio sampling rate

When the video source is digital [DIG] the DN-700 recorder will match the audio sampling rate of the source equipment.

Set the record date

The date attribute of the created file is set to this date value when the source is analogue. Each file representing a clip gets its own date. If the source is digital then the record date is taken from the source digital stream. If that date is invalid or corrupt then the current record date set by this option is used instead.

Press the **MENU** button and use the right hand soft key to navigate to the **RECORD SETUP** option. Use the left hand soft key to **ENTER** the menu option. Use the right hand soft key to navigate to the **SET RECORD DATE** option. Use the left hand soft key to **ENTER** the menu option. Use the left hand soft key to **ENTER** the **SET YEAR** option. Use the right hand soft key to navigate to the **SET MONTH** or **SET DAY** option. Once an option is selected use the soft keys to change the value to the date required. Once correctly set press the **MENU** button twice to exit the **SET RECORD DATE** option.

Recording

Before starting a new recording ensure the recorder is set up correctly, please read pages 17 to 20 first.

Select an empty BIN in which to record

You can think of a BIN like a folder for holding a single or group of related video CLIPS.

The current BIN and its contents, if any, are shown on the **Clip Status display**, see page 11.

Use the right hand soft key labelled **NEXT** to move to the next BIN. You will see the BIN number change each time you select **NEXT** or **PREVIOUS**.

The video length stored within the selected BIN is displayed in the format of Hours, Minutes, Seconds and Frames [HH:MM:SS:FF]. So a BIN showing 00:00:00:00 is empty and a BIN showing 01:35:24:06 is just over one hour thirty five minutes long. For a new recording select an empty BIN.

Note: A CLIP is automatically started at the beginning of the BIN, if the bin is empty. If the BIN already contains video the next CLIP is appended to the last CLIP in the BIN. A clip can never be inserted between other clips in a bin. **The minimum length of a CLIP is two seconds.**

Recording

There are several ways of starting a record session depending how the recorder is configured.

- 1) Manually by holding the **REC button** down while pressing the **PLAY button**.
- 2) Press the record button on the camera or source device connected to the IEEE1394 port so it triggers the **Sync to tape** feature of the recorder. See **page 14** for more information
- 3) Using the **Remote Serial interface**. See the command protocol at the rear of this manual.
- 4) Simple **contact closure** circuit using a switch, contact or button wired to the **GPI port** on the recorders rear panel. See **page 27** for more information.

Note: If power is interrupted while recording, up to two seconds of the current video CLIP may be lost.

Record Pause

There are several ways of pausing a record session depending how the recorder is configured.

- 1) Manually by pressing the **PLAY button**. Press the PLAY button again to resume recording.
- 2) Press the record button on the camera or source device connected to the IEEE1394 port so it triggers the **Sync to tape** feature of the recorder. See **page 14** for more information
- 3) Using the **Remote Serial interface**. See the command protocol at the rear of this manual.
- 4) Simple **contact closure** circuit using a switch, contact or button wired to the **GPI port** on the recorders rear panel. See **page 27** for more information.

Note: Each time the recording is resumed a new CLIP will be created within the same recording BIN. A maximum of 99 CLIPS can be created within a single BIN. **The minimum length of a CLIP is two seconds.**

Mark a recording

When recording the right hand soft key is labelled **MARK**. Pressing this soft key whilst recording will start a new CLIP, no frames are lost and the new clip is added to the same BIN. Marking a recording in this way can help you to find important parts of your video footage quickly during playback or later editing. **Note:** A maximum of 99 CLIPS can be marked or created in a single BIN. **The minimum length of a CLIP is two seconds.**

Record Stop

There are several ways to stop a record session depending how the recorder is configured.

- 1) Manually by pressing the **STOP button**.
- 2) When using the **Sync to tape** feature of the recorder first put the recorder into record pause mode then press the **STOP button** on the recorder as you would do if recording manually. See **page 14** for more information
- 3) Using the **Remote Serial interface**. See the command protocol at the rear of this manual.
- 4) When using the **GPI port** on the recorder first put the recorder into record pause mode then press the **STOP button** on the recorder as you would do if recording manually. See **page 27** for more information

Special Record Setups

Time lapse recording

Time lapse can be a useful recording option when studying changes in a subject over a long period of time such as in large scale building projects or scientific studies or even to create artistic animations.

In this option a recording can be set up to capture from one of six time lapse settings.

They are:

- 1 frame per second,
- 1 frame per 2 seconds,
- 1 frame per 5 seconds,
- every 4th frame,
- every other frame
- or 1 frame per trigger. The trigger connection is using the GPI interface.

Composite or DV25 sources can be used.

Note: This feature cannot be used with HDV sources.

Note: This mode is not saved when power is interrupted.

Note: A new clip is only created at the beginning of a time lapse recording.

Pre-trigger Record Memory

When this option is enabled the recorder is always in a record-ready mode when it is not playing. In this mode it is continuously storing live video data in its internal buffer which is 8 seconds in length. When a recording is started the last 8 seconds of video prior to the record trigger already exists and is then stored to disk before the rest of the video is captured.

Note: This mode is not saved when power is interrupted.

Power on auto record

If this option is enabled when the unit is powered on the recorder will begin recording immediately. The current BIN and the last settings used before the recorder was switched off will be used for the next recording.

Playback

Select a recorded BIN to Playback

You can think of a video BIN as being like a folder for holding a single or group of related video CLIPS.

The current BIN and its contents, if any, are shown on the **Clip Status display**, see page 11.

Use the right hand soft key labelled **NEXT** to move to the next BIN. You will see the BIN number change each time you select **NEXT** or **PREVIOUS**.

The video length stored within the current BIN is also displayed in the format of Hours, Minutes, Seconds and Frames [HH:MM:SS:FF]. So a BIN showing 00:00:00:00 is empty and a BIN showing 01:35:24:06 is just over one hour thirty five minutes long.

Before pressing the **PLAY** button, first select the correct BIN where the required video has been recorded.

Note: If you select an empty BIN then nothing will happen when you press the **PLAY** button.

Playback

There are several ways of starting playback depending how the recorder is configured.

- 1) Manually by using the **PLAY** button.
- 2) Using the **Remote Serial interface**. See the command protocol at the rear of this manual.
- 3) Simple **contact closure** circuit using a switch, contact or button wired to the **GPI port** on the recorders rear panel. See **page 27** for more information.

When in playback mode the soft keys will change to **FREV** and **FFWD** for fast reverse and fast forward. Repeatedly pressing a soft key will cause the playback to go faster in the chosen direction up to 32x speed. A speed other than 1x is displayed in the bottom line of the LCD panel.

While playing video pressing the **Menu** button will give an alternate set of soft key choices; **SLOW** and **FAST**. These keys, while keeping the same current play direction, will extend the control of the speed down to the slow motion range of 1/32x. The **Menu** button will toggle between the two sets of keys.

Pressing the **Play** button again will return to 1x play in the forward direction.

Playback in BIN or CLIP centric mode

Depending on how the **Play Setup** menu options are set, see **page 15**, the recorder will either play back **ONLY** the last CLIP within the current BIN or play back **ALL** CLIPS within the selected BIN.

When the **BIN Centric Mode** is enabled [ON] the play back function plays **ALL** the CLIPS recorded in the current BIN.

When the **BIN Centric Mode** is disabled [OFF] the play back function only plays the current or last CLIP recorded within the selected BIN.

Note that the current selection will be marked with an asterisk [*].

Pause and go to Mark

While playing back a video clip, pressing the **PLAY** button again will pause the video playback. While the video is paused, the soft keys will be labelled **◀** and **>**. These keys allow direct access to the **Clip Markers** that are the start and end frames of each CLIP within the current BIN. Counting the end frame of the last clip, there will always be one more mark than there are clips. In this mode, the clip number display will be substituted with a mark number display.

Frame stepping

Pressing the Menu key again will present an alternate set of soft keys, these will be <II and II> for reverse and forward **Frame Stepping**.

Note: Holding either key down for more than 2 seconds will cause a rapid stepping in that direction.

Loop Play

When loop play is enabled and the last frame of the clip is reached the unit will start playing over from the first frame of the first clip with no time lost. To set up **Loop Play** see **page 15**.

Power on Auto Play

When this option is enabled the recorder will immediately begin playing back the current BIN or CLIP when first powered up. To set up **Power On Auto Play** see **page 15**.

Transferring files to a computer

Preparation

The **MAKING MEDIA FILES** menu process must be undertaken with the recorder before removing and connecting the HE-1 drive enclosure to a computer with a USB 2.0 cable.

MAKING MEDIA FILES

This menu operation prepares the video content already on the HE-1 drive to be seen by a computer by building the selected file wrappers around the recorded content and emulating the chosen operating file system. Two choices are available, FAT32 and NTFS and they are chosen using the **SETUP FAT32/NTFS** menu option. See **pages 15 and 16** for more information.

Operating File System limitations

The FAT32 format is compatible with both Macs and PCs. This format limits the size of a file to a maximum of 2GB, that translates to approximately nine minutes of video. A clip that lasts longer than nine minutes is broken into multiple files each 2GB long with the last one making up any remaining time. When these files are placed on an editing time line, no video is lost in the transition between files. FAT32 also has a clip boundary of 2 seconds so it is best to make a recording longer than 2 seconds.

The NTFS format is fully compatible with PCs and is read compatible with Macs. Its main advantage is that it does not impose a file size limitation resulting in one file per recording. NTFS' clip boundary is frame accurate.

Note: Some editing software packages cannot accept video file sizes greater than 40GB, make sure your edit software is not affected if you plan on shooting one long continuous take greater than two hours and using NTFS.

File Organization

After the media conversion is made using **MAKING MEDIA FILES**, all bins that contain video will appear to the computer as folders named BINxx. Where xx represents the BIN number ranging from 01 to 99. Inside each BIN folder, each clip will be represented as a separate file with an extension name like .avi, .mov depending on the setting chosen prior to recording. Each file will be named **BxxCnnny** where xx again represents the BIN number; nn represents the CLIP number ranging from 01 to 99. The number yy is the number of the spilt file caused by the FAT32 limitation.

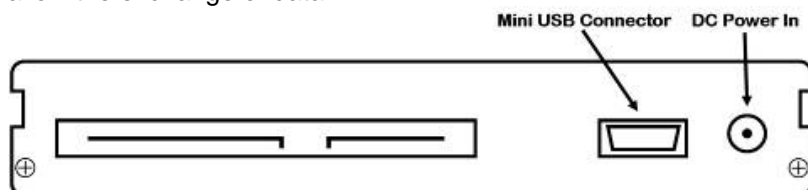
Removing and mounting the HE-1 drive enclosure to a Computer

Note: The **MAKING MEDIA FILES** menu process must be undertaken with the recorder before removing and connecting the HE-1 drive enclosure to a computer with a USB 2.0 cable.

Turn the drive lock lever to the right to unlock the HE-1 drive enclosure. Push the HE-1 into the unit and when released it will pop out a few centimetres. Gently pull the drive caddy clear of the recorder. You may feel some slight resistance as the drive disconnects internally – this is normal.



The HE-1 drive enclosure is fitted with a mini USB connector on its rear; this can provide power to the HDD, as well as allow the exchange of data.



Note: With some PCs and Laptops the USB bus power may not be enough to power the drive.

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

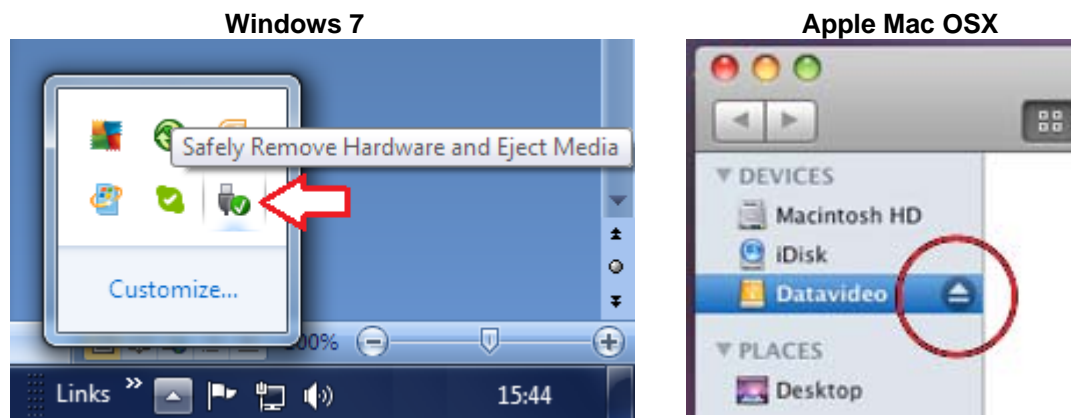
Connect the supplied mini USB to USB A cable to the HE-1 drive caddy, and connect the double lead to your PC or Laptop. If the drive does not power up correctly – connect the second USB connector to the computer as well as the first.



The drive will appear on the computer as a volume called **MediapacXX**. Where **XX** is the number value set up using **HDD Volume ID feature** as described on **page 16**.

Safely dis-mounting the HE-1 drive from a computer

In order not to cause damage to the spinning drive within the HE-1 drive do not immediately disconnect the USB 2.0 cable straight away. Instead use your Computer's drive dis-mounting process first and then physically remove the HE-1 drive after this process has been completed.



Windows computers have a **Safely Remove Hardware** process seen in the System Tray area and Apple Mac computers have an **Eject Drive/Hardware** process in the Devices area.

Updating the Firmware

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

This section describes the firmware update process for the recorder, if you have all the items required it should take **approximately 20 minutes total time to complete**.

Please contact your local dealer or Datavideo office for the latest firmware update file.

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

To update the firmware, first format the HE-1 drive in the recorder and then remove and connect it to your computer via the supplied USB 2.0 cable.

Copy the firmware update file to the HE-1 drive root directory level, where all BIN video folders usually appear, and rename the firmware file to "**flash**".

Then use the Windows **safely remove hardware** feature or **eject the drive** from the Mac computer.

Now, insert the HE-1 drive back into the recorder and select the **UPDATE FIRMWARE** option from the **SYSTEM SETUP** menu.

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

GPI Control

GPI Trigger cabling and circuit

The recorder has a GPI socket on its rear panel. The GPI circuit runs on less than 5V DC. This power is supplied by the recorder's GPI port. You will need to manufacture a GPI trigger cable using a 3.5mm stereo jack connected by two core cabling to a simple 'contact on closure' button or similar trigger. Wiring from Tip and sleeve on the 3.5mm stereo jack should show voltage when plugged into the recorder's GPI port. Jack Tip is positive(+), jack sleeve is negative(-) and ring is not used.

Depending on the settings of the recorder and the GPI menu option this unit can be configured to **Record / Record Pause** or **Play / Play Pause** with the current video BIN.

If making a recording first set up the recorder in the normal way, refer to pages 11 to 22.

If playing back a file select the required video BIN on the LCD Clip Status Display. Now enter the Menu again and go to the SYSTEM SETUP menu and choose the SET GPI TRIGGER MODE.

SET GPI TRIGGER MODE

In the SYSTEM SETUP menu use the option labelled SET GPI TRIGGER MODE. You can then make a choice between the PULSE or LEVEL trigger. The selected choice is marked with an asterisk.

PULSE trigger Record process

Using the Clip Status Display and soft keys select an empty video BIN. Make sure the source device is connected and working and the target file type on the recorder has been chosen. Press and hold in the Record button on the front panel and then press the Play button. This should start the record process. The button on the connected GPI cabling is then pressed forcing the unit into record pause mode. The unit is then ready to activate record on the next press of the contact closure button. Each time the recorder starts recording a new clip will be added to the bin [Max 99 CLIPS per BIN]. Press the stop button on the front panel of the recorder to end the recording process.

LEVEL trigger Record process

Using the Clip Status Display and soft keys select an empty video BIN. Make sure the source device is connected and working and the target file type on the recorder has been chosen. Press and hold in the Record button on the front panel and then press the Play button. This should start the record process. The button on the connected GPI cabling is then pressed forcing the unit into record pause mode for the length of the press. However, when the button is released the recording process starts again. Each time the recorder starts recording a new clip will be added to the bin [Max 99 CLIPS per BIN]. Press the stop button on the front panel of the recorder to end the recording process.

The contact closure button may be working in the opposite way to the type of action you want to perform. A mechanical change to the GPI contact closure trigger should fix this. (Example: when pressed down the circuit is broken and recording starts. When released the contact is made causing the pause action.)

Note: You may have a couple of seconds footage at the beginning of the bin that you may wish to remove later once the footage is transferred to a computer for editing.

PULSE trigger Playback process

Using the Clip Status Display and soft keys select a pre-recorded video BIN. Make sure the output device/monitor is connected and working with the recorder. Press in the Play button on the recorder's front panel. This should start the playback. The button on the connected GPI cabling is then pressed forcing the unit into play pause mode. The unit is then ready to playback from this point on the next press of the contact closure button. Press the stop button on the front panel of the recorder to end playback of the video.

LEVEL trigger Playback process

Using the Clip Status Display and navigation buttons select a pre-recorded video BIN. Make sure the output device/monitor is connected and working with the recorder. Press in the Play button on the recorder's front panel. This should start the playback. The button on the connected GPI cabling is then pressed forcing the unit into play pause mode for the length of the press. However, when the button is released the playback starts again. Press the stop button on the front panel of the recorder to end playback of the video.

The contact closure button may be working in the opposite way to the type of action you want to perform. A mechanical change to the GPI contact closure trigger should fix this. (Example: when pressed down the circuit is broken and recording starts. When released the contact is made causing the pause action.)

RS-232 Controller Command Set

Communication Format

Mode: No synchronization
Character Length: 1 start bit + 8 data bits + 1 parity bit + 1 stop bit
Data Rate: 38,400 Baud
Parity: Odd

Command Format

CMD1, CMD2, Data bytes, Checksum byte

A Command is made up of two address bytes, CMD1 and CMD2, a variable number of Data bytes (Data from 0 up to 15) and a Checksum byte. The Checksum byte is the modulo 256 sum of all preceding bytes.

The most significant nibble of the CMD1 byte represents the command group. The least significant nibble represents the number of Data bytes to follow the CMD2 byte.

Command Protocol

CMD1, CMD2, Data bytes, Checksum byte

Response: ACK

Other than the sense command, the unit will respond to all commands affirmatively by sending a three byte acknowledgement (ACK) if the Checksum is valid. If the Checksum is not valid, the DN Recorder will ignore the command. Most commands will be responded to within 8 msec. However, a PLAY command from an idle state will result in response delay of up to 700 msec. During this busy time, all commands will be ignored.

Summary List of Commands

Command	Name	Response	Name
System Control			
00h, 11h, 11h	Device Type Request	12h, 11h, 00h, 00h, 23h	Device Type
00h, F1h, F1h	Next Bin	10h, 01h, 11h	ACK
00h, F2h, F2h	Previous Bin	10h, 01h, 11h	ACK
00h, F4h, F4h	Disable Loop Play	10h, 01h, 11h	ACK
00h, F5h, F5h	Enable Loop Play	10h, 01h, 11h	ACK
01h, F0h, XXh, csum	Select Bin	10h, 01h, 11h	ACK

Connector Pin Assignment

Interface : 9 pin D-Sub female to 9 pin D-Sub female

The pin assignment of the Controller and DN-600 or DN-700 recorder is shown in the following table:

9 Pin D-Sub	Controller	DN-600 / 700	9 Pin D-Sub
	Pin 2 (Rx)	Pin 3 (Rx)	
	Pin 3 (Tx)	Pin 2 (Tx)	
	Pin 5 (GND)	Pin 5 (GND)	

System Control

00h, 11h Device Type request

The response is 00, 00 indicating Quick Capture

00h, F1h Next Bin

When this command is issued from the Idle state the next bin is selected. If the present bin is 99 then the next bin is 1.

00h, F2h Previous Bin

When this command is issued from the Idle state the previous bin is selected. If the present bin is 1 then the next bin is 99.

00h, F4h Disable Loop Play

When this command is issued from the Idle state the Loop Play feature is disabled. Loop Play is where the the last play command is repeated from its beginning when the end is reached.

00h, F4h Enable Loop Play

When this command is issued from the Idle state the Loop Play feature is enabled. Loop Play is where the the last play command is repeated from its beginning when the end is reached.

01h, F0h, XXh Select Bin XX

When this command is issued from the Idle state bin XX is selected. XX varies between 1 and 99. Illegal bins are ignored.

01h, F3h, XXh Select and Empty Bin XX

When this command is issued from the Idle state bin XX is selected and **all of its content is permanently deleted**. XX varies between 1 and 99. Illegal bins are ignored.

Sense Request

61h, 0Ch, 04h Current Time Sense

Requests the Time code data. The unit responds with 4 bytes indicating the present time code in Binary-Coded-Decimal. The first byte holds the frame number, the second byte holds the seconds, the third the minutes and the fourth the hour. In the play state, the time code returned is the time associated with the current frame being played, in the record state, the time code returned represents the elapsed time recorded in the present bin.

Command	Name	Response	Name
61h, 20h, 0L, csum	Status Sense	7Lh, 20h, Stat(L), csum	Status
61h, F0h, 04h, 55h	Current Frame Offset	74h, 00h, FO(3:0), csum	Frame Offset
61h, F1h, 01h, 53h	Current Bin	61h, 00h, nn, csum	Bin Number

24h, F1h, nn Play Offset nn

Frame Offset number nn is played. The number nn is made up of 4 binary encoded bytes and sent out with the least significant byte first. This command may be issued from the idle state or any other Play state. **Note:** Frame Offset are represented in absolute frame numbers where the first frame of the bin is 0.

24h, F2h, nn Play from Offset nn

Content of the present bin is played at 1x speed starting at Frame Offset nn. This command may be issued from the Idle state or any other Play state.

24h, F3h, bb, nn Select Bin and Play Offset

Bin number bb is selected and Frame Offset number nn is played. This command may be issued from the idle state or any other Play state.

24h, F4h, bb, nn Select Bin and Play from Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset nn. This command may be issued from the idle state or any other Play state.

24h, F5h, nn Play to Offset nn

Content of the present bin is played at 1x speed starting from present Frame Offset until Frame Offset nn at which point it pauses. Frame Offset nn is 4 bytes and starts with the LSB. This command may be issued from the idle state or any other Play state.

25h, F5h, bb, nn Select Bin and Play to Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset 0 to Frame Offset nn then pause. Frame Offset nn is 4 bytes and starts with the LSB. This command may be issued from the idle state or any other Play state.

29h, F5h, bb, nn, ee Select Bin and Play from Offset to Offset

Content of the bin number bb is played at 1x speed starting at Frame Offset nn to Frame Offset ee then pause. Frame Offsets nn and ee are 4 bytes and start with the LSB. This

Transport Control

20h, 00h, Stop

The unit enters the idle state. In the A2D, the outputs reflect the video source as selected by the Front Panel.

20h, 01h Play

Content of the present bin is played at 1x speed. This command may be issued from the idle state or any other Play state.

20h 02h Record

The video is recorded from the selected source onto the current Bin. This command may be issued only from the idle state.

20h, 10h Fast Forward

A play state where video is played at the highest speed of 32x in the forward direction.

20h, 20h Fast Rewind

A play state where video is played at the highest speed of 32x in the reverse direction.

NOTE: When receiving one of the following commands (JOG, VARIABLE or SHUTTLE), the unit will play forward or backward according to the speed data.

The first data byte may only be a maximum of 80:

Play Speed=10(nn/32-2)

Note that setting nn to 0 will result in pausing the unit.

21h, 11h, nnh Jog Forward

21h, 12h, nnh Variable Forward

21h, 13h, nnh Shuttle Forward

A Play state where video is played at the commanded play speed as described above in the forward direction. **Note: Setting the speed to 0 causes the play to pause.**

21h, 21h, nnh Jog Reverse

21h, 22h, nnh Variable Reverse

21h, 23h, nnh Shuttle Reverse

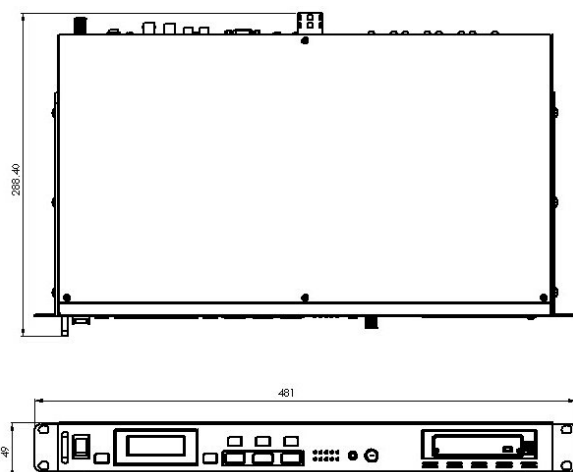
A Play state where video is played at the commanded play speed as described above in the reverse direction. **Note: Setting the speed to 0 causes the play to pause.**

21h, F0h, nnh Select Bin and Play

Content of the bin number nn is played at 1x speed from the beginning. This command may be issued from the idle state or any other Play state

Command	Name	Response	Name
01h, F3h, XXh, csum	Select and Empty Bin	10h,01h,11h	ACK
Transport Control			
20h, 00h, 20h	Stop	10h,01h,11h	ACK
20h, 01h, 21h	Play	10h,01h,11h	ACK
20h, 01h, 22h	Record	10h,01h,11h	ACK
20h, 0Dh, 2Dh	Eject	10h,01h,11h	ACK
20h, 10h, 30h	Fast Forward	10h,01h,11h	ACK
20h, 20h, 40h	Fast Rewind	10h,01h,11h	ACK
20h, 14h, 34h	Frame Step Forward	10h,01h,11h	ACK
20h, 24h, 44h	Frame Step Reverse	10h,01h,11h	ACK
21h, 11h, nnh	Jog Forward	10h,01h,11h	ACK
21h, 12h, nnh	Variable Forward	10h,01h,11h	ACK
21h, 13h, nnh	Shuttle Forward	10h,01h,11h	ACK
21h, 21h, nnh, csum	Jog Reverse	10h,01h,11h	ACK
21h, 22h, nnh, csum	Variable Reverse	10h,01h,11h	ACK
21h, 23h, nnh, csum	Shuttle Reverse	10h,01h,11h	ACK
21h, 11h, 00h, 32h	Play Pause	10h,01h,11h	ACK
24h, F0h, nn, csum	Select Bin and Play	10h,01h,11h	ACK
24h, F1h, nn (4x), csum	Play Offset	10h,01h,11h	ACK
24h, F2h, nn (4x), csum	Play from Offset	10h,01h,11h	ACK
24h, F3h, bb, nn (4x), csum	Select Bin and Play Offset	10h,01h,11h	ACK
24h, F4h, bb, nn (4x), csum	Select Bin and Play from Offset	10h,01h,11h	ACK
24h, F5h, nn (4x), csum	Play to Offset	10h,01h,11h	ACK
25h, F5h, XXh, YYh, YYh, YYh, YYh, csum	Select Bin and Play to Offset	10h,01h,11h	ACK
29h, F6h, XXh, YYh, YYh, YYh, ZZh, ZZh, ZZh, csum	Select Bin and Play from Offset Y to Offset Z	10h,01h,11h	ACK
Sense Request			
61h,0Ch,04h,71h	Current Time Sense	74h, 00h, TC(3:0), csum	Time Code

Dimensions & Weight



Depth [Front to Rear] : 288.4mm

Width : 481mm / Standard 19" with rack ears

Height : 89mm / Standard 1RU without feet

Gross weight [Packed] : 4.86 Kg / 10.71 lbs

Nett Weight [Unit only] : 3.85 Kg / 8.48 lbs

Specifications

Analogue Video Inputs	Composite video 1.0Vp-p, 75 Ohms internally terminated
Analogue Video Outputs	Composite video 1.0Vp-p, must be terminated
Audio:	Bandwidth 20~20KHz < +/- 3dB S/N Ratio > 50 dB THD. < 0.15%
Time Code In	SMPTE, 0.5V to 5.0V p-p, BNC
Digital Video In/Out	IEEE-1394, 400Mbps max, 6-pin
GPI Trigger	1.65V Threshold, 100K Ohms input, contact closure
Recording and Playback Formats	Analogue Inputs and Outputs: DV25 Digital Input and Output: DV25, HDV, DVCPRO-25
Media File Format	DV25: *.avi (Type II, Microsoft, Canopus), *.mov, *.mxf (OP1A) HDV: *.m2t
Operating File System Compatibility	FAT32, NTFS
Input Voltage Requirement	12V typical
Power Consumption	18W
Temperature	Operating: +40°F to +104°F (+4°C to +40°C) Non-Operating: -40°F to +149°F (-40°C to +65°C)

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