



 **8** *plus*

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**DIGITAL DUBBER**

## **Operator's Manual**

### **WARNING**

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

**WARNING!!**

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

1-En



THE SYMBOLS ARE RULED BY UL STANDARDS (U.S.A.)



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

5B-En

**LITHIUM BATTERY**

This product uses a lithium battery for memory back-up. The lithium battery should only be replaced by qualified service personnel. Improper handling may cause risk of explosion.

24A-En

**WARNING: WHEN USING ELECTRIC PRODUCTS, BASIC PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:****WARNING**

Power requirements for electrical equipment vary from area to area. Please ensure that your DD8*plus* meets the power requirements in your area. If in doubt, consult a qualified electrician or AKAI professional dealer.

120 VAC                      @ 60 Hz for USA and Canada  
220~240 VAC                @ 50 Hz for Europe

**PROTECTING YOURSELF AND THE DD8*plus***

- Never touch the AC plug with wet hands.
- Always disconnect the DD8*plus* from the power supply by pulling on the plug, not the cord.
- Allow only an AKAI professional dealer or qualified professional engineer to repair or reassemble the DD8*plus*. Apart from voiding the warranty, unauthorized engineers might touch live internal parts and receive a serious electrical shock.
- Do not put, or allow anyone to put any object, especially metal objects, into the DD8*plus*.
- Use only a household AC power supply. Never use a DC power supply.
- If water or any other liquid is spilled into or onto the DD8*plus*, disconnect the power, and call your dealer.
- Make sure that the unit is well-ventilated, and away from direct sunlight.
- To avoid damage to internal circuitry, as well as the external finish, keep the DD8*plus* away from sources of direct heat (stoves, radiators, etc.).
- Avoid using aerosol insecticides, etc. near the DD8*plus*. They may damage the surface, and may ignite.
- Do not use denaturated alcohol, thinner or similar chemicals to clean the DD8*plus*. They will damage the finish.
- Modification of this equipment is dangerous, and can result in the functions of the DD8*plus* being impaired. Never attempt to modify the equipment in any way.
- Make sure that the DD8*plus* is always well-supported when in use (in a specially-designed equipment rack).
- When installing the DD8*plus* in a 19" rack system, always allow 1U of ventilated free space above it to allow for cooling. Make sure that the back of the rack is unobstructed to allow a clear airflow.
- In order to assure optimum performance of your DD8*plus*, select the setup location carefully, and make sure the equipment is used properly. Avoid setting up the DD8*plus* in the following locations:
  1. In a humid or dusty environment
  2. In a room with poor ventilation
  3. In any situation where the unit is not horizontal
  4. Inside a vehicle such as a car, where it will be subject to vibration
  5. In an extremely hot or cold environment

**WARNING**

**THIS APPARATUS MUST BE EARTHED**

**IMPORTANT**

This equipment is fitted with an approved non-rewireable UK mains plug.

To change the fuse in this type of plug proceed as follows:

- 1) Remove the fuse cover and old fuse.
- 2) Fit a new fuse which should be a BS1362 5 Amp A.S.T.A or BSI approved type.
- 3) Refit the fuse cover.

If the AC mains plug fitted to the lead supplied with this equipment is not suitable for your type of AC outlet sockets, it should be changed to an AC mains lead, complete with moulded plug, to the appropriate type. If this is not possible, the plug should be cut off and a correct one fitted to suit the AC outlet. This should be fused at 5 Amps.

If a plug without a fuse is used, the fuse at the distribution board should NOT BE GREATER than 5 Amp.

PLEASE NOTE: THE SEVERED PLUG MUST BE DESTROYED TO AVOID A POSSIBLE SHOCK HAZARD SHOULD IT BE INSERTED INTO A 13 AMP SOCKET ELSEWHERE.

The wires in this mains lead are coloured in accordance with the following code:

<b>GREEN and YELLOW</b>	— EARTH
<b>BLUE</b>	— NEUTRAL
<b>BROWN</b>	— LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, please proceed as follows:

The wire which is coloured GREEN and YELLOW must be connected to the terminal which is marked with the letter E or with the safety earth symbol  $\equiv$  or coloured GREEN or coloured GREEN and YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

**THIS APPARATUS MUST BE EARTHED**

Ensure that all the terminals are securely tightened and no loose strands of wire exist.

Before replacing the plug cover, make certain the cord grip is clamped over the outer sheath of the lead and not simply over the wires.

6D-En

**FCC WARNING**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

21A-En

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

27-En

**AVIS POUR LES ACHETEURS CANADIENS DU DD8plus**

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

27-F

**VENTILATION**

Do not prevent the unit's ventilation, especially by placing the unit on the soft carpet, in a narrow space, or by placing objects on the unit's chassis—top, side, or rear panels. Always keep the unit's chassis at least 10 centimeters from any other objects.

31C-En

Changes or modifications not expressly approved by the manufacturer for compliance could void the user's authority to operate the equipment.

32-En

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## WARNING

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### WARRANTY

AKAI professional M.I. Corp. warrants its products, when purchased from an authorized "AKAI professional" dealer, to be free from defects in materials and workmanship for a period of 12 (twelve) months from the date of purchase. Warranty service is effective and available to the original purchase only, and only on completion and return of the AKAI professional Warranty Registration Card within 14 days of purchase.

Warranty coverage is valid for factory-authorized updates to AKAI professional instruments and their software, when their installation is performed by an authorized AKAI professional Service Center, and a properly completed Warranty Registration has been returned to your "AKAI professional" dealer.

To obtain service under this warranty, the product must, on discovery of the defect, be properly packed and shipped to the nearest AKAI professional Service Center. The party requesting warranty service must provide proof of original ownership and date of purchase of the product.

If the warranty is valid, AKAI professional will, without charge for parts or labor, either repair or replace the defective part(s). Without a valid warranty, the entire cost of the repair (parts and labor) is the responsibility of the product's owner.

AKAI professional warrants that it will make all necessary adjustments, repairs and replacements at no cost to the original owner within 12 (twelve) months of the purchase date if:

- 1) The product fails to perform its specified functions due to failure of one or more of its components.
- 2) The product fails to perform its specified functions due to defects in workmanship.
- 3) The product has been maintained and operated by the owner in strict accordance with the written instructions for proper maintenance and use as specified in this Operator's Manual.

Before purchase and use, owners should determine the suitability of the product for their intended use, and owner assumes all risk and liability whatsoever in connection therewith. AKAI professional shall not be liable for any injury, loss or damage, direct or consequential, arising out of use, or inability to use the product.

The warranty provides only those benefits specified, and does not cover defects or repairs needed as a result of acts beyond the control of AKAI professional, including but not limited to:

- 1) Damage caused by abuse, accident, negligence. AKAI professional will not cover under warranty any original factory disk damaged or destroyed as a result of the owner's mishandling.
- 2) Damage caused by any tampering, alteration or modification of the product: operating software, mechanical or electronic components.
- 3) Damage caused by failure to maintain and operate the product in strict accordance with the written instructions for proper maintenance and use as specified in this Operator's Manual.
- 4) Damage caused by repairs or attempted repairs by unauthorized persons.
- 5) Damage caused by fire, smoke, falling objects, water or other liquids, or natural events such as rain, floods, earthquakes, lightning, tornadoes, storms, etc.
- 6) Damage caused by operation on improper voltages.

***IMPORTANT NOTE: This warranty becomes void if the product or its software is electronically modified, altered or tampered with in any way.***

AKAI professional shall not be liable for costs involved in packing or preparing the product for shipping, with regard to time, labor, or materials, shipping or freight costs, or time or expense involved in transporting the product to and from AKAI professional Authorized Service Center or Authorized Dealer.

AKAI professional will not cover under warranty an apparent malfunction that is determined to be user error, or owner's inability to use the product.

THE DURATION OF ANY OTHER WARRANTIES, WHETHER IMPLIED OR EXPRESS, INCLUDING BUT NOT LIMITED TO THE IMPLIED CONDITION OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

AKAI professional hereby excludes incidental or consequential damages, including but not limited to:

- 1) Loss of time.
- 2) Inconvenience
- 3) Delay in performance of the Warranty.
- 4) The loss of use of the product.
- 5) Commercial loss.
- 6) Breach of any express or implied warranty, including the Implied Warranty of Merchantability, applicable to this product.

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**INTRODUCTION**

The DD8*plus* is a magneto/optical-based, random-access digital film dubber designed to replace the current generation of magnetic film dubbers and multitrack tape machines used in most film and video post production environments. It features virtually instant locating, convenient removable media, flexible I/O and remote control options together with full data compatibility and seamless integration with the Akai DD1500 Recorder/Editor.

Being a dedicated system with no host computer required, its performance is optimised for ease of use and speed of operation with no prior knowledge of computers and/or hard disk digital recording required.

The DD8*plus* is a logical development from the original DD8 with new additional features including support for 20/24-bit audio recording at sample rates up to 96kHz.

**SPECIFICATIONS****General**

- Digital audio format: 16-bit, 20-bit and 24-bit linear PCM
- Simultaneous recording: 8 tracks max.
- Recording time: 225 track-minutes  
(equivalent to 28 minutes/8 track with 2.6Gb MO disk)
- Sampling rate: 48k, 44.1k, 32kHz, 88.2kHz and 96kHz  
(with +0.1% Pull-up and -0.1% Pull-down at all sample rates)
- Recording media: Optional 2.6Gb MO disk / Removable Hard Disk Unit
- Internal drive: 5.25-inch half-height drive bay x 1 mountable
- Display: 248 x 60 dot LCD x 1 - Time, Parameters  
8-segment LED x 8 - Peak Level Meter, Track Active, Track Slip  
Warning LED x 3 - Disk Busy, T/C RCV, W/C RCV
- Memory : Flash ROM for OS and Settings  
72-pin SIMM x 1 for buffer memory expansion (EDO SIMM, any size from 2Mb to 32Mb)
- Expansion slot: General purpose slot x 4  
Digital audio slot x 1 - TDIF, ADAT or AES/EBU  
8-channel analog audio input slot x 1  
8-channel analog audio output slot x 1  
EQ8 slot (internal) x 1
- Dimensions: 482.6 (W) x 177 (179) (H) x 410 (441.2) (D)mm (max.), 4U
- Weight: 12.8 kg (no options)
- Power: 100-120 / 220-240 VAC, 50 / 60Hz, 90W

### Connections

- Video Sync / Word Clock input: BNC x 1 with 75-ohms terminator switch
- AKAINET (Ethernet): BNC connector x 1 with 50-ohms terminator switch
- Pre-Read output: 9-pin D-sub x 1, 14.5Vrms (max.), 560 $\Omega$
- Expansion port: 9-pin D-sub x 1, for RC15
- SCSI-A: 50-pin Amphenol x 1 for disk expansion
- Phones: 1/4-inch stereo phone x 1, 15mW 32 $\Omega$
- DIP switch x 1 for SCSI-B ID selection

### Options

- IB-D8AD - 8-channel analog input board  
Balanced inputs, input imp. 104k $\Omega$ ; Max. input level +24dBu  
25-pin D-sub (TASCAM DA-88 pin assignment)  
A/D converter 24-bit, 128-times oversampling  
Operating level selectable by software [-12, -16, -18 or -20dBu]
- IB-D8DA - 8-channel analog output board  
Balanced outputs, output imp. 94 $\Omega$  ; Max. output level +24dBu  
25-pin D-sub (TASCAM DA-88 pin assignment)  
D/A converter: 20-bit 8-times oversampling  
Operating level selectable by software [-12, -16, -18 or -20dBu]
- IB-D8TIF - 8-channel TDIF digital input/output board  
25-pin D-sub (TASCAM DA-88 pin assignment) with BNC connector  
for Word Clock Out and 15-pin D-sub (TASCAM DA-88 pin assign-  
ment) for TASCAM MU-8824 Meter Bridge connection
- IB-D8MA24 - 8-channel AES/EBU 24-bit digital input/output board  
25-pin D-sub connector x 1
- IB-802T - LTC interface board  
1/4" phone connector x 2
- IB-803M - MIDI interface board  
5-pin DIN connector x 3
- IB-804A - 8-channel ADAT optical digital input/output board  
Optical connector x 2
- IB-805R - RS422 interface board  
9-pin D-sub connector x 1
- IB-806B - Biphase interface board  
9-pin D-sub connector x 2
- IB-808G - GPIO parallel interface board  
37-pin D-sub connector x 1
- EQ8 - 8-channel EQ board  
For the interchangeability of DR8/DR16/DD1500 disks

- DL1500 - Remote Controller
- RC15 - User Assignable Remote Controller

*\*Restriction of board installation: TDIF, ADAT or Multi-AES/EBU interface*

### **Standard accessory**

- Cable set for AD/DA boards and SCSI Drive connection: 1
- Power cable: 1
- Operator's manual: 1

(0dBu = 0.775Vrms)

*Trademarks:*

*Open Media Framework and OMF are trademarks of Avid Technology, Inc. Macintosh is a registered trademark of Apple Computer, Inc. All other product and company names are the property of their respective owners.*

### FEATURES

- 8-track operation with immediate removability on Magneto Optical (MO) disk (no back-up required) or removable hard disks. Record times for one side of a 2.6Gbyte MO disk are 3 hours 40 minutes of mono 16-bit recording at 48kHz and 4 hours of mono 16-bit at 44.1kHz. Effective playback time can be extended using extra MO drives and up to seven drives in total may be connected using SCSI.
- Plug-and-Play replacement for the Tascam DA-88
- Options include SMPTE/EBU IN and OUT (at all frame rates), Bi-phase IN and OUT, and RS422 (Sony™ P2 9-pin protocol) .
- The DD8 will convert SMPTE/EBU to Bi-phase and vice versa.
- The DD8 can follow external timecode backwards and forwards, even at slow speeds.
- Wordclock and video sync inputs fitted as standard allowing synchronisation to house sync, digital audio and PAL/SECAM and NTSC video sync sources.
- 20-bit digital to analogue converters (DACs) with 8 x oversampling and software adjustable operating level.
- 24-bit analogue to digital converters (ADCs) with 128 x oversampling and software adjustable operating level.
- Custom LSI dedicated for signal processing ensures fast and reliable operation.
- 32 channel 'polyphony' allows long crossfades or overlaps to be achieved within a single track and across all 8 tracks simultaneously.
- Dedicated MTR-style transport keys for play, stop, rewind, fast forward and record.
- The JOG wheel allows you to 'scrub' audio across all 8-tracks for editing.
- AKAINET link (a subset of the Ethernet protocol) fitted as standard to allow true remote control of multiple DD8s from a single DL1500 controller with virtually no limit on distance.
- 16, 20 and 24-bit audio recording capabilities
- Direct playback of files created on a variety of other manufacturers digital audio workstations.

**ABOUT THIS MANUAL**

This owner's manual has been written to provide you with the information to get the best from the *DD8plus*. Although it hoped that the *DD8plus* is easy enough to use without constant reference to this manual, please take the time to read it in order to understand the machine fully. The manual takes you through the machine from scratch, assuming you have just installed it and you are using it for the first time.

This manual covers all basic functions and operation and, wherever possible, gives hints and tips and application notes. However, because of the diversity of applications in which the *DD8plus* can be used, it is not always possible to cover every application specifically. As such, most descriptions of functions are fairly general unless, however, a certain function has a specific use in a particular application.

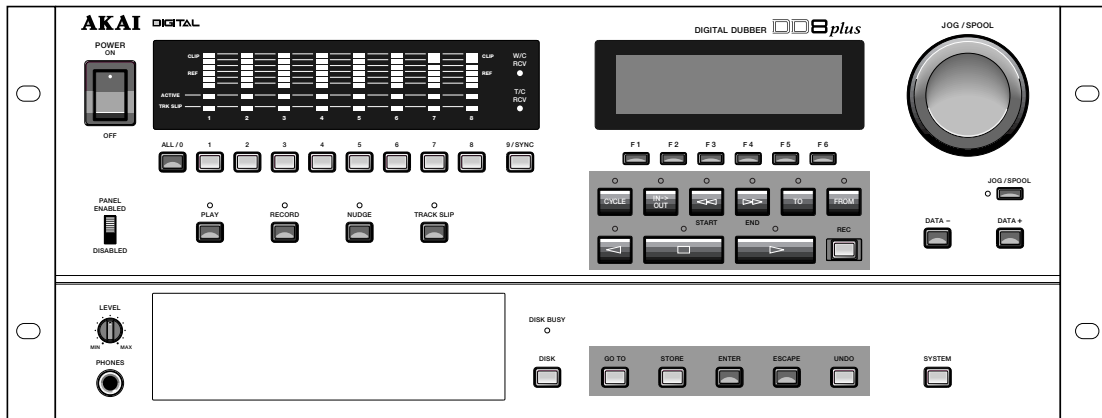
It is assumed that the *DD8plus* is being used in audio to picture, the main application for which it was designed, and it is assumed you have some experience of the techniques involved in this field.

This operating manual was originally written for the DD8 but also includes details of features specific to the *DD8plus*. Where then name DD8 is used, this can be assumed to refer to the *DD8plus* as well.

As with any piece of new gear, there is always a bit of new jargon to get to grips with. What follows, therefore, is a short list of some of the terms you will come across during the course of this manual.

- PROJECT** This is where you do the bulk of your work on the DD8 and contains all your recordings, positioned at the required times. Think of it as a reel of multi-track tape if you like, although a project on the DD8 is actually nothing more than a Qlist or EDL linking cues to timecode.
- The SYSTEM settings, locator memories etc. are also saved with the project and when a project is subsequently loaded, the whole system is restored to exactly the status the project was saved in.
- NOW TIME** The NOW TIME is the DD8's current internal time position. All work is done with referenced to this NOW time. The NOW time is displayed on many of the LCD pages.
- CUE** This refers to a piece of audio from its start to its end.
- EDIT REGION** This refers to the area selected between the IN and the OUT points.
- IN TIME** This usually refers to the start of an edit (e.g. NUDGE). However, the IN TIME is also used to set cycle times.
- OUT TIME** This usually refers to the end of an edit (e.g. NUDGE) although it is also used to set cycle times.
- MARK POINT** This is a special marker intended for Biphase synchronisation. It can be set to define a sync point between audio and film (usually a cross before the first frame).
- LIBRARY** A library is a file created for convenient storage of groups of cues (referred to as 'clips'). For example, a library may contain sound effects, or music cues, etc.. Although this is not available from the front panel due to the restricted user interface, the *DD8plus* includes full support for handling library files when a DL1500 remote controller is attached.

## FRONT PANEL



Next to the Power Switch, the 8 LED bargraph displays are used as peak level meters as well as indicating the track's status:

ACTIVE	Audio data being played from disk.
TRK SLIP	Audio track slipped in time from its original location.

The W/C RCV LED is used to indicate the status of the external word clock input. When external sync is selected, this indicator will light steadily when the correct word clock signal is being received. If there is a problem with the word clock signal, this LED will flash.

Similarly, the T/C RCV LED is used to indicate the status of the external timecode input. When external timecode is being received successfully, the DD8 will play synchronised to that timecode and the T/C RCV LED will be steadily lit. If at any time, the T/C RCV LED flickers, this indicates a problem with the external timecode such as dropout. The DD8 will 'flywheel' for a short while in the event of timecode dropout but, if the dropout is too long, the DD8 will stop playing.

Under the power switch, the PANEL ENABLE/DISABLED switch is used to lock the keys on the front panel to prevent accidental operation.

The PLAY, RECORD, NUDGE and TRACK SLIP keys are used to select one of the DD8's 'PROJECT' modes, and also determine the current function of the track select keys (1~8 and ALL).

In the 'PROJECT' modes, the track select keys (1~8, ALL) are used for selecting tracks. They can also be used in some of the setup pages as a numeric keypad. In this situation, the ALL key is used as '0' and the SYNC key is used as '9'.

Under the LCD display are 6 soft keys (F1 ~ F6) used to select items on the LCD.

The type of action performed when one of the soft keys is pressed is indicated by the style of the soft key display shown on the bottom line of the LCD:

- Accessing another page
- Executing a function
- Moving the cursor to the indicated field





Under the soft keys are the transport keys which are designed to emulate those on an MTR as closely as possible. The keys are:

CYCLE When the CYCLE key is pressed, the DD8 will start playback from the current time and then continue to repeat between the IN and OUT times previously stored.

▶ This is the PLAY key.

□ This is the STOP key and will stop playback, recording, rewind and fast forward.

◀ This is the REVERSE PLAY key. Pressing it will cause the DD8 to play backwards. This is a technique used a lot in film applications where mixing engineers actually mix down backwards in order to save time. However, please note that you cannot record backwards.

▶▶ This is fast forward. Pressing it once gives x 10 play speed; pressing it again gives x 100 play speed.

When ▶▶ is pressed during play, the DD8 will fast forward with 'tape chatter' just like a standard MTR. In this case, only x 5 play speed is possible.

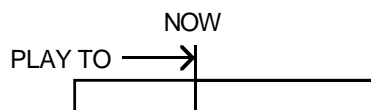
◀◀ This is rewind. Pressing it once gives x 10 play speed; pressing it again gives x 100 play speed.

When ▶▶ is pressed during play, the DD8 will rewind with 'tape chatter' just like a standard MTR. In this case, only x 5 play speed is possible.

REC This key allows you to drop in and out of record just like a normal MTR. Press ▶ plus REC together to drop in and press ▶ (or □) to drop out of record.

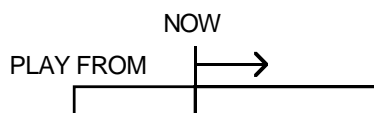
IN > OUT This will play from the IN point to the OUT point. I.e.: Because the DD8 automatically places the IN and OUT times at the start and end of a new recording, you may use PLAY IN>OUT to check it immediately after recording.

TO This will play up to the NOW time. I.e.:



This is useful for checking things prior to editing (i.e. to find a good edit point) but may also be used for checking things on the NOW time generally.

FROM This plays from the NOW time for a specified duration. I.e.:



## INTRODUCTION - 1

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Next to the LCD is the JOG/SPOOL wheel. The function of this wheel is selected by the JOG/SPOOL key. Pressing this once will select the JOG function and the LED will light steadily. Pressing it again will select the SPOOL function and the LED will flash.

The DATA-/DATA+ keys are used to set or change parameter values.

Next to the disk drive bay is the DISK key. Pressing this enters the DISK mode where you can select functions which are related to the disk drive(s) attached to the system.

The GOTO and STORE keys access the locator pages which allow you to quickly locate the transport to the required position.

The ENTER key is used to confirm actions or to complete the entry of names, numbers or timecode values. The ESCAPE key is used abort or cancel the process without committing it. This is your 'escape route' should you be in a situation where you change your mind. The ESCAPE key can also be used to take you out of the current page and back to the main play/record mode.

The UNDO key allows you to undo/redo the last thing you did. If you make a mistake and do something you're not happy with, press UNDO and the original data will be restored. If you then find that you preferred the mistake, press UNDO again to restore the previous version.

**NOTE 1:** *The UNDO function only refers to recording and editing. You cannot undo anything else. For example, if you load a project and change your mind, you cannot undo that. If you select some tracks for edit when you really meant to select them for record, you cannot undo that.*

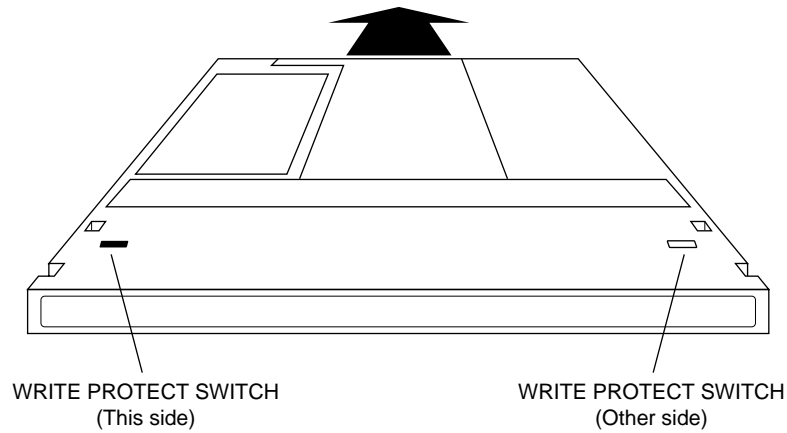
**NOTE 2:** *IT IS NOT POSSIBLE TO USE UNDO IF YOU DELETE A FILE (I.E. A PROJECT) BY MISTAKE. PLEASE TAKE CARE WHEN DELETING FILES.*

The SYSTEM key is used to select pages where you can set many parameters to select the current operational state of the DD8.

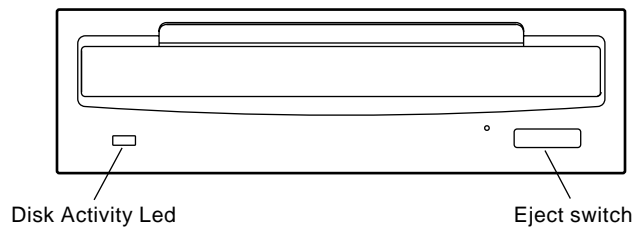
Finally, on the other side of disk drive bay, the PHONES connector outputs a mix of all tracks selected for playback. The headphone level is adjusted by the LEVEL control above the connector.

**FRONT PANEL - INSERTING AN MO DISK**

Assuming you have an MO drive installed, the disk is inserted thus:



The side you wish to use is inserted face up. Power must be on for the disk to be accepted as the load mechanism is motorised.



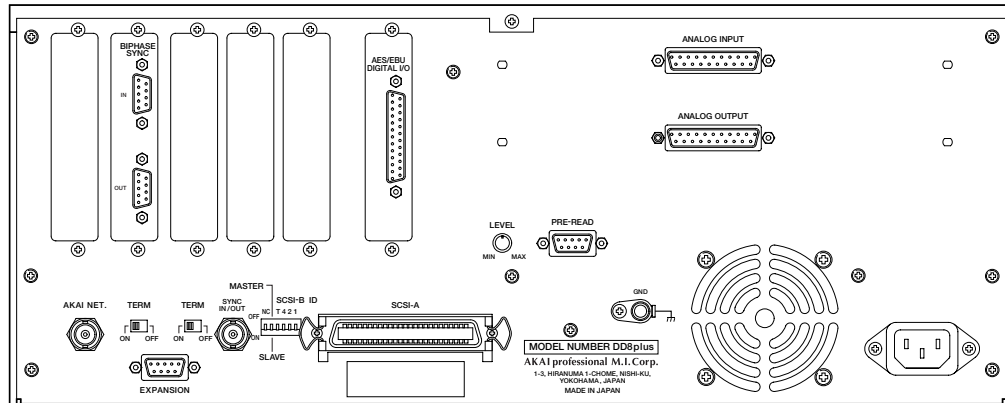
When the disk is in use (i.e. playing back, recording, saving, loading, etc.), the DISK ACTIVITY LED will flash.

To eject the disk, press the DISK EJECT button. Power must be on for the disk to be ejected as the mechanism is motorised.

**NOTE:** *If there is some problem ejecting the disk and/or power is not applied to the drive, you can eject the disk by inserting a small metal tool in the small hole alongside the disk eject button. Something like a rolled out paper clip will do it but a special tool is recommended. This tool may accompany the drive unit.*

It is possible to write protect MO disks to prevent accidental erasure, editing, formatting, etc.. To do this, slide the WRITE PROTECT switch to the PROTECT position. If you only intend to playback from the disk, it is a wise precaution to write protect the disk to prevent accidental damage to a project.

## REAR PANEL



### OPTION SLOTS

There are six slots on the rear panel for installing option cards. The first four slots from the left hand side are for general purpose interface cards such as the IB-805R (RS422 interface) or the IB-806B (Biphase interface). The fifth slot is for a digital audio interface card such as the IB-D8TIF (TDIF interface), IB-D8MA24 (AES/EBU interface) or IB-804A (ADAT interface). The final slot is for the connector to the Tascam MU-8824 Meter Bridge (this is part of the IB-D8TIF option card).

There are two more slots available for installing the analog option cards IB-D8AD (8-channel analog input) and IB-D8DA (8-channel analog output).

### AKAINET CONNECTOR

This connector is used to connect the DD8 to the DL1500 Remote Controller

### TERMINATOR SWITCHES

These switch selects 75Ω termination for the SYNC connector for use with video sync signals and 50Ω termination for the AKAINET connector.

### SYNC CONNECTOR

This BNC can accept either TTL wordclock or video sync signals (such as 'black and burst' house sync signals) and is used to synchronise the DD8 to an external clock source.

### EXPANSION CONNECTOR

This connector is used to attach the optional RC15 User Assignable Remote Controller.

### SCSI-B ID SWITCHES

These DIP switches are not in use at the moment (Note that this switch has no effect on the SCSI-A bus).

### SCSI-A CONNECTOR

This 50-pin Amphenol connector is used to connect external SCSI drives to the DD8.

### GROUND TERMINAL

This terminal is provided to allow you to earth the DD8 in the event of ground loops.

### MAINS INPUT

Mains power is connected here.

### PRE-READ LEVEL

This control is used to adjust the level of the oscillator signal that will be generated at the pre-read output connector.

### **PRE-READ CONNECTOR**

This connector can be used to replace the 'pre-read' output generated by some dubbers that have a second playback head mounted before the main playback head. Note that the DD8 does not generate an audio signal here. Instead, it uses an oscillator which is switched on and off as the playback signal reaches a preset threshold.

## POWERING UP THE DD8

It is recommended that the following power up procedure is observed when turning the system on:

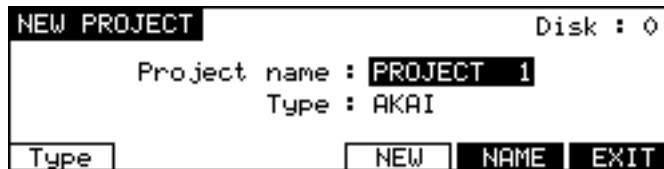
First, turn on any disk drives that may be connected to the system. Next, turn on the DD8. You will see this screen display momentarily:



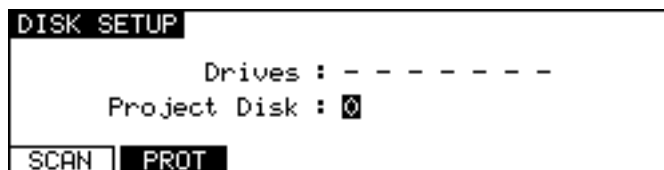
The DD8 will look at the disk drives attached to the system. If a disk containing a valid PROJECT is found, it will be loaded automatically and you will see the main playback screen:



If no projects are found, the DD8 will enter the NEW PROJECT page in DISK mode, which will be explained later in Disk mode, to allow you to setup the disks attached to the system and create a new PROJECT:



If no disk is found, it goes directly to the DISK SETUP page in DISK mode:



In this case, check the connections to the disk drive (and SCSI termination) and then press the SCAN key to search the SCSI bus again.

**PLAY MODE**

The PLAY mode is the default mode when a Project is loaded. It can also be accessed at any time by pressing the PLAY key under the barmeters. Pressing the track keys 1-8 located under the barmeters select the playback tracks to be muted. The tracks with lit LEDs indicate muted tracks. Pressing the track key again disables the mute.

The Soft Keys' functions depend on the External Time Source selected in the SYSTEM/SYNC menu. When a Biphase time source is selected, the PLAY screen will look similar to this:



The top line of the screen shows the name of the current Project, as well as the current frame rate of the timecode display.

The time display style and sub-frame display depend on the parameters set in the SYSTEM/DISPLAY menu. In the example shown above, the timecode display style has been set to display footage. However, it is also possible to select 'conventional' timecode formats in which case the display will look something like this:



The top line of the screen shows the name of the current Project, as well as the current frame rate.

Pressing the RESYNC RCV key (F1/F2) resets the biphase reader to the current position.

The RESET key (F3) resets the time counter to zero at the current position.

Pressing MACHINE SLIP (F4/F5) takes you to the MACHINE SLIP page :



This page allows you to slip the DD8's time with respect to the biphase machine. F1 and F2 are used to move the cursor to the correct position (frames or sub-frames), and the DATA +/- keys are used to adjust the value. Note that the Sub-Frame value (1/10th frame, 1/4th frame, 1/2 frame) depends on the setting in SYSTEM/DISPLAY (10th Frame, Film Perfo, Video Field). The ZERO key (F5) resets the offset to zero.

When an external time source other than biphase is selected, the PLAY screen will look like this:



## PLAY MODE - 2

When an External Time Source is selected and the SYNC key is switched on, an additional display on the main PLAY screen indicates when the DD8 is chasing the external time:



When the DD8's internal time is at the same position as the external time (and the sample rate is synchronised to the speed of the external time source), the CHASE display will change to LOCK.

Pressing the VIEW key (F6) switches to the OverView display :

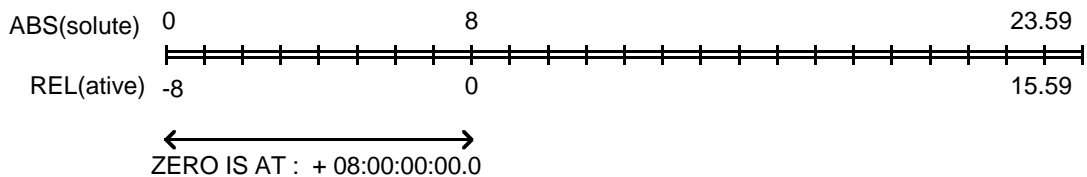


This page shows a static view of the entire Project, with the NOW time scrolling across the screen. The ESCAPE key (or any mode key) is used to exit this display.

Returning to the main PLAY screen, sometimes, you may prefer to set an offset between the DD8's timecode display and the timecode position of an external machine. For example, your project may start at 00:00:00:00 but the visuals start at 10:00:00:00. Using the soft keys on this page, you may set offsets so that the two machines play in sync without having to extensively modify the project's start time.

Pressing the ABS/REL (F1/F2) key sets the time display in absolute mode.

Pressing the ABS/REL (F1/F2) key again sets the time display in relative mode which allows the 00:00:00:00.0 reference time to be placed at a time other than absolute zero. For example:



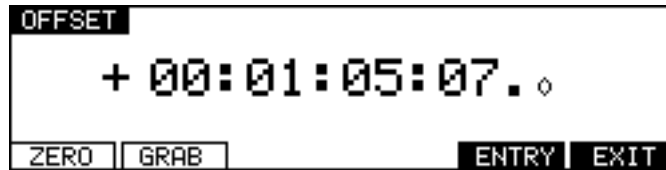
Pressing the RESET (F3) key resets the relative time to zero at the current position.

Pressing the OFFSET key (F4/F5) takes you to the Offset page where you can manually enter the time offset between ABS time and REL time.

**NOTE:** You may find it useful when starting a project from scratch to always start at, say, 1 hour and use the relative time display so that the project effectively still starts at zero. In this way, if you suddenly find you need to add cues before 00:00:00:00, you can. If you use absolute and start at zero, you will first have to slip all cues in the project forward to accommodate the new cues.



## SETTING TIMECODE OFFSETS

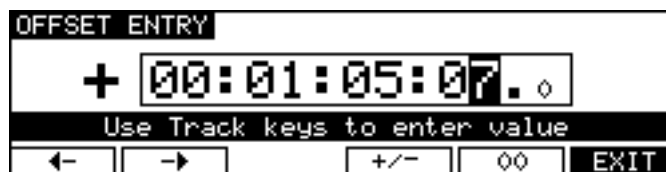


Pressing the ZERO (F1) key resets the offset to zero. When following timecode from an external machine, pressing the GRAB (F2) key grabs the offset between the current NOW time (internal) and the current External Time value.

If the project starts at 00:00:00:00.0 but the incoming timecode starts at 1 hour, you should set an OFFSET of -01:00:00:00.0. This will subtract 1 hour from the incoming timecode, thereby effectively providing the DD8 with timecode starting at 00:00:00:00.0. Conversely, if the project starts at, say, 10 hours but the incoming timecode starts at 1 hour, you would need to set an offset of +09:00:00:00.0, adding 9 hours to the incoming timecode so that it plays from 10 hours.

In cases where the project and the incoming timecode both start at odd times (for example, when the project starts at 02:23:45:23.0 and the incoming timecode starts at, say, 09:12:12:14.0), your best bet is to use the GRAB softkey. Locate the project and the incoming timecode to their respective start times and press GRAB. The offset will be calculated automatically.

Pressing ENTRY (F5) enters the Offset Entry page which allows you to manually enter an offset value or nudge the current offset value:



Soft keys F1 and F2 can be used to move the cursor to the sub-frame field, or any of the other fields. The offset time is then entered using the track keys as a numeric keypad or the current digit can be nudged using the DATA +/- keys.

The offset sign (plus or minus) can be toggled by pressing the +/- key (F4).

### RECORD MODE

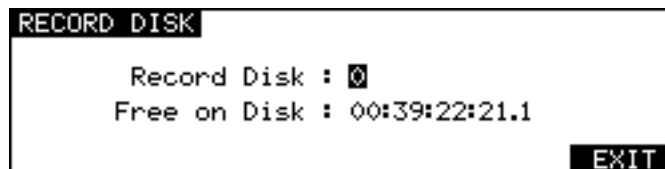
The RECORD mode is the default mode when a New Project is created. It can also be selected by pressing the RECORD key below the barmeters. In this mode, the track select keys (1~8) are used for selecting tracks to record onto.

The Time Display Style and Sub-Frame display depend on the according parameters in the SYSTEM/DISPLAY menu. However, "Free on Disk" is always shown in real time (hh:mm:ss).

When not recording, the following display is shown:



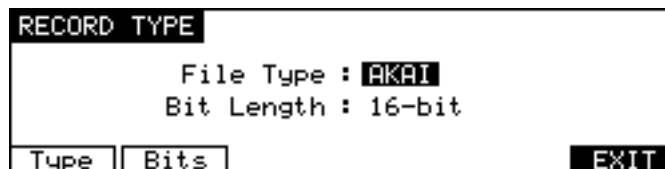
The top line of the screen shows the name of the current Project, as well as the current frame rate. Pressing DISK (F1) takes you to the Record Disk page :



Here you may select the SCSI ID of the disk onto which new audio will be recorded. This page also shows you how much available recording time there is on tracks enabled for record.

Pressing SETUP (F2) takes you directly to the RECORD SETUP screen which is described later in this manual in the System Section.

Pressing TYPE (F3) takes you to the RECORD TYPE page where you can select certain options for new recordings:



The TYPE key (F1) is used to move the cursor to the FILE TYPE field. The BITS key (F2) is used to move the cursor to the BIT LENGTH field.

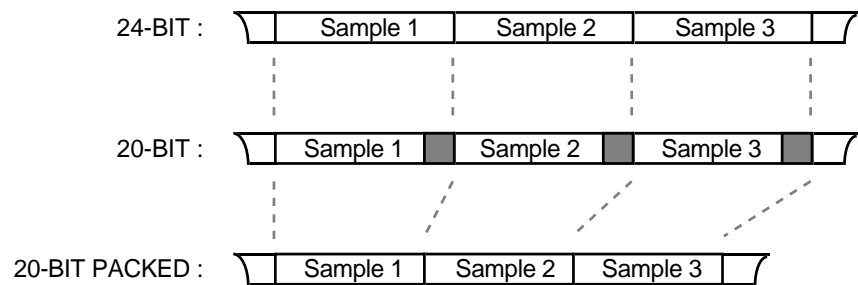
#### FILE TYPE

This selects the type of audio file that will be created when new recordings are made. The options available in this field depend on the format of the selected Record Disk.

- AKAI: This is the DD's native audio file format and is only available when the selected Record Disk is an AKAI format
- AIFF: This is Apple's "Audio Interchange File Format" that is used by many Macintosh software applications. The AIFF option is only available when the selected Record Disk is Macintosh format
- SD-II: This is the native audio file format used by Digidesign Pro Tools and some other Macintosh software applications. The SD-II option is only available when the selected Record Disk is Macintosh format
- AKAI->FAIRLIGHT: This allows special Akai audio files to be created which are intended for playback on a Fairlight MF3plus system fitted with Akai File Exchange support. This option is only available when the selected Record Disk is an AKAI format

BIT LENGTH This selects the audio bit length for new recordings.

- 16-bit: This is the compact Disc standard.
- 20-bit: This option allows 20-bit audio to be recorded, giving greater resolution and headroom.
- 24-bit: This option allows 24-bit audio to be recorded, giving even greater resolution and headroom.
- 20-bit (packed): This is a special option that is only available when recording AKAI format audio files. Typically, 20-bit audio occupies the same space on disk as 24-bit audio (the extra 4-bits of storage space in each sample being wasted). The 20-bit 'packed' mode avoids this waste of space by writing the audio to disk in a special pattern.



Note that this mode does *not* involve any 'audio compression'. It just places the data on disk in an optimal manner to maximum disk storage space and bandwidth.

Once you have selected your recording tracks, to record, simply press PLAY (to start playback) and then press PLAY and the RECORD key together. The track key(s) will be steadily lit as will the transport RECORD key.

During recording, the screen changes as follows :



Pressing RECORD ABORT (F5/F6) aborts the recording process. To stop recording, press STOP. To drop out of record (i.e. stop recording but keep playing), simply press PLAY - the DD8 will drop out of record and keep playing.

**NOTE:** There is a minimum time before you can punch in to record again after punching out. This is due to disk speed and will depend on the drive you are using.

It is also possible to start recording from stop by pressing the REC key first and *then* pressing PLAY. You can stop recording by pressing PLAY again or by pressing STOP.

## RECORD MODE - 3

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If the DD8 is in a mode other than RECORD (i.e PLAY, NUDGE or TRACK SLIP), the following message will appear when you try to start recording:



If VariSpeed is ON (and different from 0 %), the following prompt will appear when you try to start recording:



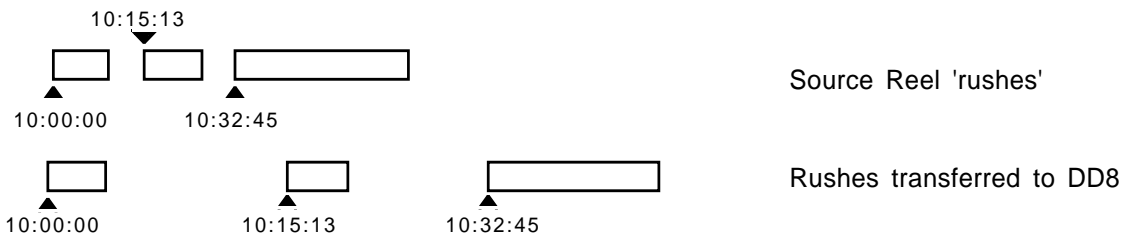
### UNDOING A RECORDING

If you don't like the recording you just made, the simplest way to repair it is probably to record over it just like tape. Another way out of a recording disaster is to undo the last recording you made by pressing the UNDO key (the key's LED will light). Of course, should you change your mind, you can redo the recording by pressing the UNDO key again (the LED will switch off).

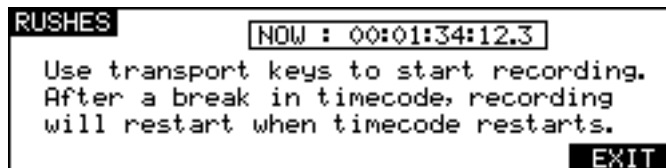
**RECORD RUSHES**

When recording 'dailies' at a film or video shoot, recordings are made referenced to 'time of day' timecode on a portable recorder of some kind. However, due to the nature of dropping in and out of record, the timecode becomes discontinuous. For example, the first recording may start at 10am and finish a minute later. As the scene is reset, the next recording may start at 10:15:13am and last 2 minutes. However, on the recording device used at the shoot, the two recordings will be adjacent, separated by a gap of a few seconds and there will be a break in the recorded timecode.

While making 'normal' recordings, the DD8 will drop out of recording if it detects a dropout in the received timecode. Hence, it would be necessary to manually put the DD8 back into record to transfer the audio in the example above. The Record Rushes function overcomes this and allows continuous recording on the DD8 despite breaks in the source reel's timecode. When the transfer is made, the rushes will be placed at their actual (original) timecode positions. For example:



To use the rushes function, press RECORD RUSHES (F5/F6) on the main record page. You will see this screen:



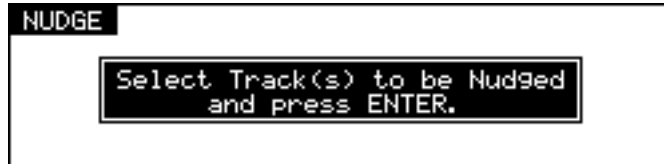
You should start the source machine playing and drop into record as normal on the DD8. When a recording is started from this page, the normal recording behaviour is modified so that recording will restart after a break in timecode.

**NOTE:** Of course, as you are recording to external timecode, the correct parameters should be selected in the SYSTEM pages to enable the appropriate time source. You will receive an error message if these settings are not correct.

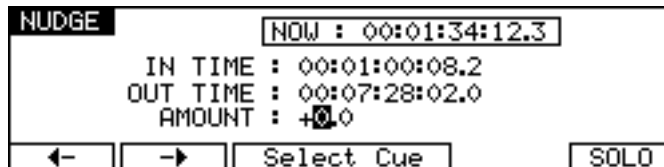
### NUDGE

The NUDGE function is used to adjust the position of a region (defined by the IN and OUT points), by small increments (frames or sub-frames) using DATA +/- keys. The selected region can be auditioned using the play IN->OUT key.

Pressing the NUDGE key will show the following prompt:



After the appropriate tracks are selected and ENTER is pressed, the following screen will appear:



It is not possible to select different tracks once the Nudge mode has been entered. When entering the Nudge mode, the displayed amount is always zero. The final amount is committed when exiting the NUDGE mode.

Pressing SELECT CUE (F3/F4) selects all of the cues at the current time on the track(s) selected for Nudge. (i.e. it sets the IN time at the beginning of the first Cue and the OUT time at the end of the last cue).

The cursor keys (F1/F2) are used to select the digit to be adjusted. The Sub-Frame value (1/10 frame, 1/4th frame, 1/2 frame) depends on the setting in SYSTEM/DISPLAY (10th Frame, Film Perfo, Video Field).

Pressing SOLO (F6) toggles the SOLO function ON/OFF. When SOLO is activated, only the track(s) selected for Nudge are heard on the headphone output.

## TRACK SLIP

The Track Slip function is used to adjust the position of a whole track by small increments (frames or sub-frames) using DATA +/- keys.

Pressing the TRACK SLIP key will show the following screen :

TRACK SLIP		NOW : 00:01:34:12.3					
1	2	3	4	5	6	7	8
+00-	+00-	+00-	+00-	+00-	+00-	+00-	+00-
.0	.0	.0	.0	.0	.0	.0	.0
COMMIT	ZERO		Frames	Sub-F	SOLO		

Pressing FRAMES (F4) or SUB-FRAMES (F5) toggles between Frames and Sub-frames. The Sub-Frame value (1/10th frame, 1/4th frame, 1/2 frame) depends on the setting in SYSTEM/DISPLAY (10th Frame, Film Perf, Video Fields).

Pressing SOLO (F6) will toggle the SOLO function ON/OFF. When SOLO is activated, only the track(s) selected for slipping will be heard at the headphone output.

It is possible to select multiple tracks for slipping, but each track will retain its own amount :

TRACK SLIP		NOW : 00:01:34:12.3					
1	2	3	4	5	6	7	8
+01-	+02-	+00-	-02-	+01-	+00-	+00-	+00-
.0	.0	.0	.0	.0	.0	.0	.0
COMMIT	ZERO		Frames	Sub-F	SOLO		

The Slip amount of each track is memorised, and displayed when entering the SLIP page. When the Slip amount of a track is different from zero, the according TRK SLIP LED (under the Meters) will be steadily lit, even when returning to another mode. This condition can be thought of as a 'Track slip preview' - the track's playback start time will be adjusted by the appropriate amount but the track's data is not actually edited.

Pressing ZERO (F2) will slip the selected tracks back to their original position and reset the display to zero.

Pressing COMMIT (F1) permanently slips the selected tracks and resets the display to zero.

**NOTE 1:** When a TRACK SLIP amount is non-zero (i.e. while a TRACK SLIP is being previewed), it is not possible to record or edit on this track. The slip time must be COMMITed to allow these operations to be used.

**NOTE 2:** The TRACK SLIP function is not recognised by the DR8/DR16 (or DD1500 prior to V2.30). When a disk with TRACK SLIP is loaded into these machines, the audio will playback at its original time. To overcome this, the TRACK SLIP should be COMMITed while the disk is connected to the DD8.

### LOCATOR

Once you start to build up a project, you need a convenient way of getting around it. Perhaps the simplest way is to use the rewind and fast forward keys.

However, you often need to go to very specific points in a project. To facilitate this, the DD8 has a powerful autolocator that allows you to store up to 100 numbered locate memories as well as being able to locate to the start, the end and the IN, MARK and OUT points. You may also locate directly to timecode values.

IN / OUT are used for the CYCLE Play function, as well as for marking a region for the NUDGE function.

MARK is a dedicated memory for Biphase synchronisation. It is set to define a sync point between audio and film picture (usually a cross before the first frame).

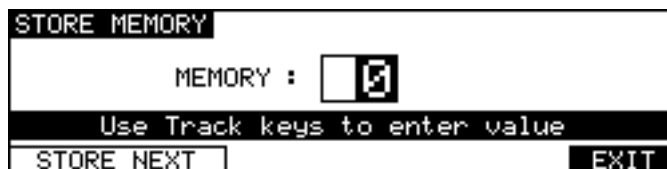
### STORE

Pressing the STORE key will show the following screen :



- Pressing IN (F1) stores the current NOW time as the IN point.
- Pressing OUT (F2) stores the current NOW time as the OUT point.
- Pressing MARK (F3) stores the current NOW time as the MARK point.

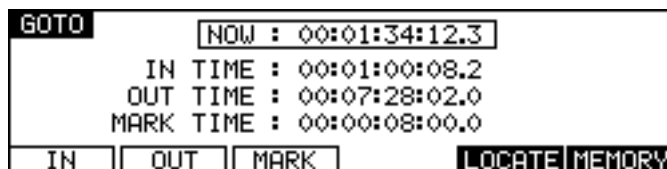
Pressing MEMORY (F6) goes to the STORE MEMORY page :



This page allows the current time to be stored in one of the locator memories (numbered 00 to 99). The memory number is entered via the Track keys (ALL/0, 1-8, SYNC/9). You can also store a series of locate points using the STORE NEXT key. Each time you press this key, the current time will be stored and the memory number will be incremented.

### GOTO

Pressing the GOTO key will show the following screen :



- Pressing IN (F1) locates to the previously stored IN point.
- Pressing OUT (F2) locates to the previously stored OUT point.
- Pressing MARK (F3) locates to the previously stored MARK point.



## LOCATING TO TIMECODE POSITIONS



You may locate to a timecode position by pressing GOTO followed by F5 (LOCATE). Use the track keys as a numeric keypad to enter the required time. Values enter from the right and time divisions (i.e. hours, minutes, seconds and frames) are confirmed using the 00 'double zero' soft key (F5).

For example, to enter a value of 1 hour, 23 minutes, 12 seconds, 12 frames, type the following:

1, 00, 2, 3, 00, 1, 2, 00, 1, 2, ENTER

You will see the following display in the selected timecode field as you enter the numbers:

```

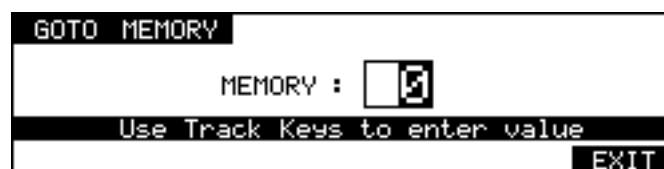
1  ---:---:---:1.0
00 ---:---:1:00.0
2,3 ---:---:1:23.0
00 ---:1:23:00.0
1,2 ---:1:23:12.0
00 -1:23:12:00.0
1,2 -1:12:12:12.0
ENTER 01:23:12:12.0

```

The important thing to remember is to 'confirm' the time division using the numeric keypad's 00 'double zero' key.

If you wish to enter a timecode value with a sub-frame, use the procedure described above but press the <- (F1) or -> (F2) keys to move the cursor to the sub-frame field.

## LOCATING TO LOCATOR MEMORIES



To locate to a previously stored locate memory, press GOTO, F6 (MEMORY) and enter the appropriate memory number 0-99 using the track keys (ALL/0, 1-8, SYNC/9) as a numeric keypad. Finally, press ENTER (see STORING LOCATE MEMORIES).

## LOCATING TO THE START OR END OF A PROJECT

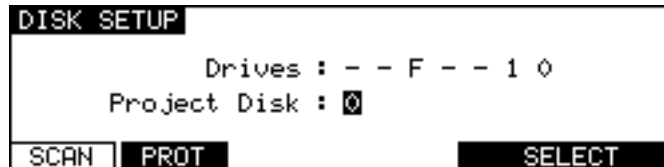
To locate to the START or END of a project, simply press GOTO, START (Rewind key) or GOTO, END (Fast Forward key) and you will be taken directly to these positions.

### DISK PAGES

The DISK key allows access to the pages which are used for general disk management such as renaming and deleting files, formatting disks, copying disks, etc..

The Disk management has some 'intelligence' of its own, so the action of this key depends on the State of the DD8, and on the contents of the Project Disk.

If no project has been loaded, pressing the disk key will take you to the following screen:



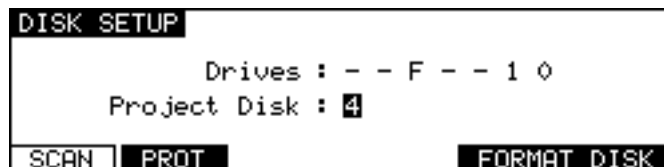
On this screen, the 'Drives' field shows the SCSI IDs of all drives that have been detected.

- 0-6 ... there is a formatted disk drive on this ID
- F ... there is an unformatted disk drive on this ID
- T ... there is a SCSI Tape drive on this ID
- ... there is no drive recognised on this ID

Pressing the SCAN key (F1) will re-scan the SCSI bus for drives. This can be used to allow the DD8 to detect an MO disk that is inserted into the drive after entering this page.

When a formatted project disk containing one or more projects is selected, pressing the SELECT key (F5/F6) will take you to the LOAD PROJECT page. If the disk is formatted but does not contain any projects, pressing this key will take you to the NEW PROJECT page allowing you to create one. As well as disks created on other Akai DD-series products, the DD8 is also able to recognise disks formatted on other systems including Apple Macintosh, Waveframe and Timeline MMR-8.

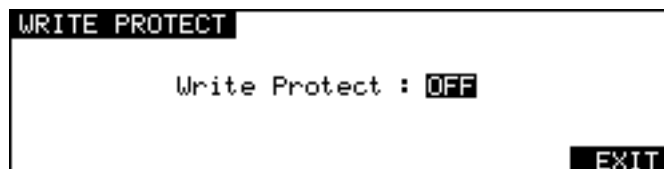
If the selected project disk is not formatted for the DD8, the screen will change to show:



Pressing FORMAT DISK (F5/F6) will take you to the format page to initialise the disk.

### WRITE PROTECT PAGE

Pressing the PROT key (F2) on the DISK SETUP page will take you to the WRITE PROTECT page:



When the WRITE PROTECT parameter is set to ON, the machine is prevented from writing any data to disk. This can be used to designate a machine as a 'player' as when write protection is enabled, all record and editing functions are prohibited. This is also useful as a safety feature when working with drives that do not have their own write protection.

**NEW PROJECT PAGE**

This page can be accessed either from the DISK SETUP page (as described previously) or by pressing NEW (F5) on the LOAD PROJECT page.



Pressing NEW (F4) will create a new Project (using Flash ROM settings), with the name shown in the Project Name field. After creating a new project, the DD8 will go to Record Mode ready to make new recordings.

The TYPE field is used to select the type of project that will be created. The options available will depend on the format of the selected disk.

The options available are:

- AKAI To create a new AKAI project on an Akai format disk
- PT 4 To create a new "Protools 4" Session on a Macintosh format disk
- PT 24 To create a new "Protools 24" Session on a Macintosh format disk.

If you do not like the default project name, pressing NAME (F5) enters the Project naming process :



Use the F1 (<-) and F2 (->) keys to move the cursor to the left/right. Use the DATA +/- keys to scroll through the available characters in order to set the name for the new project. When you are finished, press ENTER to set the new project name.

**LOAD PROJECT PAGE**

This page is accessed from the DISK SETUP page described previously. The layout of this screen changes slightly depending on the format of the selected disk. When an Akai format disk is selected, you will see the following page:



The Disk field is for information only and shows the ID that was selected on the DISK SETUP page. On the right of the screen, the list of the Projects is displayed. If the disk contains more than four Projects, arrows will appear to show that there are more Projects above or below.

The DATA +/- keys are used to scroll through the list of Projects.

Pressing DIR (F1) goes to the DIRECTORY page (*see below*) where you can view all the files on the currently selected disk.

Pressing SAVE (F2) goes to the SAVE PROJECT page where you can manually save the current project or convert it to another format.

## **DISK PAGES - 7**

---

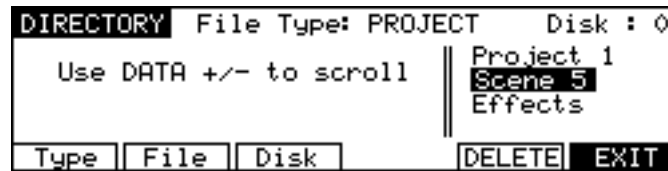
Pressing UTILITIES (F3/F4) goes to the UTILITIES page (*see below*) where you can select various disk functions such as backup and copy.

Pressing NEW (F5) goes to the NEW PROJECT page where you can create a new project.

Pressing LOAD (F6) loads the Project currently selected by the highlighted cursor. After a project is loaded, the DD8 goes directly to the PLAY mode. If the Project has been saved with SYNC enabled, the DD8 will set itself into CHASE mode (waiting for external time source)

**DIRECTORY PAGE**

The Directory page allows you to view all files on a selected disk. The default is to show Project files on the disks, but there are other files as well.



Pressing Type (F1) moves the cursor to the File Type field which allows you to select which type of file will be displayed.

Pressing File (F2) moves the cursor into the list of files and allows you to scroll through the list using the DATA +/- keys.

Pressing Disk (F3) moves the cursor to the Disk field which allows you to select the SCSI ID of the drive you wish to view.

Pressing DELETE (F5) deletes the Project selected by the cursor.

**UTILITIES PAGE**

Pressing UTILITIES on the LOAD PROJECT page will take you to the following screen.



Here you may perform certain disk utility routines. These are:

**DISK INFO**

Pressing INFO (F1) will display the following screen:

DISK INFO		Format: Normal		ID: 0
	total	used	available	
MEDIA	622Mb	91Mb	530Mb	
DATA	9Mb	0Mb	9Mb	
AUDIO	612Mb	91Mb	512Mb	
SONY	SMD-F521-00	1.04		EXIT

This screen gives more information about the type and size of the disk, how much of the disk is used and how much is free. These values are expressed in Megabytes.

The only field accessible in this page is the ID field in the top right hand corner. Here, you may select to view other disks that may be connected to the system.

### FORMATTING DISKS

Pressing the FORMAT key (F2) in the UTILITIES screen will take you to the disk format page :

```
FORMAT DISK                               Disk : 0
      Format Type : DD-PLUS
      Format operation : FORMAT & CERTIFY
      Formatting will totally wipe this disk!
Type | Operation | FORMAT DISK | EXIT
```

By pressing Operation (F2/F3), you may select whether to just format the disk or format the disk and certify it afterwards. Formatting is very fast but if you select FORMAT & CERTIFY, this may take a while depending on the size of the disk. However, if this is the first time the disk is being formatted, it is recommended you run the certify process as well. This will mark out any bad blocks on the disk and prevent them from being used which will make the disk more reliable and not prone to read errors.

Pressing Type (F1) moves the cursor to the FORMAT TYPE field that is used to select the type of the directory that will be created on the disk when it is formatted. The options are:

**DD-PLUS** This is the current Akai DD-series disk format which allows 4000 files to be saved to a single disk and will give the best performance for real-time recording and playback of audio.

**MACINTOSH** This allows the disk to be formatted in Macintosh HFS format. Note that this option will create a single volume, erasing all existing partitions on the disk. If you want to create multiple partitions, it will be necessary to use a third-party Macintosh disk formatting application.

When the MACINTOSH format option is used, the disk may later be read on any Macintosh subject to the following limitations in various versions of the Mac OS:

- System 7.1 can only support volumes up to a maximum size of 2 gigabytes
- System 7.5 can recognise volumes up to a maximum size of 4 gigabytes (which is currently the maximum size supported by Protools and many other products)
- System 7.5.3 and above can recognise volumes up to a maximum size of 2 Terrabytes

**NOTE:** While the DD8 can properly format a Macintosh hard disk or MO, it does not install any type of Macintosh driver software on the disk. Therefore, disks formatted on the DD8 will require third-party mounting software in order to appear on the Macintosh desktop.

**COMPATIBILITY NOTE:** Disks made on DD1500s or DR8/DR16s using software earlier than V2.1 can be used on the DD8. However, please be aware that disks formatted with the extended directory cannot be used on DD1500s running software earlier than V2.1.

Once you have set everything as you want, pressing FORMAT DISK (F4/F5) will show the following prompt :

```
FORMAT DISK                               Disk : 0
      Format Disk 0
      Are you sure?
      Press ENTER to confirm
      EXIT
```

If you press ENTER, you will receive this screen:

```

FORMAT DISK                               Disk: 0
      Total  Certified  Bad
Data blocks      0         0     0
Audio blocks     0         0     0
Certifying disk... (ESCAPE to abort)
  
```

During the formatting process, you may press the ESCAPE key to abort

If the disk is write protected, you will receive the prompt:

```

FORMAT DISK                               Disk: 0
      Total  Certified  Bad
Data blocks      0         0     0
Audio blocks     0         0     0
DISK WRITE PROTECTED
  
```

After a few seconds, the prompt will disappear and you will be returned to the main FORMAT DISK page. You should eject the disk and take the write protect off. However, there may be a reason the disk is write protected so it may be wise to leave the format page and check the contents before proceeding as there may be important data on it that needs to be kept.

#### NOTES ON FORMATTING DISKS

*The full format and certify procedure takes between 20 minutes and an hour, depending on the size of the disk. During this time, the DD8 writes a new, empty directory to the disk after which, if FORMAT & CERTIFY is selected as the format operation, it goes through the disk searching for bad blocks and marking them so that they won't be used.*

*We recommend that you do a full format to prevent the possibility of disk errors later on. However, if you wish, you can either select FORMAT ONLY as the format operation or you can just let the format run for 30 seconds or so (enough time to write the directory) and press ESCAPE to abort. In most cases, FORMAT ONLY should be sufficient but please note that AKAI professional cannot accept responsibility for disks that have not been fully formatted that show errors later on. It is recommended that you do a full format for brand new disks. If there are no bad blocks shown, there should be no need to do a full format again should you wish to re-format the disk for re-use at a later date.*

*As a final reminder...*

**FORMATTING THE DISK WILL ERASE THE CONTENTS COMPLETELY AND YOU WILL NOT BE ABLE TO RETRIEVE THEM.**

### NORMAL AND EXTENDED FORMAT DISKS

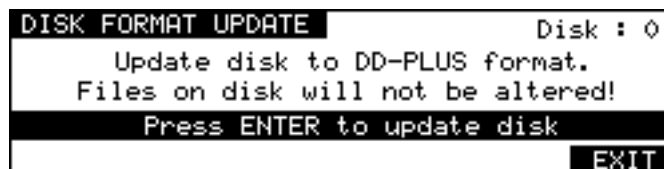
To prevent compatibility problems with many of the new features introduced in DD8 Version 2.0, this version of software no longer directly supports writing to NORMAL or EXTENDED format disks created on earlier versions of software. Although both these disk formats are still recognised and fully supported for playback compatibility, any attempt to write to these disks will give an error message saying "Disk Format Is Read-Only!". EXTENDED format disks can be easily updated to DD-PLUS format as described in the next section.

### UPDATING EXTENDED FORMAT DISKS

When an EXTENDED format disk is selected on the DISK SETUP page, an extra UPDATE softkey will appear:



Pressing UPDATE will take you to the DISK FORMAT UPDATE page which allows you to update the current disk's format from EXTENDED to DD-PLUS format.



To update the selected disk's format, press the ENTER key.

**NOTE : ALTHOUGH THIS PROCESS IS NON-DESTRUCTIVE (EXISTING FILES ON THE DISK WILL NOT BE ALTERED), ONCE THE DISK IS UPDATED, IT CANNOT BE READ ON EARLIER VERSIONS OF DD-SERIES SOFTWARE THAT DO NOT RECOGNISE THE DD-PLUS FORMAT!**



**CLEANUP DISK**

Pressing CLEAN (F3) in the main UTILITIES page will take you to the CLEANUP DISK page which allows you to clear out redundant recordings and so save valuable disk space. Pressing F3/CLEAN shows this screen:

```

CLEANUP DISK                               Disk : 0
      Free on disk : 01:48:46:20.01
      Total capacity : 606Mb
      Disk used : 57Mb
-----
MINIMISE  CLEANUP  EXIT

```

It is possible to have a disk full of unreferenced audio files. These are pieces of audio that have no association with any project. These are usually created when recording. For example, you make one recording and make a mistake. You drop in again over that, recording a new piece of audio. If the original recording is not in another project, the audio associated with the original cue you recorded of it has become 'unreferenced' and is taking up disk space needlessly. Of course, if you keep recording over and over again on the same spot, you can fill your disk up fairly quickly. Also, if you delete a cue from a project via an appropriate remote, you can end up with unreferenced audio. The functions in the CLEANUP page allow you to deal with this.

The CLEANUP functions are:

**CLEANUP**

This will only erase unreferenced audio but will not 'top and tail' the cues that are valid. However, because CLEANUP keeps all the audio that may be being referenced (no matter how small), you may see no change or only a small change in the FREE ON DISK field because unlike MINIMISE, if just one cue in one project uses one second of a ten minute recording, the whole ten minutes will be kept. If you need to free up a further nine minutes and 59 seconds, use MINIMISE.

Pressing CLEANUP will give this message:

```

Delete clipboards?  NO  YES

```

Because audio may be being referenced by an EDIT CLIPBOARD (if the disk has been edited via an appropriate remote or used by DD1500/DR8/DR16), you could try a cleanup and end up with no appreciable increase in available disk space. This option allows you to select whether you want the clipboard to be deleted as well. You should make your choice using F5 or F6 as appropriate.

Next, you will be given a final safeguard prompt:

```

CLEANUP DISK                               Disk : 0
WARNING! Careless use could destroy
your valuable recordings!
Press ENTER to proceed
-----
EXIT

```

When performing a cleanup, you should be aware that it is possible to have a project on a removable disk but for the audio for that project to exist on another disk (maybe the project is on an MO but the audio associated with it is all on a fixed hard disk). If the removable 'project' disk is not present on the system when you perform a cleanup, you run the risk of losing all the audio for that project. The reason is simple...

The CLEANUP function works by searching all the projects on all the disks currently attached to the system and it establishes what audio is being used by those projects and what is not. It then deletes any audio NOT being referenced by those projects from the disks.

If the audio associated with a project on a removable disk is on another hard disk and the removable disk is not in the system when you run CLEANUP, what will happen is that the DD8 will search through all the projects it can find on the system in order to establish what audio should be kept and what should be deleted. Of course, it won't find the removable disk because it is missing and so assumes that all the audio that it has found on the hard disk(s) related to the project on the removable (which is missing, of course) is unreferenced and will therefore delete it. When you come to insert the removable disk and try to play it, it will show that all the audio associated with it is missing and the project will be rendered unplayable.

Press EXIT (F6) to abort or, if you are sure you can proceed safely and no disks are missing from the system, press ENTER but...

**BE VERY CAREFUL BEFORE PROCEEDING AS YOU MAY IRRETRIEVABLY DESTROY A PROJECT ON A REMOVABLE DISK MISSING FROM THE SYSTEM.**

During the cleanup process, the bottom of the LCD will show:

Cleaning up disk. Please wait...

The cleanup process will delete all unused audio on any disk connected to the system. Depending on the amount of unused audio, this could take a while so do this in a quiet moment!

**NOTE:** *If all this looks a bit worrying, our apologies but these prompts are provided to safeguard against you accidentally losing valuable data. The fact is that there is no good reason why you should have your project on one removable disk and all the audio associated with it on another and it is a practice that should be avoided. Presumably, the reason a removable disk is used is so that it can be taken elsewhere for playback. If all the audio exists on another disk, then it won't play anywhere else successfully.*

### MINIMISE

This will also erase any unreferenced audio on the disk but will also 'top and tail' the recordings, discarding any audio that is not actively referenced to any project and/or library. This is the most efficient cleanup routine as it gets rid of ANY audio not being used leaving you only with the audio that is actually relevant to any projects and/or libraries on disk(s). Pressing MINIMISE will give this prompt:

May take hours! CANNOT BE ABORTED! OK?

Because the DD8 has to go round and top and tail every piece of audio affected by the MINIMISE function, it can take a long time. After that, it has to 'fix up' all the cues that have been affected in all the projects/libraries and this will also take time. The exact length of time, of course, depends on the amount of audio being minimised but it is recommended you do this at the end of the day, maybe even leaving it to run overnight!

**\*\* IMPORTANT \*\***

***The MINIMISE function cannot be aborted once you have started it.***

***\* DO NOT, UNDER ANY CIRCUMSTANCES, SWITCH THE DD8 OFF DURING MINIMISE***

\*

***IN THE EVENT OF ACCIDENTALLY PROCEEDING WITH THE MINIMISE FUNCTION AND THEN CHANGING YOUR MIND, ONCE THE PROCESS HAS STARTED, IT WILL HAVE TO BE LEFT TO CONTINUE THROUGH TO THE END.***

***SWITCHING THE DD8 OFF DURING THE MINIMISE PROCESS WILL CAUSE IRREPAIRABLE DAMAGE TO YOUR DATA!!***

Pressing ENTER will cause this prompt to be displayed:

```
CLEANUP DISK                               Disk : 0
WARNING! Careless use could destroy
        your valuable recordings!
Press ENTER to proceed
EXIT
```

As described above, because it is possible for projects and audio to exist on separate disks, if a project disk is missing from the system, you may cause data to be lost if a disk is missing from the system. Please see the explanation given in CLEANUP regarding this and please proceed with caution.

**BACKING UP TO SCSI TAPE DRIVES**

As disks become full or projects get finished, you need some way to backup the material for safe keeping so that, if needs be, you can come back to it at a later date. You could, of course, simply copy it all off to another disk of some form but this can be an expensive way of doing it.

A more cost effective method is to backup to some form of tape medium and the DD8 allows you to backup the contents of your disk(s) to SCSI tape drives via the SCSI-A connection. This function is accessed by pressing BACKUP (F4) in the DISK UTILITIES page.

In the main UTILITIES page, when you press BACKUP (F4), you will see this screen::



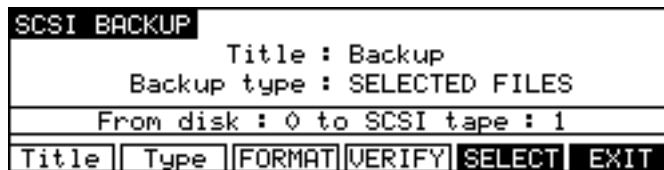
The Disk key (F1) is used to move the cursor to the DISK ID field. The Tape key (F2) is used to move the cursor to the SCSI Tape ID field.

Disk ID                      This selects the disk that will be backed up to the SCSI tape drive.

SCSI Tape ID                This selects the SCSI ID of the tape drive.

The RESTORE key (F4 or F5) will take you to pages where you can reload data previously backed up to SCSI tapes.

When you press the BACKUP key (F3), you will be taken to this screen:



Before we look at the actual functions, an understanding of SCSI tape drives is in order.

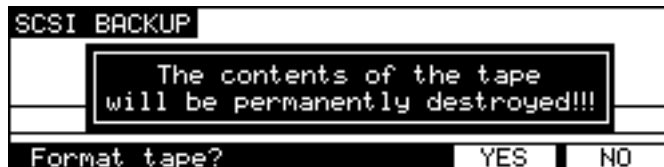
SCSI tape drives can be regarded as slow, linear disk drives. A single tape can contain several backups. However, whereas a disk drive has just the one directory where information relating to the data on the tape is stored, a tape drive has a directory for each backup on the tape.

Of course, you may find it easier to keep track of backups by backing up each disk/project to its own SCSI tape (i.e. one tape will contain only the contents for one backup) but you may, if you wish, make several backups to one tape and then restore them individually by name if you prefer.

**FORMATTING A TAPE FOR BACKUP**

Before you can perform a backup, you must first format the tape so that the tape is set up to receive files and digital audio data. This is done using the FORMAT key.

To format the tape, first select the appropriate SCSI ID for the tape drive in the SCSI BACKUP FUNCTION page. As with disk drives, the tape drive must not share the same SCSI ID as any other SCSI device on the buss. Once selected, go to the SCSI BACKUP page and press the format key(F3). You will see this screen:



**\*\* FORMATTING THE TAPE WILL PERMANENTLY DESTROY ITS CONTENTS \*\***

**PLEASE BE CAREFUL BEFORE PROCEEDING**

Because of the potential danger of accidentally formatting an existing tape, you must press YES (F5) to proceed. During the format, you will see the message "FORMATTING TAPE. PLEASE WAIT" pop up on the screen during the process. Once the process is complete, you will see the message "FORMAT COMPLETE". The tape is now ready for use.

**NOTE 1:** *The format should not take long under normal circumstances (15 seconds or so) but if the tape has been used several times before, you may find it takes longer as the DD8 may need to check the tape to make sure it is suitable for use. Under extreme circumstances, it may need to check the entire tape and so could take some time. If this is the case and the formatting seems to be taking a long time, you can press ESCAPE to abort the formatting process.*

*To avoid this, it is recommended you always use new, unused tapes. It is also not a good idea to use tapes that may have been used to backup material from some other system (for example, a PC or a Macintosh™ computer or (heaven forbid!) some other disk recorder.*

**NOTE 2:** *If you receive other messages such as DRIVE NOT READY or DRIVE BUSY, then there is a problem with the cable and/or the drive. Please check both. Is the drive switched on? Is there a tape in the drive? Are the cables connected securely? Is the SCSI buss terminated correctly? If everything seems correct but the problem persists, try moving the tape drive elsewhere in the buss (i.e. move from the end of the chain to the middle or vice versa). If the problem still persists, contact your AKAI professional dealer.*

*If a message such as THE SELECTED SCSI ID IS A DISK DRIVE is shown, this indicates you have selected the wrong SCSI ID in the SCSI TAPE field. Please take the appropriate steps.*

The fields on the SCSI BACKUP page are:

**TITLE** You may give the backup a title of up to ten characters. This will be stored in the SCSI tape's directory and you will be able to use this name to selectively restore the backup in future if you have archived several different backups to the same tape. When you move the cursor to this field by pressing the Title key (F1) the screen will change to allow a new name to be entered. If you do not specifically give it a name, the default name BACKUP will be used.

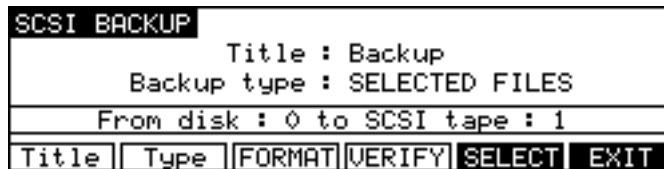
**NOTE:** As with any SCSI device, the tape's SCSI ID should be unique and should not share the same ID as another device on the SCSI buss.

**BACKUP TYPE** This selects what will be backed up to the SCSI tape. You may select:

- SELECTED FILES** You may, via F5 (SELECT), select specific files to backup.
- ALL PROJECTS** You may backup all the projects on the selected disk.
- ALL LIBRARIES** You may backup all the libraries on the selected disk.
- ALL PROJS & LIBS** You may backup all the projects and all the libraries on the selected disk.
- ENTIRE DISK** You may backup everything on the disk.

**BACKING UP SELECTED FILES**

Choosing SELECTED FILES in the BACKUP TYPE field will show this screen:

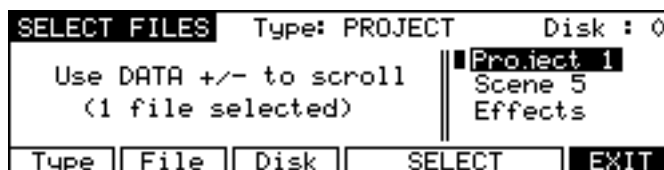


To actually select the files, press SELECT (F5). You will see something like this screen:



You can select PROJECT or LIBRARY in the TYPE field, You may select a disk to backup in the DISK field.

Press the File key (F2) to move the cursor to the list of files. To select the file you wish to backup, move the cursor to the file name and press the SELECT key (F4/F5). A small block appears to the left of the file name to indicate it is selected for archiving. For example:



In this case, PROJECT 1 is selected for backup. The left hand side of the LCD will show how many files are selected. In this case, just one.

You may also select several files for backup in this way. As in other disk pages, arrows appear to indicate files that are 'off-screen'. Use the DATA +/- keys to scroll through the list.

Files selected by mistake can be de-selected by pressing the SELECT key (F4/F5) a second time.

Once you have selected the file(s) you want to backup, press EXIT (F6) to return to the main SCSI BACKUP page and proceed with the backup.

**BACKING UP ALL PROJECTS AND/OR LIBRARIES**

If you have selected ALL PROJECTS, ALL LIBRARIES or ALL PROJS & LIBS, all you need to do is press the ENTER key. All the projects and/or libraries on the disk selected in the DISK ID field will be backed up. If any projects and/or libraries use audio from any other connected disks, these too will be backed up to the destination SCSI tape.

The exact amount of time the backup will take depends on the amount of material being backed up. Backup speed is approximately five times real-time (i.e. ten minutes of audio will take approximately 2 minutes to backup).

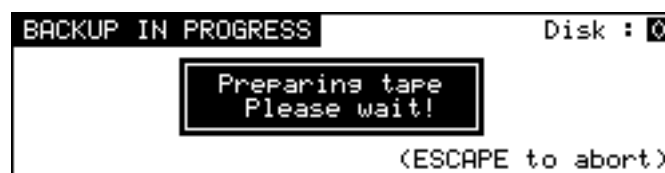
**BACKING UP AN ENTIRE DISK**

As well as selectively backing up chosen files or backing up all projects and/or libraries, you may also make a duplication of the disk by selecting ENTIRE DISK in the BACKUP TYPE field.

**NOTE:** Although ENTIRE DISK may seem the same as ALL PROJS & LIBS, there is a difference. ALL PROJS & LIBS will backup everything from the selected disk but it will also backup any audio from other disks that are used in the projects and/or libraries being backed up. ENTIRE DISK, on the other hand, only backs up the audio on the selected disk, not any audio referenced on other disks. ALL PROJS & LIBS, therefore, is more suitable for backing up your work whilst ENTIRE DISK is a better selection to make if you just want to make a safety copy of a disk.

**PERFORMING THE BACKUP**

Regardless of the backup type you have selected, to actually perform the backup, simply press the ENTER key. You will then see this screen:



Here, the DD8 is getting the tape ready for the backup. First of all, it will look at the tape's directory to make sure that there is no backup of the same name. If a backup of the same name exists on the tape, you will receive this message:



In this case, press ABORT and give the backup a new name and try again (i.e. press ENTER) or insert a new tape and press CONTINUE.

**NOTE:** You will need to specifically go to your tape drive and use the front panel EJECT key to eject the current tape and insert a new one.

## DISK PAGES - 7

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Assuming everything is OK, the DD8 will then wind the tape to the first available space where it can write data. If the tape is a new, freshly formatted tape, this will be quite quick but if the tape contains several backups already and these contain a lot of data, it may take a while to wind to the first available area of the tape suitable for backing up to.

**NOTE:** You may see other messages pop up. These will be momentary - don't worry about these.

Once a suitable position on the tape has been located, the backup will begin and you will see something like this screen as the backup takes place:

```
BACKUP IN PROGRESS                               Disk : 0
Writing Audio
  TRK 1   23 from disk 0.  4% done
                    5 of 10 files.  1% done
                    (ESCAPE to abort)
```

The screen shows the progress of the backup as it takes place and this is expressed as a percentage and as a highlighting bar. The percentage in the top line shows how much of the individual file has been backed up whilst the percentage in the bottom line shows how much of the entire backup has been done.

If any of the selected files use audio from any other connected disks, these too will be backed up to the destination SCSI tape (except in the case where ENTIRE DISK is selected). During the process, you may abort the backup by pressing the ESCAPE key at any time.

The exact amount of time the backup will take depends on the amount of material being backed up. Backup speed is approximately five times real-time (i.e. ten minutes of audio will take approximately 2 minutes to backup).

At the end of the backup, you will see this screen:

```
BACKUP IN PROGRESS
          Rewinding tape
          Please wait!
          (ESCAPE to abort)
```

The DD8 will rewind the tape to the start in readiness for the next backup. Exactly how long this takes depends on the amount of data on the tape.

Finally, you will see this screen display:

```
SCSI BACKUP
Back      Backup complete      FILES
From c    e : 1
Disk | Tape | FORMAT | VERIFY | SELECT | EXIT
```

Press any key to continue.



## VERIFYING A BACKUP

Once you have performed a backup, you may like to verify it to check that everything has backed up correctly. This is done by pressing the VERIFY key. You will see this screen:

```
SCSI BACKUP
Press F5/YES to verify
the ENTIRE backup.
Verify backup? YES NO
```

You should press YES (F5) to continue, NO (F6) to abort. As the verification takes place, you will see this screen:

```
VERIFY IN PROGRESS
Verifying Audio
TRK 1 23 from disk 0. 4% done
5 of 10 files. 1% done
(ESCAPE to abort)
```

You may abort the process at any time by pressing the ESCAPE key.

**NOTE:** The VERIFY process does a comparison of what is on the source disk and what is on tape and the idea is that the disk contents and the tape contents must be identical for the verification to be successful. Because of this, the VERIFY process is best done immediately after a backup. In this case, you should have no problems as the two media should have identical contents. If, however, you make a new recording on the source disk or delete anything from the source disk after the backup, the contents of both media will not be the same and so you will receive messages such as "FILE XXXX MATCH NOT FOUND". This is telling you that either it has found something on the disk which does not correspond to what is on tape (i.e. you may have made a new recording) or it has found something on tape which it cannot find on the disk (i.e. you have maybe deleted something off disk).

It is not essential that you run the VERIFY process after a backup but, bearing in mind the potentially serious implications of a faulty backup, it is highly recommended. However, you will please note that the VERIFY process will take about two or three times as long as the backup took so whilst it's recommended you verify your backups, you might like to do it during a 'quiet moment'.

### RESTORING A BACKUP

To restore data, in the DISK UTILITY page press BACKUP. You will see this screen:

```
SCSI BACKUP FUNCTIONS
Disk ID : 0
SCSI Tape ID : 0
Disk | Tape | BACKUP | RESTORE | EXIT
```

Select RESTORE (F5/6). You will see this screen:

```
SCSI RESTORE
Title : Backup
Restore type : SELECTED FILES
From SCSI tape : 0 to disk : 1
SELECT TITLE | SELECT FILES | EXIT
```

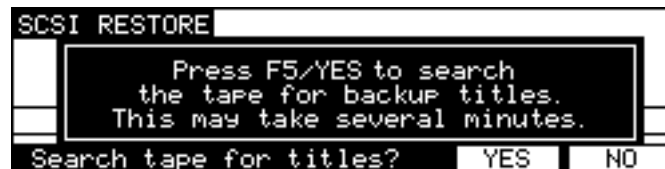
As you can see, this is basically the reverse of the SCSI BACKUP page. The fields are:

TITLE	Shows the name of the backup you wish to restore.
RESTORE TYPE	Selects what will be restored to the disk.
FROM SCSI TAPE	Shows the tape drive the data will be restored from.
TO DISK	Shows the disk the data will be restored to.

## PERFORMING A RESTORE

To perform the restore, first select the disk you wish to restore to and the SCSI ID for the tape drive in the SCSI BACKUP FUNCTIONS page.

You need to enter the name of the backup you wish to restore. In the simplest example, the tape you are restoring from may contain just one backup that uses the default name BACKUP. In this case, you can just press ENTER to start the restore. If a name other than the default was used, press SELECT TITLE (F1/F2) to see the names of the backups on the tape. Pressing SELECT TITLE will show this screen:



Depending on the number of backups on the tape, it could take a while to search the tape for the different titles. If it contains only one backup, the search should not take long but search time will increase according to the number of backups on the tape. Press YES (F5) to continue. You will see this screen:



After a while, you will see this screen:



Here, you see a list of all the backups on the tape and the number of files (cues/clips) contained within them. In this case, there are just three backups. If more than five backups exist on the tape, up/down arrows will appear to indicate that there are items 'off screen' that you may select. Use the DATA +/- keys to move the cursor to the one you want to restore and press ENTER. The backup will be selected and you will be taken back to the main SCSI RESTORE page:



The easiest restore to perform is when a tape has just one backup on it. In this case, simply select ALL PROJS & LIBS and press ENTER. Regardless of the type of backup you performed on this tape, any projects and libraries found on the tape will be restored.

Similarly, if the tape contains just one backup of only libraries, you can still use the ALL PROJS & LIBS selection - if the DD8 doesn't find any projects, it will ignore this and will restore only the libraries it finds. The same would be true of projects. If the tape only contains projects, even though ALL PROJS & LIBS is selected as the restore type, if it can't find any libraries, it will just continue, restoring only the projects.

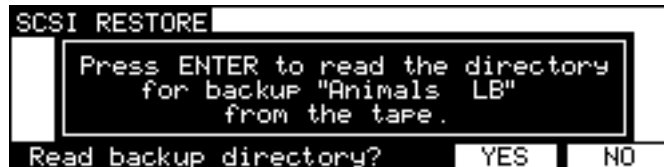
## DISK PAGES - 7

---

You can also select ENTIRE BACKUP as the restore type and this will restore everything in the selected backup.

You may also select to restore only libraries by selecting ALL LIBRARIES. In this case, even if a backup contains projects, these will be ignored. Likewise, if you select ALL PROJECTS, only projects found will be restored and any libraries in the backup will be ignored.

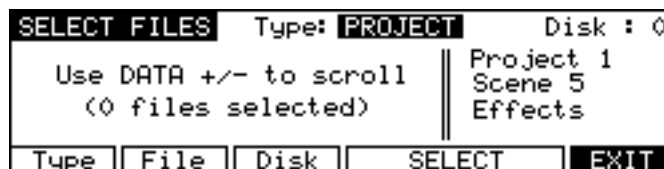
You may also specifically select the files you want to restore by selecting SELECTED FILES. To actually select the files for restore, press SELECT FILES (F3/4). First, you will see this screen:



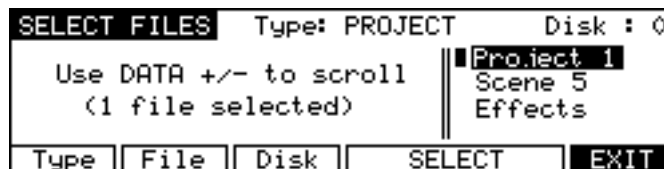
The DD8 needs to read the directory on the tape to know what files are contained in it. Press YES (F5) to proceed (or F6/NO to cancel). You will see this screen:



Depending on the complexity of the backup, after a short while, you will be taken to something like this screen:



Here, you may select the files in the backup you wish to restore (if you have used SELECTED FILES as the backup type, you will already be familiar with this and operation is the same). Move the cursor to the file you wish to restore and press the SELECT key. A small block will appear alongside the filename to indicate that it has been selected:



The number of files selected for restore will be shown. Continue to mark the files you wish to select in this way. Press EXIT (F6) to return to the main SCSI RESTORE page.

Regardless of the type of restore you have selected<sup>1</sup>, the process is initiated by pressing the ENTER key. You will see this screen display:

```

RESTORE IN PROGRESS
  Reading directory from tape.
  Please wait!
  (ESCAPE to abort)
  
```

Followed by this screen:

```

RESTORE IN PROGRESS
  Analysing cues
  Library "Animals " 0% done
  Please wait!
  (ESCAPE to abort)
  
```

After a short while (depending on how many cues are in the backup), you will see this screen:

```

RESTORE IN PROGRESS
  Restoring Audio
  TRK 1 23 from disk 0. 4% done
  5 of 10 files. 1% done
  (ESCAPE to abort)
  
```

You will see the backup being restored onto the selected disk. The percentage figures will change as the restore progresses and highlighted bar will move across the bottom of the LCD to further indicate progress.

You will then see this display:

```

RESTORE IN PROGRESS
  Resolving cue references
  30% done
  Please wait!
  (ESCAPE to abort)
  
```

What the DD8 is doing here is 'fixing up' all references to the audio data that has just been restored so that any projects and/or libraries that may use the cues/clips that have just been restored will play correctly. The percentage will change to indicate progress and the exact length of time it takes depends on the amount of 'fixing up' the DD8 has to do (i.e. how many different places the audio you have restored is used).

Finally, you will see this screen display:

```

SCSI RESTORE
  Rest  Restore complete  b
  From  k : 1  FILES
  SELECT TITLE | SELECT FILES | EXIT
  
```

<sup>1</sup> There is a difference when ENTIRE BACKUP is selected. This will be explained later.

## DISK PAGES - 7

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If, when you perform the restore, a library or project on the disk you are restoring to shares the same name as one being restored, you will see this prompt:



If you press NO (F4), the restore will proceed as described on the preceding page but a new project or library will be created with a new automatically numbered name. Using the above example, pressing NO at the OVERWRITE prompt would create a new library called ANIMALS 1 (or some other suitably numbered library of that name).

Pressing YES (F5/6) will cause the restore to proceed as normal and as described on the previous page and the selected library on disk will be overwritten.

**\*\*Be careful that you don't overwrite a valuable project \*\***

**There is no means to retrieve it once it has been overwritten.**

Pressing ABORT (F3) will abort the whole restore process. You will see this screen:



**RESTORING THE ENTIRE BACKUP**

Restoring an entire backup is essentially the same as the other types of restore except that when you press ENTER, you are prompted thus:

```
SCSI RESTORE
Title : Backup
Restore type : ENTIRE BACKUP
From SCSI tape : 0 to disk : 1
Erase disk 1 first? YES NO
```

You have the option to completely wipe the selected disk prior to restoring data back onto it. Respond by pressing NO or YES as appropriate (or ESCAPE to abort).

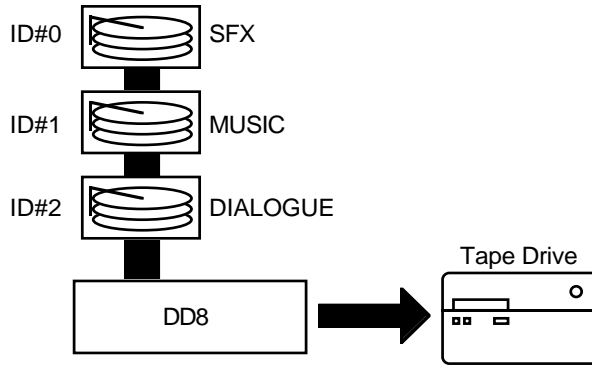
**\*\*\* BE VERY CAREFUL WITH YOUR SELECTION \*\*\***

**If you select YES, the data you erase cannot be retrieved or salvaged.**

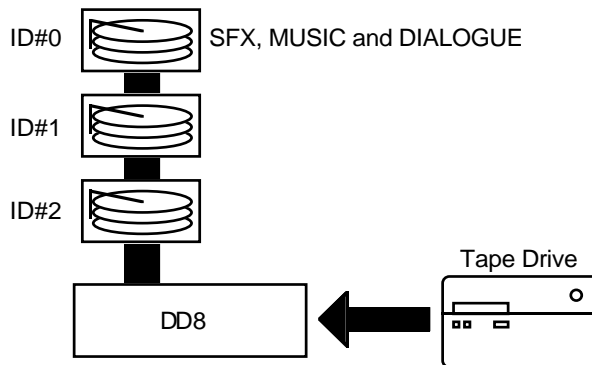
## NOTES ABOUT BACKUP/RESTORE

When backing up data to disk, there are a few things you should be aware of.

- When ALL PROJECTS, ALL LIBRARIES, ALL PROJS & LIBS, SELECTED FILES and ENTIRE DISK are selected as the BACKUP TYPE, if any projects and/or libraries use audio from other disks, this audio will also be backed up. However, when you come to restore this data, the material from the other disks will be restored to the single 'destination' disk selected in the TO DISK field. For example:



BACKUP



RESTORE

In the above example, SFX, music and dialogue from disk IDs 0, 1 and 2 are backed up to tape but these will be restored to the disk selected in the RESTORE TO field (in this example, Disk ID#0)

In other words, you should ensure that the destination disk for the restore is large enough to accommodate all the material (the DD8 will inform you if it isn't).

- If the data you are trying to backup to tape is larger than that which the tape can hold (or if there is already quite a bit of data on the tape), the backup will be done across two or more tapes. The DD8 will prompt you if this is the case and will tell you to insert another tape. If the tape is unformatted and unsuitable for use, you will be prompted to format the tape whereupon the backup will continue.

Of course, there is nothing wrong with this practice but it may get awkward trying to keep track of your backups and so, in view of this, to avoid this situation, you might prefer to use new, freshly formatted tapes when attempting a backup.



**SUGGESTIONS FOR BACKUP/RESTORE**

- Try not to re-use tapes. They are relatively inexpensive to buy and potentially carry very expensive data so it is not wise to economise.
- Do not use ordinary audio tapes unless you're really stuck as tapes made specifically for backup will be more reliable.
- Try to organise your backups sensibly to make restoring them easier.
- In much the same as in 'the old days' of 1/4 inch and multi-track tapes, try to ensure that the tape box is well labelled. Include any relevant information regarding the data stored on it. Include dates, client names and anything else you think appropriate that will make recognition of the material and the restore that much easier. Remember! It might not be you who restores it but somebody completely unfamiliar with the data.
- Store and treat the tapes carefully. Just because the media is small doesn't mean it doesn't deserve the same respect as a hefty 10" reel of master tape.
- Naturally, keep backup tapes away from magnetic sources such as monitor speakers, etc..
- If you have to send the backups anywhere, make a copy of them first.
- When sending tapes anywhere, package them well in a suitable padded envelope or box and wrap the tape in aluminium foil to help prevent damage from stray magnetic interference.
- Always write protect the tape. It may be a nuisance should you try to backup to it and get an error message but this is better than accidentally formatting it or overwriting existing backups.
- If you are travelling abroad with your backups, take them as hand luggage. Although the X-ray machines are supposed to be safe, you may be able to persuade airport security to have them manually inspected (normal luggage is often subjected to high power X-ray inspection that may not be too kind on the tape). Leave a copy at home just in case.
- Keep backups away from liquids, etc..
- Do not leave tapes lying around in vehicles, especially on hot days.

### TAKING CARE OF YOUR TAPE DRIVE

Tape drives need to be taken care of quite carefully. You should refer to your drive's operator's manual for more details on this but some general guidelines are:

- As routine maintenance, the heads should be cleaned after every 25 hours or so of use. Basically, clean the heads regularly.
- To clean the heads of your drive, only use the head cleaner recommended in your drive's documentation.
- If your drive is a SCSI DAT drive, do not use standard audio DAT head cleaners.
- If you are using a SCSI DAT drive, avoid using audio DATs. Use only those tapes recommended by your drive's manufacturer.
- Keep the drive in a dust free environment. Dust on the heads could lead to a loss of data integrity and failed backups/restores.
- Don't smoke near the tape drive. This can really clog the heads!
- Do not try to use the tape drive if you move it from environments of differing temperatures and humidity. Moisture on the head as a result of condensation could damage the tape. If you must move the drive from one place to another, turn it on and leave it for a while before attempting to use it to give any condensation a chance to evaporate. Consult your drive's operator's manual for details on this.
- If you must manually eject the tape, there can be a few seconds delay before the tape is ejected. Do not power down the drive in this period as you may damage the heads and/or the tape.

Also, don't forget to pay attention to the normal considerations of SCSI:

- Make sure the total length of the buss doesn't exceed 6 metres.
- Make sure the correct devices are terminated (this should be the first and last in the chain with all other being unterminated).
- Make sure that no devices on the buss share the same SCSI ID.

Etc..

**COPYING DISKS**

Selecting COPY (F5) on the DISK UTILITIES page goes to the Disk Copy screen which allows files to be copied from one disk to another.

```

COPY DISK
      From disk : 0 to disk : 1
      Copy type : ALL PROJECTS
-----
From | To | Type | COPY | EXIT
  
```

The parameters are:

**FROM DISK** Pressing F1 (From) will move the cursor to the 'From disk' field where you may select the 'source' disk you are copying from.

**TO DISK** Pressing F2 (To) will move the cursor to the 'to disk' field where you may select the 'destination' or 'target' disk you are copying to.

**COPY TYPE** Pressing F3 (Type) will move the cursor to the 'copy type' field where you may select the type of copy operation. You may select:

**SINGLE FILE** - this will copy a specific file as selected on the COPY FILE page.

**ALL PROJECTS** - This will copy all projects on the source disk to the destination disk.

**ALL LIBRARIES** - This will copy all the libraries on the source disk to the destinations disk.

**DUPLICATE DISK** - This will copy everything from the source disk to the destination disk.

**IMPORTANT NOTE:** DUPLICATE WILL FIRST ERASE THE DESTINATION DISK BEFORE DUPLICATING THE SOURCE DISK TO IT.

**NOTE:** It is not possible to copy from a disk to itself (i.e. from disk 0 to disk 0). You will receive the prompt: DISK CAN'T BE COPIED TO ITSELF!

If SINGLE FILE is selected as the copy type, soft keys F4/F5 will change to show SELECT FILE. Pressing either of these keys will take you to the COPY FILE screen where you can select the file to copy.

```

COPY FILE      Type: PROJECT
Use DATA +/- to scroll || Project 1
                       || Scene 5
                       || Effects
-----
Type | File | COPY FILE | EXIT
  
```

Press Type (F1) to select the type of file you wish to copy (PROJECT or LIBRARY). Press File (F2) to move the cursor to the file list to and the file you want to copy using the DATA+/- keys.

Pressing COPY (F4/F5) on the COPY DISK page, or COPY FILE (F4/F5) on the COPY FILE page, initiates the COPY process. During the copying process, the bottom line of the LCD will show something like this display:

```

Copying PROJECT 1.....(ESCAPE to abort)
  
```

A highlighting display will move across the bottom of the LCD as the file is copied. The copying process is approximately 2-4 times faster than real-time (i.e. a 12 minute piece of audio will take between 6 and 3 minutes to copy). The time it takes to copy depends on the speed of the disks you are using (i.e. MO to MO is going to take longer than a hard disk to hard disk copy) and the nature of the files you are copying (e.g. one single 12 minute piece of audio is likely to get copied faster than 48 x 15 second cues).

At any time, you may press the ESCAPE key to abort the copy and the whole process will be cancelled.

**NOTE:** *In order to prevent you having an incomplete project on the destination disk, the project selected for copying is erased from the destination disk along with all associated audio when you press ESCAPE. This may take a second or two.*

The same process is used for disk duplication.

You may leave the COPY DISK page at any time by pressing EXIT (F6).

**\*\*IMPORTANT NOTES REGARDING COPY \*\***

*The COPY process copies the project/library and all referenced audio across to the target disk. This is to prevent audio becoming detached from the project or library with which it is associated. However, the copying process only copies across the audio associated with the cues plus a 10% 'handle' either side of the cue.*

*For example, imagine that you have a 5 minute continuous recording of assorted sound effects and you have used a mere 30 seconds of it in a project you have chosen to copy. On the source disk, that cue is referencing the full 5 minutes of audio (but only playing the relevant 30 seconds of it in the project). When you copy the project across, it will only copy the 30 second section you are using in the project (plus a 3 second 'handle' either side) NOT the full five minute piece of audio it originally came from. You may find therefore, that when you copy a project from one disk to another, the project on the target disk will use less disk space than the one on the source disk.*

*however, please note one important restriction regarding copying individual projects and libraries separately to another disk. Because the audio is copied each time you individually copy a project or a library, this will take up extra disk space on the destination disk. This will happen even when you copy two similar projects that reference the same audio.*

*For example, imagine you have two projects PROJECT 1 and PROJECT 2 on DISK 0 and both projects use exactly the same audio (PROJECT 2 being just a slight variation on PROJECT 1). If you were to select SINGLE FILE as the file type and individually copy each project to DISK 1 separately, you will find that the audio is duplicated, using up disk space. In this case, you should use ALL PROJECTS - this would copy both projects but would only copy the audio once.*

*In the event of you having, say, five projects on DISK 0 all using the same audio but you only want to copy PROJECT 1, 2 and 5 to DISK 1, select ALL PROJECTS and copy all five projects across in one operation (and hence only one version of the audio) and then, on DISK 1, delete projects 3 and 4.*

*If the destination disk has a file of the same name as the source disk when copying, it will prompt you to overwrite the existing file or not.*

*The same is true when copying libraries.*

**MACINTOSH DISK COMPATIBILITY**

The DD8 is able to read and write certain files to Macintosh HFS format disks. When a Macintosh HFS format disk is selected from the DISK SETUP page, you will see the following screen:

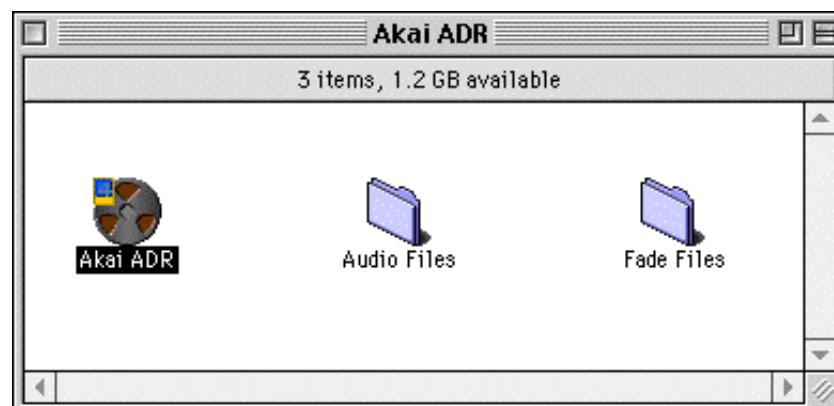


Pressing TYPE (F1) will move the cursor to the file type field where you can select the type of file you want to load. The current options are:

- |           |  |
|-----------|--|
| OMF       | To load an OMF (Open Media Framework) file allowing playback of audio created with systems such as Avid AudioVision or MediaComposer   |
| PT 3.2    | To load a 16-bit Session file created on a Digidesign "Protools 3.2" system.   |
| PT 4      | To load a 16-bit Session file created on a Digidesign "Protools 4" system.   |
| PT 24     | To load a 24-bit Session file created on a Digidesign "Protools 24" system.  |
| ALL FILES | To view all files on the selected disk. This may be used to select any OMF files that are not recognised by the DD8. This may occur if the OMF file was created on a non-Macintosh system. |

**NOTE:** Due to the limited screen size, the DD8's LCD does not show the individual folders on the disk that would normally be shown on a Macintosh screen. Instead, the display shows a list of all files of the selected type on the disk. In practice, most disks will only contain a few 'project' files and a large amount of audio, so it should be relatively easy to find the required file.

Pressing NEW (F5) will take you to the NEW PROJECT page where you can create new Protools Session files on the Macintosh disk. When a new Session file is created, a folder with the new Session's name will be created at the root level of the selected disk. The new Session file is placed inside this folder together with folders for Audio Files and Fade Files. All SD-II or AIFF files recorded into this Session will be placed into the folder labeled 'Audio Files'.



### PROTOOLS IMPORT

After moving the cursor to the required Session file, press the LOAD soft key (F6) to import the file. The display will change to show the following screen and the progress bar at the bottom of the screen will indicate that the file is being imported.



As part of its normal operation, Protools renders all fade files as separate audio files on disk. When a Protools Session containing fades is loaded into the DD8, you will be given the option to use the precomputed files or replace them by real-time fades for playback:



If you select YES, the DD8 will load and playback all fade-regions from the rendered fade files on disk. If you have created any custom fades in Protools, you should choose this option to ensure the DD8 plays back the file correctly.

If you select NO, the DD8 will perform real-time fades in each fade region. This option will give the best performance from the DD8 (as there will be less disk activity) and will also allow easier editing of the Session if you are using a DL1500 remote controller.

**NOTE:** Some systems that create Protools Session files (including Digidesign's "OMF Tool" and the DD8 itself) do not actually render fade files. If Session files from these systems are loaded into the DD8 with the 'use pre-computed fades' option, the fade regions will not contain any audio (and will be shown in yellow on the DL1500's VGA).

## OMF IMPORT

After moving the cursor to the required OMF file, press the LOAD soft key (F6) to import the file. The display will change to show the following screen and the progress bar at the bottom of the screen will indicate that the file is being imported.



## NOTES CONCERNING OMF IMPORT

If you are controlling the DD8 from a DL1500, you will notice that no envelopes (waveforms) are shown on the VGA after an OMF import. This is normal as there are no envelope files on the Macintosh disk! You can use the DL1500's COMPILE function to copy all used audio from the Macintosh disk to the Akai disk. During this process, envelope files will automatically be generated. Note that the PRE-READ function is driven from the envelope files, so it will not function with projects imported from OMF files.

Some OMF files contain pre-computed (rendered) fades. If these are found while an OMF file is being imported, you will see the following prompt which allows you to select if the pre-computed fades are loaded as separate cues (by pressing YES), or if the fades should be replaced by real-time fades (by pressing NO):



## AVID MEDIA-COMPOSER AND AUDIOVISION

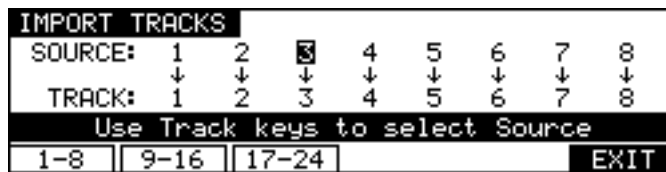
Avid Media Composer and Audiovision provide options to allow several types of OMF files to be created. When preparing OMF files for use on the DD8, you need to select the options for OMF Version 1 and for "OMFI Composition with audio media". This will create an OMFI file that contains the edit information as well as all copies of all of the associated audio in AIFF format within the OMFI file.

**UTILITIES PAGE**

Pressing UTILS (F4) on the LOAD (FROM MAC DISK) page will take you to the UTILITIES page for non-Akai disks:

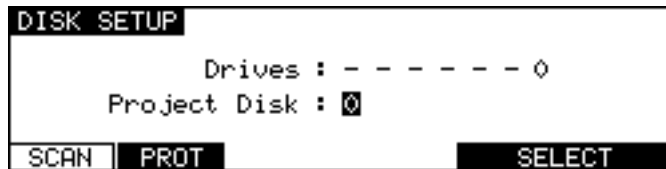


Some files created by Macintosh applications may contain more than 8 tracks of audio. In this case, you may wish to use several DD8s to playback the audio with up to 8 tracks playing from each machine. Pressing the TRACKS key (F3) on the UTILITIES page will take you to the IMPORT TRACKS page which can be used to select the 8 tracks that will be imported:



Soft keys F1,F2 and F3 can be used to quickly select tracks 1-8, 9-16 or 17-24. Alternatively, you can select an alternative combination of tracks to import by moving the cursor to the required playback track field (using the track keys, 1..8) and using the DATA +/- keys to select the audio track that will be imported from the OMF file. Press EXIT (F6) to return to the LOAD (FROM MAC DISK) page.

Finally, on the UTILITIES page, if you want to select a different disk, press SETUP (F4). This will take you back to the DISK SETUP page:





**WAVEFRAME DISK COMPATIBILITY**

The DD8 is able to read project files created on Waveframe disks including those from the Timeline MMR-8. When a Waveframe format disk is selected from the DISK SETUP page, you will see the following screen:



Pressing TYPE (F1) will move the cursor to the file type field where you can select the type of file you want to load. Normally, this should be left on PROJECT to view the available projects on the disk. ALL FILES can also be selected to view a list of all the files on the disk.

As with Macintosh disks, you can select which tracks you want to load from the PROJECT using the IMPORT TRACKS page (accessible via the UTILS on F4).

After selecting the project you wish to load, pressing LOAD (F5/F6) will start the import process and the following screen will be shown:



### FAIRLIGHT DISK COMPATIBILITY

The DD8 is able to read project files created on Fairlight MFX3-plus disks in RBF format (The Fairlight MFX3-plus supports two types of native disk format, RBF and FLFS. Currently, the DD8 is only able to recognise RBF formatted disks). When a Fairlight RBF format disk is selected from the DISK SETUP page, you will see the following screen:



Pressing TYPE (F1) will move the cursor to the file type field where you can select the type of file you want to load. The Fairlight MFX3plus stores all the the information necessary to play a complete project (including all audio and edit information) in a file with the suffix '.MT'. The Fairlight MFX3-plus also allows a separate MDL (Media Description Language) file to be created which contains all the information to play the audio in the current project. This is identified with a '.DL' suffix.

The DD8 always reads the MDL file rather than the Fairlight native project file, so it is necessary to ensure that this file is always created before the disk is removed from the MFX3-plus system.

Normally, the TYPE field on the LOAD (FROM FAIRLIGHT DISK) page should be left on MDL to view the available MDL files on the disk. ALL FILES can also be selected to view a list of all the files on the disk..

As with other non-Akai disks, you can select which tracks you want to load using the IMPORT TRACKS page (accessible via the UTILS on F4).

After selecting the MDL file for the project you wish to load, pressing LOAD (F5/F6) will start the import process and the following screen will be shown:



## EXPORT PROJECT PAGE

The DD8 is able to convert projects created on one system into files playable on a different system. Currently, the DD8 can export from any of the readable project types (i.e Akai, OMF, Waveframe, Fairlight or Protools) to Akai or Protools files. As well as conversion of the project file itself, this process includes conversion of all audio files into a suitable format (e.g from Akai format referenced by an Akai Project to Sound Designer II files referenced by a Protools Session).

The Export function can also be used to create an Akai project on an Akai disk that references special "Akai->Fairlight" audio files. These projects are intended for playback on Fairlight MFX3plus systems that include Akai File Exchange support.

The EXPORT PROJECT page is accessed by pressing EXPORT (F3/F4) on the SAVE PROJECT page.

```

SAVE PROJECT                               Disk : 0
-----
Project name : PROJECT 1
-----
Press ENTER to Save Project
-----
SAVE NEXT | EXPORT | NAME | EXIT
  
```

The project to be exported will be the one that is currently loaded into memory.

```

EXPORT PROJECT
-----
To disk : 0
Export Type : PT 4
Audio Handle : 00:00:00:00.0
-----
Disk | Type | Handle | EXIT
  
```

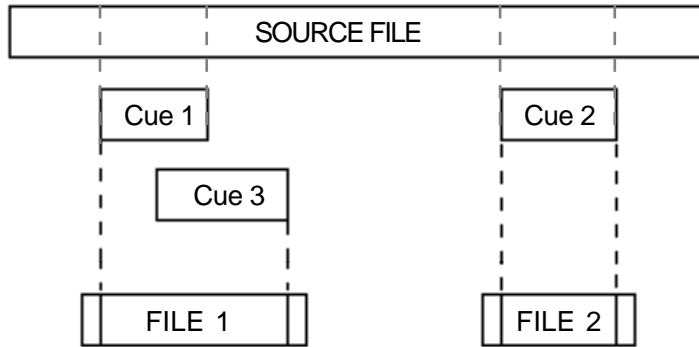
Pressing DISK (F1) will move the cursor to the TO DISK field where you can select the SCSI ID of the drive to which the project will be exported.

**NOTE:** The selected drive must have been previously formatted appropriately for the export you wish to perform (e.g An export to a Protools Session must be made to a Macintosh HFS format disk).

Pressing TYPE (F2) will move the cursor to the file type field where you can select the type of project you want to export to. The current options are:

- |                   |   |
|-------------------|---|
| AKAI              | To export to an Akai project on an Akai disk referencing Akai audio files.  |
| AKAI -> FAIRLIGHT | To export to an Akai project on an Akai disk referencing special Akai audio files intended for playback on a Fairlight MFX3plus system. |
| PT 4              | To export to a "Protools 4" Session file on a Macintosh HFS disk referencing 16-bit Sound Designer II files.                            |
| PT 24             | To export to a "Protools 24" Session file on a Macintosh HFS disk referencing 24-bit Sound Designer II files.                           |

During the export process, portions of audio will be discarded so that only audio that is actually needed will be copied and converted. If you are familiar with the DL1500, you will notice the similarity to the COMPILE function. In fact, you can use the DD8's EXPORT function to export an AKAI project to another AKAI project on a different disk! During this process, audio files will be minimised - unused top and tails will be discarded and additionally, unused audio in the middle of the source file will not be copied, thus creating multiple files:



Pressing HANDLE (F3/F4) will move the cursor to the Handle field where you can select how much extra audio will be copied before and after the audio that is actually referenced in the project. If the Handle is very large, it is likely that the source audio files will be copied intact without being minimised.

**DD1000 DISK COMPATIBILITY**

The DD8 uses the same disk format as the Akai DD1500, DR8 and DR16. Disks can be interchanged directly between any of these machines. Additionally, the DD8 can read and use disks made on the Akai DD1000 and it is possible to play Qlists created on a DD1000 directly on the DD8<sup>1</sup>.

**LOADING DD1000 QLISTS**

When you select a drive that has a DD1000 disk in it, an extra soft key will be shown on the DISK SETUP page when you press the DISK key.



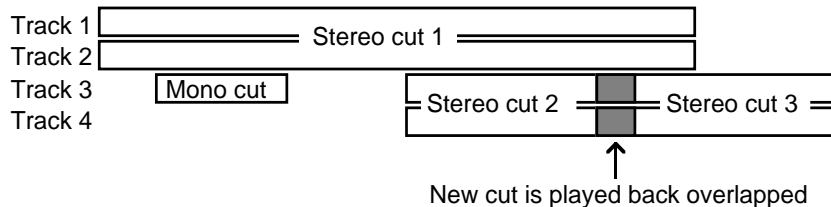
To load a DD1000 Qlist, you should press the DD1000 LOAD key (F3/F4) to go to the LOAD DD1000 QLIST page. The screen will show a list of DD1000 Qlists which you may load as normal.



When the Qlist is loaded, the DD8's project deals with overlapping cuts and track output assignments using two schemes. If cuts use different outputs (for example, a mixture of outputs A, B or AB, the following track assignments will be used:

DD1000		DD8
OUT A CUTS	→	track 1 +2 (track 1 if mono)
OUT AB CUTS	→	track 1 + 2 (track 1 if mono)
OUT B CUTS	→	track 3 + 4 (track 3 if mono)

If all the cuts use the same outputs (for example, all cuts are assigned to output A), the following track assignments will be used on the DD8's project. For example:



The cuts are assigned to tracks 1+2/3+4 in a similar way to the manner in which the DD1000 assigns cuts to voices. In other words, where cuts in a DD1000 Qlist overlap, whereas on the DD1000 they will play correctly (owing to the DD1000's 'voice' assignment), on the DD8, they will be placed on adjacent tracks so as to play correctly.

**SAVING PROJECTS TO DD1000 DISKS**

When a DD8 project is saved to a DD1000 disk, a DD1000 Qlist of the same name is automatically created and saved to the disk in addition to the DD8 project itself. This allows you to play simple projects created on a DD8 on a DD1000. The DD8 makes its best attempt to store cues for playback on the DD1000. It starts at track 1 and then continues until all the tracks are stored or all 256 DD1000 cues have been used up. After saving a project to a DD1000 disk from the DD8, the next time this disk is used you can choose to load the DD8 project rather than the DD1000 Qlist by pressing the SELECT key (F5/F6) on the DISK SETUP page.

**WARNING:** If you load a DD1000 Qlist into a DD8, work on it and then save it again on the DD8 you will lose any FADE and MIDI events that may have been on the original and you will lose all cut names.

**PLAYING DD1000 DISKS CREATED ON A DD8 ON A DD1000**

Some degree of backwards compatibility is also possible between the DD8 and DD1000 and any DD1000 disks you have worked with on the DD8 may still be used on a DD1000.

Recordings can be made on the DD8 to a DD1000 disk in the usual manner (i.e. select a track for record, press PLAY+RECORD) but the DD8 uses the following rules to decide whether a recording is mono or stereo when recorded on a DD1000 format disk.

- Adjacent channel pairs of tracks enabled for record are recorded as DD1000 stereo takes.
- Non-adjacent and remaining channels are recorded as DD1000 mono takes.

1	REC ENABLE track = 2	→	2 = MONO
2	REC ENABLE tracks = 2+3	→	2 + 3 = STEREO
3	REC ENABLE tracks = 2+4	→	2 = MONO, 4 = MONO
4	REC ENABLE tracks = 2+3+4+5	→	2 + 3 = STEREO, 4 + 5 = STEREO

**NOTE 1:** When recording in stereo, the first track of the pair is always assigned to the left channel of the DD1000. For example, in example number 2 above, track 2 would be assigned to the left channel and track 3 to the right.

**NOTE 2:** *If two mono recordings are assigned to a stereo pair, it will not be phase coherent on the DD1000.*

When recording on the DD8 is finished, the DD8 stores extra cuts files and record settings to allow this backwards compatibility.

You will also note the way DD1000 take names are created by the DD8. The ten-character take names are formed as follows:

CLIP12 998  
A B C

- A The first four characters are the recording name
- B These show the track number the recording was made on
- C This is a unique identifier to create a totally unique take name

### MULTIPLE DISK DRIVE SYSTEMS

The DD8 works with multiple disk drives very differently from the DD1000 (much better in fact!). A problem with the DD1000 was that you had to make sure that a disk was in its original drive before it would playback properly. This is because the SCSI ID is a part of the Qlist cue. For example, if a cue is specified to play from drive ID#3 but the disk is placed in drive ID#5, it will not play.

The DD8 uses a method based on each disk's unique label. This means that the DD8 'learns' the actual SCSI ID when the project is loaded. Therefore, a disk can be placed in any drive and the project will still playback correctly regardless of the SCSI IDs the drives may be. The following illustrates the difference between the two methods.

A cue in a DD1000 Qlist says:

"Play [TAKE N] from the disk in the drive with the SCSI ID#X"

If it can find that take on the disk in the drive with ID#X, it will play the cue. If it doesn't find that cue on the disk in drive #X, it will not play it. Neither will it try to look for it on another drive because it is specifically looking for it on that ID and no other.

The DD8, however, says:

"Play [TAKE N] from the disk with the unique label #XXXXXXXX"

DD1000 disks, however, do not have the concept of disk labels and so to overcome this, the DD8 will automatically write a label to the DD1000 disk, thereby giving it something it can work from given the above statement. In this way, it doesn't matter which drive the disk is in - the DD8 is looking for the disk label, not the SCSI ID. It will find this and so it will playback correctly regardless of the drive the disk is in.

**NOTE:** *Please note that for the label to be written to the DD1000 disk, the write protect switch must be off. If the disk is write protected, the label can't be written. In this case, the DD8 uses the same logic as the DD1000 (i.e. Play [TAKE N] from the disk in the drive with the SCSI ID#X) and you will have to make sure that the disk is in the correct drive.*

Furthermore, if a DD1000 Qlist has audio that exists on one disk only (as is invariably the case), the DD8 assumes that the audio is on the same disk as the Qlist and so it will also playback properly.

However, please note the following restrictions when taking a DD1000 disk from a DD8 back to a DD1000:

- When a converted DD1000 Qlist is saved as a project on the DD8, in the DD1000 Qlist that is also created, the DD8 resets all the cues' SCSI IDs to be the same as the drive it was played from on the DD8 (i.e. if you played the project on drive #4, all the cues will be reset to have a SCSI ID of #4). This means that the disk must be either be saved on an appropriately numbered drive on the DD8 or the disk must be used in a drive with the correct SCSI ID when you take it back to the DD1000 or you must edit each cue separately in the DD1000.
- If the DD1000 Qlist's audio comes from more than one disk, then the original situation remains and the disks must be placed in the correct drive in order to playback correctly.

It must be said that this all sounds terribly complicated. The fact is, it is! However, this is included to make the transfer of disks between the two machines as easy as possible. In the majority of cases, you will have a simple 2- or 4-track Qlist on one DD1000 disk which you can take to the DD8, work on it there and (assuming you don't try to add a further 6 tracks of material!!) you can take it back to the DD1000 and play it there. Only in the case where you may bring multiple disks from a multiple drive DD1000 system to a multiple drive DD8 system should you need to concern yourself with the above.

## SYSTEM SETTINGS

Pressing the SYSTEM key takes you to the SYSTEM menus. These pages contain parameters which set up the basic operation of the DD8.

As there are more menus than soft keys, F6 is used as a "MORE" key to scroll through the list of Menus in groups of five.



In all the SYSTEM menus, soft key EXIT (F6) returns to the previous level.

When you leave the system pages after changing parameters you will see the following screen:



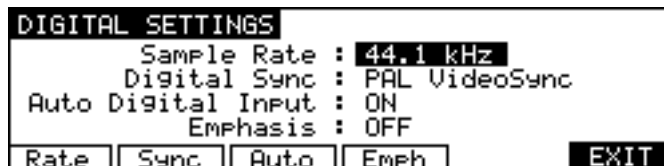
If you don't want to save your changes, press DON'T SAVE (F5/F6). You can always save your settings later by going back to the SYSTEM pages and pressing the SAVE soft key.

If you want to save the settings to disk with the current project, select WITH PROJECT (F3/F4).

If you want to save the settings to flash ROM (where they will become the default settings for new projects created), select FLASH ROM (F1/F2).

## DIGITAL SETTINGS

The DIGI key (F1) takes you to the Digital Settings menu :



**SAMPLE RATE** Pressing Rate (F1) moves the cursor to the Sample Rate field.

This sets the system's sample rate. You may select 32kHz, 44.1kHz and 48kHz or any of the associated pull-up and pull-down frequencies (i.e. 44,056Hz):



- 48kHz
- 44.1kHz
- 32kHz
- 44.056kHz (-0.1%)
- 44.144kHz (+0.1%)
- 47.952kHz (-0.1%)
- 48.048kHz (+0.1%)
- 31.968kHz (-0.1%)
- 32.032kHz (+0.1%)
- 88.2kHz (2-ch)
- 96kHz (2-ch)

**NOTE 1:** Recordings made at a sample rate other than the selected sample rate will play back at the wrong speed. For example, if the sample rate is set to 44.1kHz and you try to play back a recording made at 48kHz, the recording will play back slow. Therefore, please make sure that your recordings are made at the correct sampling rate. Recordings made at different sample rates cannot be used in the same project.

**NOTE 2:** 88.2kHz and 96kHz sample rates are only available via digital outputs in a special 'dual-channel' format. Please refer to the separate section for further information concerning operation at these sample rates.

- DIGITAL SYNC**                      Pressing Sync (F2) moves the cursor to the Digital Sync field.
- This allows you to synchronise the DD8 to a variety of video and wordclock synchronisation sources for precise system synchronisation. The options available are:
- INTERNAL CLOCK**                      This selection uses the DD8's internal crystal as its sync source and so the system is 'free running'. This is the selection used when using the DD8 on its own - when using it with external video equipment, to prevent drift of audio to picture, it is recommended to sync the entire system (i.e. VTR, DD8, etc.) to one of the external wordclock or video sync sources described below.
- DIGITAL INPUT**                      This synchronises the DD8 to the digital wordclock signal being received from the optional digital audio interface (TDIF, ADAT or AES/EBU).

**NOTE 1:** When recording through multiple digital inputs, these signals MUST ALL BE AT THE SAME SAMPLING FREQUENCY .

- PAL/SECAM Video**                      This synchronises the DD8 to a video sync signal through the SYNC BNC connector on the rear panel. Typically, this will be used in Europe to sync to a common PAL/SECAM house sync source.
- NTSC 29.97Hz Video**                      This synchronises the DD8 to an NTSC 29.97Hz house sync signal through the SYNC BNC connector. This would normally be used in Japan or America when 29.97 frames per second timecode is being used.
- NTSC 30Hz Video**                      This synchronises the DD8 to an NTSC 30Hz house sync signal through the SYNC BNC connector. This would usually be used in Japan or America when 30 frames per second timecode is being used.
- WORDCLOCK**                      This allows you to sync the DD8 to a wordclock signal through the SYNC BNC connector. This is used with a Sony PCM1630, etc. that has a separate SDIF wordclock output.

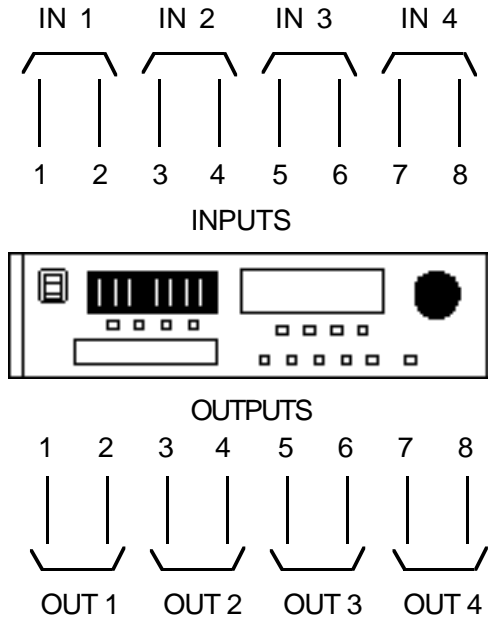
**NOTE 1:** If a wordclock sync source is selected and is being successfully received, the W/C RCV LED next to the DD8's bargraph display will illuminate. If this LED flashes, this indicates that there is some kind of problem with the wordclock (i.e. it is not connected or the cable is faulty, whatever). Please check your connections.

**NOTE 2:** Recordings made at a sample rate other than the rate of the external wordclock source will play back at the wrong speed. For example, if the wordclock being received is 44.1kHz and you try to play back a recording made at 48kHz, the recording will play back slow. Please make sure that you are receiving the correct wordclock rate.

AUTO DIGITAL INPUT	Pressing Auto (F3) moves the cursor to the Auto Digital Input field.  If this field is ON, the Digital Sync automatically switches to the selected Digital input when tracks are enabled for recording.
EMPHASIS	Pressing Emph (F4) moves the cursor to the Emphasis field.  This selects if the emphasis flag will be set on the digital outputs, and also controls the de-emphasis filter on the DA option board.

**88.2KHZ AND 96KHZ SAMPLE RATES**

These high-resolution sample rates are available for applications such as DVD authoring. These options are intended for use when connected to external equipment using the IB-D8MA24 (8-channel AES/EBU digital input/output board). When either of the "88.2kHz (2-ch)" or "96kHz (2-ch)" options are selected on the DIGITAL SETTINGS page, the DD8 enters a special 'dual-channel' mode where inputs and outputs are paired:



This is similar to the high sample rate support provided by the Nagra-D and several external AD/DA convertors. When this mode is selected, the INPUT ROUTING page will change to show you the pairs of inputs that are assigned to each track:

INPUT ROUTING		Input Type: DIGITAL						
INPUT :	1-2	3-4	5-6	7-8	OFF	OFF	OFF	OFF
	↓	↓	↓	↓	↓	↓	↓	↓
TRACK :	1	2	3	4	5	6	7	8
Use Track keys to select Track								
Type		MONO	STEREO	RESET	EXIT			

**DIGITAL OUTPUT FORMAT**

When the IB-D8MA24 (Multi-AES/EBU digital audio option board) is installed, an extra soft key will appear on the DIGITAL SETTINGS page:

DIGITAL SETTINGS					
Sample Rate :	44.1 kHz				
Digital Sync :	PAL VideoSync				
Auto Digital Input :	ON				
Emphasis :	OFF				
Rate	Sync	Auto	Emph	FORMAT	EXIT

Pressing FORMAT (F5) takes you to the DIGITAL OUTPUT FORMAT page:

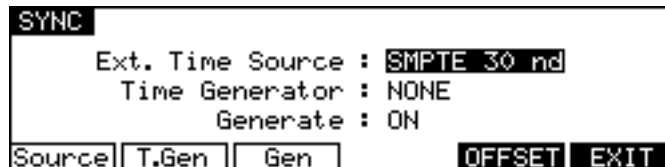
DIGITAL OUTPUT FORMAT	
Output Format:	CONSUMER
	EXIT

In this page, the OUTPUT FORMAT field allows you to set the format for the digital outputs of the IB-D8MA24 board and you may choose PROFESSIONAL or CONSUMER. PROFESSIONAL would be the choice to make when interfacing with AES/EBU digital audio equipment whilst CONSUMER would be the choice when connecting to DAT machines that use the SPDIF format of digital inputs.

**NOTE:** There is no equivalent page for the digital inputs because the DD8's digital audio receivers can automatically detect the format and adjust accordingly.

### SYNC

Pressing SYNC (F2) on the main System Settings page takes you to the synchronisation menu:



Pressing Source (F1) moves the cursor to the External Time Source field.

Here, you may choose the type of external timecode synchronisation you are using. When the SYNC key is switched on, the DD8 will not playback or record unless it is receiving the timecode type selected here. The available options depend on which option boards are installed.

NONE - This options turns off the DD8's timecode synchronisation.

SMPTE 24 fps - This selects that the DD8 will synchronise to timecode running at 24 frames per second. This would be a typical selection to make when synchronising to film equipment.

EBU 25 fps - This selects that the DD8 will synchronise to timecode running at 25 frames per second. This would normally be selected when sync'ing to EBU timecode in Europe.

SMPTE 29.97 nd - This selects that the DD8 will synchronise to non-drop timecode running at 29.97 frames per second. This would typically be used in America and Japan when working with NTSC colour.

SMPTE 29.97 drop - This will synchronise the DD8 to 29.97 drop timecode - NTSC colour. This would normally be used in America or Japan.

SMPTE 30 nd - This selects that the DD8 will synchronise to non-drop timecode running at 30 frames per second. This is the standard for NTSC black and white television and would typically be used in America, Canada and Japan. Many American and Japanese music studios use this frame rate.

SMPTE 30d NTSC BW - This will synchronise the DD8 to 30 drop frame timecode. This is the standard for NTSC black and white television and would occasionally be used in America, Canada or Japan.

**NOTE:** On many synchronisers and some pieces of video equipment, what they display as 30fps drop is actually 29.97fps drop. On the DD8, 30d NTSC BW is actually 30 frames per second, dropping a frame every now and then and so runs a little under 1% faster than true 29.97fps drop. You should select 29.97 drop when working with NTSC colour in America, Japan or Canada and 30 drop when working with black and white. 30d NTSC BW is unlikely to be used very often but please do not confuse the DD8s 30 drop-frame with other equipment's which may actually be 29.97fps drop.

Biphase 24fps x 2 - This selects that the DD8 will sync to bi-phase at 24 frames per second with 2 cycles per frame. This is used when synchronising the DD8 to film equipment.

Biphase 25fps x 2 - This selects that the DD8 will sync to bi-phase at 25 frames per second with 2 cycles per frame. This is used when synchronising the DD8 to film equipment.

Biphase 24fps x 4 - This selects that the DD8 will sync to bi-phase at 24 frames per second with 4 cycles per frame. This is used when synchronising the DD8 to film equipment.

Biphase 25fps x 4 - This selects that the DD8 will sync to bi-phase at 25 frames per second with 4 cycles per frame. This is used when synchronising the DD8 to film equipment.

Biphase 24fps x 10 - This selects that the DD8 will sync to bi-phase at 24 frames per second with 10 cycles per frame. This is used when synchronising the DD8 to film equipment.

Biphase 25fps x 10 - This selects that the DD8 will sync to bi-phase at 25 frames per second with 10 cycles per frame. This is used when synchronising the DD8 to film equipment.

EBU 25fps (+4%) - This special selection should be made when working with video material that has been derived from a frame-by-frame transfer from 24 fps film to 25 fps video. When material is transferred in this way, the visuals will actually run 4.1% faster when played from the video. As a result, the DD8 needs to playback audio with the same speed offset in order to maintain sync.

This selection should be used when working with material that has been transferred from film in this way. Whilst working with the video, the audio will play back slightly faster and may sound unnatural but this is not a problem as, ultimately, the audio will be played back sync'ed to the master film at 24fps at which point, correct playback speed will be restored.

**NOTE 1:** *It is not possible to record audio when synchronised to this selection.*

**NOTE 2:** *You must select 25fps (+4.1%) as the time display style - see below.*

SMPTE 24fps (-4%) - This special selection should be made when working with video material that has been derived from a frame-by-frame transfer from 24 fps film to 25 fps video. Whilst working with the audio in the DD, it is referenced to the EBU 25fps timecode at nominal speed from the video. The audio is finally mastered referenced to 24fps film and hence must be slowed down by 4% to remain in sync with the film. The SMPTE 24fps -4% setting is used during mastering to achieve this -4% varispeed.

**NOTE 1:** *It is not possible to record audio when synchronised to this selection.*

**NOTE 2:** *You must select 24fps (-4%) as the time display style - see below.*

SMPTE/EBU+RS422 - These options are available at all frame rates and are for use with RS422 equipped VTRs when the DD8 is acting as an RS422 master controller (i.e. when all playback, locating, jogging, etc., of both the DD8 and VTR are controlled from the DD8). SMPTE/EBU from the VTR is still connected as usual via the LTC (SMPTE IN) input and the SYNC key must be switched on. The DD8 will receive timecode information in playback from the LTC connection but, when working in slow motion, it receives timecode over RS422 making locking of the two machines tighter.

**NOTE:** The SMPTE+RS422 selection described above **MUST** be used when using the DD8 as an RS422 master.

RS422 - It is also possible to synchronise the DD8 to timecode over RS422 only and all frame rates are supported. However, you will note that this is primarily of use when using the DD8 with a non-linear video recorder (see the section that explains the RS422 functions for more details on this).

Pressing T.Gen (F2) moves the cursor to the Time Generator field.

Here you may select the type of timecode the DD8 will generate. The options are:

NONE - This will stop the DD8 generating timecode.

SMPTE/EBU selection - These will generate timecode at the selected frame rate.

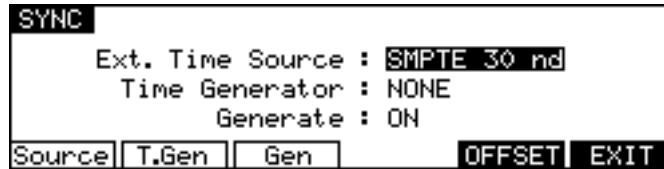
**NOTE:** The DD8 cannot generate and receive LTC at the same time.

BI-PHASE selection - All of the bi-phase selections will generate bi-phase at the selected frame rate and cycle rate regardless of what the EXT. TIME source is.

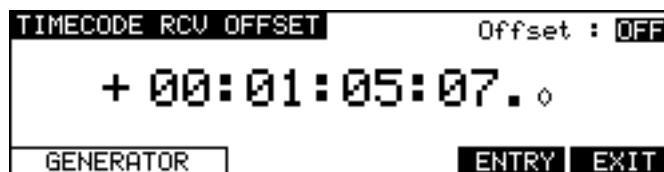
**NOTE:** The DD8 can read one type of timecode and generate another. For example, the DD8 can receive SMPTE/EBU and generate Bi-Phase at any of the rates available (or vice versa). In this way, the DD8 can be used as a very comprehensive timecode converter to help you overcome many of the awkward situations one can be faced with when receiving work done at different (or wrong!) timecode rates.

**TIMECODE OFFSETS**

New pages have been added which allow an offset to be set on the timecode generator and/or receiver. These options were previously available when the DD8 was controlled from the DL1500, but were not available from the DD8's front panel.



On the SYSTEM 'SYNC' page, press the OFFSET key (F5) to go to the timecode receive offset page:



When the TIMECODE RCV OFFSET is set to ON, the offset value shown will be added to subtracted from the incoming timecode to produce the time value that the DD8 will lock to.

When the TIMECODE RCV OFFSET is set to OFF, the offset will not be added/subtracted to the incoming timecode.

To enter a specific TIMECODE RCV OFFSET, press the ENTRY key (F5). The screen will change to allow you to enter the required offset time:



Soft keys F1 and F2 can be used to move the cursor to the sub-frame field, or any of the other fields. The offset time is then entered using the track keys as a numeric keypad or the current digit can be nudged using the DATA +/- keys.

The offset sign (plus or minus) can be toggled by pressing the +/- key (F4).

For example, if the project starts at 00:00:00:00.0 but the incoming timecode starts at 1 hour, you should set a TIMECODE RCV OFFSET of -01:00:00:00.0. This will subtract 1 hour from the incoming timecode, effectively providing the DD8 with timecode starting at 00:00:00:00.0. Conversely, if the project starts at 10 hours but the incoming timecode starts at 1 hour, you would need to set a TIMECODE RCV OFFSET of +09:00:00:00.0 which would add 9 hours to the incoming timecode so that it starts from 10 hours.

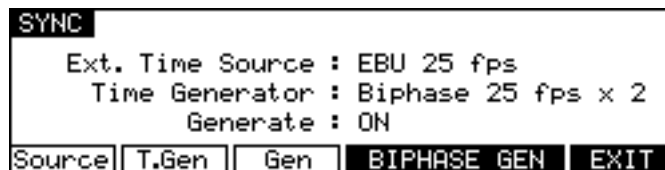
Press EXIT (F6) to return to the TIMECODE RCV OFFSET page.

A similar offset can be applied to the output of the timecode generator. Press the GENERATOR softkey (F1/F2) on the TIMECODE RCV OFFSET page to goto the TIMECODE GEN OFFSET page:



**BIPHASE GENERATOR**

If Time Generator is set to one of the Biphase options, an additional soft key appears :



Pressing BIPHASE GEN (F4/F5) accesses the Biphase generator settings page :



In this page, you can set certain parameters that affect the biphase generator. The parameters are:

- |                                 |   |
|---------------------------------|---|
| <p><b>MAXIMUM SPEED</b></p>     | <p>Different pieces of bi-phase film equipment are capable of different rewind and fast forward speeds. This parameter should be set to allow for the connected machine's maximum rewind/fast forward speeds. The parameter can be set from 1-30 times normal play speed. Please check your film equipment when setting this as incorrect setting may result in damage to the equipment or to the film or tape. Pressing Max (F1) moves the cursor to this field.</p> |
| <p><b>TIME TO MAX SPEED</b></p> | <p>This allows you to set how long it will take for the connected equipment to reach its maximum rewind or fast forward speed. The range is 0-10 seconds. Please check your film equipment and ensure that a sensible value is set here as damage to your film equipment could result. Pressing Time (F2) moves the cursor to this field.</p>   |

When the DD8 is acting as a biphase master, pressing RESYNC GEN will reset the DD8's biphase generator to zero and from then on, the film player will count the biphase pulses and all sync will be relative to that start point.

To leave the BIPHASE GENERATOR page, press EXIT. You will return to the SYNC page.

Going back to SYNC page, pressing Gen (F3) moves the cursor to the Generate field.

Here, you may choose the type of timecode generate mode. The available options are:

- OFF - This options turns off the DD8's timecode generation.
- ON - This selects that the DD8 will generate the timecode at the selected frame rate at all times.



via SYNC key - This selects that the DD8 will generate the timecode at the selected frame rate when the SYNC key is ON.

### ADVANCED TIMECODE OPTIONS

A new page has been added with options to control subtle features concerning the DD8's response when chasing timecode.

The ADVANCED TIMECODE OPTIONS page is a new 'hidden' page accessed by pressing ENTER + F1 on the SYSTEM SYNC page.

```
ADVANCED TIMECODE OPTIONS
Reverse Chase : Unmuted
Mute delay : 0 secs(s)
Drop out filter : 15 frames
Chase Delay Filter EXIT
```

The REVERSE CHASE field allows playback audio to be muted while the transport is chasing reverse timecode. This can be useful when the DD8 is being controlled from an older synchroniser that does not support random access machines. Often, these devices spool to locate to a new position which can result in annoying bursts of audio from random access machines

The options for the REVERSE CHASE field are:

UNMUTED The DD8 will attempt to play audio while chasing reverse timecode.

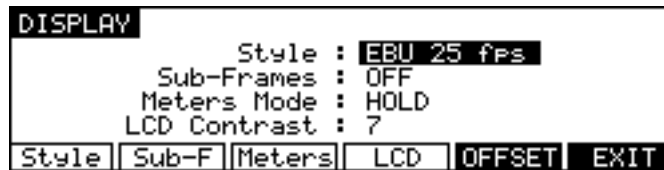
MUTED The DD8 will mute playback while chasing reverse timecode.

The MUTE DELAY field determines the delay after locking to incoming timecode until the audio outputs are unmuted. In multi-machine systems, this field can be set to allow an adequate delay to allow the playback on all machines to start virtually simultaneously. Note that MUTE DELAY only affects playback in the forward direction.

The DROP OUT FILTER field determines the approximate drop-out length (in frames) which will cause the DD8 to stop playback or drop out of record. The recommended value is 15. A shorter length is useful for forcing playback to stop more abruptly when the timecode source is stopped. Note however that a short length may prevent the machine locking to very slow-moving timecode.

### DISPLAY

Pressing DISP (F3) on the first System Settings page takes you to the Display menu :



Pressing Style (F1) moves the cursor to the Style field.

This allows you to set the type of timecode you wish the DD8 to display. Normally, this is the same as the timecode type selected in the EXT. TIME SOURCE field on the SYNC page (and the DD8 will take care of this automatically) but you may choose to view another time display if you wish. The selections are:

AS EXT. TIME SOURCE - The time display style is automatically selected to be the same as the timecode selected in the EXT. TIME SOURCE field.

23.98 fps - 23.98 frames per second (24 frames per second with a 0.1% pulldown for use when synchronising film to NTSC video).

24 fps - 24 frames per second.

25 fps - 25 frames per second.

29.97 fps - non-drop 29.97 frames per second.

29.97 fps drop - drop frame 29.97 frames per second.

30 fps - non-drop 30 frames per second.

30 fps drop - drop frame 30 frames per second.

Feet, 24fps 16mm - feet and frames at 24 frames per second as referenced to 16 mm film.

Feet, 24fps 35mm - feet and frames at 24 frames per second as referenced to 35mm film.

Frames, 24fps - frames only at 24 frames per second.

Frames, 25fps - frames only at 25 frames per second.

Frames, 30fps - frames only at 30 frames per second.

Frames, 29.97fps - frames only at 29.97 frames per second.

Hr:Min:Sec:mS - time will be displayed in hours, minutes, seconds and milliseconds.

Seconds (Secs.mS) - time will be displayed in seconds and milliseconds only.

25fps film (+4.1%) - display 25 frames per second but with a 4.1% playback speed offset for use when working with material that has been transferred from film to video.

24fps film (-4%) - display 25 frames per second but with a 4% playback speed offset for use in European film applications when working with material that has been transferred frame-by-frame from 24fps film to 25fps video.

**NOTE 1:** It must be said that some of the latter options are for use in very specialised applications. You will know if they are useful for you. The normal selection made is 24, 25, 29.97 or 30fps. Those working in film or cartoons may like to use other display styles.

Pressing Sub-F (F2) moves the cursor to the Sub-Frames field. This selects how many sub-frames will be displayed per frame. Available selections are :

- OFF            The sub-frame display is switched off
- 10th Frames   Normal display with 10 sub-frames per frame
- Film Perfs     This counts film perforations at 4 perforations per frame.
- Video Fields   This counts video fields at 2 fields per frame.

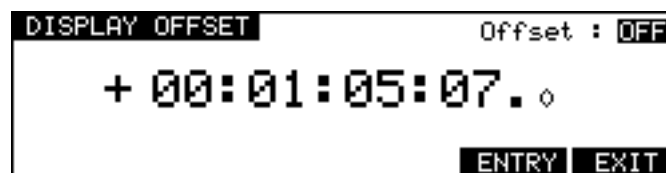
Pressing Meters (F3) moves the cursor to the Meter Mode field. This controls the meter's peak hold function. Available selections are :

- NORMAL       Peak level is displayed momentarily
- HOLD           Peak level is displayed indefinitely on the meters

Pressing LCD (F4) moves the cursor to the LCD Contrast field. This allows the contrast of the LCD display to be changed for better visibility by using the DATA +/- keys.

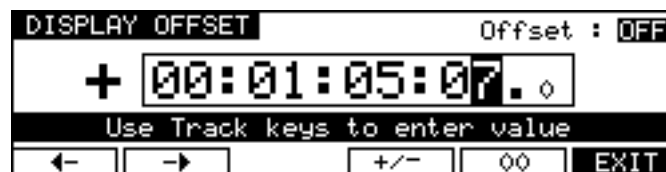
**DISPLAY OFFSET**

Pressing OFFSET (F5) takes you to the DISPLAY OFFSET page:



When the OFFSET field is OFF, the timecode displays will show either absolute or relative time as selected. When the OFFSET field is ON, the timecode displays will show be adjusted according to the offset shown on this page.

To enter a new offset value press the ENTRY key (F5):



Soft keys F1 and F2 can be used to move the cursor to the sub-frame field, or any of the other fields. The offset time is then entered using the track keys as a numeric keypad or the current digit can be nudged using the DATA +/- keys.

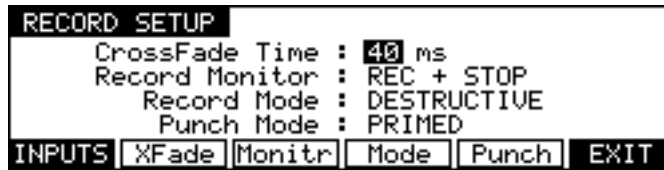
The offset sign (plus or minus) can be toggled by pressing the +/- key (F4).

**FOOTAGE DISPLAY**

When footage (Feet/Frames) display styles are selected on the SYSTEM 'DISPLAY' page, the current position is calculated using the MARK time as zero footage. Other timecode offsets are ignored. This allows a project to be setup with a TIMECODE RCV OFFSET for use when the project is loaded into a machine chasing LTC as well as a separate and unrelated footage zero.

**RECORD SETUP**

Pressing RECORD (F4) on the first System Settings page takes you to the Record Setup menu :



Pressing the XFade key (F2) moves the cursor to the CrossFade Time field. This allows a record crossfade of 0 to 80ms to be set.

Pressing Monitr (F3) moves the cursor to the Record Monitor field.

Here you may select how you will monitor the input signal. The default selection is RECORD AND STOP. With this selected, you will hear the input signal under the following conditions:

	STOP	RECORD	PLAYBACK
HEAR INPUT?	YES	YES	NO

RECORD TRACK'S PLAY SELECT KEY ON

	STOP	RECORD	PLAYBACK
HEAR INPUT?	YES	YES	YES

RECORD TRACK'S PLAY SELECT KEY OFF

The other selection you may make is RECORD ONLY. With this selected, you will only hear the input signal whilst actually recording, regardless of the status of the record track's PLAY select key. I.e.:

	STOP	RECORD	PLAYBACK
HEAR INPUT?	NO	YES	NO

RECORD TRACK'S PLAY SELECT KEY ON OR OFF

RECORD ONLY is useful when you only ever want to hear the input signal during record and at no other time. The DD8 will take care of the switching automatically.

**\*\* IMPORTANT NOTES REGARDING TRACK MONITORING DURING RECORDING \*\***

*On analogue multi-track tape recorders, we take seamless punch-in/out for granted. However, this is much more difficult to achieve on hard disk recorders.*

*The DD8 has seamless punch-in/out and to achieve this, the DD8 plays previously recorded material in the background so that, when you punch-out manually, the track is ready to play back immediately with no gap at the punch-out. I.e.:*



*This means that in most cases, the DD8 will drop in and out of record pretty much like a normal MTR. Usually, on most hard disk recorders, due to disk speed restrictions and SCSI bandwidth, there is a gap of several seconds or more at the point of drop-out. This is not so on the DD8 and it is possible to punch in and out seamlessly on mono and stereo tracks.*

*However, when using an MO, because these are slower than hard disks, you may notice tracks dropping. Also, when recording four tracks, there may be gap in monitoring when you drop out of record. The actual recording will be fine - only the monitoring at the point of punch-out will be momentarily affected.*

*As mentioned, though, under normal circumstances, when recording stereo or mono cues onto either a hard disk or MO, you should not notice this.*

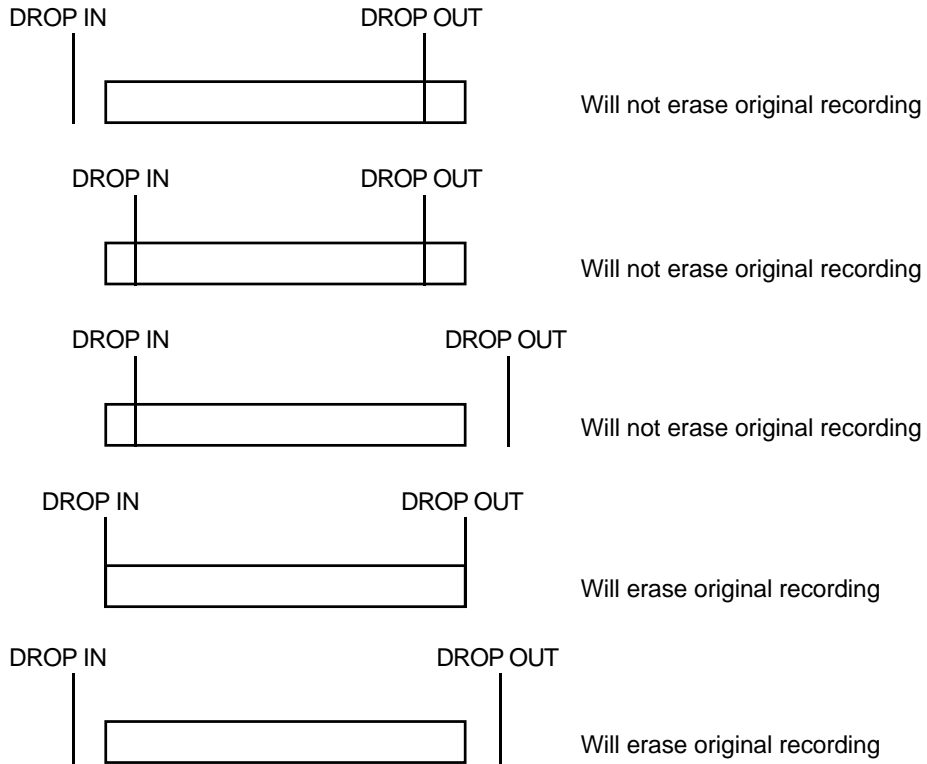
Pressing Mode (F4) moves the cursor to the Record Mode field. The available selections are :

**NORMAL** This is the default mode where new recordings are made onto an unused area of the disk. Note that recording in this mode is non-destructive (existing audio on the disk is not overwritten and it is possible to recover the original audio using the UNDO function).

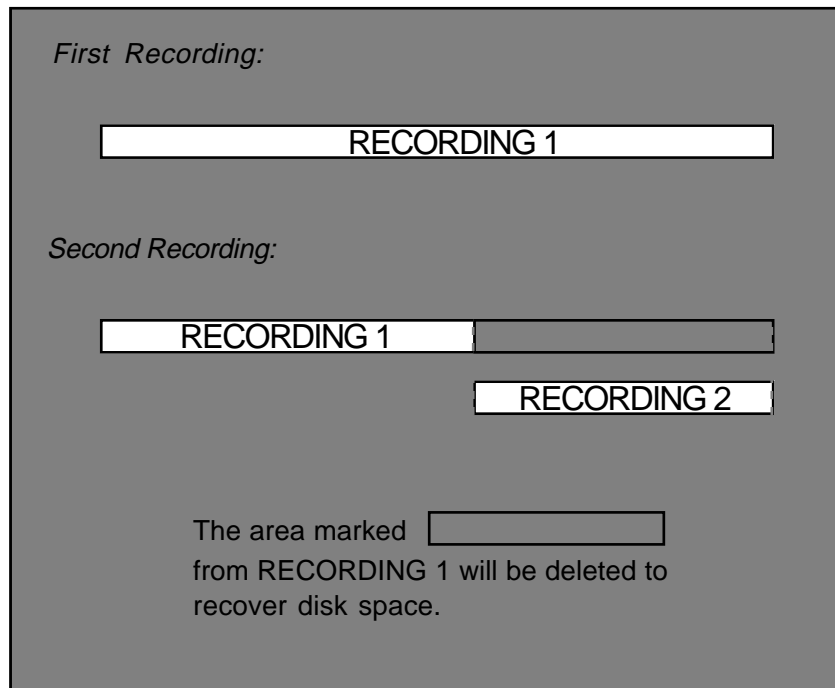
**DESTRUCTIVE** This is a special type of record mode that behaves more like traditional tape.

As mentioned, recording on the DD8 is non-destructive by default but, sometimes when recording, it is possible to build up a lot of redundant audio on your disk, especially if you are dropping in and out over the same point time and time again (for example, when recording dialogue). As a result, your disk can soon become full of audio you cannot access or use. The DESTRUCTIVE record mode goes some way to overcome this.

When DESTRUCTIVE recording mode is on, if you record over an entire cue, the audio associated with the original cue will be erased from disk. However, you must record over the original cue completely - dropping in and/or out half way through the cue will not cause the original cue's to be deleted from disk. For example:



When recordings are made in DESTRUCTIVE mode, the ends of overwritten files are deleted to recover disk blocks (similar to the process during disk MINIMISE).



**NOTE:** *There are certain considerations regarding destructive recording that you should be aware of.*

- *THERE IS NO UNDO FOR RECORDINGS WHEN DESTRUCTIVE MODE IS USED.*
- *After you have just loaded a new project, as a safety factor, recording over cues in that project will not delete their audio from disk and the original project cannot be damaged. If, however, you record over cues recorded since the project was loaded, newly recorded cues' audio will be deleted from disk.*

The destructive record mode will go some way to avoiding the build up of unnecessary audio on your disk but, given the above points, there may be times when you will need to perform a manual cleanup or minimise.

**\*\* WARNING \*\***

**BECAUSE OF THE DESTRUCTIVE NATURE OF THIS FUNCTION, PLEASE MAKE SURE IT IS NOT INADVERTENTLY SELECTED WHEN RECORDING AS YOU RUN THE RISK OF LOSING VALUABLE DATA.**

For example, if you are used to using non-destructive recording but receive a disk where DESTRUCTIVE record mode is enabled, you may be working in your usual way, thinking that new recordings are recoverable when, in fact, they are being deleted from disk every time you record over them. A good example may be where you are repeatedly dropping in over dialogue recordings, unaware that DESTRUCTIVE mode is set. You may think that you can retrieve 'out-takes' after the talent has left only to find that only the very latest recordings you made are available on disk. In this case, before recording over existing cues, please check that DESTRUCTIVE record mode has not been selected.

**\*\* THERE IS NO UNDO WHEN DESTRUCTIVE RECORD IS USED \*\***

Pressing Punch (F5) moves the cursor to the Punch Mode field. This selects how the DD8 will respond if the record track selection is changed while the transport is in record.

Available selections are :

**NORMAL**                      This is the default setting. The record track selection can not be changed while the transport is in record.

**TRACK KEYS**                In this mode, the transport responds in the same manner as a conventional MTR. Pressing the REC and PLAY keys will put the DD8 into a 'record-ready' condition waiting for tracks to be punched in from the track select keys. If no tracks are selected at the time the REC and PLAY keys are pressed, the REC key will flash. In this situation, when any of the track select keys are pressed the DD8 will punch into record on the selected track(s) and the REC key will light steadily. When the track select key is pressed again, that track will be punched out of record.

**PRIMED**                      In this mode, recording will start immediately on selected tracks when the REC and PLAY keys are first pressed. After this, if new record tracks are selected, the appropriate track select key(s) will flash indicating that the track is in 'record-ready', but recording will not actually start until the PLAY key is pressed again while holding down the REC key. While in record, pressing the track select key of a track that is actually recording will punch that track out of record and back into the 'record-ready' state.



**ROUTING INPUTS**

Pressing INPUTS (F1) accesses the Input Routing page :

INPUT ROUTING		Input Type: ANALOG						
INPUT :	1	2	3	4	5	6	7	8
	↓	↓	↓	↓	↓	↓	↓	↓
TRACK :	1	2	3	4	5	6	7	8
Use Track keys to select Track								
Type		MONO	STEREO	RESET	EXIT			

This shows the default assignment for a system with eight analogue inputs with each input being routed to the 8 tracks.

Pressing Type (F1) moves the cursor to the Input Type field which allows you to select between ANALOG or DIGITAL inputs (depending on the option boards fitted).

Pressing MONO (F3) recalls the MONO preset (Input 1 to all tracks)

Pressing STEREO (F4) recalls the STEREO preset (Inputs 1&2 to all pairs of tracks)

Pressing RESET (F5) recalls the default assignment (Inputs 1-8 to tracks 1-8)

Other Input assignments are made by pressing the Track Key (1-8) to select a track and then using the DATA +/- keys to select the required input.

**SPEED**

Pressing SPEED (F5) on the first System Settings page takes you to two pages depending on the SYNC status of the DD8.

If the SYNC key is switched OFF (Internal Time Source), pressing SPEED (F5) takes you to the VariSpeed menu :

VARISPEED	
Speed :	+00.00 %
VariSpeed :	ON
Internal Time Source only !	
<	> Vari ?
EXIT	

F1/F2 (</>) moves the cursor from one digit to another in the SPEED field and F3 (Vari ?) toggles VariSpeed ON/OFF.

If SYNC is ON (Chasing External Time Source), the SPEED key takes you to the External Source Speed page:

EXTERNAL SOURCE SPEED	
External Source Type :	LTC
External Time Format :	25 fps
External Source Speed :	+1.0000
External Source Stability :	0.00
EXIT	

In this page, there are no user parameters. This is used only as a Time Source analyser, in order to check the Source format and quality (speed and stability).

**SECOND SYSTEM SETTING PAGE**

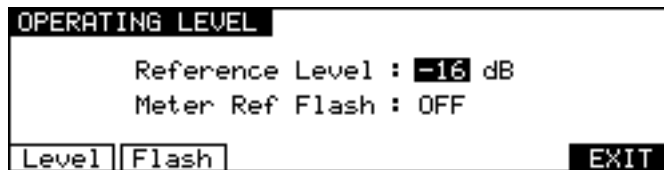
Pressing MORE (F6) on the first SYSTEM SETTINGS page will show this screen:



The functions are:

**OPERATING LEVEL**

Pressing LEVEL (F1) on the second System Settings page takes you to the Operating Level page:



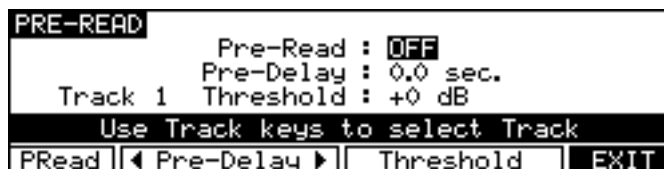
Reference Level (F1) The Reference Level : is used to set the 0 VU of the A/D and D/A converters.

Available selections are -12 dB , -16 dB, -18 dB and -20 dB.

Meter Ref Flash (F2) This function may to used to allow accurate calibration of operating levels to and from the DD8. When the METER REF FLASH mode is switched on, the REF light on the barmeters will flash when the input signal is within approximately 0.4dB of the current operating level setting.

**PRE-READ**

Pressing P-READ (F3) on the second System Settings page takes you to the Pre-Read menu :



PRead (F1) Moves the cursor to the Pre-Read On/OFF field. This enables the Pre-Read function and causes the DD8 to load pre-read data into memory.

**NOTE:** The Pre-Read function requires an area of memory to store information about the audio files on disk. The DD8 also requires memory for storing large items such as disk directories. In some circumstances, you may receive an "OUT OF MEMORY" error message when trying to enable the Pre-Read function. This indicates that the DD8 is unable to allocate sufficient memory to allow this function to be used. This can be overcome by installing CPU expansion RAM in the DD8.

Pre-Delay (F2/F3) Moves the cursor to the Pre-Delay field (F2 (<) for the units, F3 (>) for the decimal). This is the time before the current NOW time at which the track's Pre-Read output will be activated.

Threshold (F4/F5) Moves the cursor to the Threshold field. This sets the detection threshold of the selected track. Select the required track using the Track Keys (1-8) or the ALL key (to set all the same threshold on all tracks).

**TIMES**

Pressing TIMES (F4) on the second System Settings page takes you to the Times menu :

```

TIMES
      Play To : 1 second(s)
      Play From : 1 second(s)
  To  | From  | EXIT
  
```

To (F1) Moves the cursor to the Play To field. This sets the amount of audio (before the NOW time) that will be played when the TO key is pressed.

From (F2) Moves the cursor to the Play From field. This sets the amount of audio (after the NOW time) that will be played when the FROM key is pressed.

**JOG**

Pressing JOG (F5) on the second System Settings page takes you to the Jog menu :

```

JOG / SPOOL
      JOG Resolution : FINE
      Maximum JOG Speed : 1 x nominal
      Maximum SPOOL Speed : 2 x nominal
  Jg Res | Jg Max | Sp Max | EXIT
  
```

Pressing Jg Res (F1) move the cursor to the JOG Resolution field.

Available values are :

NORMAL	Normal Jog wheel response
FINE	Fine jog wheel response

Pressing Jg Max (F2) moves the cursor to the Maximum JOG Speed field. This may be set to a maximum of 5 x play speed.

Pressing Sp Max (F3) moves the cursor to the Maximum Spool Speed field. This may be set to a maximum of 5 x play speed.

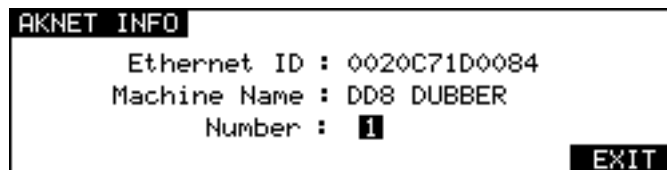
### REMOTE

Pressing REMOTE (F2) on the second System Settings page takes you to the Remote menu :



Soft keys are only shown for the installed option boards. If certain boards are not installed, they will not be detected by the DD8 and their keys will not be shown here.

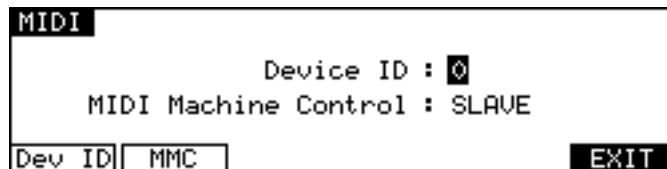
Pressing the AKNET key takes you to a page which shows the Ethernet ID number assigned to the machine. This number is programmed during production.



The other parameters on this page are described later in the section on MULTI-MACHINE OPERATION.

The pages available from the GPIO and RS422 keys are described later in the sections on GPIO and RS422.

Pressing the MIDI key takes you to the following page:

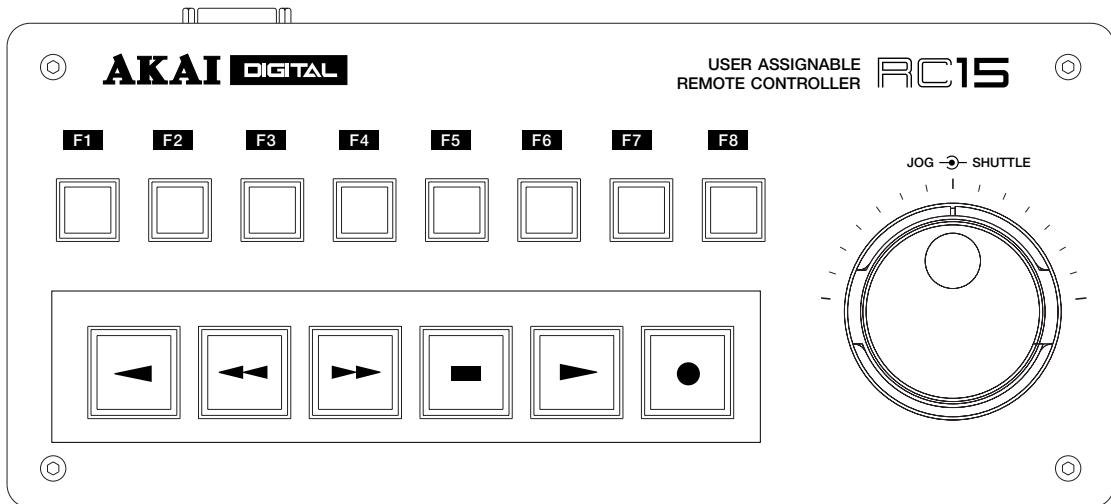


This allows you to setup the DD8 as a SLAVE for MIDI MACHINE CONTROL when the MIDI option board is installed.

If an RC15 Remote Controller is attached to the DD8, a soft key labelled "RC15" will be shown on the REMOTE page. Pressing the RC15 key takes you to the following page:

RC15 SETUP		Function
F1		Rec Track 1
F2		Rec Track 2
F3		Rec Track 3
F4		Rec Track 4
Type	File	EXIT

The RC15 is a small optional remote controller that connects to the EXPANSION connector on the rear-panel of the DD8. As well as a jog/shuttle wheel, it has 8 function keys (F1..F8) and 6 transport keys, each of which can be assigned to a variety of functions:



The RC15 keys are listed in the column on the left hand side of the RC15 SETUP screen. The 8 transport keys are listed as F1..F8, and the transport keys are listed as TRANSPORT 1 .. TRANSPORT6.

The DATA+/- keys are used to select the function for each key and the PREV/NEXT keys (F1/F2) are used to scroll up and down through the list of RC15 keys.

The options available are:

- REWIND                      Rewind transport
- FAST FORWARD            Fast Forward transport
- STOP                        Stop transport
- PLAY                        Put transport into play
- RECORD                     Send record command when PLAY is also pressed
- REC (PUNCH-IN)           Drop into record
- REC (TOGGLE)             Drop in/out of record
- PLAY REVERSE             Play backwards
- STORE IN                   Grab IN time
- STORE OUT                 Grab OUT time

## SYSTEM - 8

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STORE MARK	Grab MARK time
SYNC (ON-LINE)	Switch EXT.TIME on/off
REHEARSE	Switch REHEARSE on/off
AUTO-PUNCH	Switch AUTO-PUNCH on/off
REC TRACK 1-8	Switch selected record track on/off
BPH RCV RESYNC	Resync biphase receiver
BPH GEN RESYNC	Resync biphase generator

**THIRD SYSTEM SETTING PAGE**

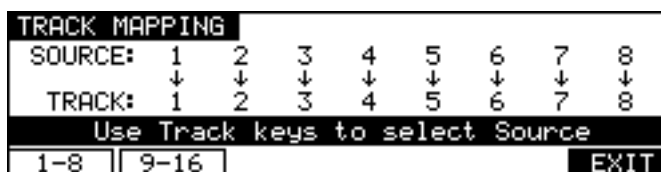
Pressing MORE (F6) on the second SYSTEM SETTINGS page will show this screen:



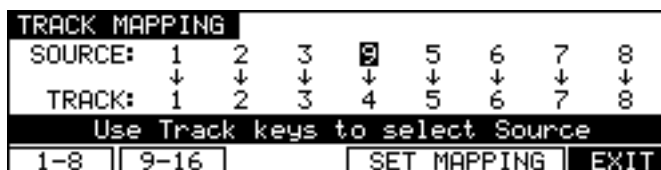
The functions are:

**TRACK MAPPING**

Pressing TRACKS (F1) on the third System Settings page takes you to the Track Mapping page:

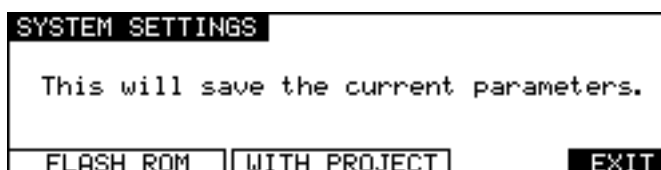


This page is used to assign 'virtual' tracks from the current project to the 8 playback tracks. For example, if you are using a project created on the DD1500 or DR16 with 16 tracks, you can choose which 8 of these tracks you want to play on the DD8. The soft keys '1-8' (F1) and '9-16' (F2) can be used to quickly select tracks 1-8 or 9-16 for playback. You can also select individual tracks by using the track keys (1-8) to select a playback track and using the DATA +/- keys to select the required source. After changing the mapping for individual tracks a new soft key, SET MAPPING, will appear. Press this key (F4/F5) to confirm your selection.



**SAVE SETTINGS**

Pressing SAVE (F2) on the third System Settings page takes you to a page which allows you to save the current system parameter settings:

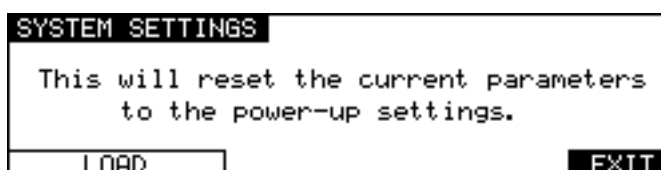


If you want to save the settings to disk with the current project, select WITH PROJECT (F3/F4).

If you want to save the settings to flash ROM (where they will become the default settings for new projects created), select FLASH ROM (F1/F2).

**LOAD SETTINGS**

Pressing LOAD (F3) on the third System Settings page takes you to a page which allows you to load the current system parameter settings:



Pressing LOAD (F1/F2) will replace the current system settings with those stored in Flash-ROM.

### CLEAR SETTINGS

Pressing CLEAR (F4) on the third System Settings page takes you to a page which allows you to clear the current system parameter settings from the Flash ROM:

```
SYSTEM SETTINGS
This will clear the Flash ROM settings.
CLEAR FLASH EXIT
```

Pressing CLEAR FLASH (F1/F2) will clear the Flash ROM parameter settings.

### REAL-TIME CLOCK

Pressing CLOCK (F5) on the third System Settings page takes you to the SYSTEM CLOCK SETUP page:

```
SYSTEM CLOCK SETUP
Time : 11:21:00
Date : 16 Jul, 1998
Day : Thursday
Hour Mins Secs SET DATE EXIT
```

To change the current time, press HOURS (F1), MINS (F2) or SECS (F3) to move the cursor to the required field and use the DATA+/- keys to adjust the time. Pressing SET DATE (F4/F5) will change the soft-key selections to allow you to move the cursor to the date fields:

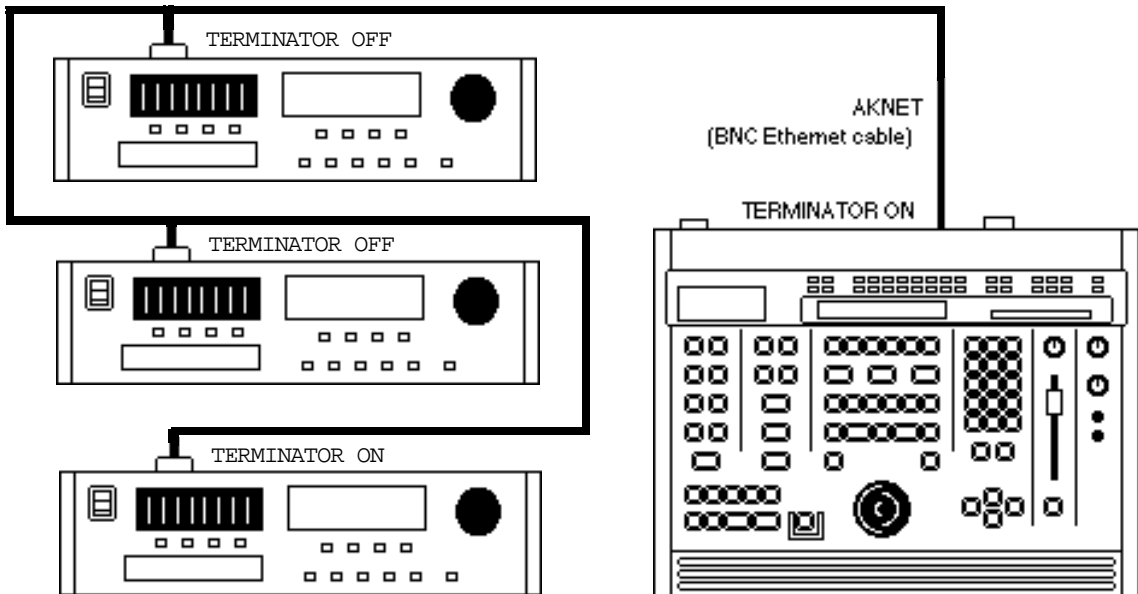
```
SYSTEM CLOCK SETUP
Time : 11:21:00
Date : 16 Jul, 1998
Day : Thursday
Date Month Year SET TIME EXIT
```

The Real-time clock is used to timestamp new files and recordings as they are saved to disk.



**MULTI-MACHINE OPERATION**

It is possible to connect up to 16 DD8s for control from a single DL1500.



The units are chained together by the AKNET BNC connector on each machine using standard Ethernet BNC cables and 'T' pieces. It is essential that the TERMINATOR switch is switched to the ON position on first and last units in the chain. Failure to do so will prevent correct communications and the system will not work..ii.AKAINET Termination;

**NOTE: The AKNET interface used in the DD system is 10-Base-2 Ethernet. There are certain rules that must be adhered to when setting up the system to ensure reliable operation:**

- All cables should be 50 ohm impedance.
- There should be a maximum of 185m of cable in the system between the first and last nodes.
- There should be at least 0.5m of cable between each node.

Before the system is used for the first time, each DD8 must be assigned a unique machine number which is used to identify it. This is set on the AKNET INFO page which is accessed from REMOTE page in the SYSTEM menus:

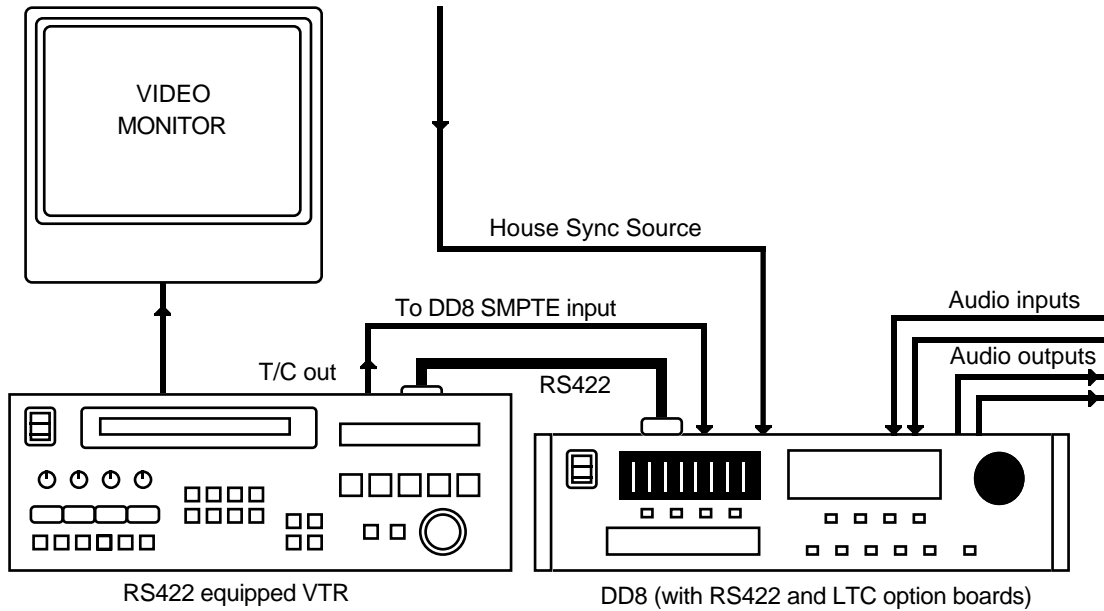
```

AKNET INFO
  Ethernet ID : 0020C71D0084
  Machine Name : DD8 DUBBER
  Number : 1
  EXIT
    
```

**NOTE: The MACHINE NAME field can not be edited from the DD8 front panel. This can be changed from the DL1500.**

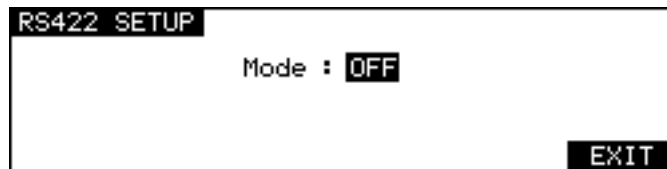
**DD8 AS AN RS422 MASTER**

The DD8 can be used as an RS422 master using the Sony™ P2 protocol. This means that all play, jog, shuttle and locate commands are issued from the DD8 allowing you to control a VTR equipped with RS422 and the DD8 together. Connections should be made as shown below with the DD8's RS422 option board output connected to the VTR and the timecode output from the VTR connected to the DD8's LTC option board timecode input.



**RS422 SETUP PAGE**

Pressing the SYSTEM key followed by REMOTE and RS422 takes you to the RS422 SETUP page where you can setup functions to cater for the VTR's transport mechanism.



If RS422 MASTER is selected in the RS422 MODE field. You will see this screen:



The parameters are:

**VTR PRE-ROLL** Most VTRs require a certain amount of 'run up' time when sync'ed to external equipment. This field sets that time. When a value is set here, locating to any position will automatically cause the system to locate to a point slightly earlier than actually specified. In the above example, if you locate to 1 minute, the DD8 will actually locate to 55 seconds.

**NOTE: YOU MUST SELECT ONE OF THE SMPTE/EBU+RS422 OPTIONS AT A FRAME RATE APPLICABLE TO YOUR AREA WHEN USING RS422 MASTER.**

*These options are available at all frame rates. SMPTE/EBU from the VTR is still connected as usual to the LTC option board's input and the SYNC key must be switched on. The DD8 will receive timecode information in playback from the LTC connection but, when working in slow motion, it receives timecode over RS422 making locking of the two machines tighter.*

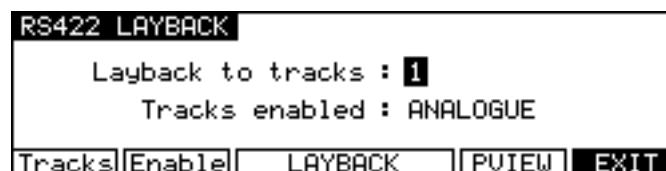
Switching on the SYNC key engages the RS422 function. Because of the frame accuracy limit imposed on the DD8 by the VTR over RS422, it is sometimes necessary to 'isolate' the DD8 for greater editing accuracy. To do this, simply switch off the SYNC key - this will allow the DD8 to be used 'stand alone'.

As a practical example, let's say you are trying to sync a door slam sound effect in the DD's project with the picture on video. You could, of course, do everything referenced to frame accurate picture but, you just cannot get the door slam precisely in sync. By switching off the SYNC key, you can momentarily disengage the VTR, 'isolating' the DD8 and you can place the sound effect, nudging it backwards or forwards in sub-frame increments on the DD8 until you think it's at the right position. You can then re-engage the VTR by switching on the SYNC key again and trying it out against picture. You can repeat this process until it's perfectly in sync.

#### LAYBACK FUNCTION IN RS422 MASTER

LAYBACK is a process where you have material on the DD8 that you wish to 'master' onto a VTR or other such RS422 equipped machine (such as an RS422 DAT machine). For example, you may receive a video tape with just dialogue on it. This is sync-transferred to the DD8 where it may be edited and tidied up if necessary and sound effects, music and other 'sweeteners' can be added using the DD8's multi-track capabilities. Finally, the whole thing is transferred back to the VTR.

To use the LAYBACK function, press LAYBACK (F4/F5). You will see this screen:



The parameters are:

- |                   |   |
|-------------------|---|
| LAYBACK TO TRACKS | Here you may select which of the VTR's tracks the material will be recorded to. You may select VTR tracks 1, 2, 3, 4, 5, 6, 7, 8 (mono) or 1+2, 3+4, 5+6, 7+8 (stereo) or 1-4, 5-8 or 1-8.  |
| TRACKS ENABLED    | Here you may select whether the layback (i.e. the mixdown) will be to the VTR's analogue tracks or its digital tracks. You may also select ANALOG+DIGITAL which will cause the layback to be recorded to both the analogue and the digital audio tracks of the VTR. |

The soft key functions are:

PVIEW	This allows you to 'rehearse' (preview) the layback (i.e. it will go into E-E mode at the IN point and will then stop at the OUT point). This function allows you to check whether the edit will be successful or not.
LAYBACK	Pressing this will initiate the layback process (i.e. the VTR will play to the IN point and will drop into record on the VTR. When the OUT point is reached, it will stop).

**NOTE:** *If tracks are accidentally enabled for record on the DD8 they will be ignored when using the LAYBACK function.*

### USING THE LAYBACK FUNCTION

The DD8's IN and OUT markers set the record in/out points for the VTR. Assuming the functions described above are set as appropriate, press LAYBACK and the VTR will drop in/out of record at the IN/OUT points marked.

You may 'build' the final transfer in sections (in this way, you can obtain the optimum mix section-by-section) and set IN/OUT points as appropriate. You may rehearse the drop in/out using PVIEW and, when you're happy with the results, press LAYBACK to actually 'commit' the recording.

It may be that you want to transfer the whole project back to the video tape in one go. In this case, set the IN at the start of the project and the OUT at the end of the project and press LAYBACK (F3/F4) to transfer the whole project back to the master video tape in one pass.

Another use of this may be to receive a video tape as described above but the 'sweetened' version on the DD8 may be laid back to an RS422 equipped DAT machine thus preserving the dialogue on the original video with a synchronised 'master' on DAT.

### RS422 MASTER CONTROL OF NON-LINEAR VIDEO RECORDERS

Using the 'RS422 only' external timecode selection, it is possible to take full advantage of non-linear hard disk video recorders such as the AKAI DV1500 or FED V-MOD 100.

When using any of the SMPTE+RS422 external timecode options, although locate/lock times in this case are virtually immediate, when jogging at slow speeds, there is no significant performance improvement over a VTR and the non-linear video recorder will 'stutter' frame by frame much like a normal VTR. However, using the 'RS422 only' selection, slow speed jogging is exceptionally smooth and very tightly locked to the DD8's audio jogging and so is ideal for spotting audio to picture.

However, please note that because of inaccuracies in the timecode sent via RS422, when playing at nominal speed, there may be instances where there is a  $\pm 1$  frame offset. This can be overcome by switching to SMPTE+RS422 for playback and using RS422 only for jogging and spotting. Of course, in the RS422 SETUP page, RS422 MODE must be set to MASTER and the SYNC key must be switched to ON.

**RS422 SLAVE FUNCTIONS**

It is also possible to use the DD8 on its own under the control of a video edit controller as an RS422 slave. In this condition, the DD8 will behave much like a VTR. In this way, as you perform your video edits, the DD8 will capture the audio edits and so the audio tracks will be built up on the DD8. That disk may then be removed and sent to post-production for 'sweetening'. In this way, you alleviate the need for lengthy auto-conform procedures as the audio is being compiled at the same time as the video edits.

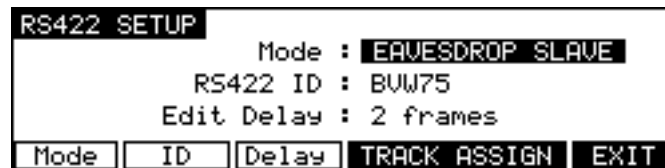
There are two ways the DD8 may be used as an RS422 slave. The first is known as 'EAVES-DROPPING' mode. Here, the DD8 is connected to the video edit controller via a 'Y' lead that goes to the VTR and also to the DD8's RS422 option board connector (LTC connection to the DD8's LTC option board is also required). In this mode, the DD8 will simply 'copy' any commands sent to the VTR but will not report back any status to the edit controller - it will simply be 'listening in' to anything sent to the VTR and performing the same actions.

FULL SLAVE mode is where the DD8 emulates a VTR exactly, reporting its status back to the video edit controller.

Either mode is applicable for capturing audio edits with video edits - the mode you choose largely depends on your setup.

**RS422 SLAVE - EAVESDROPPING MODE**

In the RS422 SETUP page (SYSTEM->REMOTE->RS422), select EAVESDROP SLAVE in the RS422 MODE field. You will see this screen:



You will see that F4/F5 show TRACK ASSIGN. Pressing this will show this screen:

RS422 TRACK ASSIGNMENT					
VTR Track	A1	A2	A3	A4	D1-D16
DD Track	OFF	OFF	OFF	OFF	OFF

A video edit controller will have track assignment keys (usually A1-A4) on it to determine which tracks on the VTR the audio will be recorded to when an edit is performed. This page allows you to set which tracks on the DD8 will be used when tracks on the video edit controller are selected.

The top line of the matrix shows the video edit controller's track select keys and below those, you may assign the DD8 tracks to those keys. For A1-A4, you may select individual tracks 1 to 8 for mono edits and 1+2, 3+4, 5+6, 7+8, for stereo edits. You may also select tracks 1-4, 5-8 and 1-8. When using A1, A2, A3 or A4 for your edit, the tracks assigned in these fields will be selected on the DD8. No guidelines can be given here - you must decide according to your video editing system and requirements.

The field D1-16 has just two states - ON or OFF. Some video edit controllers offer selection of the VTR's digital audio tracks which are selected on the video edit controller itself by way of keys labelled D1-n (where n is the highest number track available on the video edit controller - e.g. D1-D16). These may be used to select tracks on the DD8 (for example, selecting to record on track D5 will cause track 5 to be selected on the DD8).

**NOTE:** Although these track select keys on the video edit controller relate to the VTR's digital audio tracks, on the DD8 they simply select the track you will record onto with no reference to digital or analogue. If you wish to record digitally on the DD8, this must be set up in the usual way using the record setup page's input routing function.

**RS422 SLAVE - FULL SLAVE MODE**

In the RS422 SETUP page (SYSTEM->REMOTE->RS422), select FULL SLAVE in the RS422 MODE field. You will see this screen:



You will see that F4/F5 show TRACK ASSIGN. Pressing this will show this screen:

RS422 TRACK ASSIGNMENT					
VTR Track	A1	A2	A3	A4	D1-D16
DD Track	OFF	OFF	OFF	OFF	OFF

A video edit controller will have track assignment keys (usually A1-A4) on it to determine which tracks on the VTR the audio will be recorded to when an edit is performed. This page allows you to set which tracks on the DD8 will be used when tracks on the video edit controller are selected.

The top line of the matrix shows the video edit controller's track select keys and below those, you may assign the DD8 tracks to those keys. For A1-A4, you may select individual tracks 1 to 8 for mono edits and 1+2, 3+4, 5+6, 7+8, for stereo edits. You may also select tracks 1-4, 5-8 and 1-8. When using A1, A2, A3 or A4 for your edit, the tracks assigned in these fields will be selected on the DD8. No guidelines can be given here - you must decide according to your video editing system and requirements.

The field D1-16 has just two states - ON or OFF. Some video edit controllers offer selection of the VTR's digital audio tracks which are selected on the video edit controller itself by way of keys labelled D1-n (where n is the highest number track available on the video edit controller - e.g. D1-D16). These may be used to select tracks on the DD8 (for example, selecting to record on track D5 will cause track 5 to be selected on the DD8).

**NOTE:** Although these track select keys on the video edit controller relate to the VTR's digital audio tracks, on the DD8 they simply select the track you will record onto with no reference to digital or analogue. If you wish to record digitally on the DD8, this must be set up in the usual way using the record setup page's input routing function.

FULL SLAVE mode and EAVESDROPPING mode are virtually identical, the only difference being that FULL SLAVE reports back to the video edit controller and EAVESDROPPING mode just has the DD8 sitting there mimicking any commands sent to it. Operation is basically identical, it's just the wiring that's different.

**GPI/O**

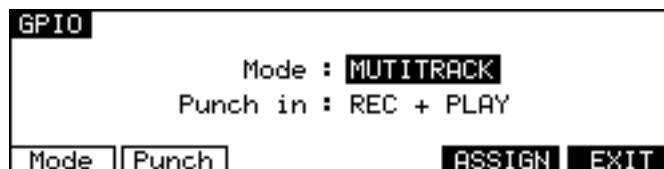
The DD8 can be fitted with an optional GPI/O interface board that provides 16 general purpose inputs (GPIs) and 12 general purpose outputs (GPOs). These may be set to perform a variety of useful functions.

You may use the GPIs to cause the DD8 to start or stop playback, fast forward, rewind or stop and start recording as well as many other assignments. In this way, you may, for example, build your own remote controller for the DD8 (for example, a simple PLAY/STOP remote). Another example would be to use the GPOs of another device to remotely control the DD8 (for example, using the GPOs of a dialogue replacement looping recorder).

You may use the GPOs to switch devices on and off on certain actions. A simple suggestion may be to turn on a red light in a voice-over booth when you enter record.

Many things are possible and no doubt you will find your own uses for these connections. Please refer to the information at the end of this manual for technical details of the connections to the GPIO interface board.

Pressing F2 (GPIO) on the SYSTEM/REMOTE page displays this screen:



This screen allows you to configure the GPIO board in MAG or MULTITRACK modes.

The GPIs used for transport control are momentary (they are triggered once with a pulse to select the track, and a second time to switch it off).

The available GPI configurations are:

**MAG** In MAG mode, The GPIs used for track selections are momentary (they are triggered once with a pulse to select the track, and a second time to switch it off).

In MAG mode, the Record Track GPIs respond in a similar manner to the tracks keys on a MAG machine - when a record track is selected, the transport will immediately drop into record. When the transport motion stops, all record track selections are automatically cleared.

**MULTITRACK** In MULTITRACK mode, the GPIs assigned for track selections are level triggered (they are held at one state to select the track). With the default GPO assignments, the MAG/MULTITRACK mode is indicated by the state of GPO 12. Additionally, there is a relay on the GPIO board that is controlled by GPO12. This can be used to switch the operating mode of external equipment.

When MULTITRACK mode is selected, the [Punch In] field is used to select how the DD8 will start recording. The available options are:

**REC + PLAY** The DD8 will start recording when both GPI 'RECORD' and 'PLAY' commands are activated simultaneously.

**REC ONLY** The DD8 will start recording when a GPI 'RECORD' command is received on its own.

**TRACK COMMANDS** With this option, the DD8 will behave as if it is in MAG mode, but track selections will be level triggered. Record track commands will only be accepted while the transport is in motion. When the transport motion stops, all record track selections are cleared.

The GPIs and GPOs have default assignments as follows:

*GPI Default Assignments:*

GPI 1	Record Track 1
GPI 2	Record Track 2
GPI 3	Record Track 3
GPI 4	Record Track 4
GPI 5	Record Track 5
GPI 6	Record Track 6
GPI 7	Record Track 7
GPI 8	Record Track 8
GPI 9	Play
GPI 10	Record
GPI 11	Stop
GPI 12	Rehearse
GPI 13	(Unassigned)
GPI 14	All Tracks Play
GPI 15	All Track Record Ready
GPI 16	All Tracks Off (Mute)

*GPO Default Assignments:*

GPO 1	Record Track 1 Tally
GPO 2	Record Track 2 Tally
GPO 3	Record Track 3 Tally
GPO 4	Record Track 4 Tally
GPO 5	Record Track 5 Tally
GPO 6	Record Track 6 Tally
GPO 7	Record Track 7 Tally
GPO 8	Record Track 8 Tally
GPO 9	Record Tally
GPO 10	Play Tally
GPO 11	Rehearsal Tally
GPO 12	Mag/Multitrack Tally

You can change these assignments by pressing the ASSIGN (F5) key which will take you to the following screen:

GPI SETUP		Active	Function
GPI 1	LOW	RECORD TRACK 1	
GPI 2	LOW	RECORD TRACK 2	
GPI 3	LOW	RECORD TRACK 3	
GPI 4	LOW	RECORD TRACK 4	
←		→	Prev Next GPO EXIT

This screen allows you to set parameters relating to the GPIs. The parameters are:

**ACTIVE** You may select OFF, HIGH and LOW. When OFF, the GPI has no function. When set to HIGH, the selected function (see below) will become active when a +5V signal is received at the GP input. When set to LOW, the selected function will become active when a 0V signal is received.

**FUNCTION** Here you may assign a range of DD8 functions to the GPIs. These include:

PLAY - When activated, the DD8 will start playback.

STOP - When activated, playback will stop.



FAST FORWARD - When activated, the DD8 will fast forward.

REWIND - When activated, the DD8 will rewind.

RECORD - When activated, the DD8 will start recording.

PLAY TO - When activated, the DD8 will play to the current NOW time.

PLAY OVER - When activated, the DD8 will play over the current NOW time.

PLAY FROM - When activated, the DD8 will play from the current NOW time.

PLAY IN TO OUT - When activated, the DD8 will play from the selected IN point to the selected OUT point.

PLAY LAST - When activated, the DD8 will play the last thing played.

PLAY BACKWARDS - When activated, the DD8 will play backwards.

GRAB IN MARK - When activated, it will mark an IN point.

GRAB SYNC MARK - When activated, it will mark a SYNC point.

GRAB OUT MARK - When activated, it will mark an OUT point.

RESET BIPHASE - This will reset the biphase receiver.

TOGGLE EXT.TIME - When activated, it will switch on/off the external time source.

RECORD REHEARSE - This will switch on/off the record rehearsal function.

REC TRACK - These options allow any of the record tracks to be switched on/off by a GPI control.

REC TRACK ON - These options allow any of the record tracks to be switched on by a GPI control.

REC TRACK OFF- These options allow any of the record tracks to be switched off by a GPI control.

PLAY TRACK - These options allow any of the playback tracks to be switched on/off by a GPI control.

EDIT TRACK 1 .. 8 - Select EDIT TRACK (for Track Slip)

SLIP +1 FRAME - Slip track(s) selected by EDIT TRACK 1..8 by +1 frame.

SLIP -1 FRAME - Slip track(s) selected by EDIT TRACK 1..8 by -1 frame.

SLIP +1 SUB-FRAME - Slip track(s) selected by EDIT TRACK 1..8 by +1 sub-frame.

SLIP -1 SUB-FRAME - Slip track(s) selected by EDIT TRACK 1..8 by -1 sub-frame.

F1/F2 are used to move the cursor between the Active and Function fields. The Prev/Next keys (F3/F4) are used to scroll up and down through the list of GPIs.

The applications for these inputs are enormous. You may, as mentioned, build a simple play only remote. You may use the GPOs of another machine to remotely control the DD8 (for example, a dialogue recording looping recorder). Some mixing consoles have simple transport controls which could be wired for simple remote control of a DD8. There are many possibilities!

Press EXIT (F6) to leave this page.

**GPO**

Pressing F5 - GPO - gives this screen:

GPO SETUP	Active	Function
GPI 1	LOW	RECORD TRACK 1
GPI 2	LOW	RECORD TRACK 2
GPI 3	LOW	RECORD TRACK 3
GPI 4	LOW	RECORD TRACK 4
←	→	Prev Next GPI EXIT

This page allows you to set the parameters for the General Purpose Outputs (GPOs). The parameters are:

**ACTIVE** Allows you to select OFF, HIGH or LOW. OFF switches the GPO function off. HIGH selects that the GPO is normally low (0V) and when the selected function is activated, the output will be pulled up to the voltage at the GPO pullup pin. When set to LOW, the GPO is pulled to 0V when the selected function is activated.

**FUNCTION** A variety of functions may be applied to the GPOs. These are:

**PLAYING** - The GPO will change level when PLAY is activated.

**STOPPED** - The GPO will change level when STOP is activated.

**LOCATING** - The GPO will change level while locating to a timecode position.

**RECORDING** - The GPO will change level when RECORD is activated.

**EXT TIMECODE OK** - The GPO will change level while external timecode is being successfully received.

**EXT WORDCLOCK OK** - The GPO will change level while external wordclock is being successfully received.

**EXT TIME LOCK** - The GPO will indicate when the transport is successfully locked to external timecode.

**REC TRACK** - These options allow a tally to be sent when any of the record tracks are switched on/off.

**REHEARSE** - These options allow a tally to be sent when rehearse mode is enabled.

**TRACK SLIP 1 ..8** - These options allow an appropriate tally to be generated when a track is slipped.

F1/F2 are used to move the cursor between the Active and Function fields. The Prev/Next keys (F3/F4) are used to scroll up and down through the list of GPIs.

Applications for the GPOs are varied and one that immediately springs to mind is that of using one of the GPO outputs set to RECORDING to turn on a red light every time you drop into record.

Press EXIT (F6) to leave this page.

### NOTES ON CHOOSING A DISK DRIVE

You will probably have bought your DD8 with a disk drive installed. If, however, you are supplying your own disk drive, please bear the following in mind.

Theoretically, any disk drive that conforms to the SCSI implementation may be used with the DD8 and you will get more or less tracks and time depending on the speed and size of the disk. Basically, any modern disk drive should work - in fact, with the speed of current hard disks, it would be difficult to find a drive that didn't give a fairly healthy number of tracks! It is only with older drives you may experience performance problems but, even then, the DD8 will try the best it can to get as many tracks off disk as possible. You should be able, therefore, to connect any SCSI drive and it should work.

However, please be wary of a few things. For a start, don't take for granted the specifications given in brochures for disk drives. They may quote quite fast access speeds but they may not be strictly accurate and many of them quote 'best case' figures. Also, buying a disk drive with a fast access speed is not a guarantee of achieving lots of tracks as data bandwidth (i.e. the data transfer rate - usually expressed in Megabytes Per Second) is also crucially important and a slow drive with a high bandwidth may give better results than a disk whose access speed is quoted as being extremely fast. One other point to bear in mind is that some disks do not maintain a constant bandwidth across the disk and you will find that some drives are very fast at one end of the disk but extremely slow at the other. The same may be true of disk access speed. Beware of specifications that quote "average" figures for disk speed as they may not give you a true indication of what the disk is capable of across the whole disk. Furthermore, different drives' SCSI implementation can vary quite dramatically. In our tests, a drive with an access speed of around 10 milliseconds and a transfer rate of around 3Megabytes per second should be able to give eight disk tracks.

As a result of all of this, AKAI professional cannot guarantee that you can just hook up any SCSI drive and expect it to work. It is impossible for AKAI professional to test every drive in the world as there are so many to choose from. However, as more and more people use the DD8 and try out different drives, we will gradually find out which drives give the best performance, which drives are not really suitable and which drives just cannot be used. As this will vary from country to country, you should speak to your local distributor about which drives are recommended.

### NOTES REGARDING SCSI

The DD8 communicates with disk drives using SCSI so, as mentioned elsewhere in this manual, you must be aware of some restrictions imposed by SCSI.

- 1 Every device (i.e. every disk drive) on the SCSI chain **MUST** have unique SCSI IDs. Failure to observe this will cause problems and unreliability. The maximum numbers of disks you can have on-line at any one time is seven (SCSI ID#0-6).
- 2 The recommended **TOTAL LENGTH** of the SCSI chain must not exceed 6 metres.
- 3 It is important to install the correct termination. Usually, the rule is that the first and last devices in the chain must be terminated and all devices in between should not be terminated.
- 4 Always use high quality SCSI cables. Cheap ones may seem an attractive proposition but can cause unreliability. Cheap, unshielded SCSI cables may also introduce unwanted noises into your audio system, especially if audio and SCSI cables are in close proximity to each other.

Failure to observe any of the above can result in problems and unreliability.

However, assuming your system is set up correctly, you should have no problems. If you have any doubts at all, please contact your local distributor who will be able to help and advise you.

**NOTES REGARDING THE USE OF MULTIPLE DISK DRIVES**

The DD8 can have several disk drives on line at any one time and these may be a combination of fixed hard disk drives or removable disk drives. The DD8 can play audio from any disk at any time. Furthermore, a single project can access audio from any disks that are on-line. For example, a project could be playing music from one disk, sound effects from another, foley from another and dialogue from another. However, please note that when using removable disks (i.e. MO disks), it is vital that the correct disks accompany the project if it is transferred elsewhere. In the above example, if the disk containing the foley did not accompany the project when it is transferred to the mix down room, the foley would not play. However, you will note that the rest of the project will play correctly - you simply won't hear the foley cues until that disk is put on-line.

Note that there is no restriction into which drive a removable disk can be placed. If, on System A, the music disk was on Drive ID#0, the sound effects on Drive ID#1, the foley on Drive ID#2 and the dialogue on Drive ID#3, they do not necessarily have to be in that order when transferred to another System B (i.e. you could swap all the disks around and everything would still play perfectly). This allows a lot of flexibility when transferring disks from one system to another as each system may be set up slightly differently (for example, one system may use SCSI IDs 0-3 whilst another uses 1-4 and another uses 0, 2, 5 and 6). In all cases, the projects will play back correctly regardless of the SCSI ID of the drive any disk is placed in and you won't have to re-edit projects to allow for different system configurations.

The only problem you may have is when an MO disk is transferred elsewhere and the audio becomes 'detached' from the project. Basically, what you must remember is that when transferring MO disks from one system to another, try to ensure that the audio does not get 'detached' from the project.

### OPTION BOARD INSTALLATION

**CAUTION - These instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.**

The DD8 can accommodate several options. Some of these are installed from underneath and the others from the top. The options installed on the top side are the IB-D8AD 8-channel Analog Input Board, the IB-D8DA 8-channel Analog Output Board, IB-D8TIF TASCAM Digital Interface Board, IB-D8MA24 Multi-channel AES/EBU Digital Interface Board, IB-802T SMPTE/EBU Interface Board, IB-803M MIDI Interface Board, IB-804A ADAT Interface Board, IB-805R RS422 Interface Board, IB-806B Biphase Interface Board and IB-808G GPI/O Interface Board.

The options installed from underneath include the EDO SIMMs memory board (not made by AKAI) for buffer RAM expansion, the EQ8 Equaliser Board, and the internally mounted Disk Drive.

To install any of these options, you must first remove the top and/or bottom cover(s) of the case.

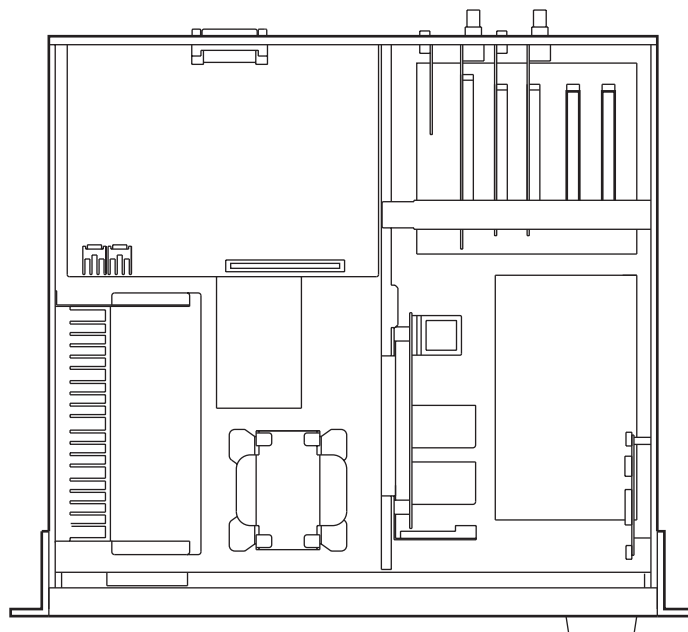
**\*\* IMPORTANT NOTE \*\***

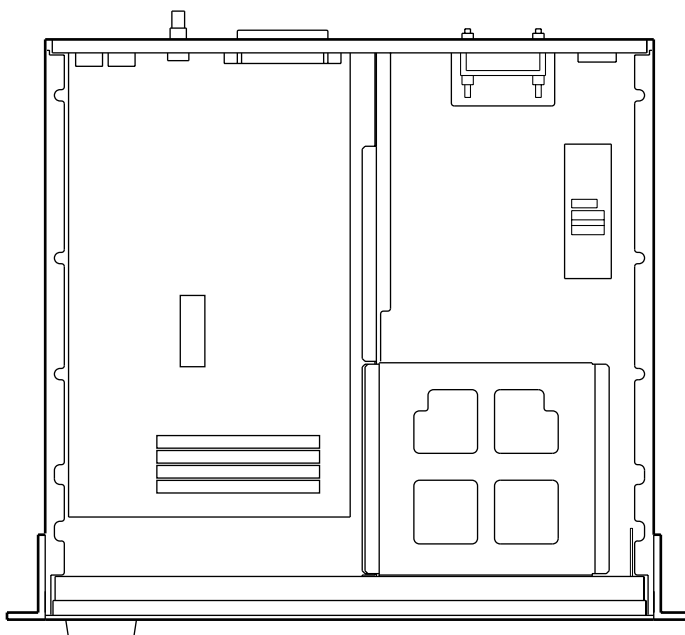
**Consult your AKAI professional dealer for installation of any options (including memory) to the DD8. Self-servicing may cause malfunction of components or the unit itself. AKAI professional does not guarantee against the unit's malfunction, damage or any loss caused by self-servicing or improper operation.**

Remove the top cover by undoing the two large screws on either side of the case and the smaller screw in the centre of the top of the rear panel. Remove the bottom cover by loosening the ten screws on the bottom cover.

Looking inside the DD8, you will see something like this:

### TOP VIEW



**BOTTOM VIEW****INSTALLING IB-D8DA 8-CHANNEL ANALOG OUTPUT BOARD**

The IB-D8DA 8-channel analog output board needs to be installed in the DD8 to allow use of analog outputs.

Remove the connector cover for the analog output terminal (25-pin D-sub connector) by loosening the two screws on the rear panel. Place the IB-D8DA board in place (remove the two hex screws on the D-sub connector first) and fix it with the four screws in the IB-D8DA package and two hex screws on the connector. Connect the P5 (4-pin) cable from the Power Supply P.C. Board to P3 (4-pin) and P2 (3-pin) cable on the IB-D8DA board to P6 (7-pin) on the Power P.C. Board. Then securely connect the far end of the 60-pin AD/DA cable (included with the DD8 in a separate package) between P1 on the IB-D8DA board and P103 on the CPU P.C. Board (located underneath the unit). Tie the cable with the tie-band (included with the DD8 in a separate package) to the chassis.

If the IB-D8AD 8-channel analog input board is installed at the same time, use the second connector instead of the first one of the 60-pin AD/DA cable. The same 60-pin cable is used for both the IB-D8AD and IB-D8DA boards.

**INSTALLING IB-D8AD 8-CHANNEL ANALOG INPUT BOARD**

The IB-D8AD 8-channel analog input board needs to be installed on the DD8 to input analog signals.

Remove the connector cover for analog input terminal (25-pin D-sub connector) by loosening the two screws on the rear panel. Place the IB-D8AD board in place (remove the two hex screws on the D-sub connector first) and fix it with the four screws in the IB-D8AD package and two hex screws on the connector. Connect the P2 (7-pin) cable on the IB-D8AD board to P7 (7-pin) on the Power Supply P.C. Board. Then securely connect the far end of the 60-pin AD/DA cable (included with the DD8 in a separate package) between P1 on the IB-D8AD board and P103 on the CPU P.C. Board (located underneath the unit). Tie the cable with the tie-band (included with the DD8 in a separate package) to the chassis.

If the IB-D8DA 8-channel analog output board is installed at the same time, use the second connector for the IB-D8DA board. The same 60-pin cable is used for both the IB-D8AD and IB-D8DA boards.

### INSTALLING DIGITAL INTERFACE BOARD

The IB-D8TIF TASCAM digital interface board needs to be installed in the DD8 to transmit or receive digital audio in TASCAM format (8-channel). It also provides the interface to connect with the TASCAM's MU-8824 Meter Bridge on a separate board.

The IB-D8MA24 multi-channel AES/EBU digital interface board needs to be installed in the DD8 to transmit or receive digital audio in AES/EBU format (8 channel).

The IB-804A ADAT interface board needs to be installed in the DD8 to transmit or receive digital audio in 8-channel ADAT format.

Remove the connector cover (5th slot from the left on the rear panel) for the digital interface board by loosening the two screws on the rear panel. Remove the board holder by loosening the two screws. Place the digital interface board in place and connect its connector to P209 on the Mother P.C. Board. Fix the board with the two screws on the rear panel that have been removed previously. Then replace the holder and tighten it with the two screws.

When the IB-D8TIF is installed, remove the 6th cover from the left on the rear panel for the Meter Bridge interface board. Place and secure the interface board into the slot as done for the main interface board.

**Note:** Only one digital interface board can be installed on the DD8 at a time.

### INSTALLING GENERAL PURPOSE INTERFACE BOARDS

The DD8 has four slots for the following General Purpose Interface Boards that may be installed in any one of the slots (apart from the one reserved for the digital option board).

The IB-802T SMPTE/EBU interface board, when installed, allows the DD8 to receive and generate SMPTE/EBU time code.

The IB-803M MIDI interface board, when installed, allows the DD8 to accept MMC controls and generate MTC.

The IB-805R RS422 interface board, when installed, allows the DD8 to be controlled using Sony™ P2 protocol via the RS422 port.

The IB-806B Biphase interface board, when installed, allows the DD8 to be synchronised via biphase pulses.

The IB-808G GPI/O interface board, when installed, allows the DD8 to accept controls via GPI/O port.

Remove the two screws from the board holder. Then remove the connector cover (1st to 4th slot from the left on the rear panel) for general purpose interface board by loosening the two screws on the rear panel. Place the interface board in place and connect its connector to the appropriate connector (P205 to P208) on the Mother P.C. Board. Fix the board with the two screws on the rear panel that have been removed previously. Replace the board holder with two screws.



**INSTALLING BUFFER RAM EXPANSION**

The DD8's internal buffer RAM memory can be expanded by installing one EDO SIMM RAM board in the slot labelled J6. Installation is fairly simple. The SIMMs board is inserted to the slot at a slight angle and then pushed back where it clips into place. Because SIMMs boards can differ, it is not possible to say "Install them with the components facing the front of the DD8" or anything like that because some SIMMs boards have the memory chips mounted on both sides sometimes. However, the boards can only be inserted one way so you shouldn't have any problems but be careful not to force them into place otherwise they may snap.

**INSTALLING EQ8 EQUALISER BOARD**

The DD8 can support the EQ8 equaliser board to maintain data compatibility with disks which have been created by the DR8, DR16 or DD1500 with an EQ board.

Remove the four screws on the CPU P.C. Board and replace them with the four mounting posts provided with the EQ8 package. Place the EQ8 board and connect its connector to the connector (J3) on the CPU P.C. Board. Then fix it with the four screws removed previously.

Please note that it is not possible to adjust the EQ parameters from the DD8 itself. This board is just to maintain data compatibility.

**INSTALLING INTERNAL DISK DRIVE**

A Disk Drive can be mounted inside the DD8. The SCSI disk drives that can be mounted internally are 5.25-inch half height MO Drives, 5.25-inch half height Removable HD Cart Bays or any other removable media drives with an adapter to cover the 5.25-inch half height opening.

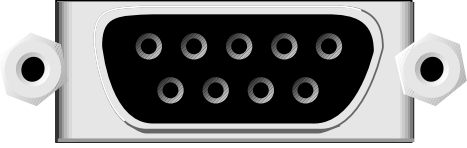
Remove the Front Panel by loosening the six screws on its top and bottom (3 screws each) then take the mask cover off for the drive bay opening by pressing it from the front (assuming the top and bottom covers have been removed already). Then place the Front Panel back on and tighten the screws. (Please make sure that there's no dust in between the screen or meters and the windows.)

Insert (slide in) the drive bay from the front and fix it with the four screws provided from the bottom (The different screws are required depending on the drive, one is mm-threaded and the other is inch-threaded. Use the appropriate screws.). Then connect the 50-pin SCSI cable between the SCSI connector on the drive unit and the P202 connector on the CPU P.C. Board. Also, connect the 4-pin power cable between the Power Connector on the drive and P2 on the Control P.C. Board (located on the top side). The necessary screws and cables are packaged separately in the DD8 box.

**PIN WIRING - DD8 (and option boards)**

**PRE-READ OUTPUT**

**PRE-READ OUTPUT**

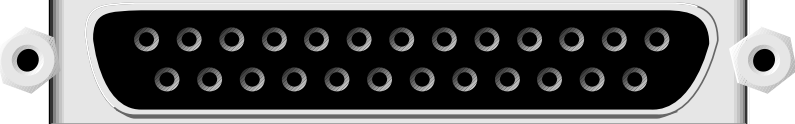


D-Sub 9 Pin Female

PIN	SIGNAL
1	Ground
2	Track 2
3	Track 4
4	Track 6
5	Track 8
6	Track 1
7	Track 3
8	Track 5
9	Track 7

**ANALOG INPUT/OUTPUT CONNECTIONS**

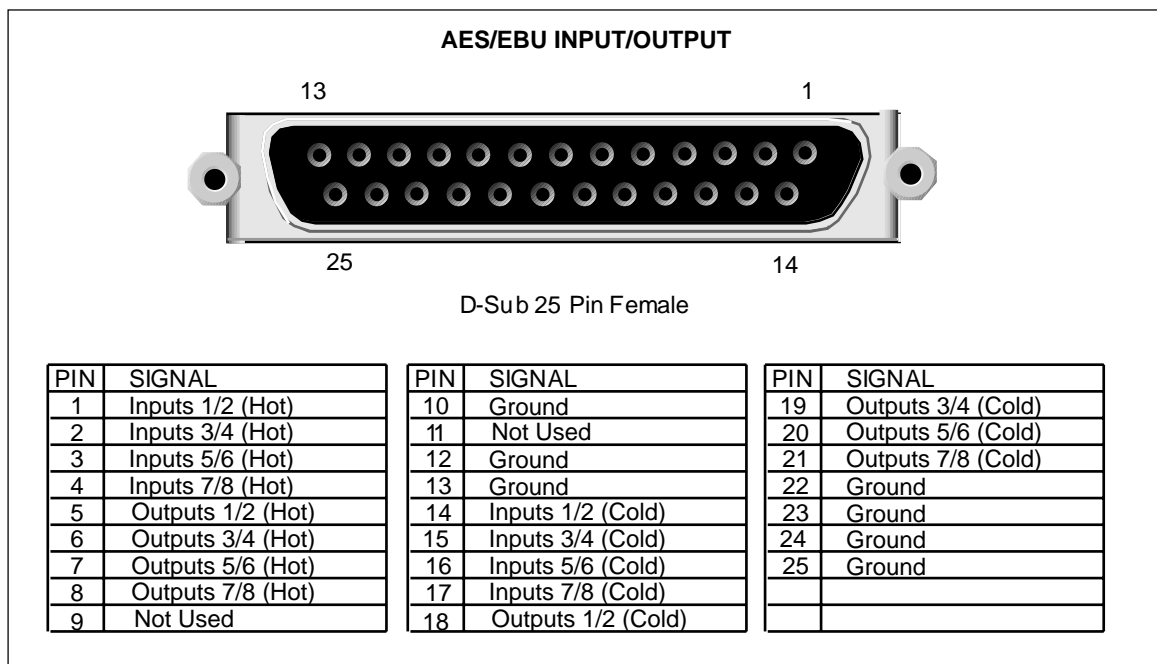
**ANALOG INPUT/OUTPUT**



D-Sub 25 Pin Female

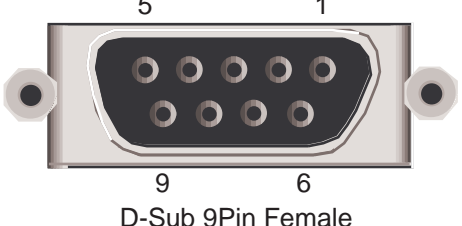
PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	Track 8 (Hot)	10	Track 2 (Hot)	19	Track 5 (Ground)
2	Track 8 (Ground)	11	Track 2 (Ground)	20	Track 4 (Cold)
3	Track 7 (Cold)	12	Track 1 (Cold)	21	Track 3 (Hot)
4	Track 6 (Hot)	13	No Connection	22	Track 3 (Ground)
5	Track 6 (Ground)	14	Track 8 (Cold)	23	Track 2 (Cold)
6	Track 5 (Cold)	15	Track 7 (Hot)	24	Track 1 (Hot)
7	Track 4 (Hot)	16	Track 7 (Ground)	25	Track 1 (Ground)
8	Track 4 (Ground)	17	Track 6 (Cold)		
9	Track 3 (Cold)	18	Track 5 (Hot)		

AES/EBU INPUT/OUTPUT CONNECTIONS



RS422 9-PIN CONNECTION

**VTR CONTROL**



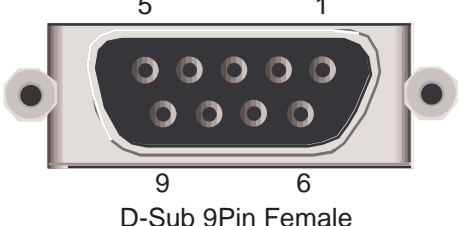
D-Sub 9Pin Female

**RS422 LEVEL**

PIN	RS422 MASTER	RS422 SLAVE
1	Frame Ground	Frame Ground
2	Receive A	Transmit A
3	Transmit B	Receive B
4	Transmit Common	Receive Common
5	No Connection	No Connection
6	Receive Common	Transmit Common
7	Receive B	Transmit B
8	TransmitA	Receive A
9	Frame Ground	Frame Ground

BI-PHASE INPUT

**BI-PHASE SYNC INPUT**



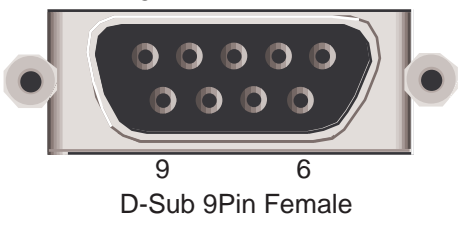
D-Sub 9Pin Female

**TTL LEVEL**

PIN	SIGNAL
1	No Connection
2	Ground
3	RZ (Input)
4	No Connection
5	+5V (Output Imp 22Ω)
6	Ground
7	SZ (Input)
8	No Connection
9	Frame Ground

BI-PHASE OUTPUT

**BI-PHASE SYNC OUPUT**



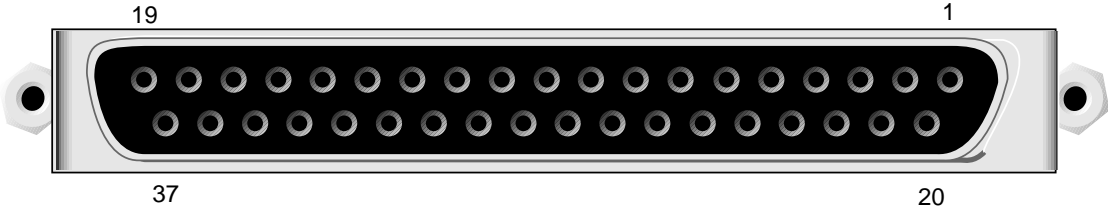
D-Sub 9Pin Female

**TTL LEVEL**

PIN	SIGNAL
1	No Connection
2	Ground
3	RZ (Output)
4	No Connection
5	+5V (Output Imp 22Ω)
6	Ground
7	SZ (Output)
8	No Connection
9	Frame Ground

**PARALLEL (GPIO) CONNECTIONS**

**PARALLEL (GPIO) CONNECTIONS**



D-Sub 37 Pin Female

**Pin Connections**

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	GPI 1 (In)	14	GPO 11 (Out)	27	GPO 8 (Out)
2	GPI 2 (In)	15	GPO 12 (Out)	28	GPO Common
3	GPI 3 (In)	16	GPO Common	29	GPI 13 (In)
4	GPI 4 (In)	17	GPO 9 (Out)	30	No Connection
5	GPI 5 (In)	18	GPO 10 (Out)	31	Ext. Sw 0
6	GPI 6 (In)	19	GPO Common	32	Ext. Sw 1
7	GPI 7 (In)	20	GPO 1 (Out)	33	Isolated +5v
8	GPI 8 (In)	21	GPO 2 (Out)	34	GPO Pullup
9	GPI 9 (In)	22	GPO 3 (Out)	35	GPI 14 (In)
10	GPI 10 (In)	23	GPO 4 (Out)	36	GPI 15 (In)
11	GPI 11 (In)	24	GPO 5 (Out)	37	GPI 16 (In)
12	GPI 12 (In)	25	GPO 6 (Out)		
13	GPI Common	26	GPO 7 (Out)		

**Pin Connections (Default GPIO assignments)**

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	Rec Cmd Track 1 (In)	14	Rehearse Tally (Out)	27	Rec Tally Track 8 (Out)
2	Rec Cmd Track 2 (In)	15	Mag/Multi Tally (Out)	28	Tally Common
3	Rec Cmd Track 3 (In)	16	Tally Common (Out)	29	Spare Command (In)
4	Rec Cmd Track 4 (In)	17	Record Tally (Out)	30	No Connection
5	Rec Cmd Track 5 (In)	18	Play Tally (Out)	31	Ext. Switch 0
6	Rec Cmd Track 6 (In)	19	Tally Common	32	Ext. Switch 1
7	Rec Cmd Track 7 (In)	20	Rec Tally Track 1 (Out)	33	Isolated +5v
8	Rec Cmd Track 8 (In)	21	Rec Tally Track 2 (Out)	34	Tally Pullup
9	Play Command (In)	22	Rec Tally Track 3 (Out)	35	All Track Play Cmd (In)
10	Record Command (In)	23	Rec Tally Track 4 (Out)	36	All Rec Ready Cmd (In)
11	Stop Command (In)	24	Rec Tally Track 5 (Out)	37	All Mute Cmd (In)
12	Rehearse Cmd (In)	25	Rec Tally Track 6 (Out)		
13	Command Common	26	Rec Tally Track 7 (Out)		

**PARALLEL (GPIO) INTERFACE (Electrical Specifications)**

**Inputs**

The inputs may be driven by passive contact closures as from mechanical switches, or from open collector NPN transistors, or from active CMOS or TTL circuits. In all cases, the driver must be able to sink adequate current to operate the optocoupler receivers on the GPIO option board. All inputs share the same common electrical return path, GPI COMMON. The inputs are electrically isolated from the DD8.

Number of Inputs .....	12
Input LOW voltage: .....	0 – > +1V
Input HIGH voltage: .....	+3.3V – > +50V
Max input current (input shorted to GPI COMMON): .....	–5.2mA
Max allowable leakage current for input HIGH: .....	–200µA

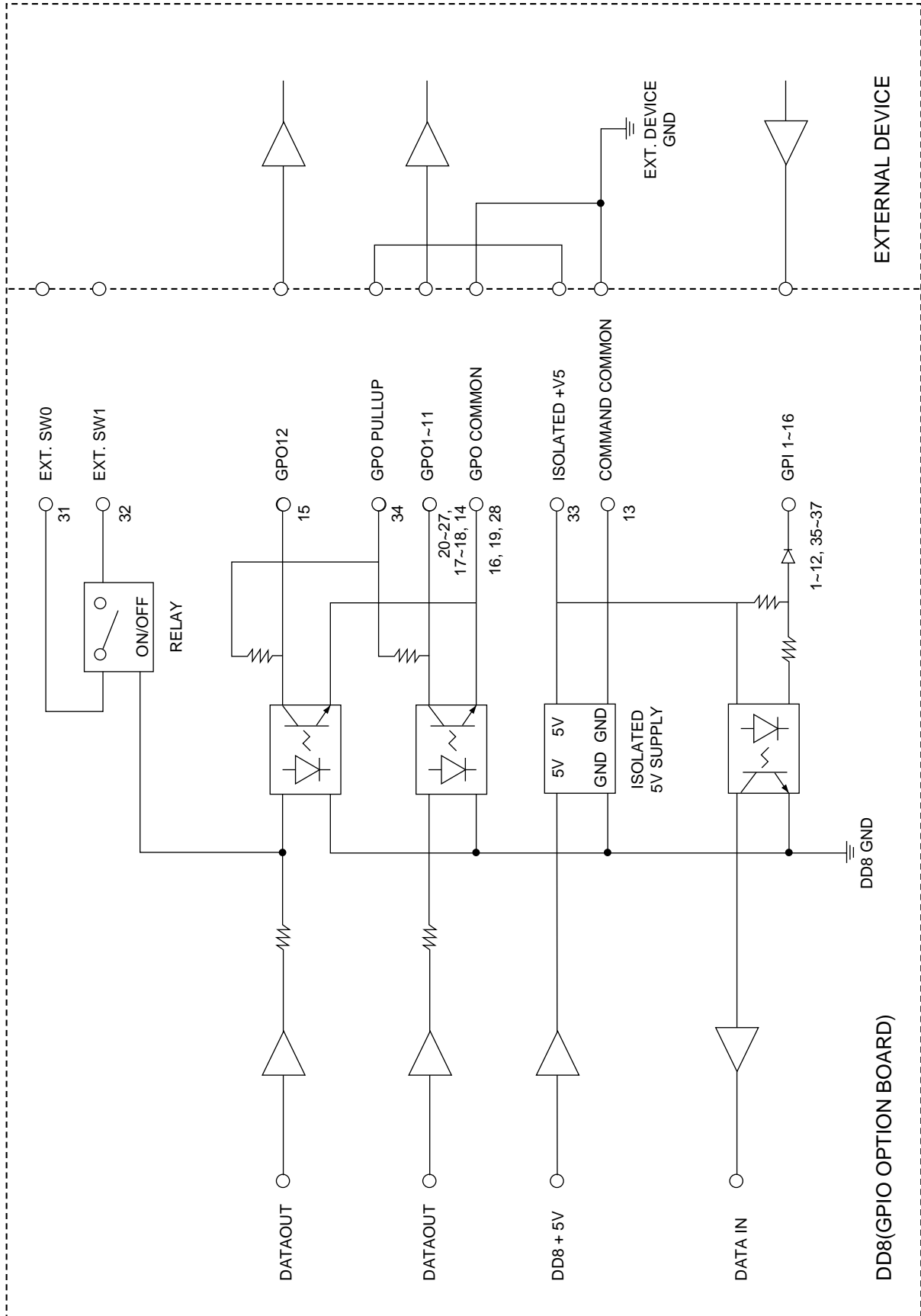
**Outputs**

The outputs are optically isolated solid-state relays. These are capable of driving LED or incandescent indicators or mechanical relays or logic circuits. In all cases, power for the indicators etc. must be supplied externally. When the relays are open, the outputs may optionally be pulled up to the internally isolated +5V supply or to an external supply depending by linking the relevant pins on the connector. The outputs can switch DC or AC and share the same common electrical return path, GPO COMMON. The outputs are electrically isolated from the DD8.

Number of Outputs .....	16
Max current per output: .....	+/- 350mA
Max ON resistance: .....	2.5 Ω
Max OFF state voltage: .....	+/- 100V
Max OFF state leakage current: .....	1µA

Additionally, one of the GPO also controls a relay on the option board that can be used to switch the operating mode of external equipment.

Relay contact rating: .....	0.5A/125V
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GPIO OPTION BOARD BLOCK DIAGRAM

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