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The staff at Akai would like to thank you for buying the DD1500. Developed by the same team of engineers that developed the Akai DD1000, the world's first Magneto Optical Disk recorder/editor, we are confident that the DD1500 will be a sound investment, offering many years of reliable service and will be a product you can rely on in your daily work.

The DD1500 is a powerful multi-track digital audio recorder and editor. Being a dedicated system with no host computer required, its performance is optimised for recording, editing and syncing audio to picture and so offers ease of use and speed of operation with no prior knowledge of computers and/or hard disk digital recording required.

The system comprises three main units:

**DD1500m** This is the system's main signal processor and contains custom LSI developed especially for the DD1500m. All the timecode interfaces you are likely to require such as SMPTE, BI-PHASE, VITC, RS422, etc., are provided as standard as well as a variety of wordclock inputs and outputs allowing the DD1500 to be integrated into virtually any professional work environment. Two digital AES/EBU inputs and outputs are supplied as standard and optional digital i/o boards may also be installed in the DD1500m.

**DD1500x** This is the system's disk drive. This can house up to two Sony 1.3GByte Magneto Optical (MO) disk drives or an MO and a fixed hard disk. It connects to the DD1500m using SCSI.

**DD1500a** This unit allows you to add analogue inputs and outputs to the system as you require. Each unit may contain up to eight inputs and eight outputs and two units may be used with the system.

**DL1500** This is the system's controller. It offers dedicated keys for most day-to-day functions making the system fast to learn and easy to use. Dedicated track select and transport keys and autolocator functions give it the feel of a normal MTR whilst sophisticated editing functions allow you to edit audio quickly and precisely. The specially designed jog wheel allows you to 'scrub' audio across all 16 tracks just like reel rocking ordinary tape and, using RS422 control of a VTR, you can jog audio and picture together.

The DL1500 also has a special custom LSI developed purely for generating the graphics you see on the external VGA monitor. Being optimised for the task, you will see that screen updating is exceptionally fast, offering smooth waveform scrolling and lightning fast zoom in and zoom out. At no time are you left sitting there waiting for the screen to update and waveforms to re-draw. A simple but effective colour scheme eliminates eye strain even in prolonged sessions. You will no doubt be pleased to know that the screen you see on the monitor is the only one you work in and there are no multiple, stacked 'windows' to confuse you and no separate record or edit modes to have to enter making operation fast and consistent.

# 1 - INTRODUCTION

---

## FEATURES

- 8-track operation (4-track record/8-track playback) with immediate removability on the Sony™ Magneto Optical (MO) disk (no back-up required). Record times for one side of a 1.3GByte MO disk are 1 hour 40 minutes of mono recording at 48kHz, 2 hours of mono at 44.1kHz and 3 hours of mono at 32kHz. Effective playback time can be extended using extra MO drives and up to seven drives in total may be connected using SCSI.
- 16-track operation (8-track record/16-track playback) using a fixed hard disk. The largest single drive the DD1500 can accommodate is 4Gbytes offering in excess of 12 hours of mono recording at 44.1kHz.
- SMPTE/EBU IN and OUT (at all frame rates), Bi-phase IN and OUT, VITC IN and RS422 (Sony™ P2 9-pin protocol) are all fitted as standard.
- As an RS422 MASTER, the DD1500 can be used to control video equipment for synchronised editing of sound to picture and RS422 SLAVE operation allows you to use a DD1500m as a slave device to a video editor.
- AUTO CONFORM function allows to import EDLs from external video editors with automated recording of source reels into the DD1500.
- The SMPTE output will re-generate fresh, electronic timecode from an external timecode source.
- The DD1500 will convert SMPTE/EBU timecode to Bi-phase and vice versa. It is also possible to convert one frame rate of timecode to another.
- The DD1500 will convert SMPTE/EBU timecode to MIDI clock and MIDI TIMECODE (MTC) and vice versa.
- The DD1500 can follow external timecode backwards and forwards, even at slow speeds. High speed rewind, fast forward, spooling and jogging is also possible.
- Wordclock and video sync inputs fitted as standard allowing synchronisation to house sync, digital audio and PAL/SECAM and NTSC video sync sources.
- Up to 20 analogue outputs may be installed (16 track outputs plus two stereo mix outputs A and B).
- 20-bit digital to analogue converters (DACs) with 8 x oversampling. Separating them in the DD1500a ensures high quality, interference-free analogue audio. All outputs use balanced XLR connections at +4dBm.
- Up to 12 analogue inputs may be installed and these may be freely assigned to tracks as you wish. All inputs use balanced XLR connections at +4dBm.
- 18-bit analogue to digital converters (ADCs) with 64 x oversampling.
- Three assignable General Purpose Inputs (GPI) and five assignable General Purpose Outputs (GPO) are fitted as standard.
- Custom LSI dedicated for signal processing ensures fast and reliable operation.
- DSP FUNCTIONS include Timestretch, Pitch shift, Varispeed, EQ and Reverse.
- 16-channel digital mixer contained in the DD1500m with external MIDI control (can be automated with an external MIDI sequencer).
- Dedicated MTR-style transport keys for play, stop, rewind, fast forward and record.
- MTR style autolocator with 100 locate memories and 100 'grab' markers.

- The JOG wheel allows you to 'scrub' audio across all 16-tracks for editing.
- Dedicated track select keys for easy selection of play, mute, edit and record.
- Dedicated keys for nearly all main editing functions (i.e. COPY, CUT, ERASE, PASTE, INSERT, TRIM, NUDGE). Lesser used edit functions are displayed on soft keys. Naturally, all editing is totally non-destructive.
- Easily managed DIRECTORY and LIBRARY system for importing files into projects.
- Dedicated fader and pan controls can be used to set levels and pan.
- Independent fade up and fade down for every cue with a choice of fade curves.
- Custom graphics LSI ensures fast screen re-drawing and updates on any size S-VGA monitor.
- The AKAINET link from the DD1500m to the DL1500 allows true remote control with virtually no limit on distance.
- A convenient digital audio link between the DD1500m and the DL1500 allows local monitoring on the DL1500 using headphones or powered speakers with no need for complicated mixing and audio setups.
- HELP function shows help messages on the DL1500's LCD.
- Printer port for printing out EDLs, Library contents, etc., for hard copy reference.
- MIDI connections for integration in musical environments with MTC output for synchronising sequencers plus automation of the internal mixer via a MIDI sequencer.

## 1 - INTRODUCTION

---

### **ABOUT THIS MANUAL**

This owner's manual has been written to provide you with the information to get the best from the DD1500. Although it is hoped that the DD1500 is easy enough to use without constant reference to this manual, please take the time to read it in order to understand the system 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 DD1500 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 DD1500 is being used in recording, editing and syncing 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. Throughout the manual, we will use the phrase "... to picture". This will refer to video or film with no particular bias. Of course, we also realise that the system will be used without reference to picture (in radio drama for example) but the functions described are equally applicable.

As with any piece of new gear, there is always a bit of new jargon to get to grips with. The DD1500 is no exception! What follows, therefore, is a short list of some of the terms you will come across during the course of this manual.

- GRID** This stands for **GR**aphic **I**nterface **D**isplay and refers to the track display on the external monitor.
- PROJECT** This is where you do the bulk of your work on the DD1500 and contains all your recordings, edited and positioned as required and shown on the GRID. Think of it as a reel of multi-track tape if you like and the GRID as an animated track sheet. If you are working to picture, audio cues can, of course, be edited, slipped around and properly synced for playback against the visuals. A project on the DD1500 is actually nothing more than a Qlist or EDL except that, of course, on the DD1500, it is displayed graphically rather than as a list of timecode numbers and cue names.
- A PROJECT also contains autolocator memories, mixer settings, MIDI tempo maps, etc., and these are all saved with the project. The SYSTEM settings 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. For example, the status of the zoom on the tracks, the tracks selected for playback, editing and/or record, the sample rate, external timecode selection, input routing, etc.. All these will be explained later.
- NOW TIME** In the centre of the GRID are two vertical lines. The centre of these two lines is known as the NOW TIME and the actual NOW time is shown in the display above it (and on the timecode display on the DL1500). All work is done with referenced to this NOW time. For example, to select a cue for editing, move it to the NOW time and press SELECT CUE. Marking IN times and OUT times and locate memories is also done referenced to the NOW time. The NOW time timecode display is shown on the DL1500 and on the external monitor.
- CUE** This refers to a piece of audio from its start to its end in the GRID. In this manual, a cue may be referred to as "a stereo cue" - this is actually two mono cues across two (normally adjacent) tracks that make up a 'stereo' cue.
- EDIT REGION** This refers to the area selected between the IN and the OUT points. A track (or tracks) must be selected for editing and the edit region is highlighted green on the external monitor.
- IN TIME** This usually refers to the start of an edit. However, the IN TIME is used to set auto punch-in and cycle times as well. It is marked by pressing the large green IN key located above the jog wheel.
- OUT TIME** This usually refers to the end of an edit although it is also used to set auto punch-out and cycle times. It is marked by pressing the large green OUT key located above the jog wheel.
- SYNC POINT** This is a special marker you can place within an edit region or cue for sync purposes.

## 2 - TERMINOLOGY

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### **DIRECTORY**

The DIRECTORY is a list of all your LIBRARIES.

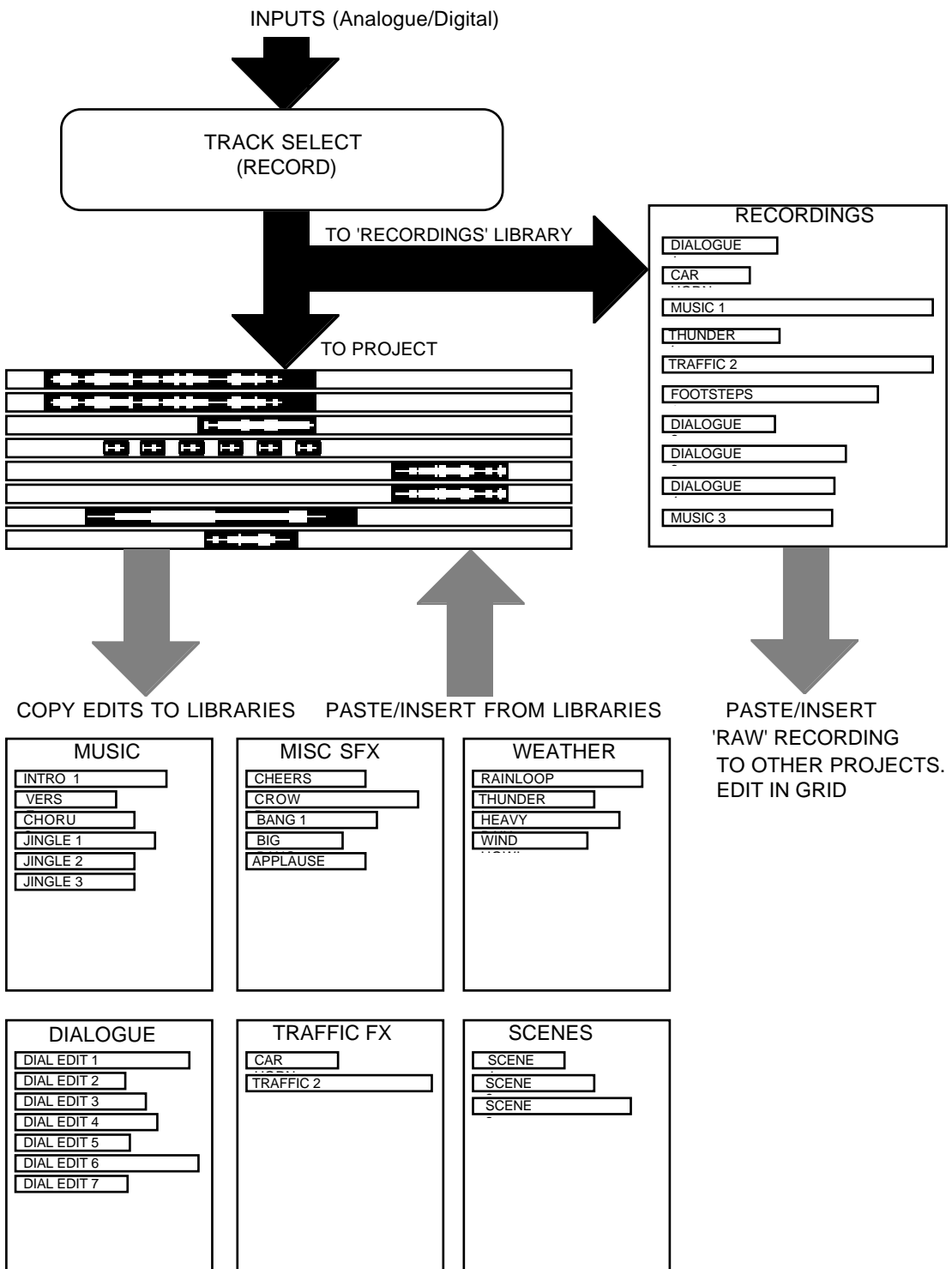
### **LIBRARY**

A library is a file in which you can keep CLIPS (see below) for pasting or inserting into projects. If you have used an Apple Macintosh™, you can think of them almost like folders where files can be conveniently kept together. Similarly, if you have used a PC, you can liken them to directories. For example, you may have a folder/directory on your computer where you keep all your accounts, another where you keep all your correspondence and another where you keep all your games. On the DD1500, you could have a library where all your 'raw' recordings are kept, another where you keep all your traffic sound effects, another where you keep all your animal sound effects, another where you keep all your music cues, etc.. When working, you may open a library at any time and paste or insert clips into your project. You can also copy edits you make in the GRID to a library.

### **CLIP**

A clip is a library item and can contain a single cue or several cues. It can also contain several cues across several tracks. In this way, a clip can be mono, stereo or multi-track. Usually, a clip is created by copying a cue (or cues) or an edit region into a library. That clip may then subsequently be re-used elsewhere by pasting it or inserting it from the library into the GRID where it becomes part of the project.

The following is a 'flowchart' of the DD1500.

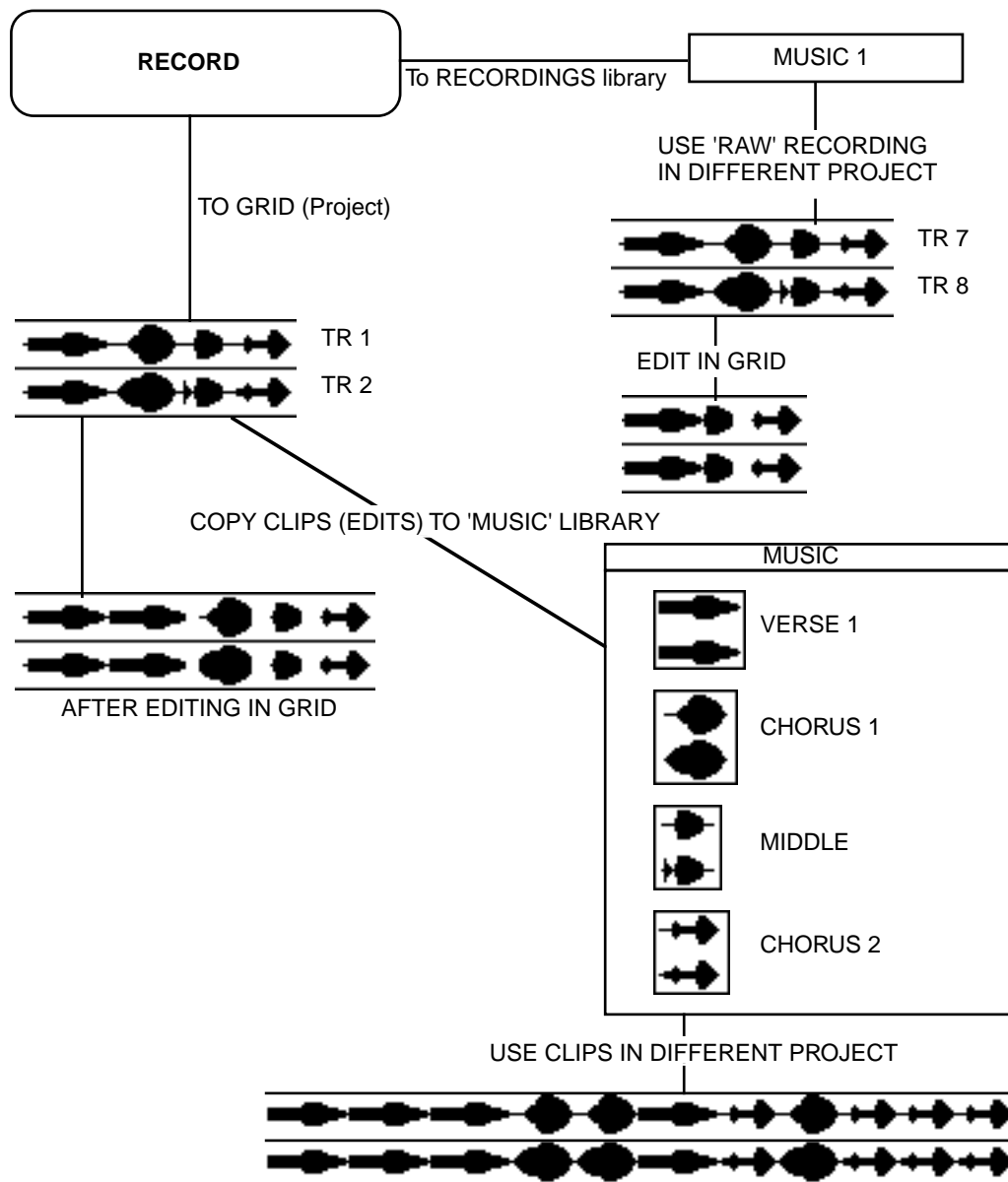


Audio is recorded through the inputs (analogue and/or digital) directly to tracks in the GRID where they may be edited, slipped, synced, etc.. At the same time as recording them into the GRID, the 'raw' recordings are normally placed in their entirety in a library where they may subsequently be re-used in other projects. In the above example, they are being placed in a library called 'RECORDINGS' so you always have access to these 'raw' recordings in the future. You may want to re-use them elsewhere but, also, by having them in this library, you also have a 'safety copy' of the original recording to revert to in the event of a mishap.

### 3 - HOW THE DD1500 WORKS

In the GRID, the source audio may be edited and that may be all you ever do with it! For example, you may record a long piece of dialogue onto track 1, edit out all the mistakes, coughs, breath noises and other unwanted artefacts and simply save the project. However, using the libraries, you may make certain edits in the GRID and copy them to libraries for use in other projects. For example, you may record a rain sound effect for the project you are currently working on and create a loop out of it. It may work out so well and you may be so pleased with the result that you may wish to use it another time so, copy it off to a library (called WEATHER, for example) and keep it for use in a future project. In this way, you can build up sound effects, atmos and music libraries, etc., as you work. Edits made in this way are not limited to just mono or stereo (one track or two tracks) - you could, if you wish, copy a multi-track edit across to a library for subsequent re-use. For example, you may build up a really good street scene using an assortment of sound effects of cars and traffic passing, crowd noises, weather and other ambience effects, etc., and copy the whole thing to a library for use in the future as a general purpose 'street' effect. Later on, when you use it in another project, you can edit and reposition the individual elements within the new project.

Let's look at the life of a typical piece of audio, in this case, a stereo music cue:





The music is recorded directly to tracks 1 and 2 of the project you are working on. At the same time, you can see it is also placed in a library called RECORDINGS (it could be called anything you like, however) and the recording is called MUSIC 1. In the GRID, the recording is cut up into smaller sections and these you copy off to a library called MUSIC where you have four clips called VERSE 1, CHORUS 1, MIDDLE and CHORUS 2. Also, in the GRID itself, you can see VERSE 1 has been copied and repeated, lengthening the whole cue. Some unwanted portions have also been removed.

You can also see that another project has been created and the clips you copied off to the MUSIC library have been used to create an alternative version of this piece of music.

Also in the diagram, you have pasted the 'raw' recording into yet another project (this time, pasting it in on tracks 7 and 8) and edited as appropriate to that project. So now, as you can see, we have done many things with this basic stereo music recording:

1. We have edited the recording in its original project and also copied those edits off to a library for future use.
2. We have used the edits from that library to make an alternative version of the music in another project.
3. We have also used the original 'raw' recording in another project to make yet another variation of it.

Of course, this procedure is not limited to music but could equally be used with dialogue, sound effects, etc., in mono or stereo (or, in fact, multi-track).

A project, therefore, may be built up in two distinct ways. Of course, you can record audio directly into the GRID at the timecode position you want it. That audio may subsequently be edited, trimmed, etc., as appropriate for the project. You may also import audio into the GRID from the libraries. In this case, it is assumed that you have built up a library of sound effects, music cues, etc., for general purpose use and all you have to do is find the place you want a specific sound effect to happen, find an appropriate audio clip and paste or insert it directly onto a track (or tracks). This can subsequently be re-edited, synced, slipped, nudged, trimmed, etc., as appropriate for the project.

## 4 - CONNECTIONS - DD1500M



The front panel of the DD1500m is very simple comprising just a single POWER ON/OFF switch and indicator. The rear panel, however, is a different matter! From left to right...

### DIGITAL INPUTS A AND B

There are two AES/EBU digital inputs on the DD1500m supplied as standard. These are on XLR type connectors and will accept AES/EBU signals as well as SPDIF signals. These inputs may be freely assigned to any track (or tracks) for recording. It is quite possible if you are deriving your audio digitally from DAT or CD, that these inputs may be sufficient for your system and one input may be patched to the digital outputs of the CD and the other to the DAT, selection being made when you assign the input(s) to the track(s) for recording.

It is possible to record through both digital inputs simultaneously provided the source material is synchronous and at the same sample rate.

### MIX A/MIX B DIGITAL OUTPUTS

These two AES/EBU digital audio outputs carry a stereo mix as set by the DD1500m's internal mixer. Level and pan may be set for tracks using the fader and pan control found on the DL1500 and individual cue's level and pan may also be set. In this way, you can achieve a totally digital mix of material (albeit without EQ) within the DD1500. Furthermore, MIX A and MIX B can have different mixes.

### OPTION SLOTS

The two option slots found above the digital inputs and outputs can accept more digital inputs using the DI04 and DO4 digital interface boards. In this way, up to 12 inputs and 12 track outputs may be added if you wish allowing you to integrate the DD1500 into a totally digital studio where you may be using a digital mixing console.

### ANALOGUE UNIT

This allows you to connect up to two DD1500a ADC/DAC units to add analogue inputs and outputs to the system.

Up to two DD1500a units may be connected to give a total of 12 analogue inputs, 16 analogue track outputs and MIX A and MIX B analogue outputs. All inputs are balanced +4dBm type.

**SMPTE IN**

This balanced connector receives SMPTE or EBU timecode to synchronise the DD1500 to external equipment. The DD1500 can receive SMPTE/EBU at all frame rates and this is set on the DL1500.

**SMPTE OUT**

This used to synchronise external devices to the DD1500. When receiving external timecode through the SMPTE input, the DD1500m can be set to generate fresh, electronic timecode at the SMPTE output. This may be useful if the source timecode is defective in any way (for example, coming from a tape that has a lot of dropouts). Furthermore, it is possible to set it so that the timecode being generated is different to that being received for those occasions where conversion from one frame rate to another is required or where you need to convert one timecode type to another (for example, converting SMPTE/EBU to bi-phase or vice versa).

**LEVEL**

A level control is also provided so that you may set the output level of the timecode.

**MIDI IN, OUT, THRU**

MIDI IN will accept MIDI data to control the DD1500's internal 16-channel mixer. Using a synchronised MIDI sequencer, mix data can be recorded into the sequencer to achieve automated mixing. The MIDI OUT will send out MIDI Clock and MIDI Time Code (MTC) for synchronising external MIDI sequencer. A tempo map function on the DD1500 allows tempo changes and time signatures to be programmed for more precise control over the external sequencer. The THRU passes a copy of the data received at the MIDI IN.

**WORDCK (A)/VIDEO SYNC (A) IN**

This BNC connection can accept TTL wordclock or video sync signals such as 'black and burst' house sync signals. The TERM switch allows you to switch video sync termination on or off. If the DD1500m is the last device in the chain of sync signals, termination should be ON but if the DD1500m is somewhere in the middle of a chain, it should be set to OFF.

It is recommended to synchronise the DD1500m to a common house sync source using this connection in order to maintain precise sync throughout your system.

**WORDCLOCK (B) IN/OUT**

This BNC connection functions as a wordclock output only and can be used when the DD1500 is being used as a wordclock master (for example, when sync'ing a digital mixing console).

**VIDEO - VITC/SYNC (B) IN**

This BNC connection has two uses. When you wish to lock playback to VITC, this connection should be used and the VITC signal is derived from the VTR's video output (also a BNC connection).

Another use for this connection is as an alternative video sync source. In this way, you may have, for example, a TTL wordclock signal connected to WORDCK (A) and a video sync signal connected to this input and switch between them as appropriate from the DL1500. When synchronising to a video sync source through this input, the correct termination should be set to ensure reliable operation.

**BI-PHASE SYNC IN**

This allows you to synchronise the DD1500 to film machines that generate bi-phase sync signals. You may set the system to synchronise to 24 and 25 frames per second and may select 2, 4 and 10 cycles from the DL1500.

**BI-PHASE SYNC OUT**

The DD1500m can generate bi-phase as well as sync to it and this connection allows you to synchronise external film machines to the DD1500. A variety of frame rates can be generated and these are set on the DL1500.

### VTR CONTROL

This allows you to connect video equipment fitted with RS422 interfaces for remote machine control. The protocol used is the Sony™ P2 9-pin protocol, pretty much the standard for machine control in broadcast. This allows you to control a VTR from the DL1500 causing it to play, stop, rewind, fast forward, locate and jog as you operate the DL1500. In this way, editing and syncing audio to picture on the DL1500 is an integrated operation.

The RS422 connections are also used to control an external RS422 device during the AUTO CONFORM process

The DD1500 may also be set to work as a slave to RS422 where it can be controlled by a video editor. This is useful in situations where you can compile the audio for a project as the picture is being edited.

### GPI/O

The DD1500m has three general purpose inputs (GPIs) and four general purpose outputs (GPOs) and these may be set to perform a variety of useful functions.

You may use the GPIs to cause the DD1500 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 simple remote controller for the DD1500 for simple applications (for example, a simple PLAY/STOP remote so that you can use the DD1500m as a playback device without needing a DL1500). Another example would be to use the GPOs of another device to remotely control the DD1500 (for example, use the GPOs of a dialogue replacement looping recorder to control the DD1500).

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.

### SCSI

The system's disk drives are connected to this 50-pin Amphenol SCSI connection.

### REMOTE - AKAINET/DIGITAL AUDIO OUT

These connections are for the DL1500. The AKAINET BNC connection is an Ethernet connection using a standard BNC cable<sup>1</sup>. It is essential that the TERM switch is switched to the ON position on both the DD1500m and the DL1500. Failure to do so will result in the two units not communicating with each other and the system will not work.

The DIGITAL AUDIO OUT 9-pin D-sub connection is a digital audio link between the DD1500m and the DL1500 that allows convenient remote line audio output and/or headphone monitoring on the DL1500 via the DL1500's built in Digital to Analogue Converters (DACs). The signal is an AES/EBU signal and has a theoretical maximum length of 50 metres.

### DIP SWITCHES

Please see APPENDIX 3.

### SIGNAL GND

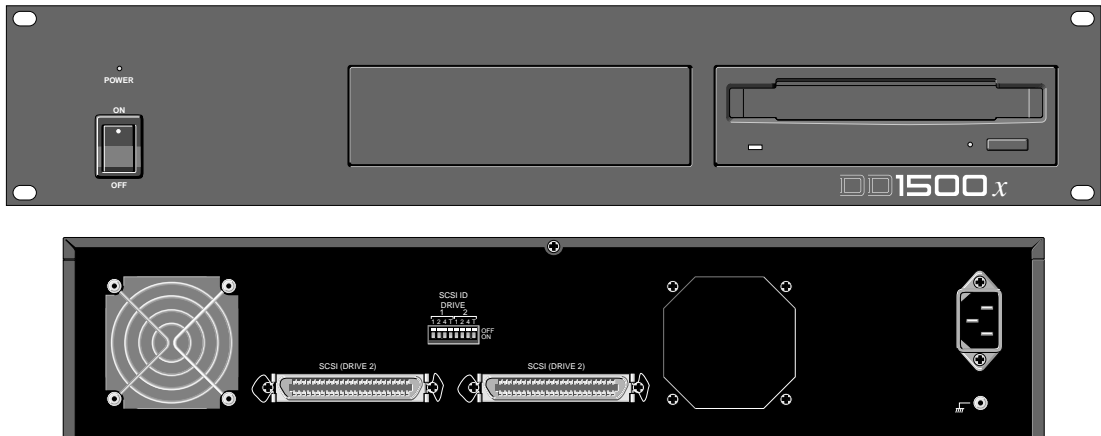
This allows you to earth the unit to reduce the possibility of ground loops in a complex setup.

### MAINS INPUT

Mains power is connected here.

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1 Ethernet is a standard protocol for communication between computers and is used as a means of networking a system of computers. The DD1500 uses Ethernet because, unlike SCSI, it allows true remote control with virtually no limit on cable length.



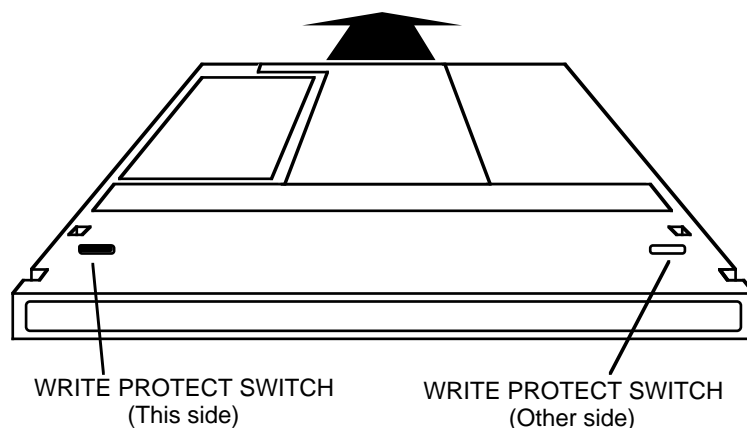
The DD1500x is the system's disk drive. It can accommodate up to two Sony™ 1.3Gbyte Magneto Optical (MO) disk drives or a combination of fixed hard disk drive and MO drive and connects to the DD1500m using SCSI.

When used with an MO drive, the system can record simultaneously up to four tracks and play back eight tracks. When used with a suitably fast fixed hard disk drive, the system can record up to eight simultaneous tracks and can play sixteen.

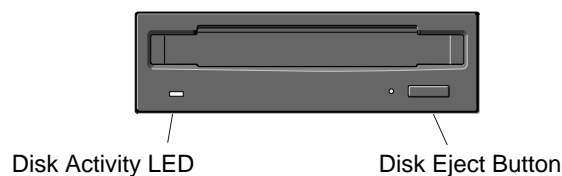
**NOTE 1:** You will note that installing two MO drives does not enable 16-track performance (i.e. 2 x 8 tracks). Similarly, installing a hard disk and an MO will not expand your track playback capability. However, it is possible to have some recordings played from one disk and others from another simultaneously provided the maximum number of tracks does not try to exceed the maximum number allowed by the slowest drive in the system. For example, if you try to use an MO and a hard disk, because of SCSI bandwidth limitations, the maximum number of tracks would be eight (for example, four tracks from the hard disk and four from the MO) as this is the maximum allowed by the MO drive which, in this case, is the slowest drive in the system. This is not a restriction imposed by the DD1500 but by SCSI.

### 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.

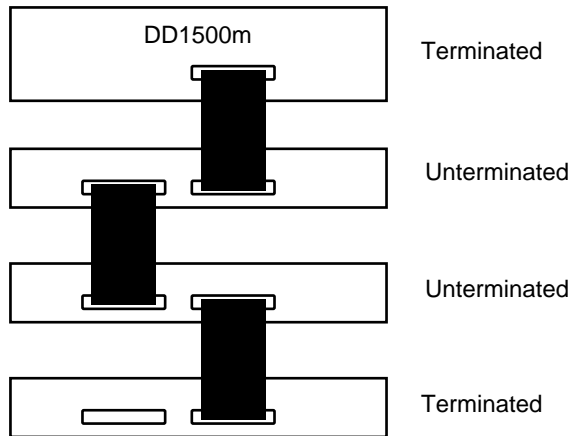
**NOTE:** *If there is some problem ejecting the disk and/or power is not applied to the drive, you can eject the disk by inserting a small metal tool in the small hole alongside the disk eject button. Something like a rolled out paper clip will do it but a special tool is recommended. This tool may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

Please consult your dealer about installing a second MO drive or hard disk drive.

**REAR PANEL CONNECTIONS**

The DD1500x's rear panel consists of two SCSI ports plus provision for two cooling fans. The SCSI ports are 50-way Amphenol connectors (i.e. standard SCSI connectors!) and connect to the DD1500m's SCSI port. The sockets are wired as 'thru' connections so if you wish to connect one or more extra drives, connect them to the unused port. I.e.:



As shown in the diagram, please pay particular attention to the termination of each drive. Failure to do so will result in erratic performance, even loss of data.

**\*\* NOTES REGARDING SCSI \*\***

1. The devices at each end of the SCSI chain **MUST** be properly terminated. The DD1500m is terminated internally and so you need not worry about that. The DD1500x has a DIP switch that allows you to turn termination on or off for each drive it may have. If you are using just one drive, then that should be terminated. If you are using two drives, the first drive should be un-terminated and the second drive must be terminated.

Please see the next page for details on termination on the DD1500x. If the drive you are using is not a DD1500x, you must consult the device's owner's manual.

Akai cannot guarantee the performance of drives other than those recommended and cannot accept liability for any problems you may experience with untested drives.

2. The total length of the whole SCSI chain must not exceed 6 metres otherwise you will get unpredictable performance, maybe even corruption of data. Please note that this refers to the **TOTAL LENGTH** of the chain, not the individual cables between each SCSI device.
3. Every SCSI device must have a unique SCSI ID number otherwise you will have problems as devices clash on the SCSI buss. For example, if two drives have an ID of 1 and the DD1500m sends out a message "PLAY THE RECORDING TAKE 3 ON THE DISK IN SCSI DEVICE#1", the system will fail because it will be trying to access both the drives looking for TAKE 3 and not know which it should choose. This is a common problem of all SCSI devices and is not a fault with the DD1500.

The DD1500 system can accommodate up to seven disk drives and it is good practice to set the SCSI IDs sequentially so you can keep track of things more easily (i.e. first drive ID#0, second drive ID#1, third drive ID#2, etc.).

**NOTE:** If the drive you are using is something other than a DD1500X, then it is likely that it will have two SCSI ports for 'daisy-chaining' devices as shown above.

## 4 - CONNECTIONS - DD1500X

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### DIP SWITCHES - SETTING SCSI ID AND TERMINATION

If you have just one DD1500x, you need not concern yourself with this too much as the correct SCSI ID will have been set at the factory. The default settings for a single drive is SCSI ID#0, termination ON and the rear panel DIP switches should look like this:



However, if you install another drive into the DD1500x, the DIP switches should be set thus:



SCSI ID#0 is still selected for the first drive but its termination is now OFF. SCSI ID#1 has been set for the second and it is terminated (you may, of course, set any SCSI ID you like as long as it does not contend with any others on the buss).

The following table shows how to set the DIP switches on the DD1500x for SCSI IDs 0-7:

SCSI ID	Switch Positions		
	1	4	7
0	OFF	OFF	OFF
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF
4	OFF	OFF	ON
5	ON	OFF	ON
6	OFF	ON	ON
7	ON	ON	ON

If you are using other drives in the system, then termination for the second disk in the DD1500x should be switched off and the other drives terminated or otherwise as appropriate.

If you are in any doubt about SCSI IDs and termination, please consult your dealer. Similarly, if you are in any doubt about setting up a system with more than one drive, please consult your dealer who will be able to advise you.

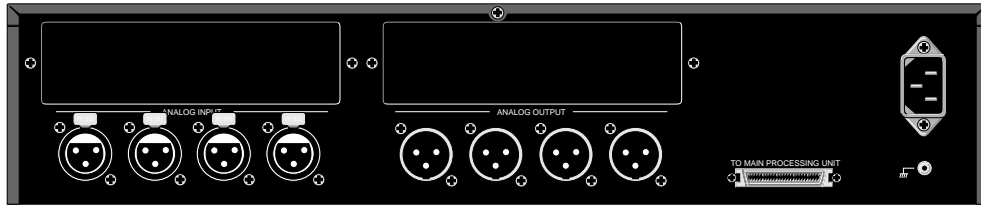
### SIGNAL GND

This allows you to earth the unit to reduce the possibility of ground loops in a complex setup.

### MAINS INPUT

Mains power is connected here.





The DD1500a contains the Analogue to Digital Converters (ADCs - inputs) and the Digital to Analogue Converters (DACs - outputs) for the system. The system can accommodate up to twelve inputs, sixteen track outputs and two stereo mix outputs A and B. These are housed in the DD1500a and the DD1500m may have up to two DD1500a units attached.

The DD1500a comes with four inputs and four outputs as standard and you can add inputs and outputs as you like according to your requirements, enabling you to build a system that suits both your needs and your budget. For example, if you are using a simple MO based 8-track system, you may choose to have just one DD1500a with two DA4 boards installed giving you four analogue inputs, eight analogue track outs and stereo mix outputs as well.

In a more complex setup, you may like to add another DD1500a for more inputs and outputs.

There are some things to note about the DD1500a.

UNIT 1, the first DD1500a in the system comes supplied as standard with four ins and four outs. The four inputs can be freely assigned to any track you like using the DL1500's input matrix routing. In many cases, this may be sufficient regardless of the type of disk you have and the number of tracks you are using. The 'hardwired' outputs on UNIT 1 are always set to output MIX A and MIX B. Should you wish to have eight track outputs, you must install two DA4 boards - you cannot use the 'hardwired' outputs supplied as standard as individual track outputs on UNIT 1 as these are always outputting MIX A and MIX B.

If you have a second DD1500a, the 'hardwired' outputs are tracks 9-12 and fitting two more DA4 boards would give you the remainder of the track outputs. Recommended configurations are shown below and a diagram of a fully expanded pair of DD1500a units is shown on the next page. If you are in any doubt about output configurations, please contact your dealer.

CONFIGURATION	UNIT 1	UNIT 2
8-TRACK - 4 INS/STEREO OUT	NO DA4/AD4 REQUIRED	UNIT 2 not req'd
8-TRACK - 4 INS/8 TRACK OUTS *	INSTALL 2 X DA4	UNIT 2 not req'd
16-TRACK - 8 INS/16 TRACK OUTS *	INSTALL 2 X DA4	INSTALL 1 X DA4
16-TRACK - 12 INS/16 TRACK OUTS *	INSTALL 1 X DA4/1 X AD4	INSTALL 2 X DA4

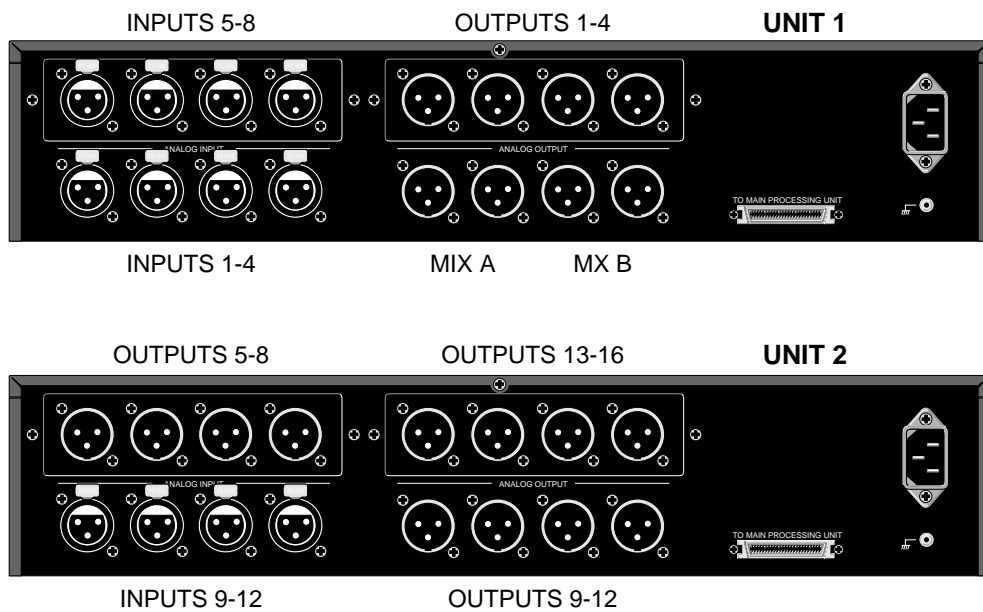
\* MIX A and MIX B can also be used in addition to the track

The DD1500a connects to the DD1500m using a special cable.

## 4 - CONNECTIONS - DD1500A

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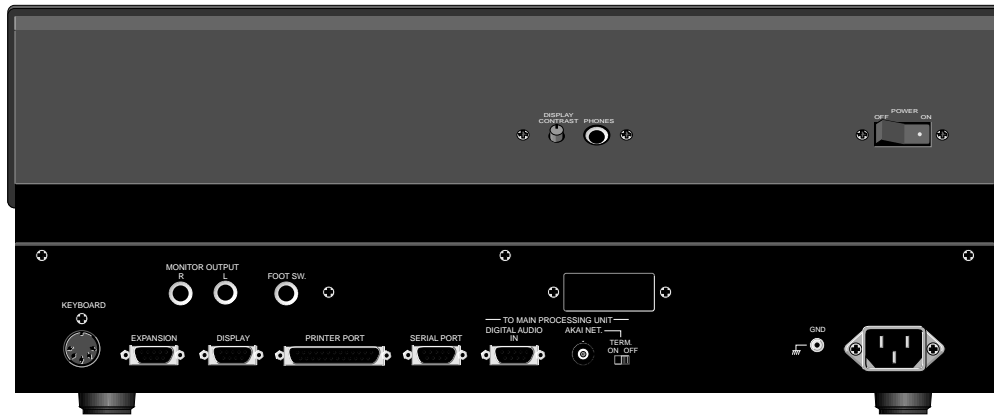
A fully loaded system's input and output configuration would be as follows:



UNIT 2 never has an optional AD4 board fitted.

**NOTE:** None of the inputs or outputs are labelled. Because of the modularity of the units, it is impossible to label them at the factory. However, 'scribble strips' are provided beneath each connector so that you may label them yourself according to your setup.

All inputs and outputs are balanced +4dBm XLR connections for professional use.



In this section, we take a look at the DL1500's rear panel connections. Actual operation of the DL1500 will be discussed later.

### UPPER PANEL

#### DISPLAY CONTRAST

This allows you to set the display contrast for the DL1500's LCD.

#### HEADPHONE

This 1/4" stereo jack socket allows convenient headphone monitoring when the DL1500 is being used without a mixing console. In order to use the headphone output, the DIGITAL AUDIO LINK must be connected (see below).

### LOWER PANEL

#### AUDIO MONITOR OUTPUT

This provides a convenient stereo monitor output on 1/4" jack connections for times when the system is not being used with an external mixing console. These may be connected to an amplifier and speakers or to powered monitor speakers. Of course, they could also be used as a simple stereo analogue output for mixing down (although you will find the converters used in the DL1500 are not as high quality as those used in the DD1500a). In order to use the monitor output, the DIGITAL AUDIO LINK must be connected (see below).

#### FOOT SW

This has no function in Version 2.00.

#### KEYBOARD

This 5-pin DIN socket will accept a standard IBM or compatible PC keyboard and is provided to make the naming of files easier.

#### EXPANSION CONNECTION

This has no function.

#### DISPLAY

This connects to any standard S-VGA monitor such as you would use with any PC. You will probably have bought a monitor with the system as supplied by your dealer but, if not, any reputable computer store will be able to sell you one. Any monitor should be able to be used but there are many monitors of different quality available (usually reflected in the price!) and some may not give as good results as others. For example, some may have a particular blue, red or green bias to them, others may not have particularly clear colour contrast and may appear 'hazy' or not have a particularly sharp focus. Other monitors can be sometimes show a faint image of screen items twice resulting in a 'ghostly' image that is difficult to read (especially text). If you are buying a monitor and have any doubts, please contact your dealer who will no doubt be able to recommend a suitable monitor.

## 4 - CONNECTIONS - DL1500

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Any size monitor may be used and the graphics automatically resize accordingly. You may even use very large RGB monitors but you will need a suitable S-VGA to RGB converter for this. Again, please speak to your dealer for information on choosing and connecting a monitor.

### PRINTER PORT

You may connect a standard Centronics printer to this connection and this may be used to print out projects as EDLs or for printing out the contents of libraries, etc..

### SERIAL PORT

This is used for our engineers' testing and development purposes only.

### DIGITAL AUDIO IN

This receives the digital audio link from the DD1500m and provides a convenient line out and headphone monitoring on the DL1500 when the system is not being used with any form of external mixing console. The DD1500m sends an AES/EBU signal of MIX A and MIX B to the DL1500. In order to keep cabling to a minimum, a 9-pin D-sub connection is used (as opposed to two bulky XLR cables). You will note that the maximum cable length allowed between the DD1500m and DL1500 is 50 metres. If longer lengths are required, you will need to use special 'line driver' interfaces. Please contact your dealer for information regarding these.

### AKAINET

This takes a standard BNC Ethernet cable and is used to control the DD1500m. You may use the cable provided but, if longer lengths are required, any reputable computer store should sell BNC Ethernet cables in a variety of lengths.

If you choose to use a cable other than the one provided, please make sure it is a high quality one. If there are any problems with the cable or the BNC plugs, you will have communications problems and erratic and unreliable performance.

### TERM

This switches termination for the AKAINET connection on or off. It must be ON.

***IMPORTANT NOTE: IT IS ESSENTIAL THAT TERMINATION IS SWITCHED ON ON BOTH THE DD1500M AND DL1500. FAILURE TO DO SO WILL RESULT IN THE SYSTEM NOT WORKING.***

### OPTION SLOT

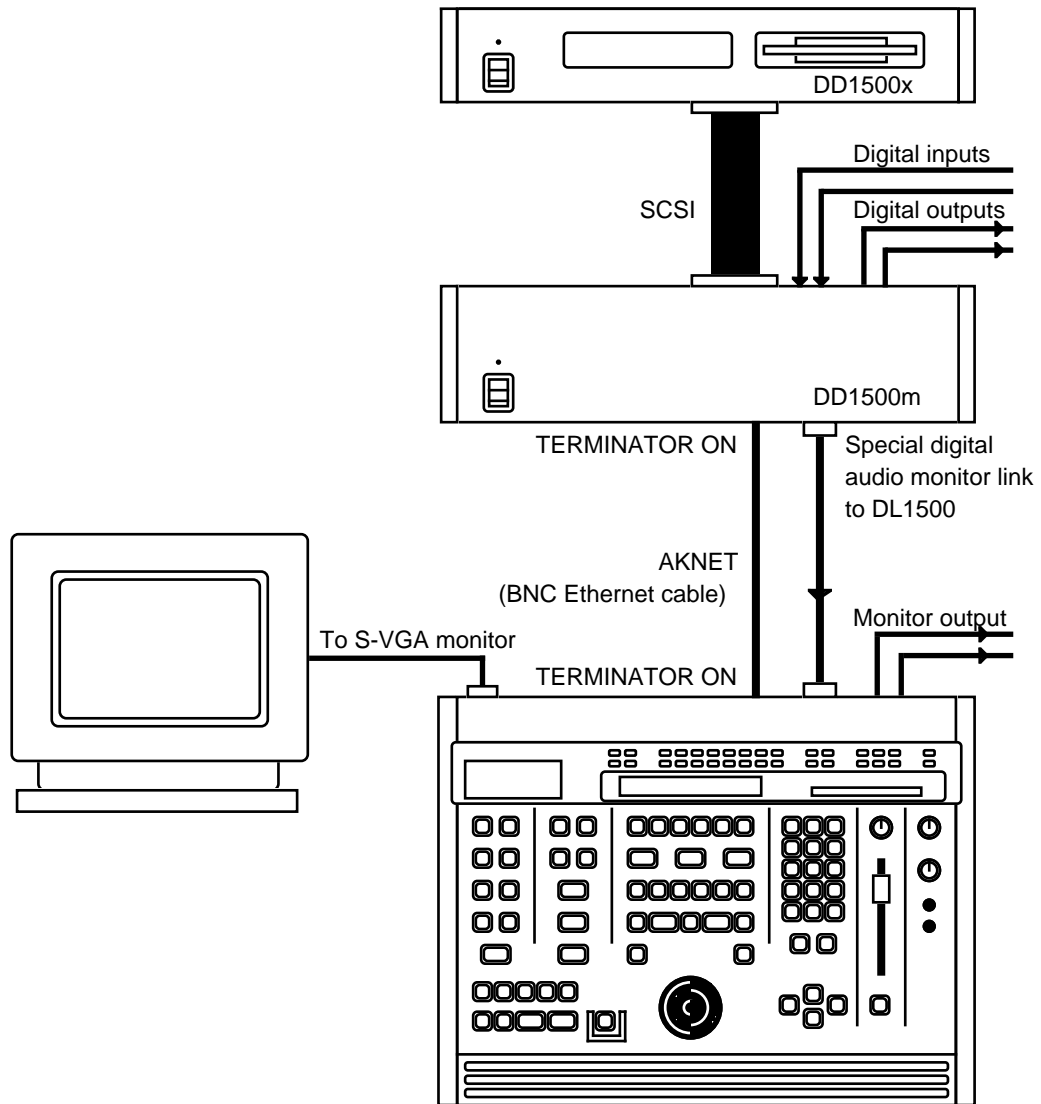
This is provided for future use when an optional Ethernet board is released for full networking of DD1500s on a common Ethernet network. This will allow communication between machines on the network as well as file transfer, etc.

### SIGNAL GND

This can be used to overcome ground loops in a complex system.

### MAINS INPUT

Mains power is connected here.



This could be considered to be the minimum setup you could install. Inputs are purely digital using the digital inputs A and B and mix down is via the digital MIX A/MIX B outputs and/or the analogue line out mix outputs on the DL1500. Such a setup may be sufficient for editing and compiling radio drama where audio is recorded from DAT and sound effects and music, etc., are added from CD and/or DAT. A rough mix may be done within the DD1500 and the disk then transferred to a larger mixdown room for the final mix.

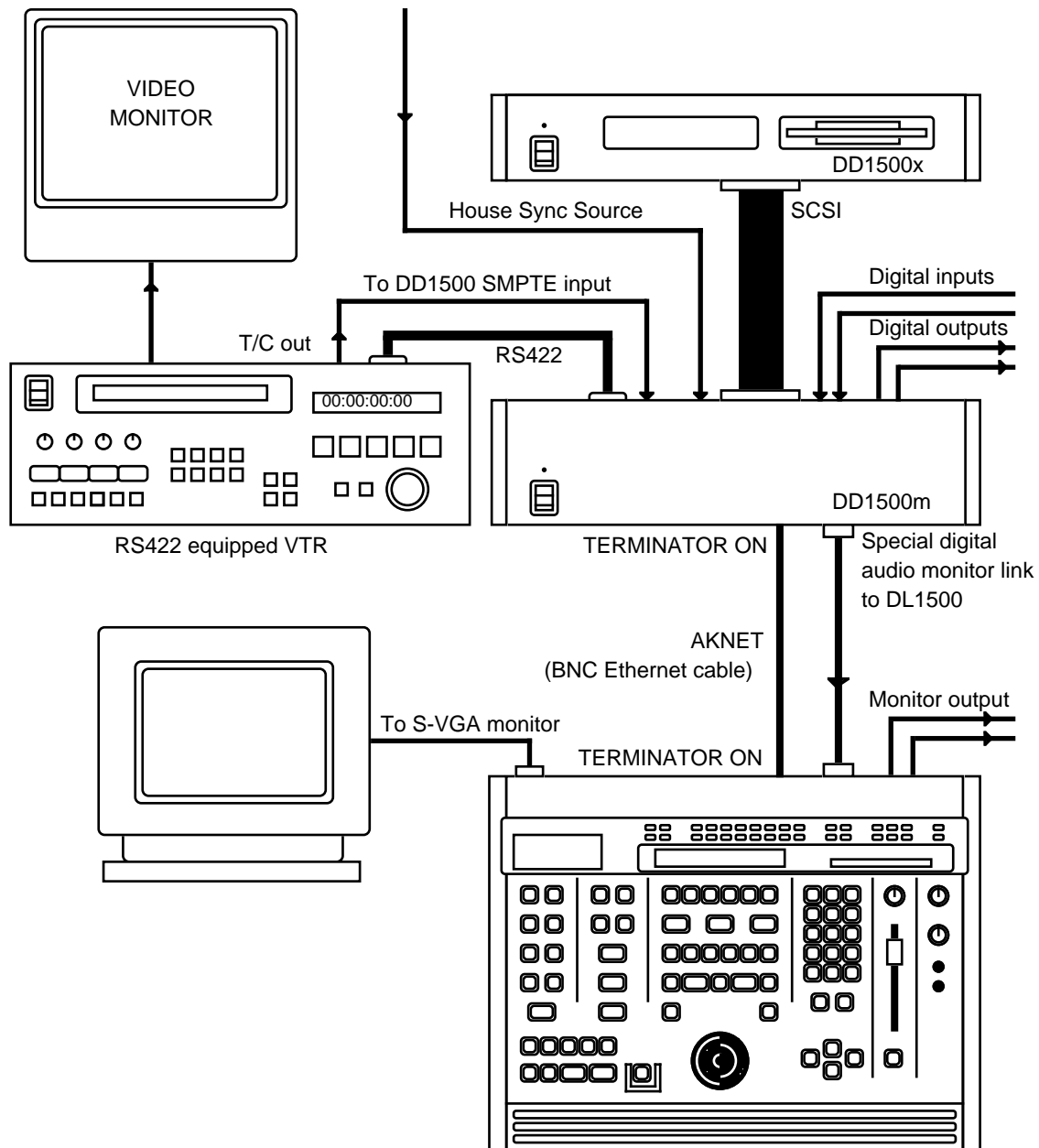
The DD1500m connects to the DD1500x using SCSI (taking care to pay attention to SCSI ID and termination settings) and to the DL1500 using the BNC AKAINET connection (the AKAINET termination MUST be ON on both machines for system to work). In order to have the headphone and line out monitoring on the DL1500, the special digital audio link must be connected using the 9-pin D-sub cable supplied.

The external monitor is a standard S-VGA colour monitor such as you would use with any PC and any size may be used.

Of course, to this basic system, you may add analogue and/or digital inputs and outputs for use with an external mixer.

If you plan to do a lot of naming of recordings and files, an external PC keyboard is recommended.

## 4 - CONNECTIONS - SYSTEM



This shows a basic DD1500 configuration for recording and editing sound to picture (in this case, video). All recording is done digitally through the digital inputs A and B. Mastering could be through the digital outputs MIX A and/or MIX B or, alternatively, through the analogue monitor outputs on the DL1500. Mixing would be done internally using the DD1500's digital mixer. Any size VGA monitor may be used and probably, in a small setup such as this, something like a 14" or 17" screen would be sufficient.

Such a system would be ideal for assembling post sync sound effects digitally from CD or for editing dialogue, music, foley, actuality, etc., recorded on DAT where an elaborate external mixer may not be required.

Once the material is assembled, the disk could be transferred to a more complete system for mixdown, etc., using a larger external mixer.

The DD1500m is connected to the DL1500 using the AKAINET link and a standard BNC cable should be used. You may use the one provided but, if you need longer lengths, any reputable computer store will be able to sell you a standard BNC cable in a variety of lengths to suit your needs.

To get audio to the DL1500 for monitoring (and maybe simple mixdown), connect the DIGITAL AUDIO OUT 9-pin D-Sub connections on both units using the cable provided.

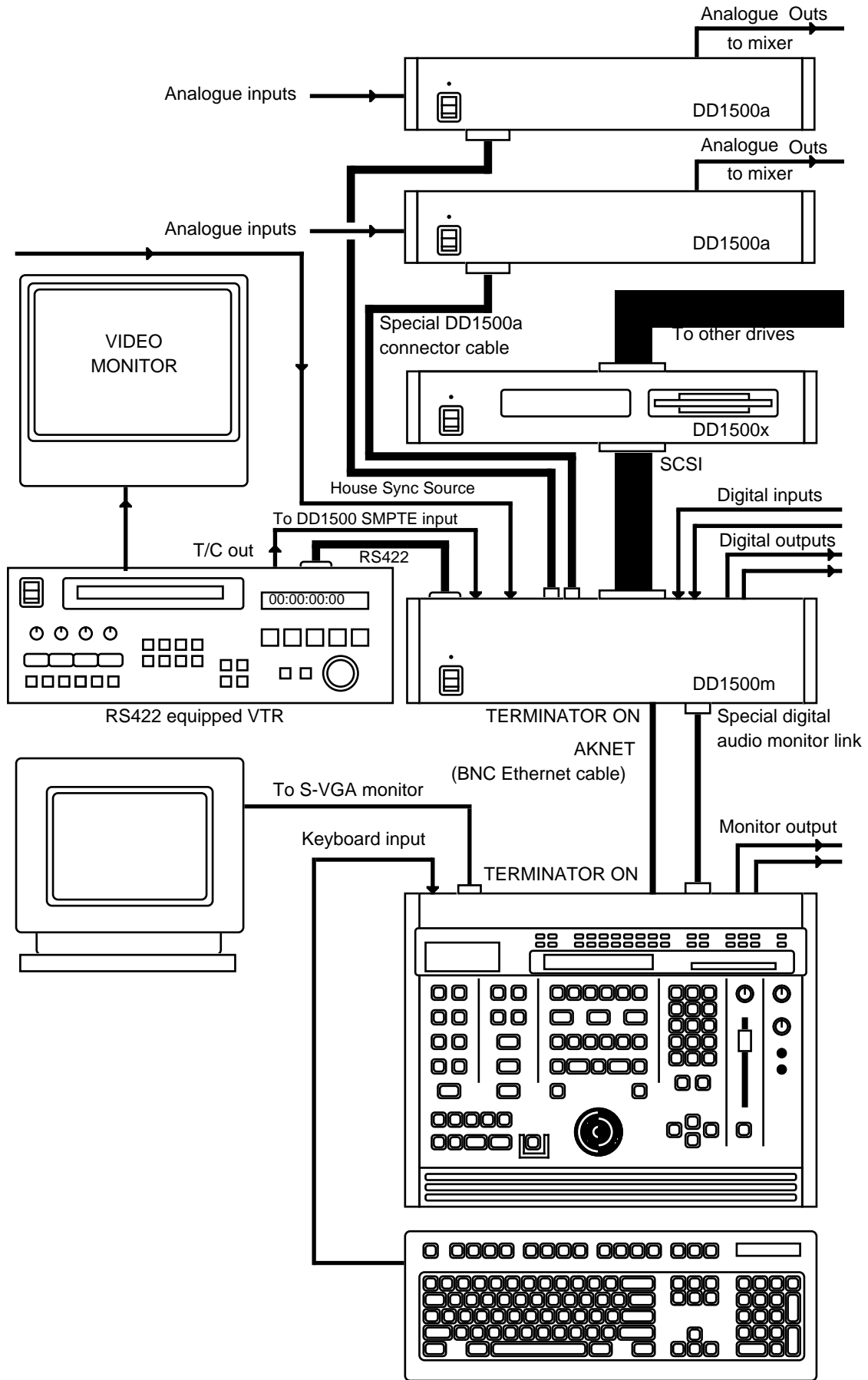
Connect a standard S-VGA colour monitor's cable to the DL1500's DISPLAY output (standard S-VGA 15-pin D-Sub).

The DD1500x disk drive is connected to the DD1500m using SCSI.

The VTR is connected using RS422. The DL1500 can be used to play, stop, rewind, fast forward and jog the picture. The DD1500m must receive a timecode feedback from the VTR (i.e. the RS422 tells the VTR what to do, the timecode back to the DD1500 tells the DD1500m the timecode position the VTR is at). This timecode can be derived from a number of sources. At its simplest, it could be just timecode recorded on the audio tracks of the video tape derived from the VTR's audio outputs. It could be derived from the TIMECODE output found on most professional RS422 equipped VTRs. Alternatively, you could use VITC instead of LTC and this would be derived from the VTR's VIDEO out as it is embedded in the picture itself. You should decide which is best for your circumstances and the equipment you are using.

It is recommended to sync the whole system to a common house sync source so that the whole system - the video, timecode and DD1500's audio - is properly and precisely synchronised to prevent any drift. This would normally be connected to the WORDCK (A)/VIDEO SYNC (A) BNC connection on the DD1500m and the sync type selected from the DL1500.

# 4 - CONNECTIONS - SYSTEM





In this diagram, we see a system with all the options!

Two DD1500a ADC/DAC units are connected to the DD1500m offering the full complement of outputs for mixing on a large console and these connect to the UNIT 1 and UNIT 2 ANALOGUE multi-way connectors on the DD1500m. With the DD1500a converters connected, you may also record analogue audio through the analogue inputs. You may also, of course, record digitally through the digital inputs A and B plus you could have extra digital inputs and outputs installed in the DD1500m for use with a digital mixing console.

The DD1500x disk drive is connected using SCSI. The same consideration must be given regarding cable length and termination. In the diagram, it is implied that other drives are connected to the system as well. If so, make sure that each drive's SCSI ID is different. Failure to observe this will cause problems as drives contend with each other on the SCSI buss (see CONNECTIONS - DD1500x for information on setting SCSI IDs and selecting termination).

As in the basic configuration, the DL1500 is connected using AKAINET and a BNC cable. For the system to work, it is essential that termination be switched to the ON position on both the DD1500m and the DL1500.

The audio link between the DD1500m and the DL1500 is also shown here although, bearing in mind that the analogue outputs are connected to a mixer in this example, it is possible that you would not need to use the DL1500's monitor output in this situation as you will no doubt be monitoring through the mixer. However, you may still wish to use it for convenient headphone monitoring on the DL1500.

In such a setup, a larger S-VGA monitor may be useful and you may use any size monitor. 21" is a good size if you need to see the monitor from some distance but if space in the studio is at a premium, a 17" monitor is a good compromise.

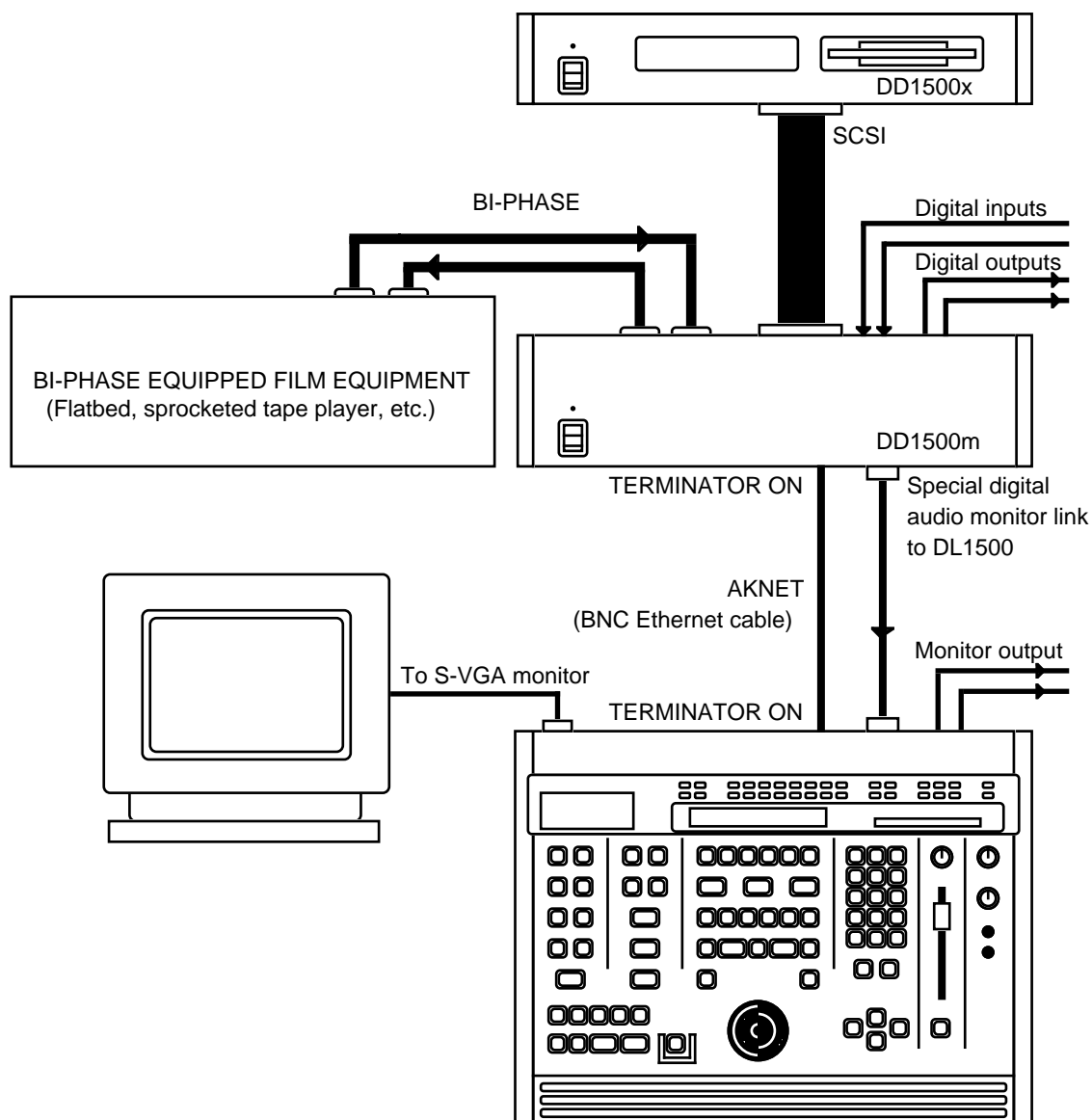
Also connected to the DL1500 in this system is a standard IBM or compatible PC computer keyboard. This connects to the DL1500's rear panel KEYBOARD connection and can be used to name files more easily. The computer keyboard serves no other purpose than to name things.

As with the basic setup, a VTR is connected using RS422 and a timecode feed from the VTR is connected to the DD1500m's SMPTE input. Again, it is recommended you sync the whole system to a common house sync source for precise wordclock synchronisation. This would normally be connected to the WORDCK(A)/VIDEO SYNC(A) BNC connection on the DD1500m and the sync type selected from the DL1500.

**NOTE:** *One unique feature of the DD1500 is its ability to read one type of timecode and generate another. For example, in the diagram shown above, you could be controlling a VTR using RS422 with the DD1500 synchronised using SMPTE/EBU timecode but, at the same time, be generating Bi-Phase to synchronise film equipment.*

## 4 - CONNECTIONS - SYSTEM

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This diagram shows a typical setup for post-syncing audio to film. The same basic connections are used except that, in place of RS422, the DD1500m's Bi-Phase connection is used. In this case, the DD1500 should be the master and the film equipment set to slave. Pressing play, rewind, fast forward, stop and jogging will cause the film equipment to respond accordingly. However, because of the way film equipment 'accelerates' up to speed, it is sometimes necessary to feed the film equipment's bi-phase output back to the DD1500m so that it can 'report back' its position and keep the two units in sync after rewind or fast forward. This largely depends on the equipment you are using, however, so no hard and fast advice can be given here. You may need to experiment to find the best setup. If you have any doubt, please contact your dealer who will be able to help.

Of course, in this setup, you may add DD1500a units as appropriate and you may wish to use a PC keyboard for naming files more easily.

Once the audio has been edited and synced using the system described above, the disk can be taken to the mixdown room where the DD1500 (or the compatible Akai DR8 or DR16) would be set to be a slave to a master Bi-Phase controller in sync with other film playback machines.

**POWERING UP THE DD1500 SYSTEM**

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 DD1500a ADC/DAC unit(s). Next, turn on the DD1500m. The DD1500m will 'talk to' the disk drives and you will see some disk activity as it does so. When this has settled down, turn on the DL1500. The external monitor screen can be switched on at any time and will have no effect on the system.

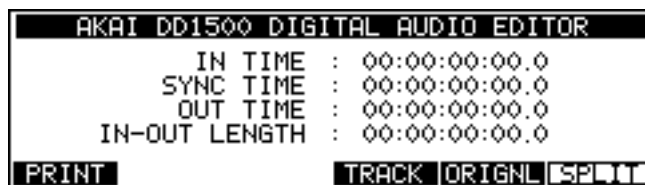
When you power up the DL1500, the DL1500 will go 'looking for' the DD1500m and its drives. You will see this screen display momentarily:



A few seconds later, you will see this screen:



This indicates that the DL1500 has successfully detected the DD1500m. Approximately five seconds later when the system is booted, you will see this screen:



If there is a problem, the system will display this screen permanently:



This indicates that the DL1500 cannot find the DD1500m. If this occurs, check that the DD1500m is actually switched on. If it is, check the AKAINET BNC cable at both ends to make sure that it is securely connected. If that seems o.k., check the AKAINET termination switches. They must both be switched ON on both the DL1500 and the DD1500.

## 4 - CONNECTIONS - POWERING UP

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If everything seems alright but the problem persists, press any key on the DL1500. You will be taken to the SYSTEM LOAD O/S screen. This is normally used for upgrading your system software but, in circumstances like this, can be used to restart the system.

Pressing any key will display this screen:

```
LOAD OPERATING SYSTEM SOFTWARE
Current DD O/S : V0.00
Current DL O/S : V2.00
O/S load type : BOTH (DD and DL)
INFO          RESTART          LOAD O/S
```

The screen shows that the current operating system in the DD1500m is Version 0.00. In other words, because the DL1500 has not been able to find the DD1500m on the system, it doesn't know what version software is in it. Don't worry about this for the moment - press RESTART (F3/F4). This will go through the boot up process again as described above.

If this doesn't work, try powering everything down and trying again. If you still find that you cannot boot up, please contact your dealer immediately.

But take heart! This should not happen and if you do have problems, you will probably find it is nothing more serious than a damaged AKAINET BNC cable or that the AKAINET termination has been incorrectly set. If these are alright, however, but the problem persists, you should contact your dealer immediately.

**BASIC CONCEPTS**

Audio in the GRID is known as a CUE. A cue is a block of audio from start to finish. This may be a raw recording in its entirety or may be the result of an edit. For example:

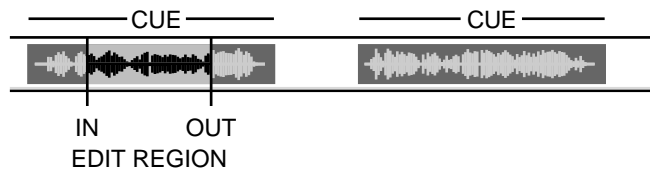


This shows two cues. On the monitor screen, the cues' blocks are shown as blue and the waveforms (if selected to be displayed) are shown in grey.

**NOTE:** If the track is not selected for playback, the cue's block is shown in a light grey and the waveform in a slightly darker grey. I.e.

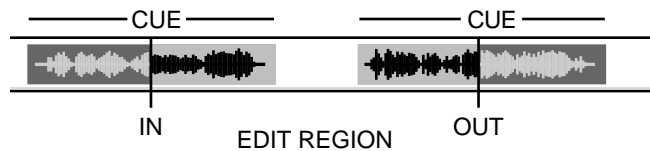


An EDIT REGION is the area that falls between the IN and the OUT times you have marked.

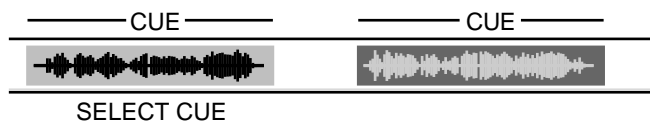


The IN and OUT markers are shown as vertical green lines. The edit region between the IN/OUT markers is highlighted green and the waveform (if selected to be displayed) is shown in black.

An edit area may exist across one or more cues (and across several tracks). For example:



It is also possible to select a single cue for editing using the SELECT CUE key. I.e.



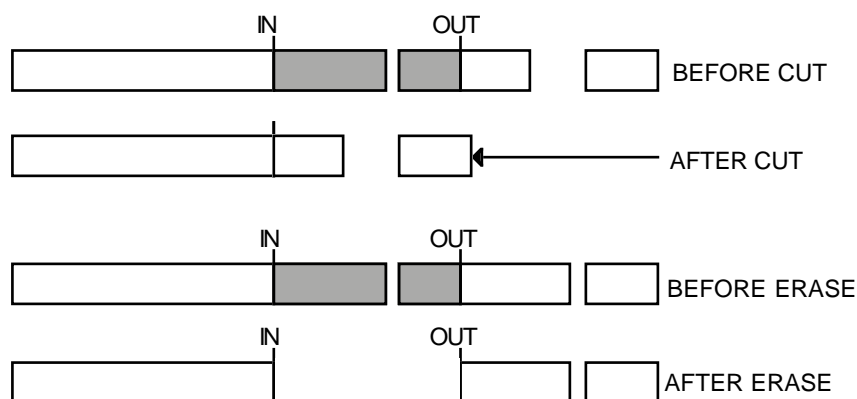
Once selected in this way, the cue may be subjected to all the usual editing possibilities. SELECT CUE allows you to select a cue for editing very quickly without having to specifically mark an IN and an OUT time. Once a cue is selected in this way, it can be subjected to all the normal editing procedures such as COPY, CUT and ERASE.

The basic operation is that you select a track (or tracks) for editing using the TRACK EDIT keys on the top panel of the DL1500. Once you have found the piece of audio you wish to edit, mark an IN time using the large green IN key above the jog wheel. Now jog or play to where you want the edit to end and mark an OUT time. Alternatively, line up the cue(s) you are interested in on the NOW time and press SELECT CUE. You may then use any of the editing functions such as copy, cut, paste, insert etc..

## 5 - BASIC CONCEPTS

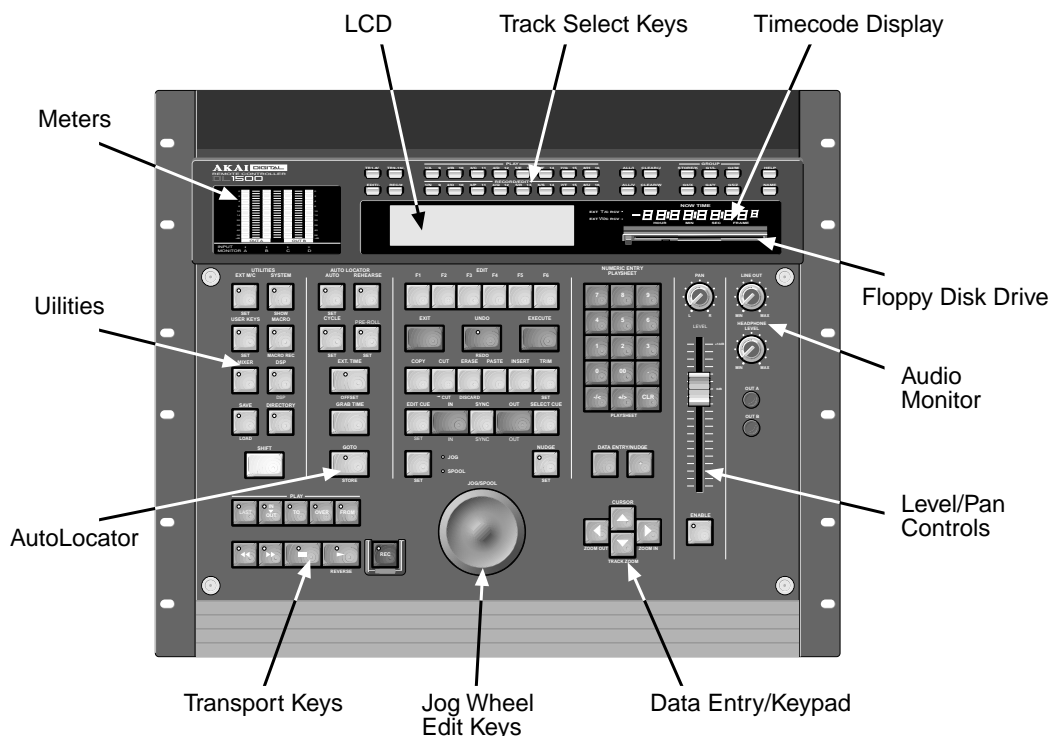
---

As a very simple example, imagine you wish chop out a cough from a piece of dialogue on track 4. Select track 4 for editing, play (or locate or fast forward/rewind or jog) to the start of the cough, jog over it to find an exact start point (you may also refer to the waveform shown on the monitor for extra assistance) and press the IN key. Now jog to the end of the cough and press the OUT key at an appropriate point. Pressing CUT will get rid of the cough and close the gap, shifting all subsequent audio backwards accordingly; pressing ERASE will also get rid of the offending cough but will keep the gap created, thus preserving timing. For example:



You may, of course, edit entire cues in this way. For example, let's say you have a sound effect you wish to copy, select the track for editing, go to the cue, press SELECT CUE followed by COPY, EXECUTE. In this case, you have not needed to specifically mark IN and OUT times - simply selecting the cue was sufficient. Multiple cues (across several tracks if necessary) may also be edited this way. You may now locate to the point you want to place the copy and press PASTE or INSERT followed by EXECUTE.

Of course, this is just a very simple example and there are many different ways the DD1500 may be used to edit and sync audio. However, whatever it is you are trying to achieve, you will find that all functions are consistent making operation easy and fast.



The DL1500 is the key to the system's operation. It is a dedicated remote controller with most commonly used functions available on dedicated keys. If you break down the DL1500's panel into its various sections, it really is quite straightforward to understand and use.

### TOP PANEL

Across the top panel of the DL1500 are the track select keys. These allow you to turn tracks on and off for playback as well as select tracks for editing and recording. The GROUP keys allow you to store and recall up to five combinations of track settings. HELP and NAME keys are also in this area.

The 20-segment METERS normally show the levels of the stereo MIX A and MIX B outputs but may also be selected to show input levels and track levels.

The LCD displays information concerning the status of the system at any time as well as being used to provide soft keys, the function of which changes according to the system's status.

The TIMECODE DISPLAY shows the current now time.

The floppy disk drive is used to load new operating systems as they become available. It is also used to import EDLs from video editors for auto conforming.

### MAIN PANEL

The UTILITIES keys give you access to functions such as DISK DIRECTORY, SYSTEM settings, EXT. MACHINE, DSP and MIXER functions, etc.. The large amber SHIFT key gives access to keys' sub-functions and these are shown in amber text beneath the keys.

The AUTOLOCATOR is a standard autolocator such as you would find on any well specified multi-track recorder and offers 100 programmable memories, 100 'grab' markers as well as the ability to go the start and end of projects and the IN, SYNC and OUT times giving a total of 205 locate points for fast location to any point in a project.

The TRANSPORT keys provide the basic PLAY, STOP, REWIND, FAST FORWARD, etc.. They also offer special 'edit play' keys used when editing and these include PLAY TO, PLAY FROM, PLAY OVER, etc..

## 6 - DL1500 PANEL LAYOUT

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Above the ergonomically designed JOG wheel are the main dedicated edit keys such as CUT, COPY, PASTE, INSERT, etc., for quick and convenient editing.

Also included in the EDIT section are EXIT, UNDO and EXECUTE keys.

Located directly beneath the LCD is a row of six soft keys, the function of which depends on the DL1500's current status.

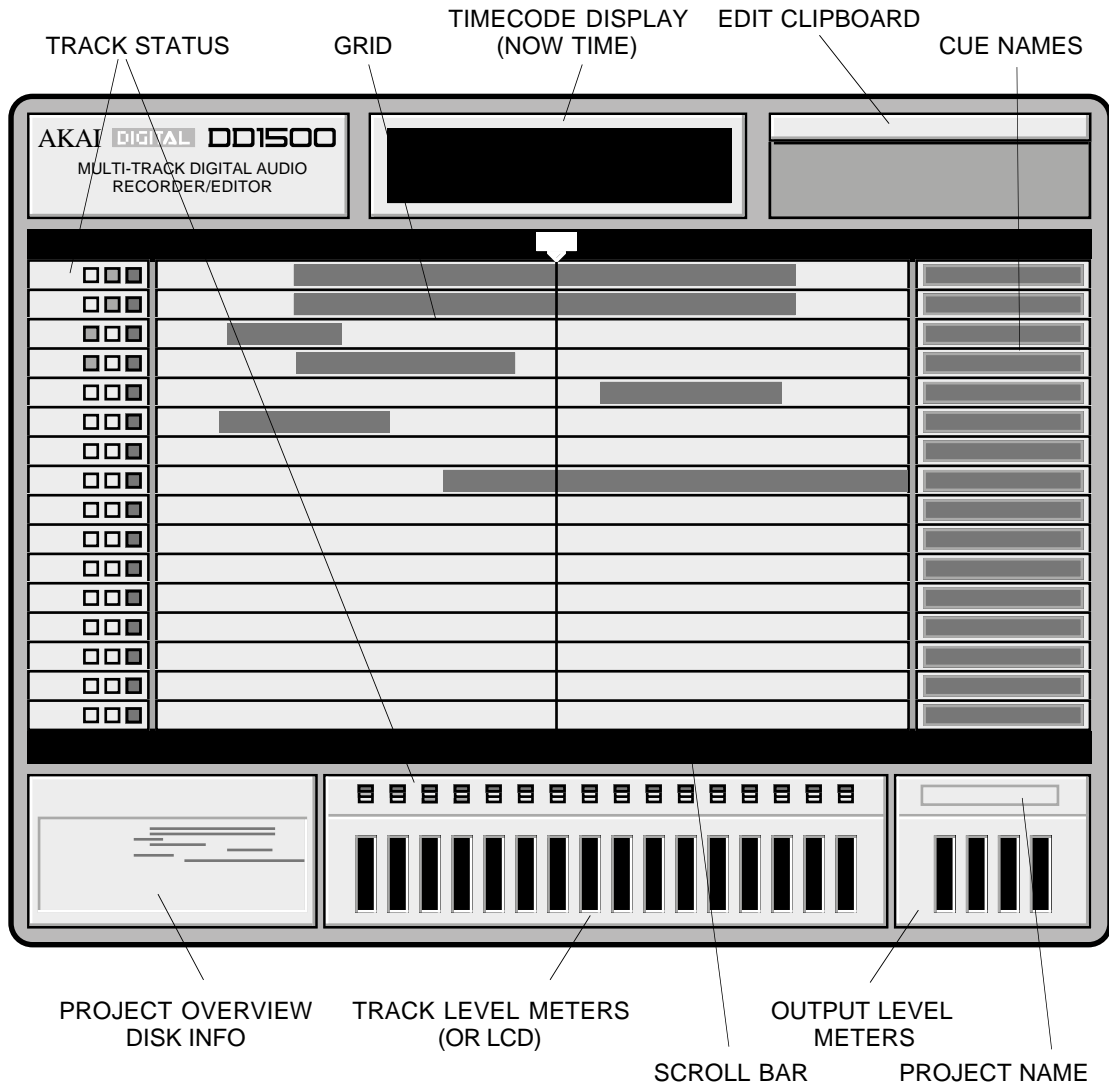
The JOG wheel emulates reel rocking for finding edit points. It is possible to jog all tracks simultaneously.

The DATA ENTRY section includes a numeric keypad for inputting timecode and values and for selecting locator memories and edit clipboards. The +/- DATA ENTRY keys allows you to set parameter values whilst the CURSOR keys are used for selecting parameter fields in the DL1500's LCD. The +/- DATA ENTRY keys can also be used to nudge audio into sync and to go to the next and previous cues and the CURSOR keys double as vertical and horizontal zoom keys.

The DL1500 also has a long throw professional fader and pan pot for setting the levels of audio cues and of tracks for basic mixing. The fader may also be used to set input recording levels.

Finally, the LINE OUT and HEADPHONES controls allow you to set monitoring levels for the stereo analogue outputs and the headphone output on the rear of the DL1500. These may be adjusted independently. The OUT A and OUT B switches allow you to monitor output A, B or both.





TRACK STATUS shows the current status of the tracks - i.e. PLAY, REC, and EDIT. As well being shown alongside the tracks, this is shown alongside the tracks and also above the track meters.

The GRID (**GR**aphic **I**nterface **D**isplay) shows the audio as waveforms and/or as blocks and you may choose whether to display waveforms or not according to your preference. Consistent colour coding is used throughout - blue for play, grey for muted, red for record, green for edit and light brown (ochre) for EDIT CUE. This allows you to see at a glance the status of the tracks even from a distance. The waveforms/blocks scroll during playback and you may zoom in horizontally or vertically for more precise editing and the DD1500's real-time operating system even allows you to zoom in or out when the machine is currently busy doing other things such as playing back, recording, etc.. It is also possible to show cue names and these are shown in a column on the right of the GRID.

Directly above the GRID is the NOW time and this indicates the current time on the NOW line that intersects the GRID vertically in the centre. The NOW line position may be adjusted so that you can see more or less of what is coming as the cues scroll.

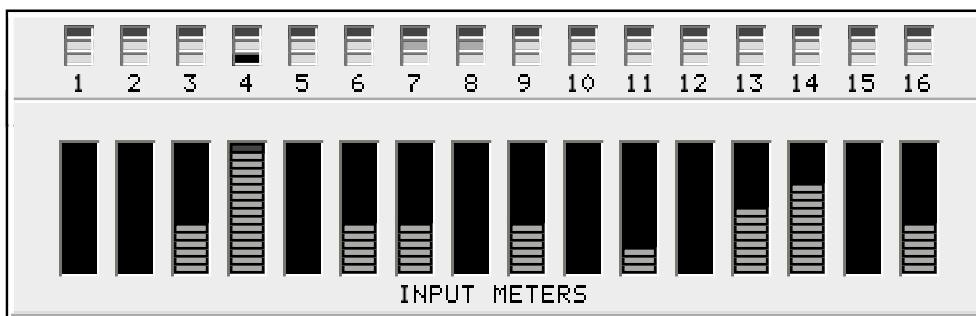
The SCROLL BAR at the bottom of the GRID shows locate points and grab marks.

## 7 - VGA MONITOR LAYOUT

Underneath the TRACK DISPLAY are a variety of different displays. To the left of the display is an overview of the currently selected project as well as disk information:

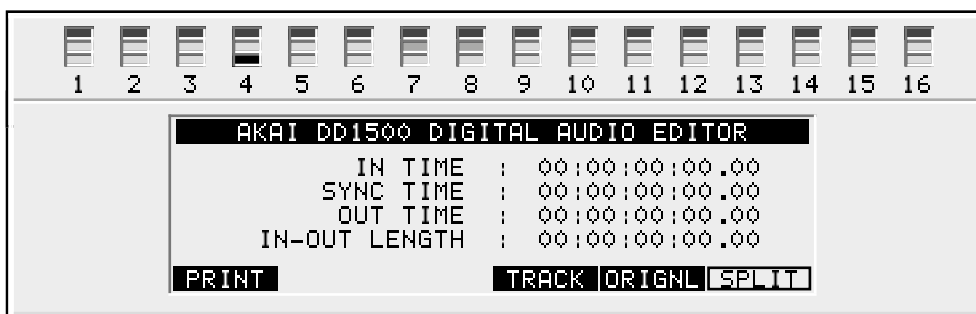


To the right of that is a meter bridge where you may see the levels of the sixteen individual tracks.

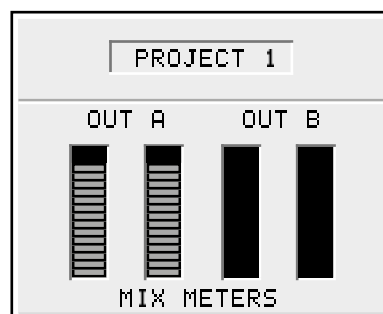


Above this meter bridge is a track status bar where you can see the status of any track. Although this may seem to be a duplication of the track status bar shown to the left of the GRID, this one shows track status even when zoomed in to a few tracks.

If you are using the DD1500 with an external mixing console that has good metering, you may prefer to display the DL1500's LCD instead of the meters. E.g.:

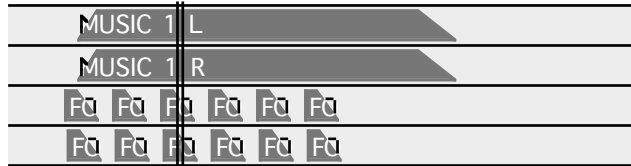


At the bottom right of the screen is displayed the currently selected project's name and main output meters:



To the right of the track display, you may choose to see the names of the cue(s) currently being played. This is used instead of the normal convention on other hard disk recorders where the name is shown within the cue itself because with short cues, the name often gets abbreviated into something meaningless. On the DD1500, you see the entire name regardless of its length.

For example:



'Conventional' disk recorder cue name display.

Whilst the long music cue can display the full name, the footsteps SFX on the adjacent tracks (called FOOTSTP 1L and FOOTSTP 1R) are abbreviated to FO. Compare this with the DD1500:



DD1500 cue name display.

On the DD1500, regardless of the length of the cue, the entire name is shown clearly.

At the top right of the monitor, you can see the EDIT CLIPBOARD. This shows the ten edits available for pasting and/or inserting into a project at any time:

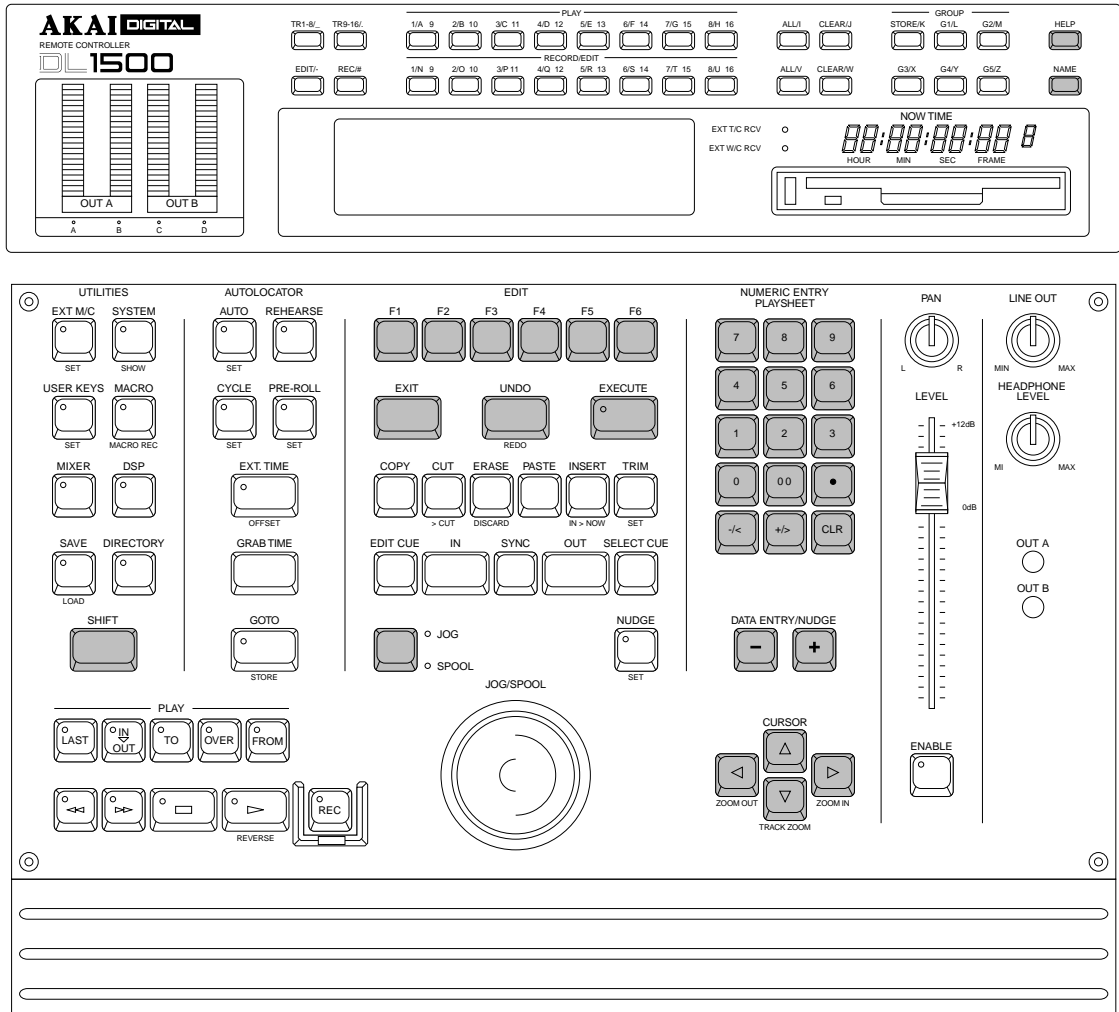


The EDIT CLIPBOARD will be explained in the section "EDITING".

Finally, the panel top left reminds you of the piece of equipment you're working on just in case you're not sure ;-)

You will note that this screen display is the only display you have to deal with when using the DD1500 and ALL work is done here including recording, editing, slipping, syncing, etc.. There are no separate record modes or separate edit modes to have to enter. Similarly, there are no multiple windows stacked on top of each other to confuse you and everything is done here in the GRID ensuring that all operation is consistent throughout.

## 8 - GETTING AROUND THE DD1500



Getting around the DD1500 is quite straightforward. Dedicated keys for most commonly used functions reduces the need for multi-menu operation. Less day-to-day functions are kept hidden away out of harms way but are still readily accessible.

The external monitor is used purely for referencing your work to see what is going on. You can think of it as an animated track sheet. In theory, the DD1500 could be used without it as most work is done from the DL1500's front panel in association with the large LCD that sits in the centre of the DL's upper panel.

The keys we will look at in this section are highlighted in the above diagram although others may be referred to where necessary.

**CURSOR KEYS**

You use the four CURSOR keys to move around the LCD. In the following example, the page is displaying a list of files and the CURSOR keys are used to scroll up and down the list in order to select one.

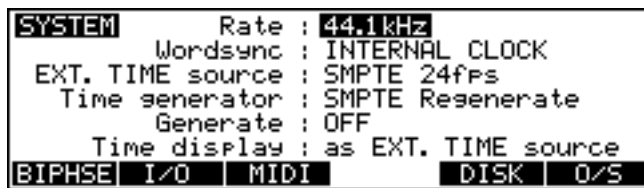


You can also, in this example, move the cursor to the top line to select a different library using the DATA +/- keys and a different disk. Disk selection would be made using the DATA ENTRY +/- keys or by typing in a number directly from the numeric keypad.

**NOTE:** The two arrows shown in this example indicate that there are files 'above' and 'below' the screen which may be accessed by scrolling up or down. This is a convention used in all file-lists in the DD1500 (for example, when loading PROJECTS, pasting or inserting from a library list, etc.). If the arrows don't appear, there are no files 'off-screen'.

The cursor keys are 'accelerators' - that is, they move faster the longer you hold them so scrolling through long lists of files or parameters is very fast.

Another example of a typical screen is this:



This shows a list of parameters. To change any of them, move the cursor to the one you wish to change and use the DATA ENTRY +/- keys to select a new value. In cases where there are many options to select, the DATA +/- keys are 'accelerators' that speed up the longer you press them.

However, it is not always necessary to use the cursor keys to move up and down parameter lists and some pages offer a more direct approach to parameter selection. For example:



In this example, INSERT, you can select the clipboard to insert from simply by pressing any of the numeric keypad's number keys 0-9. You can specifically move the cursor to the REFERENCED TO field if you wish to select IN, SYNC or OUT with the DATA ENTRY +/- keys but you can achieve this more easily by just pressing the IN, SYNC or OUT keys - the display will change accordingly, showing your selection. You can also see a '?' softkey. This conveniently 'toggles' selects the SLIP TYPE parameter.

## 8 - GETTING AROUND THE DD1500

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### TRACK ZOOM KEYS

The CURSOR keys are also used with the SHIFT key to zoom in and out on tracks.

SHIFT plus the CURSOR ◀/▶ allow horizontal zoom in/out. You may also use these keys simultaneously to switch between maximum horizontal zoom in and a zoom out of your choice by pressing SHIFT+CURSOR ◀/▶ keys simultaneously. To do this, zoom in to the level of your choice - pressing SHIFT and the CURSOR ◀/▶ keys together will now switch you between that level and maximum zoom.

SHIFT plus the CURSOR ▼/▲ keys allow you to zoom in vertically on tracks. SHIFT+▼ will zoom in, showing fewer and fewer tracks whilst SHIFT+▲ will zoom out, showing more tracks. As you zoom in, so you will see tracks 1-12, 1-8, 1-4, 1 and 2 and finally, 1 displayed on the external monitor. However, you may want to zoom in on tracks 5 and 6. This easily achieved by pressing SHIFT plus the PLAY SELECT keys 5 and 6. This will place tracks 5 and 6 as the top two tracks in the GRID. Any tracks may be selected in this way. For a four track zoom, you may want to see tracks 2, 5, 7 and 8 so hit SHIFT+PLAY SELECT 2, 5, 7, 8. To clear the display so that tracks 1-16 are shown sequentially again in the GRID, press SHIFT plus either of the CLEAR keys. To select tracks 9-16 in this way, use SHIFT plus the lower RECORD/EDIT SELECT keys. Any combination of tracks 1-8 and 9-16 can be selected for display in zoom.

**NOTE:** This function affects the display only - it does not route different tracks to different outputs.

Several other key combinations are possible. These are:

SHIFT+EDIT	All tracks selected for EDIT are automatically placed at the top of the GRID.
SHIFT+REC/#	All tracks selected for RECORD are placed at the top of the GRID
SHIFT+TR1-8	This places tracks 1-8 at the top of the GRID.
SHIFT+TR9-16	This places tracks 9-16 at the top of the GRID.
SHIFT+CURSOR UP/DOWN	This will zoom right into any tracks selected for edit. Pressing it again will take you back to view the last selected vertical zoom level.

**NOTE:** In the SHOW page, you may set the DL1500 so that tracks selected for edit are those that are shown on the VGA as you zoom in. For example, with tracks 3 and 4 selected for edit, when you zoom to two tracks, 3 and 4 would automatically be placed at the top of the screen. Please see the section that describes the SHOW functions for more details on this.

### NUMERIC KEYPAD

The NUMERIC KEYPAD has two main functions. It is used to store and recall up to 10 edits in what we call the EDIT CLIPBOARD (see the section on editing that describes this). It is also used for timecode and numeric entry.

### EDITING NUMERIC FIELDS

To edit number fields, you can just type the number directly followed by EXECUTE. You may also use the DATA ENTRY +/- keys to increment/decrement through the values.

If you make a mistake, press EXIT - this will restore the parameter's previous value.

To clear a number field, press the NUMERIC KEYPAD's CLR key followed by EXECUTE. This may be used to type in a value 'from scratch' or to clear a mistake and start over again.

**EDITING NAMES THAT INCLUDE NUMBERS**

In names that have a number as part of the name (i.e. PROJECT 5), this can be renamed very quickly simply by pressing any other number on the numeric keypad. For example, pressing 9 would immediately change this name to PROJECT 9. This can be useful when saving a project with a different name (SAVE AS). It is also useful for quickly renaming libraries or clips.

**ENTERING TIMECODE VALUES**

Timecode is entered using the NUMERIC KEYPAD. Values enter from the right and time divisions (i.e. hours, minutes, seconds and frames) are confirmed using the keypad's OO 'double zero' key.

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

1, 00, 23, 00, 12, 00, 12, 00, EXECUTE

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

```

1      : : : 1.0
OO    : : : 1:00.0
23    : : : 1:23.0
OO    : : : 1:23:00.0
12    : : : 1:23:12.0
OO    : : : 1:23:12:00.0
12    : : : 1:23:12:12.0
EXECUTE 1:23:12:12.0
    
```

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

If you wish to enter a timecode value with a sub-frame, use the procedure described above but, before entering the sub-frame value, press the . key on the numeric keypad and enter the sub-frame value. For example, 1, OO, 23, OO, 12, OO, 12, OO, ., 5, EXECUTE to enter 1 hour, 23 minutes, 12 seconds, 12 frames and 5 sub-frames:

```

1      : : : : 1.0
OO    : : : : 1:00.0
23    : : : : 1:23.0
OO    : : : : 1:23:00.0
12    : : : : 1:23:12.0
OO    : : : : 1:23:12:00.0
12    : : : : 1:23:12:12.0
.     : : : : 1:23:12:12.0
EXECUTE 1:23:12:12.5
    
```

If you make a mistake when entering a timecode value, press EXIT. This will restore the field's previous timecode entry and you may try again.

It is also possible to 'nudge' timecode entries. You can move the cursor 'within' the timecode field using the numeric keypad's -/< and +/> keys. As an example, in EDIT CUE, you may wish to nudge a fade up time from 2 seconds to 3 seconds. Rather than type in 3, OO, EXECUTE, move the cursor to the seconds field using -/< or +/> as appropriate and use the DATA ENTRY + key to increment by one. I.e.:

```

Fade up : 00:00:02:00.0
          /
          CURSOR
    
```

## 8 - GETTING AROUND THE DD1500

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Now press the numeric keypad's -/< to move the cursor and press the DATA ENTRY + key:

Fade up : 00:00:03:00.0  
                  |  
                  v  
                  CURSOR

In this way, instead of having to type out long strings of timecode numbers, you can nudge a timecode field to a value quite easily.

### DATA ENTRY/NUDGE KEYS

These two keys allow you to set data values and select parameters in the DD1500.

To set a data value, simply move the cursor to appropriate field and press the DATA ENTRY '+' key to increase the value or the DATA ENTRY '-' key to decrease the value. Like the CURSOR keys, these keys are 'accelerators' that get gradually faster the longer you keep them held down, allowing rapid changes to be made to long parameter fields.

These keys are also used with the SHIFT key to increase or decrease the waveform magnification on the external monitor. They are also used in conjunction with the GOTO key to go to the next or previous edit. They can also be used to nudge trim points and audio.

### USING THE SOFT KEYS

The soft keys perform two main functions. One is to take you to another page, another is to perform some kind of action.

Page keys are highlighted - i.e.: **DISK** will take you to the disk page.

Action keys are 'hollow' - i.e.: **SAVE** will save the current file

There is another type of action key that we saw a bit earlier and that is the '?' action key. These use Lower case characters and refer to the name of the parameter they are linked to. These allow you to switch parameters in the field they refer to.

There are also double width soft keys: **AUTOCONFORM** or **DEFAULT**

These may be page keys (highlighted) or 'action' keys (hollow) as described above. There can also be double width '?' action keys. When a double width key is used, either of the soft keys directly below it may be used.

In some pages, the soft keys act as 'radio' keys - i.e. switching one on will switch one or more others off - and select different functions. In this case, the selected key highlights. Although these look essentially like 'action' keys or 'page' keys, the distinction should be clear from the context of the page you are in.

### EXECUTE

Nearly all actions on the DL1500 require completion using the large EXECUTE key located beneath the soft keys. This key has a LED in it that will flash indicating that it should be pressed to complete the action. You may also receive a prompt to tell you to press EXECUTE. Sometimes, where multiple prompts are shown (i.e. "DELETE SELECTED FILE?" followed by "ARE YOU SURE? NO UNDO!!"), the EXECUTE key will remain flashing until the whole process has been completed. Basically, whenever the EXECUTE key is flashing, this indicates that you must press it to complete an action.

EXECUTE is also used to complete entering a name or number or timecode value.

### EXIT

Whenever the EXECUTE can be used (i.e. its LED is flashing), the EXIT key will 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 EXIT key also functions as a "NO" key in situations where YES/NO responses are required.



At all times, the EXIT key will take you out of the current page and back to a 'safe' situation.

In cases where you have arrived at a page by going through other pages first (for example, SYSTEM SETUP, SETTINGS, FLASH ROM, LOAD) the EXIT key will take you back step by step through those pages until you arrive back at the main display.

### **UNDO**

The UNDO key offers twenty levels of undo and redo. 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 REDO (SHIFT+UNDO).

You may undo/redo the last twenty things you did by repeatedly pressing UNDO or REDO (SHIFT+UNDO). This allows you to try a few edits out in succession and then, if you don't like the results, restore the original 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 OR LIBRARY OR CLIP) BY MISTAKE. PLEASE TAKE CARE WHEN DELETING FILES.*

### **SHIFT**

The large amber SHIFT key gives access to sub-functions on certain keys. Most keys' sub-functions relate to the key itself (for example, ERASE removes audio between the IN and OUT marks whereas its shift function, DISCARD, removes audio *either side* of the IN/OUT marker).

When using the SHOW (SHIFT+SYSTEM), LOAD (SHIFT+SAVE) and GOTO STORE (SHIFT + GOTO), the keys' LEDs flash indicating you are the key's 'alternative' function.

Most SHIFT functions are labelled but some are not. You may liken these to 'keyboard shortcuts' such as you would find in a typical Mac™ or PC application where the more 'advanced' functions are conveniently available on certain convenient SHIFT key combinations once you get to know the system better.

### **SET FUNCTIONS**

Some keys' SHIFT function is SET, allowing you to set up certain parameters relevant to the key (for example, SHIFT+NUDGE allows you to set parameters relevant to nudging audio). When using SET pages, the LED will not flash but will be lit according to whether that key is switched ON or OFF (for example, when setting NUDGE parameters, the LED will indicate whether the NUDGE function is turned on or off. Similarly for JOG/SPOOL SET).

**NOTE:** *Not all keys' SET functions are operational. Some of the SET functions are reserved for future enhancements via software.*

### **JOG WHEEL**

The jog wheel is normally used to 'scrub' audio when finding edit points. It is possible to jog all tracks simultaneously. You may also use the jog wheel to 'spool' through a project and the jog wheel acts as a speed control for forwards or backwards playback.

### NAMING FILES

Although the DD1500 has an auto-naming function for naming recordings, projects, etc., sometimes it is necessary to name files yourself. Typically, you want to name projects, libraries and clips most of the time and you may wish to name edits prior to copying them into the clipboard.

Naming is done by pressing the NAME key. The key will flash and the selected file will be highlighted thus:

**Project 1**

The first character of the name will be highlighted and you may type in a name of up to ten characters. Letters are input using the top panel TRACK SELECT keys and some extra characters are provided on the TR1-8, TR9-16, EDIT and REC keys. Letters are entered in lower case but you may use the SHIFT key to enter upper case characters.

Numbers are input using the numeric keypad. You may use the CURSOR left/right keys to move around the name field without erasing text and the numeric keypad's -/< and +/> keys will delete text. These latter keys are also used for entering spaces.

As the LCD prompts you, you must press EXECUTE to complete the naming process. If you change your mind, press EXIT at any time.

You can also name things by pressing the CLR key. By moving the cursor to the file you wish to name and pressing the numeric keypad's CLR key, you will clear the whole name and you can input a new name from scratch.

In both cases, pressing EXIT will leave the naming process and revert to the original name.

If you are using a computer keyboard to name files, there is no need to press the NAME key - just start typing (see below - USING A COMPUTER KEYBOARD).

### RENAMING FILES

There will be occasions where you want to rename an existing project, library or clip. Renaming is exactly the same as naming a file - press the NAME key and enter a suitable name.

You may also re-name existing files that have a number in them very quickly just by pressing any of the numeric keys. For example, you can rename LIBRARY 1 to LIBRARY 2 simply by pressing 2, EXECUTE.

You can also add numbers to files in this way. For example, to re-name the library ANIMALS to ANIMALS 1, simply move the cursor to the library, press 1, EXECUTE. Again, pressing EXIT will abort the naming process.

If you are using a computer keyboard to name files, there is no need to press the NAME key - just start typing (see below - USING A COMPUTER KEYBOARD).

### USING A COMPUTER KEYBOARD

It must be said that naming files on the DD1500 from the track select keys can be a little tricky. This has been included merely as a convenience for those occasions where using a PC computer keyboard is not practical due to studio layout, restricted desk space or whatever and you need to name a file without a keyboard attached. If you are planning on doing a lot of naming, it is recommended you use a PC computer keyboard. The computer keyboard is connected to the KEYBOARD input on the rear of the DL1500.

To type in a name from the external keyboard, first move the cursor to the file you wish to rename and start typing - there is no need to press the NAME key. Press RETURN to complete the name.

When using a computer keyboard, you will note that the numeric keypad functions just like the DL1500's. You will also note that you can use the keyboard's first six function keys to duplicate the DL1500's soft keys. ESC(ape) duplicates the action of the DL1500's EXIT key. SHIFT and CAPS LOCK work as you would expect as do the cursor keys which duplicate the action of the DL1500's CURSOR keys. In fact, for the most part, you will find that the keyboard performs much like it would when used with a computer.

**NOTE:** The following characters are not available from the computer keyboard:

£ \$ ^ & { } [ ] @ | ~ ` + -

The following keys also have no function:

TAB CTRL ALT PAGE UP PAGE DOWN  
HOME END F7-F12 PRINT SCREEN SCROLL LOCK

## PROMPTS

Two types of prompts are used in the DD1500. One is a temporary one that is displayed for information only. I.e.:



This pops up and lasts for a few seconds. Pressing any key while it is displayed will clear the message. Different messages stay up for different lengths of time depending on the nature of the message. If the message relates to something fairly serious such as DISK DRIVE NOT READY, the message will stay up longer than, say, the message FILE COPIED or PROJECT LOADED. In the event of a really serious problem, the message may stay up permanently until any key is pressed.

You may also receive this kind of prompt on the bottom line of the LCD:

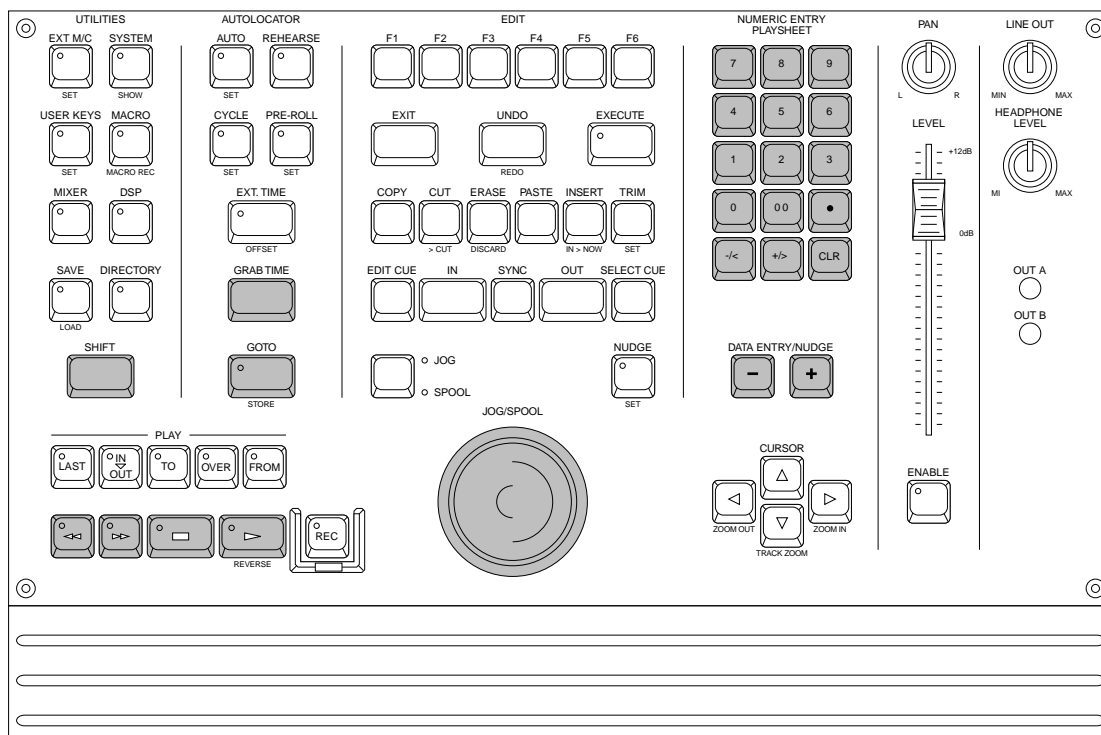


In this situation, the EXECUTE key's LED will be flashing and you should press EXECUTE to continue (the equivalent of answering "YES" to the prompt) or EXIT to abandon what you are doing (the equivalent of responding "NO").

## HELP

Pressing the HELP key will display a brief message about the selected page. The message is displayed on the LCD only and is for reference when you don't have a manual to hand. When HELP is selected, the message will be displayed and the HELP key will flash. Press HELP again or use EXIT to turn the message off.

## 9 - GETTING AROUND THE GRID



There are many convenient ways to move around the GRID.

### TRANSPORT KEYS

The most obvious way, perhaps, is to use the REWIND and FAST FORWARD keys (**◀▶**). Pressing either **◀** or **▶** once will cause the project to rewind or fast forward at 10 x normal play speed and pressing it again will cause the project to rewind or fast forward at 100 x normal play speed. Pressing either of these keys again will revert to 10 x normal play speed.

During playback, simultaneously pressing PLAY (**▶**) plus either the **◀** or **▶** keys will allow you to rewind or fast forward with ‘ape chatter’ and you will hear the audio rewinding or fast forwarding at high speed much like a normal MTR.

**NOTE:** When rewinding or fast forwarding with ‘chatter’, you may notice that some tracks will be dropped. This is normal as the DD1500 cannot play all tracks at high speed. However, if your project only has a few tracks to begin with, then this won’t be so noticeable.

### GOTO FUNCTION

Another way to get around a project would be to set locate points and use the GOTO key to locate directly to those points. 100 locate memories may be stored per project. You may also GOTO a timecode position directly by hitting GOTO and typing in an appropriate timecode value.

You may also mark ‘grab markers’ using the large GRAB key. This will ‘drop’ un-numbered markers along the scroll bar and these can be used as you like. You can mark locate memories and grab markers ‘on the fly’ as you are playing back (or indeed, jogging, spooling, even rewinding). 100 ‘grab’ markers can be set per project.

You can also use GOTO with the IN, SYNC and OUT keys to go to these points.

You may also go to the start and end of a project using F5 and F6 in the GOTO page when you press the GOTO key.

Pressing GOTO and the numeric keypad's +/- keys allows you to step though locate points sequentially. These include locate memories, grab markers and IN, SYNC and OUT points.

**NEXT/PREVIOUS EDIT**

By pressing AND HOLDING the GOTO key and the DATA ENTRY +/- keys, you can go to each edit in turn. This will take you to the start and end of each cue in turn on the track(s) selected for edit. I.e.:



If a track is selected for edit, these keys take you to the start and end of each cue in turn on that track. If no tracks are selected for edit, they take you to the start and end of each cue on the tracks selected for playback (i.e. shown blue on the external monitor). If no tracks are selected for playback or editing, these keys have no function.

**NOTE:** You must hold the GOTO key down for this - if you press GOTO and release it before pressing either the DATA + or - key, you will display the GOTO screen where the DATA +/- keys act as normal for incrementing/decrementing parameter values.

**JOG WHEEL**

The jog wheel allows you to 'scrub' audio much like reel-rocking on a conventional tape recorder. You may jog all tracks simultaneously. Normally, maximum jog speed is 1 x play speed but you may set this to be as much as 5 x maximum play speed. More conveniently, perhaps, you can set it so that normal operation gives a maximum jog speed of 1 x play speed but, when the SHIFT key is held, you can jog up to 5 x play speed.

The jog wheel can also act as a 'spool' function and the jog wheel then sets the speed and direction of playback. Maximum spool speed can be set to 5 x play speed.

You may also use the jog wheel to 'scroll' through a project very quickly, In this case, all you are doing is 'sliding' the GRID on the VGA monitor, allowing you to get to points 'off screen' very quickly. In this case, no audio is heard.

JOG, SPOOL and SCROLL are selected using the JOG/SPOOL key. This selects whether the jog wheel described below 'scrubs' audio, spools audio or scrolls through the project. When the JOG LED is on, the jog wheel will scrub audio. The jog wheel is always active, even in play, so that you can just grab the jog wheel and start editing straight away.

When SPOOL is on, the jog wheel will spool audio.

When both LEDs are on, you can scroll through the project very quickly and no audio will be heard but this does allow you to get to points in the project very quickly.

## 9 - GETTING AROUND THE GRID

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When both LEDs are off, the jog wheel has no function. This position is recommended when mixing down from the DD1500 so as to prevent accidental jogging during playback.

**NOTE:** The jog wheel may also be used to trim cues - please the section TRIM in EDITING for more details

### JOG/SPOOL SET

By pressing SHIFT+JOG/SPOOL, it is also possible to set maximum jog and spool speeds. You will see this screen display:

```
JOG WHEEL SETUP
  Jog limit : 1 x Play speed
SHIFT+Jog limit : 2 x Play speed
  Spool limit : 2 x Play speed
                                     RESET
```

The fields are:

#### JOG LIMIT

This may be set to a maximum of 5 x play speed. If you only occasionally require jogging to be greater than play speed, it is recommended you keep this field set to 1 x play speed and use the SHIFT+JOG functions described next.

#### SHIFT+JOG LIMIT

This allows you to set the maximum jog speed when pressing SHIFT plus the jog wheel together. Maximum speed is 5 x normal play speed (although 2 x normal play speed is probably the most useful as the audio is still fairly intelligible).

SHIFT+JOG is very convenient when editing because you can use the jog wheel for normal jogging (JOG LIMIT set to 1 x PLAY SPEED - see above) to find edit points, etc., and use SHIFT+JOG when you need to whiz through audio to the next edit you wish to make.

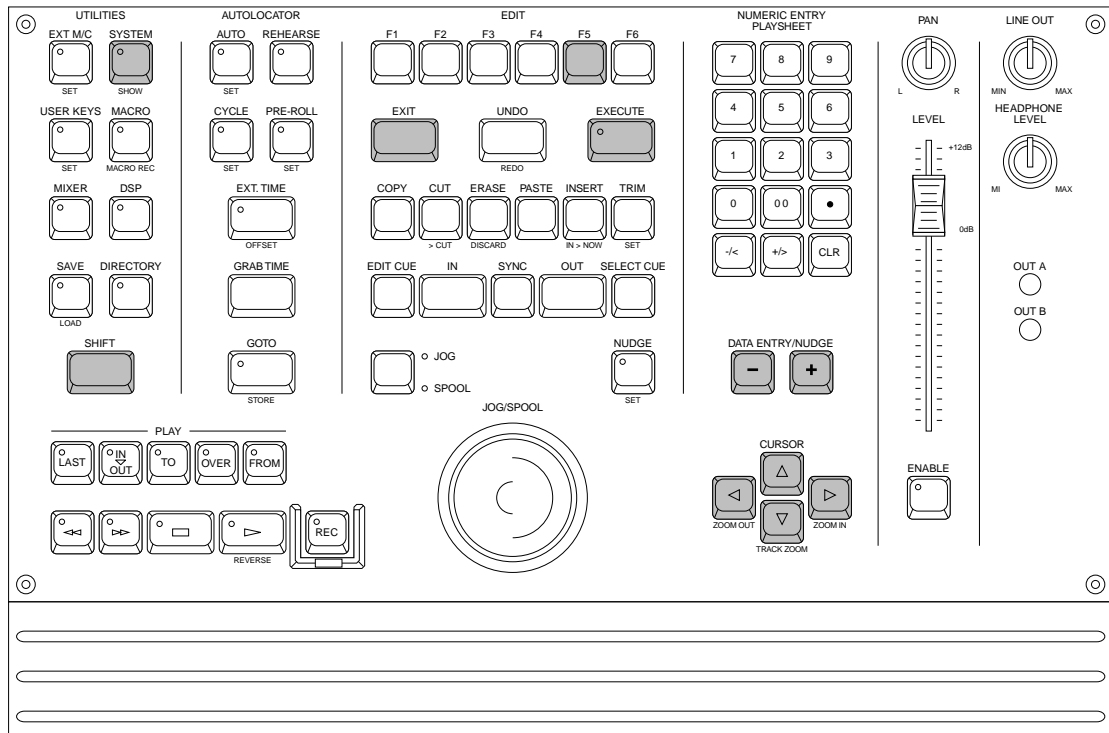
#### SPOOL LIMIT

This allows you to set the maximum spool speed which is 5 x play speed.

**NOTE:** When jogging or spooling at anything higher than nominal play speed, because of restrictions regarding disk speed and SCSI bandwidth, the DD1500 will automatically drop some tracks to allow the high speed playback. However, in most cases this is fairly transparent and should not be particularly noticeable, especially on faster drives.

The RESET soft key on F5/F6 will reset the selections you make to their default value.

Press SHIFT plus the JOG/SPOOL key again or EXIT to leave this page.



Before we move on to look at basic operation, it is necessary to have a look at the SYSTEM page in order to set the system up as necessary. If you just want to get on with some recording, skip this section and come back to it at a later date if you wish. The keys we are interested in are highlighted in the panel diagram above.

The SYSTEM pages allow you to set certain parameters that will affect the DD1500 system as a whole. These include setting sample rates, timecode types and inputs, external connections, etc., as well as enabling disk formatting and file management, etc.. Once configured, your system settings can be saved so that you may personalise your operating system.

Pressing the SYSTEM key displays this screen:

```

SYSTEM      Rate : 44.1kHz
             Wordsync : INTERNAL CLOCK
EXT. TIME source : SMPTE 24fps
             Time generator : SMPTE Regenerate
             Generate : OFF
             Time display : as EXT. TIME source
BIPHSE I/O  MIDI  DISK  O/S
    
```

The parameters are:

**SAMPLE RATE** This sets the system's sample rate. You may select 32kHz, 44.056kHz, 44.1kHz and 48kHz.

**NOTE:** 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.

### WORDSYNC

This allows you to synchronise the DD1500's DACs to a variety of video and wordclock sync sources for precise system synchronisation. The options available are:

**INTERNAL CLOCK** - This selection uses the DD1500's internal crystal as its sync source and so the system is 'free running'. This is the selection used when using the DD1500 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, DD1500, etc.) to one of the external wordclock or video sync sources described below.

**DIGI IN A** - This synchronises the DD1500's DACs to the digital wordclock signal being received through DIGITAL INPUT A. This selection is automatically made when recording when this input is used as the input source in the INPUTS routing matrix (see RECORDING).

**DIGI IN B** - This synchronises the DD1500's DACs to the digital wordclock signal being received through DIGITAL INPUT B. This selection is automatically made when recording when this input is used as the input source in the INPUTS routing matrix (see RECORDING).

**NOTE 1:** *If optional DIO4 DIGITAL INPUTS are installed in the DD1500m, you will also receive DIGI IN C. in this field. When recording using digital inputs C - F, wordclock should always be received through DIGI IN A.*

**NOTE 2:** *When recording through multiple digital inputs, these signals MUST ALL BE AT THE SAME SAMPLING FREQUENCY .*

**PAL/SECAM (Video A)** - This selects that the DD1500's DACs will synchronise to a video sync signal through the VIDEO SYNC (A) BNC connection. Typically, this will be used in Europe to sync to a common PAL/SECAM house sync source.

**NTSC 29.97Hz (Video A)** - This selects that the DD1500's DACs will synchronise to an NTSC 29.97Hz house sync signal through the VIDEO SYNC (A) BNC connection. This would normally be used in Japan or America when 29.97 frames per second timecode is being used.

**NTSC 30Hz (Video A)** - This selects that the DD1500's DACs will synchronise to an NTSC 30Hz house sync signal through the VIDEO SYNC (A) BNC connection. This would usually be used in Japan or America when 30 frames per second timecode is being used.

**PAL/SECAM (VITC in)** - This selects that the DD1500's DACs will synchronise to a video sync signal through the VITC SYNC BNC connection. Typically, this will be used in Europe to sync to a common PAL/SECAM house sync source.

**NTSC 29.97Hz (VITC in)** - This selects that the DD1500's DACs will synchronise to an NTSC 29.97Hz house sync signal through the VITC SYNC BNC connection. This would normally be used in Japan or America when 29.97 frames per second timecode is being used.



NTSC 30Hz (VITC in) - This selects that the DD1500's DACs will synchronise to an NTSC 30Hz house sync signal through the VITC SYNC BNC connection. This would normally be used in Japan or America when 30 frames per second timecode is being used.

WORDCLOCK A - This allows you to sync the DD1500's DACs to a wordclock signal through the WORDCK (A) BNC connection. This is used with a Sony PCM1630 that has a separate SDIF wordclock output.

**NOTE 1:** *If a wordclock sync source is selected and is being successfully received, the EXT W/C RCV LED next to the DD1500's timecode 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.*

Here, you may choose the type of external timecode synchronisation you are using and works in conjunction with the EXT. TIME key. When the EXT. TIME key is not switched on, the DD1500 is 'free running'. With the EXT. TIME key switched on, the DD1500 will not playback or record unless the timecode type selected here is received. The selections in this field are:

SMPTE 24 fps - This selects that the DD1500 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 DD1500 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 DD1500 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 DD1500 to 29.97 drop timecode - NTSC colour. This would normally be used in America or Japan.

SMPTE 30 nd - This selects that the DD1500 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 DD1500 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 DD1500, 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 DD1500's 30 drop-frame with other equipment's which may actually be 29.97fps drop.*

VITC 25 fps - This selects that the DD1500 will synchronise to VITC (Vertical Interval TimeCode) running at 25 frames per second. This would normally be selected when syncing to EBU VITC in Europe.

VITC 29.97 nd - This selects that the DD1500 will synchronise to non-drop VITC running at 29.97 frames per second. This would typically be used in America and Japan when working with colour television.

VITC 29.97 drop - This will synchronise the DD1500 to 29.97 drop VITC. This would normally be used in America or Japan when working with colour television.

VITC 30 non-drop - This selects that the DD1500 will synchronise to VITC running at 30 frames per second. This would typically be used in America and Japan when working with NTSC black and white television.

VITC 30d NTSC BW - This will synchronise the DD1500 to 30 drop VITC. This would normally be used in America or Japan when working with NTSC black and white television (see SMPTE 30d NTSC BW).

Biphase 24fps x 2 - This selects that the DD1500 will sync to bi-phase at 24 frames per second with 2 cycles per frame. This is used when synchronising the DD1500 to film equipment.

Biphase 25fps x 2 - This selects that the DD1500 will sync to bi-phase at 25 frames per second with 2 cycles per frame. This is used when synchronising the DD1500 to film equipment.

Biphase 24fps x 4 - This selects that the DD1500 will sync to bi-phase at 24 frames per second with 2 cycles per frame. This is used when synchronising the DD1500 to film equipment.

Biphase 25fps x 4 - This selects that the DD1500 will sync to bi-phase at 24 frames per second with 4 cycles per frame. This is used when synchronising the DD1500 to film equipment.

Biphase 24fps x 10 - This selects that the DD1500 will sync to bi-phase at 24 frames per second with 10 cycles per frame. This is used when synchronising the DD1500 to film equipment.

Biphase 25fps x 10 - This selects that the DD1500 will sync to bi-phase at 24 frames per second with 10 cycles per frame. This is used when synchronising the DD1500 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 DD1500 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 synced 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/EBU+RS422 - These options are available at all frame rates and are for use with RS422 equipped VTRs when the DD1500 is acting as an RS422 master controller (i.e. when all playback, locating, jogging, etc., of both the DD1500 and VTR are controlled from the DL1500). SMPTE/EBU from the VTR is still connected as usual via the EXT. TIME input and the EXT.TIME key must be switched on (as must the EXT. M/C key). The DD1500 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 from now on when using the DD1500 as an RS422 master.*

SMPTE/EBU+VITC - These options are available at all frame rates and allow the DD1500 to follow SMPTE/EBU timecode as normal during playback but, during extremely slow motion playback or jogging, the DD1500 automatically switches to VITC for better slow motion lock between the machines. Naturally, both the LTC and VITC inputs must be used when this timecode selection is made.

**NOTE:** *When the DD1500 switches to VITC at very, very slow jog speeds, you will not hear audio as you jog but you will notice improvements in the accuracy of frame locking at such slow speeds.*

RS422 - It is also possible to synchronise the DD1500 to timecode over RS422 only and all frame rates are supported. However, you will note that this is primarily of use when using the DD1500 with a non-linear video recorder (see the section that explains the RS422 functions for more details on this).

### TIME GENERATOR

Here you may select the type of timecode the DD1500 will generate. The options are:

RE-GENERATE SMPTE - This will re-generate fresh, electronic SMPTE/EBU timecode at whatever rate is being received. You may find this useful for re-stripping a tape where the source material has dropouts.

SMPTE/EBU selection - These will generate timecode at the selected frame rate regardless of what the EXT. TIME source is.

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

MTC - These selections will generate MIDI Timecode at all frame rates through the rear panel MIDI OUT. This should be used when synchronising a MIDI sequencer to the DD1500.

MIDI SPP - This will generate MIDI Clock with Song Position Pointer through the MIDI OUT. This may also be used for synchronising MIDI sequencers.

**NOTE:** *The DD1500 can read one type of timecode and generate another. For example, the DD1500 can receive SMPTE/EBU timecode at one rate and generate it at a different rate. It can also receive SMPTE/EBU and generate Bi-Phase at any of the rates available (or vice versa). Likewise, the DD1500 could be receiving SMPTE/EBU whilst simultaneously generating MTC or MIDI Clock. In this way, the DD1500 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 the wrong!) timecode rate.*

### GENERATE

This selects whether the DD1500 will generate the timecode selected above. The options are:

OFF - The DD1500 will not generate the selected timecode shown in the TIMECODE TYPE field. This may be useful to switch external equipment 'off-line'.

ON - The DD1500 is always generating the selected timecode when playing, recording, fast forwarding, rewinding, jogging and spooling.

VIA EXT.TIME KEY - This allows you to switch timecode generation on or off using the EXT. TIME key. When this is selected, with the EXT.TIME key ON, the DD1500 will generate the selected timecode type and when EXT. TIME is off, the DD1500 will not generate timecode. This may be useful when the DD1500 is a slave to an external device but is also passing on timecode to other equipment. You can use the EXT. TIME key to totally isolate the DD1500 so that it can be used on its own.

VIA EXT M/C KEY - This allows you to switch timecode generation on or off using the EXT M/C key. When this is selected, with the EXT.TIME key ON, the DD1500 will generate the selected timecode type and when EXT. M/C is off, the DD1500 will not generate timecode.

**TIME DISPLAY**

This allows you to set the type of timecode you wish the DD1500 to display. Normally, this is the same as the timecode type selected in the EXT. TIME SOURCE field (and the DD1500 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.

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 - 29.97 frames per second.

30 fps - non-drop 30 frames per second.

30 fps drop - drop frame 30 frames per second.

25fps (4%) - 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.

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.

Samples - elapsed sample points will be shown.

**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.*

**NOTE 2:** *The selected TIME DISPLAY is ONLY shown on the external monitor. The DL1500's timecode display always displays the timecode type selected in the EXT. TIME SOURCE field.*

Press EXIT to leave this page and return to the main screen display.

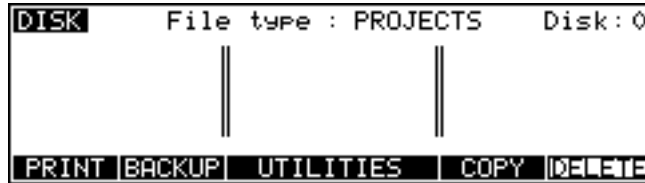
## 10 - SYSTEM SETUP

---

The SYSTEM page's soft keys take you to other pages where certain parameters that affect the whole unit may be set. Not all of these are relevant for basic operation so, for the moment, we will only look at the SETTINGS and DISK FORMATTING pages.

### DISK - FORMATTING DISKS

The DISK pages are used for general disk management such as renaming and deleting files, formatting disks, copying disks, etc.. For the moment, we will just look at formatting a disk as this needs to be done before you can start working with the DD1500. Pressing DISK displays this screen:



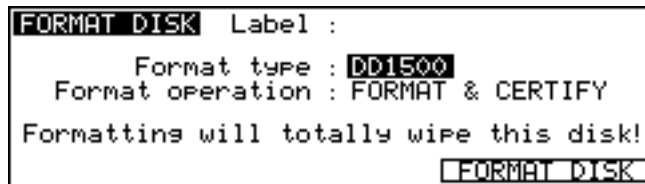
Assuming you have not used the system yet, no files exist on disk and so the DISK page is empty. If this is your first time to use the system, you may receive the message:



This indicates that the disk needs formatting. Press F2 - UTILS. You will see this screen:



Press FORMAT DISK (F5/F6) to see this screen:



You may select whether to format the disk for use in a DD1000 or for the DD1500. You should select DD1500 (the default selection) - DD1000 format is only of use if you think the disk may be used in an Akai DD1000.

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.

It is also possible to give the disk a name in the LABEL field. Here, you may enter a name of up to ten characters. This name will accompany the disk wherever you take it. To label the disk, move the cursor to the LABEL field and press NAME. You may enter a name of up to ten characters using the track select keys. Press EXECUTE once to complete the name and EXECUTE again to enter the name.

If you have a PC keyboard connected, with the cursor on the LABEL field, you do not need to press name - simply start typing to enter a name of up to ten characters. Press RETURN once to complete the name and a second time to enter it.

**NOTE:** Naming a disk is not compulsory! This is here entirely for your convenience.

Once you have set everything as you want, pressing FORMAT DISK will show this prompt.

Erase everything? SHIFT+EXEC to confirm

To guard against accidental formatting, you must press SHIFT+EXECUTE simultaneously to initiate the formatting. As you can see from the screens and the prompts, formatting will erase everything, erasing all files on it completely. BE VERY CAREFUL BEFORE PROCEEDING.

If you have external disk drives connected to the system, you may select which disk you wish to format in the DISK field. PLEASE CHECK THE CORRECT DISK IS SELECTED.

The EXECUTE key will be flashing and you should select as appropriate. Pressing SHIFT+EXECUTE will start the format process and pressing EXIT at this point allows you to cancel.

**NOTE:** Pressing SHIFT+EXECUTE now will start the format process and will wipe the disk. Be very careful before proceeding as you could permanently erase important data. Once the format process has begun, there is no going back!!!

If you press SHIFT+EXECUTE, you will receive this screen:

```

FORMAT DISK Label :                               Disk: 0
          Total  Certified  Bad
Data blocks      0         0     0
Audio blocks     0         0     0
Formatting. EXIT to abort
    
```

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

```

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

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 DD1500 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 of you can just let the format run for 30 seconds or so (enough time to write the directory) and press **EXIT** to abort. In most cases, **FORMAT ONLY** should be sufficient but please note that Akai 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...*

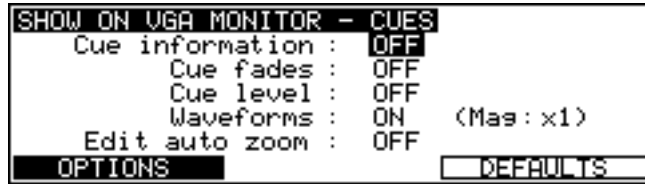
**FORMATTING THE DISK WILL ERASE THE CONTENTS COMPLETELY AND YOU WILL NOT BE ABLE TO RETRIEVE THEM.**

We will come back to the other disk functions later as these are all to do with disk management (rename, delete, copy disks, etc.) and assumes there is audio on the disk. If this is the first time you have used the system, we need to get something onto disk before we can look at these functions.



**SHOW (SHIFT+SYSTEM)**

The SYSTEM key's SHIFT function is SHOW. When you press SHIFT+SYSTEM, the key's LED will flash and you will receive the following screen display:



The options are split across two pages. The first page shown above offers the following:

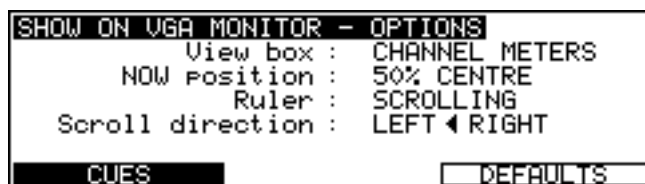
CUE INFORMATION	Allows you to select:
	<ul style="list-style-type: none"> <li>CUE NAMES      This will show the names of the current and, depending on the direction of playback/jogging/etc., the next or previous cues will be listed for each track down the right of the GRID.</li> <li>DISK IDS        This will show the SCSI ID numbers of the disk drives the cues are playing from will be shown down the right of the GRID</li> <li>DISK LABELS    This will show the disk label given in the FORMAT page down the right of the GRID.</li> <li>DISK NAMES     This will show the name given to the disk in the FORMAT page down the right of the GRID.</li> </ul>
CUE FADES	These can be switched ON or OFF. Scrolling is slightly smoother with the fades switched off.
CUE LEVEL	It is possible to show the cue's level with this option. The height of the blue box surrounding the waveform will vary according to its level (although this does have the effect of making the waveform display look off centre). CUE LEVEL may be switched ON or OFF.
WAVEFORMS	You may select whether the cues' envelopes are shown on the GRID and the options are ON or OFF. You will note that scrolling is slightly smoother with the waveforms switched OFF.
MAG	You may set the vertical magnification of the waveform envelopes. You may also do the same thing at any time more conveniently using SHIFT+DATA ENTRY +/-.
EDIT AUTO ZOOM	This function has three settings: OFF/MANUAL/AUTO.  With the parameter switched OFF, the vertical zoom in/out will zoom in from 16 tracks through 12, 8, 4, 2 and finally 1 track shown on the VGA monitor.

When switched to MANUAL, as you zoom in/out, if certain tracks are selected for editing, the monitor will automatically show the selected tracks as you zoom in. For example, if tracks 1, 2, 4 and 12 are selected, zooming in to eight tracks will show tracks, 1, 2, 3, 4, 5, 6, 7, 12; when you zoom in to four tracks, tracks 1, 2, 4 and 12 will be shown and zooming in to 2 tracks will, of course, show tracks 1 and 2. In many cases when editing, you want to zoom in on the tracks you are editing.

With this function switched to AUTO, as soon as you select a track for editing, the GRID will automatically zoom in to it. Any further tracks you select for edit will be shown on the monitor. For example, if you select track 3 for editing, the monitor will zoom in to one track, track 3. If you then select track 4, two tracks will be shown on the monitor, tracks 3 and 4. If you then select track 8, that too will be shown.

**NOTE:** When tracks are selected for edit, *SHIFT+CURSOR UP/DOWN* will toggle you between zooming in to the tracks selected for edit and the last selected vertical zoom level.

Pressing F1/F2 - OPTIONS - will display this screen:



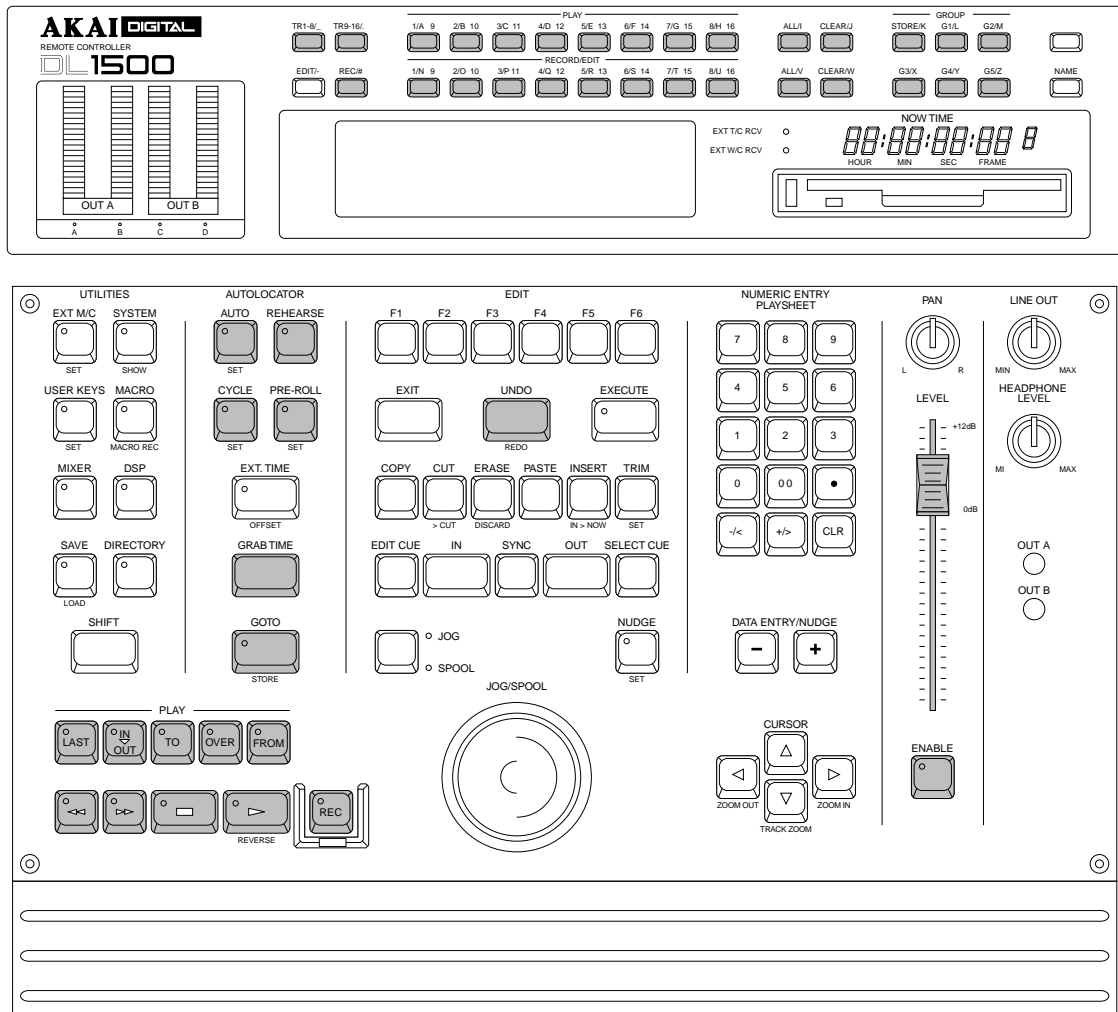
The parameters are:

- |                  |  |
|------------------|--|
| VIEW BOX         | Allows you to select what is viewed in the box below the GRID. You may select between CHANNEL METERS and LCD DISPLAY. CHANNEL METERS will show the tracks' output levels; LCD DISPLAY will show a duplication of the DL1500's LCD. |
| NOW POSITION     | You may set the vertical NOW marker anywhere on the GRID. 50% is central, lower percentages move it further to the left, higher percentages to the right.  |
| RULER            | You can select whether the ruler across the top of the GRID will be static or will scroll with the project.  |
| SCROLL DIRECTION | You may set the direction in which the project scrolls. You may select LEFT<RIGHT or LEFT>RIGHT - the arrow indicates the direction.   |

In both SHOW pages, you may reset the parameters to their default settings using the DEFAULTS soft key on F5/F6.

Press either EXIT or SHIFT+SYSTEM again to close this screen.

These are the basic settings one needs to make for operating the DD1500. We will look at other SYSTEM functions later on.



In the next three sections, we will see how to record and playback material as well as mark locators and locate to specific points in a project.

The main keys we will be looking are highlighted in the above diagram although others may be mentioned where appropriate.

**BASIC RECORDING**

Before we can do anything with the DD1500, we must first make a recording. Because the DL1500 has many standard multi-track tape recorder (MTR) keys, recording on the DD1500 is very simple. There are no special, separate record modes to encounter; simply select a track (or tracks) for record and press PLAY and RECORD as you would on a normal MTR. There are other aspects to recording but we will look at those a bit later on.

To select tracks for recording, first, press the top panel's REC/# key - it will illuminate. You may now use any of the lower RECORD/EDIT keys to select a track (or tracks) for recording onto. Tracks 1-8 are selected using the TR1-8 key and tracks 9-16 (if you are using a fixed hard disk) are selected using the TR9-16 key. When the track keys are selected, they will flash indicating 'record ready'. The monitor will show RECORD in red in the track status display area.

## 11 - RECORDING

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Once you have made your selection, to record, simply press PLAY (to start playback) and then press PLAY and the red RECORD key together. The track key(s) will be steadily lit as will the transport RECORD key. On the monitor, the recording will be shown as a red block as it is recording.

To stop recording, press STOP. After a second, the recording you have just made will be shown in blue (assuming the track is selected for playback otherwise it will be shown grey - muted) and the IN and the OUT times will automatically be marked at the start and end of the new recording. The RECORD track select keys will flash indicating that you are back in 'record ready' state, ready to record again.

To drop out of record (i.e. stop recording but keep playing), simply press PLAY - the DD1500 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. If you are using a hard disk, you will find that you can punch back in to record after about 1 second. If you are using an MO drive, you will find that the time is a bit longer and you won't be able to punch in again for a few seconds*

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

That really is all there is to do for simple recording - press REC/#, select a track or tracks as appropriate, press PLAY and RECORD together, press STOP or PLAY to stop 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. It will be recorded over in the GRID but, because all recording and editing is non-destructive, you can set the DD1500 so that the actual audio will still be on disk so you can retrieve that at a later date if necessary.

**NOTE:** *When you make a recording, the IN and OUT times are automatically marked at the start and end of the new recording. Because the AUTO function uses these times to punch in and out of recording automatically, if you wish to re-record over a recording you have just made, to ensure punch-in and out are at exactly the same position, switch on the AUTO function (see below - AUTO PUNCH IN/OUT).*

Another way out of a recording disaster is to undo the last recording you made using the UNDO key. In fact, you could undo the last twenty recordings you have just made using the multi-level UNDO function. Of course, should you change your mind, you can REDO the recording using SHIFT+UNDO (REDO). Not only can you use UNDO to repair mistakes you may have made but you could also use it to compare recordings. For example, you might make a recording that you think is acceptable but it could be improved upon so you re-record over it. After the second recording, you can use the UNDO function to compare the two. Being a multi-level undo, you could do this several times, making several recordings and then comparing them using UNDO and REDO, keeping the one you like best.

**ADVANCED RECORDING**

There is no 'advanced recording' mode as such - this section just tells you more about the recording functions.

Recording is designed to be as simple as possible and you may, if you wish, make a recording as described above. However, it is also possible to name recordings (although recordings are given a default name so that you may avoid this process if you just want to get on with the job and the recording can be renamed afterwards) as well as set other parameters should you wish.

When you press the top panel REC/# key, you will see this screen:

```

RECORD                               Record Disk:0
Recording name : TAKE 1
Record mode  : PROJECT + LIBRARY
Library name : RECORDINGS
Free on disk : 00:10:23:10.7
ROUTE INPUTS | AUTOCONFORM | SETUP
  
```

The fields on this screen are:

**RECORDING NAME** Here, you may name the recording you are about to make. To do this, press the NAME key and enter a name of up ten characters. If you are using a computer keyboard to input names, just start typing.

**NOTE:** The DD1500 has an 'auto-increment' function for names and so each new recording you make will have a new name based on the 'seed' name you give it here. For example, if you name a recording APPLAUSE, all subsequent recordings you make will be automatically named APPLAUSE 1, APPLAUSE 2, etc., until you specify a new 'seed' name in this field

The autoname function does not work when performing a punch-out followed by a punch-in. In this case, both recordings will have the same name. This is not a problem because recordings can have the same name in a project. Recordings can be renamed if you wish.

**RECORD MODE** In this field, you may select whether the recording you are about to make will be placed in the project only or in the project AND in the library selected in the LIBRARY NAME field (see below). When PROJECTS + LIBRARY is selected, the recording will be recorded directly into the project on the track(s) selected for record) and will also be placed in a library (in the above screen example, in a library called RECORDINGS). In this way, you have access to the 'raw' recording in its entirety (see the section 'HOW IT WORKS').

You may also select PROJECT ONLY. With this selection, new recordings will be placed only in the currently active project.

**NOTE:** PROJECT + LIBRARY is the recommended selection so that, in the event of a mishap, you always have access to your recordings. A possible 'mishap, is that you have made some recordings to PROJECT ONLY and forget to save the project. In this case, those new recording would be lost.

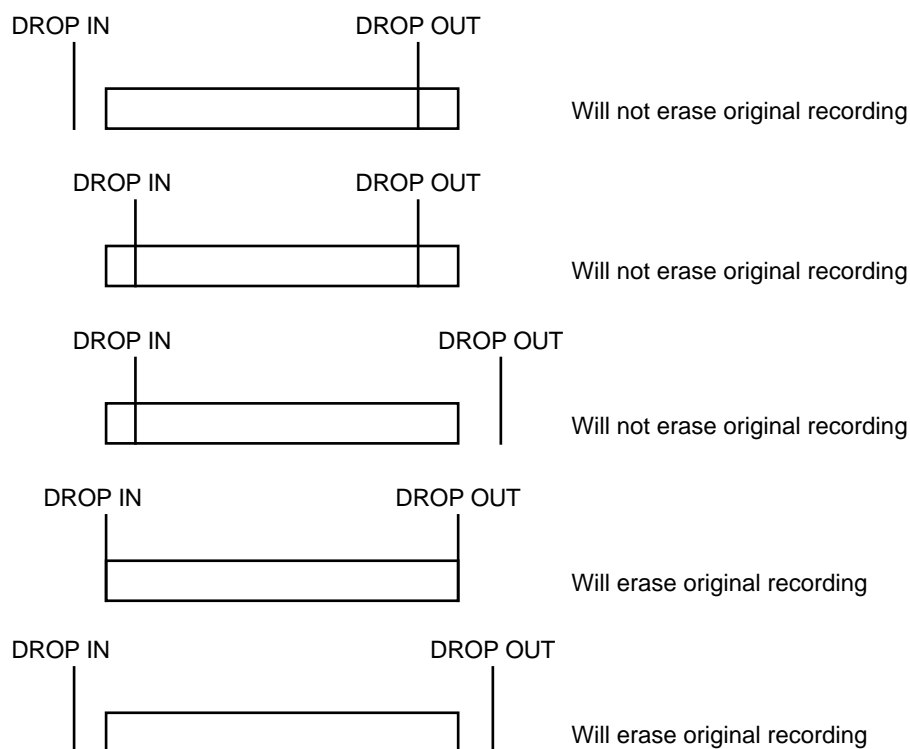
You will note that no extra disk space is used when recordings exist in both a project and a library.

PROJECT + LIBRARY is the default setting.

You may also select DESTRUCTIVE. This is a special type of record mode that behaves more like traditional tape.

As mentioned, recording on the DD1500 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 (unless you retrieve them with the SALVAGE function - see later). 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:



If you are using AUTO to drop in and out of record automatically and you have to keep repeating the auto-punch over and over again, the DESTRUCTIVE mode will be useful as it will help prevent the build up of unwanted recordings on your disk.

**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.*
- *If, during the session, you switch to PROJECT+LIBRARY in the RECORD SETUP page, if you then switch back to DESTRUCTIVE record mode and record over recordings made to PROJECT+LIBRARY, the audio associated with those recordings will not be deleted because the audio is also being referenced in the library.*
- *If you record over cues pasted or inserted into a project from a library, their audio will not be deleted from disk (this is also because these cues are referenced in a library).*

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 \*\***

**LIBRARY NAME**

Here you may select which library the recording will be placed in when PROJECT + LIBRARY is selected in the RECORD TO field. In the screen example shown above, the new recording will be recorded directly to the current project and will also be placed in a library called 'RECORDINGS'.

If, however, you do not wish the new recording to be placed in a library (i.e. the recording is unique to the current project and you know you will not need it again), you may select PROJECT ONLY.

### **NOTES REGARDING RECORDING TO A LIBRARY**

*There are advantages and disadvantages to recording to a library. The advantage is that ALL recordings you make are kept safe in the library so, regardless of what you do to them in the project, you can always fall back on the original source recording.*

*However, in the case where you are recording multiple punch-ins and punch-outs (for example, in dialogue recording), also placing them in a library means that all the mistakes and out-takes are also kept which you may or may not want. Another disadvantage of placing recordings in a library in this case is that when you subsequently come to clean up your disk to clear some disk space, you will find that very little space is cleared because even though the out-takes are not actually being used in any projects, they are being referenced in the library in which they are placed and so they will not be deleted. In this case, you will have to go through the library and specifically delete the clips you don't need.*

*Please refer to the section SYSTEM - DISK MANAGEMENT for details on the CLEANUP process.*

#### **FREE ON DISK**

In this field, you can see how much time you have free on the currently selected disk. This field is not accessible and is shown for information.

You will note that as you select more tracks for recording, so the amount shown in the FREE ON DISK field changes. For example, if you have 12 minutes free on disk, when you select one track for record, that time remains unchanged. If, however, you select two tracks for record, that figure will halve, informing you have 6 minutes. Should you select another track, it will show that only 4 minutes is available.

Of course, you still have 12 minutes available in total but this available time is divided by the number of tracks you have selected. For example, in this case, when two tracks are selected, you still have 12 minutes free on disk but, because you are making two recordings you may only record for a total of six minutes.

#### **TO DISK**

At the top right of the screen, you may select which disk to record onto (assuming you have more than one drive attached to the system). However, please note that recording to an external drive could cause playback problems later on.

For example, in the case where you are playing back a project from an MO disk in Drive SCSI ID 0 but, for some reason, you record to a hard disk on SCSI ID 1, if the MO is removed and played back on another system, because some audio has been recorded on the other system's hard disk, that audio will not play. The cue will be shown bright yellow in this case indicating that although the cue is in the project, the audio is not on the selected disk. In this instance, either make sure you record to the same disk that the project is on (you can see the Project Disk number on the VGA in the bottom left of the screen above the OVERVIEW). If you do record to an external disk, ensure that this disk accompanies the project disk or use the COMPILE function.



When recording, you will see this screen:

```
RECORD                               Record Disk:0
Recording name : TAKE 1
Record to : PROJECT + LIBRARY
Library name : ANIMALS
Free on disk : 00:10:23:10.7
Recording ... (SHIFT+REC to abort)
```

As you are recording, so the FREE ON DISK field 'counts down' as disk space is used up. In the event of a mishap, you can abort the recording by pressing SHIFT and the red REC key simultaneously. This will stop the recording process and delete it from disk, thereby saving disk space. It also deletes it from the library you may be recording into thereby preventing the build up of unwanted recordings.

### SETTING RECORD LEVELS

To set input levels, select the track you want to adjust, press the ENABLE key (its LED will flash) and adjust the level using the fader. You may adjust several tracks at once if you wish (i.e. for setting stereo record levels). To reset the input levels to unity gain (i.e. 0.00dB), press SHIFT+ENABLE.

**NOTE:** This fader only applies to the analogue inputs. You cannot set the level of any digital inputs using this fader.

### RECORD SETUP

It is possible to select certain options relating to recording in the RECORD SETUP page. Pressing F5/6 takes you to this page:

```
RECORD SETUP
Panel meters : MIX OUT A/OUT B
VGA meters   : MIXER LEVELS
Auto-monitor : RECORD AND STOP
Input gain range : +12dB
```

The parameters are:

#### PANEL METERS

This allows you to select which audio signals you see on the DL1500's meters. Input levels are shown on the TRACK METERS on the external monitor but, if you want a larger display, it is also possible to use the DL1500's front panel meters for monitoring input levels.

The default selection is MIX OUT A/OUT B where the panel meters are showing the output levels of stereo mix outputs A and B. However, you may also select that the panel meters show the levels of the record tracks (i.e. TRACK IN 1-4, TRACK IN 5-8, TRACK IN 9-12 and TRACK IN 13-16). These select that you are monitoring the levels at the track inputs on the panel meters. Just beneath the DL1500's meters are four LEDs labelled INPUT MONITOR. These will illuminate, indicating that you are now monitoring input levels and not output levels.

You may also select MIXER OUT 1-4, 5-8, 9-12 and 13-16 and this will display the output level for the tracks *after* the mixer (i.e. they will reflect level changes set by the DD1500's mixer) and you may select TRACK OUT 1-4, 5-8, 9-12, 13-16, this latter selection showing the actual levels of audio coming off disk *before* the mixer (i.e. full level regardless of mixer settings).

#### VGA METERS

You may also select what will be displayed on the meters on the VGA monitor using the VGA METERS parameter and you may select INPUT LEVELS (to view the inputs to the tracks selected for record), MIXER LEVELS (to view the output of the tracks *after* the DD1500m's internal mixer) and TRACK LEVELS (to show the true pre-fade level of the tracks *before* the DD1500m's internal mixer).

**NOTE 1:** Because you may set levels for the tracks using the DD1500m's internal mixer, it is possible that when TRACK OUTPUT is selected in the VGA METERS field, what you actually see on the meters may not be a true representation of the input level.

**NOTE 2:** Tracks must be selected for record before their signal levels will be shown in the meters.

AUTO MONITOR

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 DD1500 will take care of the switching automatically.

INPUT GAIN RANGE

It is possible to set the fader to boost the gain of the input signal by up to +24dBs. This may be useful when recording signals from domestic or semi-professional equipment that runs at -10dBm (the DD1500's analogue inputs are all calibrated to +4dBm).

The default selection is +12dB. This sets that the amount of gain available on the fader between its 0dB setting and +12dB setting is +12dBs.

You may also select +24dB where the gain of the fader between its 0dB and +12dB setting is actually +24dBs. However, be careful when selecting this as the fader is very sensitive in this range and could lead to unwanted distortion.

Press EXIT at any time to leave this page and revert to the main RECORD screen.

### AUTO PUNCH-IN/OUT

So far, we have seen how to drop in and out of record manually. It is also possible to automate this using the AUTO key at the top of the AUTOLOCATOR section.

The AUTO IN and OUT times are set using the IN and OUT keys. Switching AUTO to ON (i.e. LED lit) will activate the auto punch-in/out function.

To use the AUTO function, locate to a point before the IN time, select a track (or tracks) for record and press PLAY and RECORD together. The RECORD track select key will flash as will the transport keys' REC key as the DD1500 plays up to the IN time. When the IN time is reached, the DD1500 will automatically drop in to record and will drop out when the OUT time is reached.

**NOTE:** *One feature of the DD1500 is that, because the IN and OUT times are automatically marked at the start and end of a new recording, once you have performed a recording manually, to re-create that time and time again (for example, if you need to keep re-taking the same recording over and over again), you can simply switch AUTO on and the DD1500 will then repeatedly punch-in and out automatically at those points.*

*If the DESTRUCTIVE mode of recording is enabled under these circumstances, old recordings will automatically be deleted from the disk thus preventing the build up of unwanted, useless recordings.*

*If you want to keep the out-takes, please ensure that RECORD MODE field is set to PROJECT + LIBRARY.*

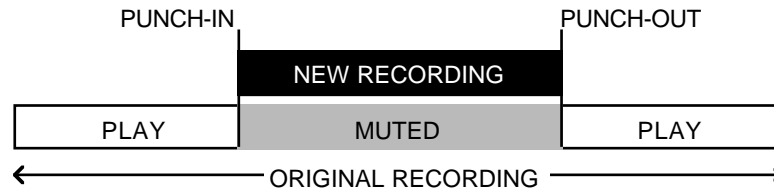
### REHEARSE

When the REHEARSE key is switched on, the DD1500 will 'pretend' to punch in and out but no audio will be recorded allowing you to rehearse a punch in/out prior to actually doing it.

**\*\* 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 DD1500 has seamless punch-in/out and to achieve this, the DD1500 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 DD1500 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 DD1500 and it is possible to punch in and out seamlessly on mono and stereo tracks.*

*However, in order to achieve this, it is necessary to drop tracks because, during recording, the track selected for recording is actually using two tracks - one for the actual recording and the other for the muted track. The DD1500 deals with this in a way so that this should not be much of a problem and the way this works is designed to be as transparent as possible. When you enable a track for record, the priority for track dropping is:*

**FIRST TRACK(S) TO BE DROPPED** - Those with no audio on them.

**NEXT TRACKS TO BE DROPPED** - Any tracks not selected for playback.

**NEXT TRACK(S) TO BE DROPPED** - Those with the least audio on them (i.e. a track with one or two cues will be dropped before a very busy one).

*In normal practice, you should find the process fairly transparent and it's only in very busy projects with a lot of cues across all tracks that you will hear the track dropping take place.*

*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.*

**INPUT ROUTING - ASSIGNING INPUTS TO TRACKS**

Because the DD1500 has more tracks than there are inputs, some way of assigning the inputs to tracks is needed. The default selection depends very much on the number of inputs you have installed in the system. In a basic system with no ADCs connected (i.e. the only inputs you have are the digital inputs A and B), the default assignment would be:

INPUTS	TO TRACKS							
DIGI A L/R	1	2	5	6	9	10	13	14
DIGI B L/R	3	4	7	8	11	12	15	16

If you add one DD1500a to the system with just two stereo analogue inputs, these would be automatically assigned as

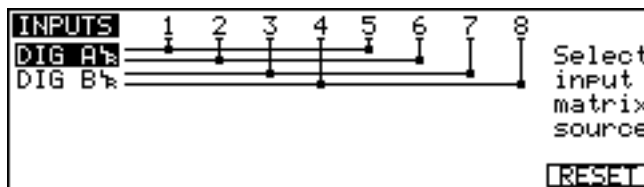
INPUTS	TO TRACKS			
ADC 1L	1	5	9	13
ADC 1R	2	6	10	14
ADC 2L	3	7	11	15
ADC 2R	4	8	12	16

The digital inputs A and B may also be assigned if you wish but, in this case, the analogue inputs would take priority in the routing.

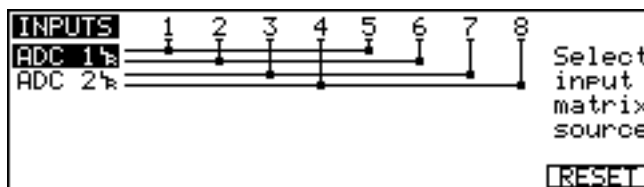
Of course, should you add more inputs (be they digital or analogue), the system will assign them automatically for you but you may re-assign them as you wish.

With this default setting, you may record using a normal 4- or 8-group output track laying mixer and assign mixer channels to tracks from the mixer just as you would with a normal MTR with no need to worry about having to set any special input routing. However, if you do wish to route inputs within the DD1500, this is also possible.

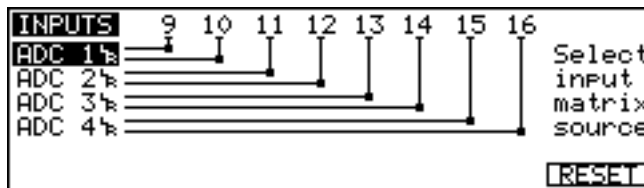
In the REC/# page, pressing ROUTE INPUTS displays something like this screen:



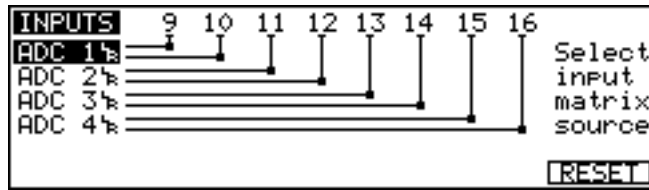
This shows the default routing in a system with no analogue inputs, only the standard digital inputs A and B.



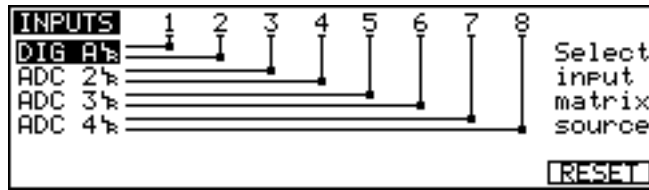
This shows the default settings for a system fitted with a DD1500a comprising one AD4 analogue input board.



This shows the default assignment for a system with eight analogue inputs with each input being routed to the 8 tracks. Inputs can be assigned to tracks 9-16 by pressing the TR9-16 key. You will see this screen display.

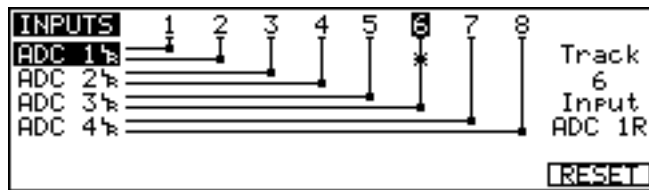


With the cursor to the far left of the screen in the INPUTS column, you may assign inputs to tracks using the DATA ENTRY +/- keys. For example, to assign digital input A to tracks 1 and 2 instead of the analogue inputs shown here, press the DATA ENTRY+ key to receive this display:

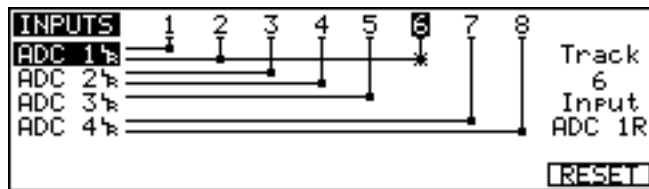


Any pair of inputs input can be assigned to tracks in this way

Inputs may also be routed to tracks using the cursor up/down/left/right keys to move to a matrix point. You then use the DATA ENTRY +/- keys to assign or de-assign accordingly. For example, to route ADC 1R to track 6, move the cursor to 6 using the cursor right key and use the cursor down key to select INPUT ADC 1R. The cursor looks like this \* and shows you where you are. To the right of the screen, the input you have selected and the track you are on is also shown.



The cursor is shown \* and the track number is highlighted. The selected track and input are also shown to the right of the screen - in this case, TRACK 6 INPUT ADC 1R. To route this input to the selected track, press the DATA ENTRY+ key. You will see this screen:



This shows that INPUT ADC 1R is now routed to tracks 2 and 6.

Any combination of inputs may be routed to tracks in this way (although two inputs may not be routed to one track). Don't forget that to route inputs to tracks 9-16, you should press the TR9-16 key.

Should you wish to reset the input routing to the default setting, press the RESET key. The input selection and track routings you make can be saved as part of the system settings when you save them (see SYSTEM - SETTINGS).

## 11 - RECORDING

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Of course, depending on your system, you may have more or less analogue and/or digital inputs. The procedure is exactly the same, however, regardless of system configurations.

Once you have set parameters in this page, you may continue as normal - just press PLAY and REC to record onto the selected tracks. As mentioned, however, it is not absolutely vital to set parameters in this page when all you need to do is make a quick recording. There is no need to name a recording if you don't want to and the default input routing (or the routing you have saved as part of the SETTING file) will be used.

### **BOUNCING DOWN TRACKS**

It is also possible to 'bounce down' tracks onto others. For example, you may wish to bounce down a sub-mix of some sound effects from tracks 1-6 onto 7 and 8. This is achieved using the ROUTE INPUTS page.

By selecting MIX A or MIX B as your input source, you may set a mix of the 'source' channels complete with level and pan settings and record them onto a track or tracks. For example, to record tracks 1-6 onto 7 and 8, select tracks 7 and 8 for record. In the ROUTE INPUTS page, route MIX A to tracks 7 and 8 and set a mix as appropriate using the fader and panpot (see the section MIXER for more details on mixing within the DD1500). When you press PLAY and REC to record tracks 7 and 8, you will record tracks 1-6 on them and you will hear it as it is being 'bounced'.

**NOTE:** *When bouncing down in this way, if you open the MIXER page and adjust levels during the bounce down, those level changes will be recorded. In this way, you could, for example, bounce down a music track to another spare pair of tracks and 'duck' their level under a voice over. You could then erase the original music tracks.*



**RECORDING DIGITALLY**

When recording digitally, the DD1500 must synchronise to that digital audio signal's wordclock. If you have selected a digital input to record through in the ROUTE INPUT page, the input is selected automatically as the wordclock source by the DD1500 as soon as you select a track for record.

If, for some reason, you select to record digitally but a digital input is not connected, as soon as you try to select a track (or tracks) for record, you will get the prompt:



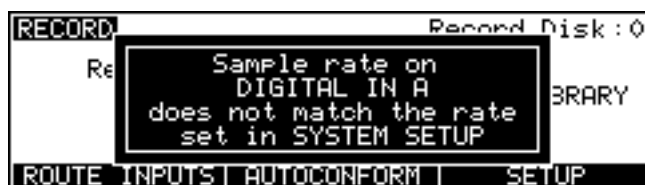
The digital input selected for recording will be shown - in this case, DIGITAL IN B has the problem. You will not be able to select any tracks for record until the problem has been fixed. Please check your digital audio connections.

If the digital audio signal gets disconnected or you select another digital input that has no connection, you will receive this prompt:



If you are in the process of recording when this happens, the DD1500 will stop recording and playback. Please check your connections.

If the DD1500's sample rate is one rate and yet the digital input receives another (for example, the DD1500 is set to 44.1kHz but you send it 48kHz from your DAT machine), you will receive the following prompt:



It will show the input A, B or C, whichever is selected. You will not be able to select tracks for record until the sample rates match. However, using the example above of the DD1500 being set to 44.1kHz and the digital input being 48kHz, setting the DD1500's sample rate to 48kHz would play the other tracks in the project at 48kHz and so they would play fast. However, if you record this signal at 48kHz and then reset the DD1500's sampling rate to 44.1kHz, the project will playback at its normal rate but the new recording will playback slowly. It is not possible to play recordings made at different sampling rates within one project in Version 2.00 software.

If you are syncing to some other external wordclock sync source (for example, 'black and burst' house sync) and you select a digital input to record through, the DD1500 will automatically switch its wordclock sync to the digital audio input as soon as you select a track (or tracks) for record. As soon as you have made the recording and you de-select the record tracks, the DD1500 will switch back to the house sync wordclock source. There may be times, therefore, when recording digitally that the DD1500 is not precisely synchronised to the house sync source.

## 11 - RECORDING

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You will note that when you are set up to record digitally and tracks are selected for record, should you go to the SYSTEM page and attempt to select a different wordclock sync source, you will receive the prompt:



However, if no tracks are selected for record, you may select a different wordclock sync source but, when you select tracks for record, the DD1500 will automatically switch from the newly selected wordclock source to the digital audio input.

**PLAYING BACK MATERIAL ON THE DD1500**

There really isn't much to say about playing audio - simply press the PLAY key!! Of course, in order to hear anything, you must select tracks for playback using the TRACK SELECT PLAY keys on the upper panel. When tracks are selected for play (i.e. their keys are lit), audio is shown in blue blocks on the monitor with a grey waveform. If a track is not selected for play (the keys are not lit), the monitor will display them as light grey blocks with slightly darker grey waveforms. In many ways, operation is much the same as for any standard MTR with the added bonus of a scrolling 'track sheet' on the external monitor.

The DD1500's transport keys are designed to emulate those on an MTR as closely as possible. The keys are:

- ▷ This is the PLAY key.
- This is the STOP key and will stop playback, recording, rewind and fast forward.
- ▶▶ This is fast forward. Pressing it once gives x 10 play speed; pressing it again gives x 100 play speed. Press it again to fast forward at x 10 play speed.  
  
When ▶▶ is pressed during play, the DD1500 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. Press it again to fast forward at x 10 play speed.  
  
When ▶▶ is pressed during play, the DD1500 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. Of course, in order to record, you must first select tracks to record using the RECORD select keys on the upper panel.

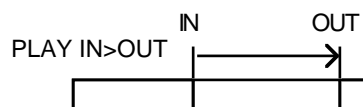
The DD1500 offers other play options not available on most tape machines or hard disk recorders, however.

For example, there is REVERSE PLAY. Pressing SHIFT+PLAY will cause the DD1500 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.

Above the main play keys is a row of five special play keys. These are:

**PLAY LAST** This will play the last thing you played. This is useful for checking something repeatedly - just keep pressing PLAY LAST. For example, if you have just made a recording and want to check it, press PLAY LAST.

**PLAY IN>OUT** This will play from the IN point to the OUT point. I.e.:



This is useful for checking edits but can also be used for checking the last recording you made. Because the DD1500 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.

### PLAY 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.

The default PLAY TO time is 1 second but you may change this by pressing SHIFT+PLAY TO. You will receive this screen:

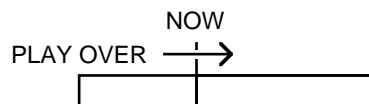
```
PLAY DURATIONS
PLAY TO duration : 1 Second(s)
PLAY FROM duration : 1 Second(s)
* TO + FROM time = PLAY OVER duration *
[RESET]
```

You may set the PLAY TO duration to a maximum time of 9 seconds. As this function is used almost exclusively for quick auditioning, times in excess of this are considered unnecessary.

You will also note that you can set the PLAY FROM duration here as well (see below) and the two duration's combine to set the PLAY OVER duration (see below). You may reset the play durations to the default settings of 1 second by pressing F6 - RESET.

### PLAY OVER

This allows you play over the NOW time, playing up to it and playing over it by a predetermined amount. I.e.:



Pressing SHIFT+PLAY OVER will display the PLAY DURATIONS screen shown above and the total PLAY OVER time is set using a combination of the PLAY TO and PLAY FROM durations. In this way, you may, for example, play for 1 second before the NOW time and 5 seconds after the NOW time as you wish. The maximum PLAY OVER time is 9 seconds either side.

**PLAY FROM**

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



The PLAY FROM duration can be set by pressing SHIFT+PLAY FROM.

**NOTE:** You will find that if PLAY durations are set longer than the default 1 second setting, play response will be marginally slower.

You will find these keys very useful for checking things. With their default values of 1 second, their play response time is very fast indeed making auditioning and checking very quick and convenient.

**MUTING TRACKS**

Tracks are muted simply by turning the appropriate PLAY track select keys off. When muted, the cues are shown in grey on the external monitor.

**SOLOING A TRACK**

There is no dedicated SOLO key on the DD1500. This is not an oversight on our part as the same thing can be achieved using ALL and CLEAR. To solo a track, press CLEAR and select the track(s) you wish to solo. To 'un-solo' the track(s), press ALL.

**GROUPING TRACKS**

It is also possible to group up to five different combinations of tracks together. Actually, this is not specifically a playback feature because you may also group tracks together for record and/or edit.

To store a group, assuming you have selected tracks as necessary, press the STORE key (it will flash). At this time, you may still select other tracks for play, record or edit. Press one of the GROUP keys G1-G5 to store the combination. Groups are recalled simply by pressing the appropriate GROUP key.

When a group is selected, should you select another track (or de-select one of the grouped tracks), the selected GROUP's key will go out as you have effectively overwritten the group selection you stored.

The GROUP keys are very useful for storing combinations of PLAY and RECORD. They are also particularly useful when editing, especially when copying awkward track combinations from one to another (for example, tracks 1, 3, 6 to tracks 2, 7, 8).

## 13 - AUTOLOCATOR

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 DL1500 has a powerful autolocator that allows you to store up to 100 numbered locate memories, 100 'grab' markers as well as being able to locate to the start, the end and the IN, SYNC and OUT points. You may also locate to the next and previous cues and you may also locate directly to timecode values.

Pressing the GOTO key will display this screen:

```
GOTO
      GOTO time : 00:00:00:00.0
Locator memory : 0
* Press EXEC to locate (EXIT to abort) *
TIME MEMORY START END
```

### LOCATING TO THE START OR END OF A PROJECT

To locate to the START or END of a project, simply press GOTO, START (F5) or GOTO, END (F6) and you will taken directly to these positions.

### LOCATING TO THE NEXT OR PREVIOUS CUES

You may also go sequentially to the start and end of previous and next cues by holding down GOTO and pressing the DATA ENTRY '+' key (next cue) or press GOTO+DATA ENTRY '-' (previous cue). This makes getting around the cues very rapid as you only need to hold down GOTO and press DATA ENTRY ++++++++ to go forward nine edits.

**NOTE:** You must HOLD the GOTO key when using the DATA ENTRY +/- keys in this way.

The logic for cue selection is that you will only go to the cues on the tracks selected for edit. If only one track is selected for edit, you will only go to the cues on that track. If one or more tracks are selected for edit, you will go to each one on each track in turn. If no tracks are selected for edit, only PLAY, you will go to every cue on all tracks in turn. If no tracks are selected for PLAY (i.e. all track select keys are off), the function does not work.

### LOCATING TO TIMECODE POSITIONS

You may locate to a timecode position using the numeric keypad. For example, to locate to 01:12:13:23, press GOTO, 1,00,12,00,13,00,23,00, EXECUTE where 00 is the 'double zero' key on the keypad. To locate to sub-frames, enter the timecode as above and then press the ● key to enter the sub-frame value. For example, to locate to 01:12:13:23, press GOTO, 1,00,12,00,13,00,23,00, ●,7, EXECUTE.

**NOTE:** If you previously located to a locator memory number, you may have to press F1 to select TIME.

### LOCATING TO LOCATOR MEMORIES

To locate to a previously stored locate memory, press GOTO, F2 (MEMORY) and the appropriate number 0-99 on the keypad followed by EXECUTE (see STORING LOCATE MEMORIES).

You may also locate to locate positions sequentially using the numeric keypad's -/< or +/> keys. Pressing GOTO and either of these will take you to the next locate point, whatever that may be. It could be a locate memory number, a GRAB marker, the IN, OUT, SYNC points or the start and end of a project.

Locate points are unique to a project and all locator memories are saved when you save the project and are recalled when the project is subsequently re-loaded.

**STORING LOCATE MEMORIES**

To store locate memories, press SHIFT+GOTO (STORE). You will see this screen:



The STORE TIME field shows the current NOW time when you enter this page. However, by pressing F2 - TIME - you may change this time here prior to storing it but this will not affect your position and you will stay on the current NOW time. For example, if you know you want to store 00:05:00:00.0 in a locator memory, you may enter this value here without moving from the current NOW time.

There are actually two ways to store locate memories. One allows you to store single memories and leave the page, the other allows you to stay in the page and store multiple locate memories without having to keep re-entering the STORE page.

To store a single memory, locate to the time you want to store using GOTO, TIME and then press SHIFT+GOTO (STORE), type in a locate memory 0-99 from the keypad and press EXECUTE.

To store multiple locate memories, enter GOTO STORE and enter the first memory number 0-99 you want to store and then press STORE NEXT (F5/6). The memory will be stored and TO LOCATOR MEMORY number will automatically be incremented to the next number so you can store the next number simply by press STORE NEXT again. This allows you to store locate positions 'on the fly' during playback. For example, with this page open and select a suitable memory location. Now start playback and, while playing back, pressing STORE NEXT will store the memory locations incrementally. You may also do this whilst jogging or using the NEXT/PREV CUE function, etc.. Pressing EXIT or EXECUTE will close this screen and return you to the main screen.

When you store locate memories, they are shown on the scroll bar beneath the GRID as a white triangle:



You may also mark locate points using the GRAB key. Simply pressing the GRAB key will mark a grabbed locate point and it will be show as a grey vertical line in the scroll bar beneath the GRID:



You may 'grab' the points at any time when the DD1500 is stopped or, in fact, when playing back. These markers are particularly useful for marking locate points of interest you may wish to come back to later (for example, sections in a piece of music, mistakes in a dialogue track, etc.) and up to 100 grab points may be marked in one project. They can be converted to locate memories simply by locating to them (holding down GOTO plus the numeric keypad's -/< or +/> key) and then storing a locate memory as described above.

When this page is open, pressing EXIT will return you to the main work page.

## 13 - AUTOLOCATOR

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### CLEARING LOCATE MEMORIES

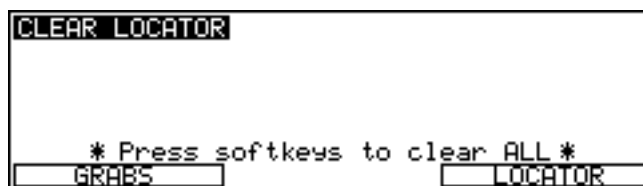
Sometimes, it may be necessary to clear (delete) one or more (or all) locator memories. There is no real benefit to this other than reducing clutter in the scroll bar by removing locate memories that are no longer required.

### CLEARING SINGLE LOCATE MEMORIES

To clear a single locate memory, press SHIFT+GOTO(STORE), select the locator memory you wish to clear and press F3/F4 - CLEAR. If you make a mistake, simply press STORE again to re-mark it.

### CLEARING ALL LOCATE MEMORIES

To clear *all* locate memories, press SHIFT+GOTO(STORE) and then SHIFT+F3/F4. You will receive this screen.



Press LOCATOR to clear all locate memories; press GRABS to clear all GRAB markers. You will receive prompts for these and the EXECUTE key's LED will flash. You should press EXECUTE to clear or EXIT to abort.

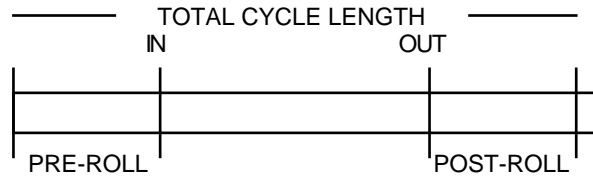


**CYCLE**

With CYCLE switched on, the DD1500 will play repetitively between the IN/OUT points you have marked.

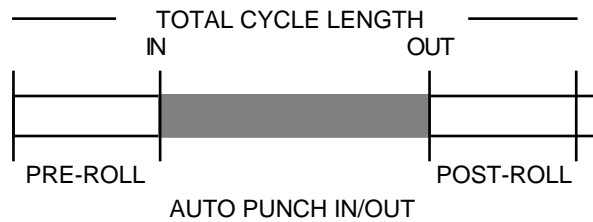
This may also be used in combination with the PRE-ROLL key (see below) and the AUTO function.

With PRE-ROLL switched ON, the repeat will play for a time before the IN time as set by the PRE-ROLL. It will then play for a time after the OUT time as set by the PRE-ROLL. For example, with a PRE-ROLL of 5 seconds, the cycle will play from 5 seconds before the IN time and for 5 seconds after the OUT time. I.e.:



It is also possible to use this with the AUTO punch in/out function.

For example, with CYCLE, AUTO and PRE-ROLL on, you can automate your recordings very conveniently. The PRE-ROLL will cause playback to commence at a set amount before the IN time and will then play back for the same amount after the OUT time, punching in and out at the IN/OUT times accordingly. In this way, you can set a 'run in' and a 'post-roll' to an auto punch in/out.



**NOTE:** The CYCLE function does not offer 'seamless' looping and there will be a small gap in playback as the DD1500 cycles back to the IN point. The exact length of the gap depends on the IN>OUT length.

## 13 - AUTOLOCATOR

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### PRE-ROLL

The PRE-ROLL key allows you to set an offset to locate times. This offset is then added to all locate time points you go to. For example, with a pre-roll of 3 seconds, if you locate to 00:01:00:00.0, you will actually locate to 00:00:57:00.0. Similarly, with a 3 second pre-roll, you would locate three seconds before the IN time in the event of you pressing GOTO IN. Similarly with GOTO OUT or SYNC. Locating to a locate memory would have the same effect.

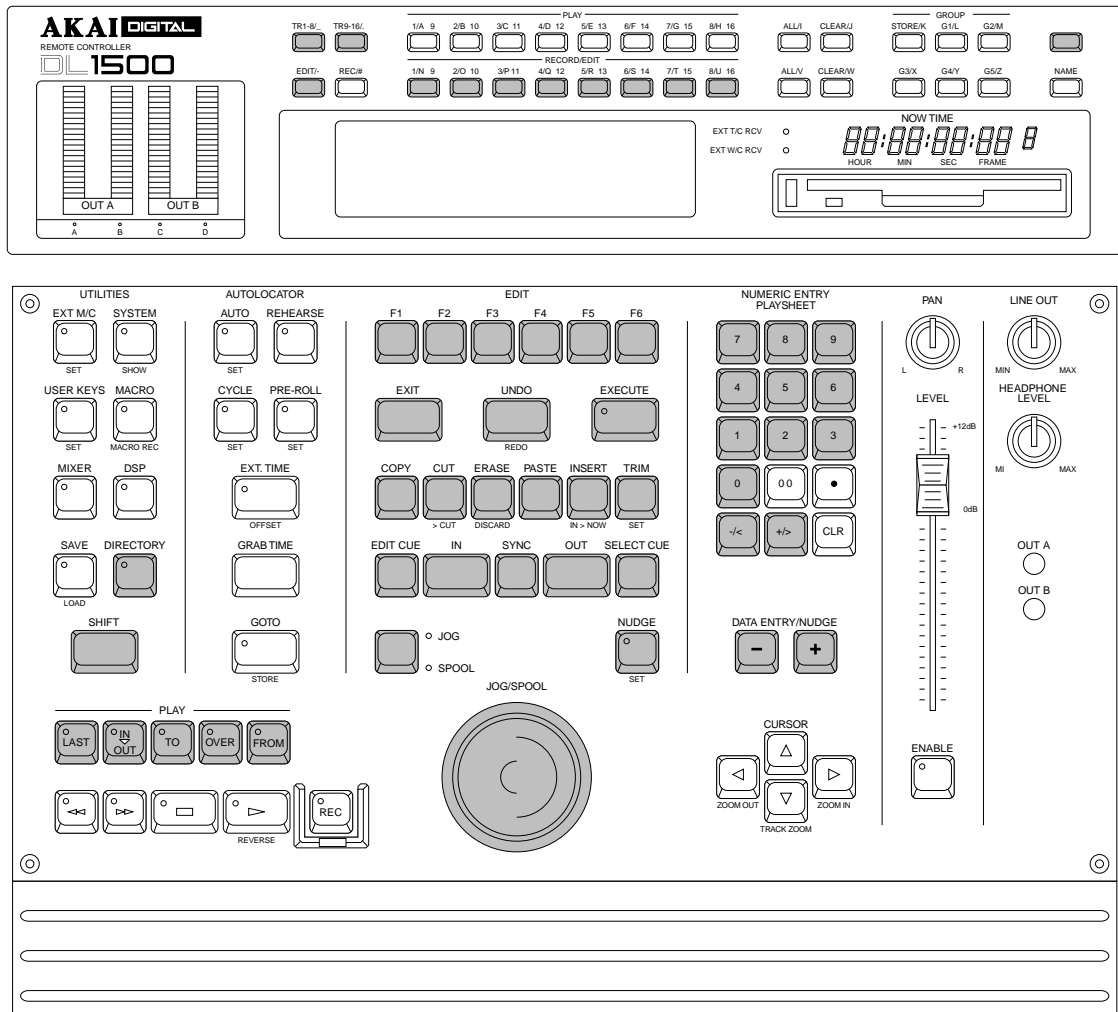
The principle use of PRE-ROLL is when synchronising mechanical tape players (VTRs, MTRs, etc.) to the DD1500. Because mechanical devices need a certain amount of time to get up to speed, it is necessary to locate to a point a few seconds before where you really want to be so that the external devices get up to sync by the time you reach the actual locate point.

The PRE-ROLL time is set by pressing SHIFT+PRE-ROLL(SET). You will receive this screen:

```
PRE-ROLL SETUP
                Pre-roll : 1 Second
* All locates will be minus this time *
                                RESET
```

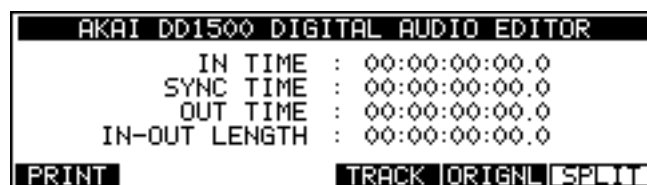
Simply set the pre-roll time you require using the DATA ENTRY+/- keys or more directly from the numeric keypad. If you get confused in this complicated screen, press RESET (F6) to rest the pre-roll time to the default time of 1 second!!

When PRE-ROLL is switched on, all locates will be minus the time set here.



In this section we will be looking at editing on the DL1500. The keys we will be using principally are highlighted above although others will be mentioned and described that are relevant to these functions.

The screen you see most of the time when operating the DL1500 looks something like this.



The IN, SYNC and OUT times are shown as is the IN/OUT length.

Before we can look at editing, however, one very important aspect to the DD1500's editing is the concept of LIBRARIES and CLIPS. The library function allows you to copy edits away to a library for re-use later on. These library clips may subsequently be imported into a project using PASTE and/or INSERT. In this way, you can have a large assortment of sound effects, music cues, etc., on disk and build projects using these recordings.

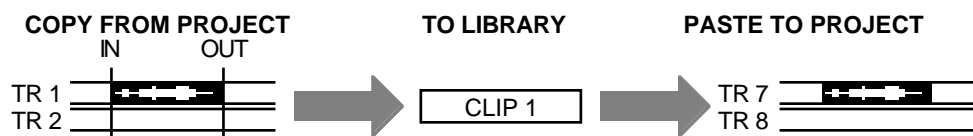
**DIRECTORY - USING LIBRARIES**

The DIRECTORY key allows you to access the libraries in order to import recordings into your project from disk. For example, you may use this to access a sound effects or music library you may have on disk.

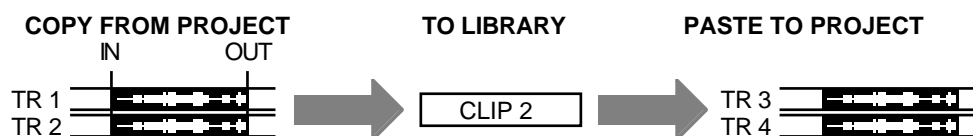
A LIBRARY is a file in which you can keep an assortment of CLIPS. CLIPS are edits you make in a project (complete with fade up, fade down, level adjustment, sync points, etc.), which can be stored away in libraries for future use. In this way, you can use the DD1500's libraries to assemble sound effects and music cue libraries as well as generally file your recordings and edits more efficiently. Without any form of library system, when you enter DIRECTORY, all you would see is a huge list of all recordings and edits which would be very difficult to keep track of.

If you have used a WINDOWS™ based computer or a Macintosh™ at any time, you can liken the DD1500's libraries to the concept of 'folders'. In this way, you can sort your recordings and edits by category. For example, you may have an ANIMALS library where you keep all your animal sound effects; you may have a TRAFFIC library where you keep all your traffic SFX; an AUTOS library where you keep all your car sounds; a MUSIC library where you keep your music cues. Furthermore, you can copy and move clips from one library to another - for example, a sound in TRAFFIC may also be useful when you are using the AUTOS library so you could copy it from one to the other. You may place 'raw' recordings into libraries as well and you can import these 'raw' recordings into a project at any time. Once in the GRID, they can be edited and these edited stored as part of the project and/or stored in libraries for future use.

At its simplest level, a library clip can consist of one cue from one track. I.e.:

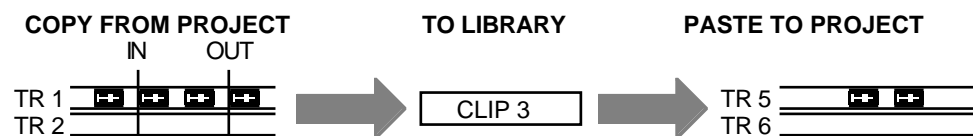


The next level would be to have two cues from two tracks (for example, a stereo cue across two tracks with the left and right sides copied to a library). I.e.:

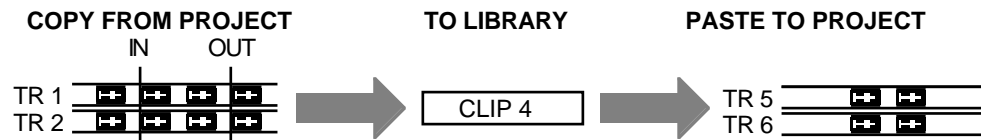


As a CLIP, these two cues would have just one filename (for example THUNDER 1) but, when you come to place this clip into a project, you would be inserting two cues across two tracks.

The next level up would be for a clip to contain several sequential cues. This would typically be achieved by marking an edit region that spans several cues. I.e.:

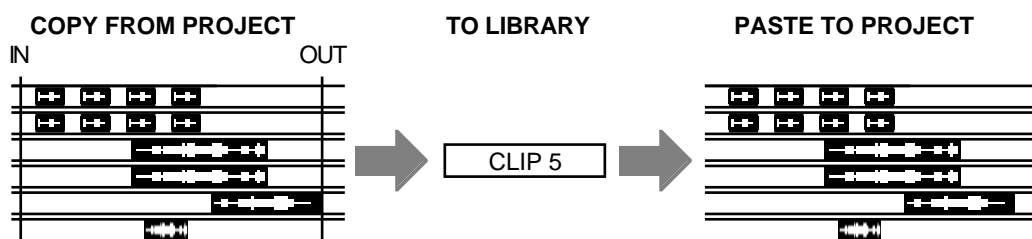


You could, of course, mark an edit region that spans several sequential cues across two tracks (i.e. several stereo cues). I.e.:



In this way, you can manage mono and stereo files very easily and no distinction is made other than mono files only need one track to paste onto, stereo files need two tracks (preferably adjacent but not absolutely necessary).

The logical conclusion to this, however, is that a clip could actually comprise several sequential cues across many tracks (i.e. a multi-track clip). For example:



In this way, you can copy and keep a whole 'scene' of cues for use at a later date. In fact, you could copy an entire project into a library.

A library can contain any combination of mono, stereo and/or multi-track clips with no restriction however please note that a library can only hold up to a maximum of 256 mono clips or 200 stereo clips (if you use many multi-track clips, this number reduces).

You may create any number of libraries and arrange them as you like with each one holding up 256 clips. You may, if you wish, have libraries on different disks and use these to paste/insert clips into project. However, please note that pasting something into a project from a library is not a true 'copy' function and, in the case where a project consists of lots of clips pasted in from different disks, those disks must be present on the system if the project is to play back successfully.

Of course, when you paste a clip into a project, you can edit it further within the GRID and copy it back to the library (or another library) in its edited form for use later on. The system allows great flexibility in the editing, handling and management of audio.

It is a good idea to become familiar with the concept of libraries as it is quite fundamental to successful and flexible operation of the DD1500.

Now that we have a basic understanding of the libraries, let's now look at the function.

Pressing DIRECTORY will show something like this screen display:

```
DIRECTORY List of libraries on Disk: 0
ANIMALS      || Assrtd FX      || Cars, etc.
Crashes      || Crashes 2     || Demo Lib 1
Demo Lib 2   || Demo Lib 3    || Ext Atmos
Foley 1      || Misc SFX      || Music cues ↓
PRINT        || NEW          || OPEN
```

Here we see the libraries currently on Disk 0.

Libraries are automatically sorted alphabetically from right to left and down. The small downwards pointing arrow found in the bottom right of the screen indicates that there are files 'below' screen which you can access by scrolling down using the cursor keys. In this example, if there were libraries 'above' the current screen display, an upwards pointing arrow would be shown:

```
DIRECTORY List of libraries on Disk: 0
ANIMALS      || Assrtd FX      || Cars, etc. ↑
Crashes      || Crashes 2     || Demo Lib 1
Demo Lib 2   || Demo Lib 3    || Ext Atmos
Foley 1      || Misc SFX      || Music cues ↓
PRINT        || NEW          || OPEN
```

Libraries are selected by moving the cursor using the cursor up/down/left/right keys. When the cursor is highlighting the library you wish to use, press F6 - OPEN - and you will be taken to that library where you will see a list of clips contained in the library. I.e.:

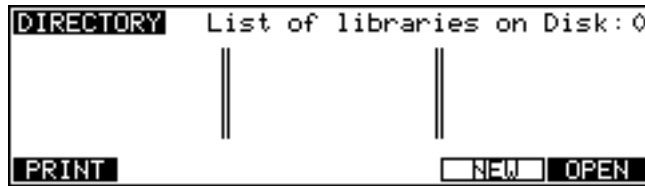
```
CLIPS Library Name : Demo Lib 1 Disk: 0
THUNDER 1   | THUNDER 2   | Lightning ↑
RAIN FX 1   | THUNDER 3   | Big Thund
Rainloop 1  | HEAVY RAIN  | RAINDROPS
RAIN+WIND1  | WIND+RAIN2  | WIND HOWL ↓
INFO        || PLAY CLIP  || UTILS     || CLOSE
```

In this example, we can see a list of library clips. As indicated by the arrows, there are files 'above' and 'below' the screen which you may scroll to. The top line that shows the Library Name and Disk number are for reference only - you cannot actually select another library or disk ID in this page. To open another library, close the current one and select the one you want from the main DIRECTORY list.

Of course, the above example assumes that you have taken the time to create and assemble a series of libraries. If you are using the DD1500 for the first time, you will not have any libraries or clips so let's see how to create a new library and place some clips in it.

**CREATING A NEW, EMPTY LIBRARY**

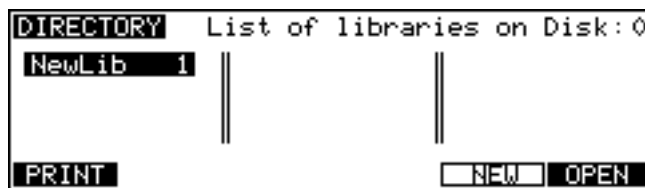
Press the DIRECTORY key to receive this screen:



Press F1/F2 - NEW LIBRARY. You will receive this prompt on the bottom of the LCD:



The EXECUTE key will flash and you should respond accordingly - EXECUTE for YES, EXIT for NO/CANCEL. If you press EXECUTE, the screen will display:



The library is given a default name "NewLib 1". If you wish to give it a more meaningful name, simply press the NAME key and type in a suitable name using the track select keys followed by EXECUTE to complete the name and EXECUTE again to rename it. If you are using a computer keyboard, there is no need to press NAME; simply start typing to enter a new name, press RETURN to complete the naming process and RETURN again to rename the library. You can now add clips to this library using the dedicated row of COPY, CUT and/or ERASE keys. You may subsequently paste or insert clips from this library into projects you may be working on. Of course, you may also create other libraries. If you do, you will note that as you rename them, so they are automatically sorted alphabetically.

We will come back to working in the DIRECTORY page later on when we have copied some clips into our library as the DIRECTORY page allows you to 'manage' those clips, copying and moving them from one library to another.

### EDIT CLIPBOARD

The EDIT CLIPBOARD can be regarded as a miniature library. It can hold up to ten clips 0-9 which are available for pasting and inserting into a project at any time. The clipboard is shown on the VGA monitor at the top right of the screen and here you can see the edits you have placed in it.

EDIT CLIPBOARD	
0:	MUSIC 1
1:	DIALOGUE 1
2:	DIALOGUE 2
3:	MUSIC CUE
4:	CAR CRASH
5:	
6:	
7:	
8:	
9:	THUNDER

When you copy, cut or erase an edit to the clipboard, the name of the cue is shown in the clipboard number you have used. You may, if you wish, give an edit a different name prior to placing it in the clipboard so that you can see at a glance what is in the clipboard. When an edit is re-named in this way, the new name will be used when you subsequently come to paste or insert the edit later on.

In the case where the IN/OUT markers straddle several cues that have different names, the name of the first cue selected will be shown in the clipboard. When that edit is subsequently pasted or inserted back into the project, the original name will be shown.

The EDIT CLIPBOARD is a very convenient way of having edits readily available for immediate access at any time. In a way, if you consider the analogy of tape editing, the clipboard is the digital equivalent of putting certain useful edits to one side and hanging them up for use later on.

CLIPBOARD 0 is the default clipboard and unless another clipboard number is specifically selected, this is the clipboard number you will copy, cut or erase to or paste or insert from.

Using the clipboard is designed to be very quick and easy. At its simplest level, to copy an edit to, say, clipboard 5, simply mark the region you are interested in, press COPY, 5, EXECUTE. To paste that back in elsewhere, press PASTE, 5, EXECUTE. Prior to copying it to the clipboard you could give it a name and prior to pasting it in, you can audition it to check you have selected the correct one.

You will find the EDIT CLIPBOARD an invaluable aid when editing.



**SOFT KEYS**

The soft keys below the LCD display functions which change according to the DD1500's status. Sometimes these are used to go to other pages or call other functions, sometimes they are 'action' keys that perform specific functions. We have already seen some of their functions in the AUTOLOCATOR section. We will look at more of their functions during the course of this section.

**EXIT KEY**

The EXIT key is a 'cancel' or 'abort' key and will take you out of any situation without committing it.

**UNDO KEY**

The DL1500 offers multi-level undo of up to 20 steps allowing you 'repair' an edit should you make a mistake. To undo a mistake, simply press UNDO. If you have been experimenting with something and have carried out a series of edits, you may undo them sequentially by repeatedly pressing UNDO.

**REDO (SHIFT+UNDO)**

If you undo something and wish to revert back to the previous version, pressing SHIFT+UNDO (REDO) will redo the undo. In the event of you undoing a few steps, pressing REDO several times will sequentially undo the undos.

**EXECUTE KEY**

Most editing functions of the DD1500 are completed using EXECUTE. In an action where it necessary to press EXECUTE to complete it, the key's LED will flash and you should press EXECUTE to complete the action. Whenever this LED is flashing, EXIT will always abort the action without committing it. For example, if you press CUT, the EXECUTE key will flash indicating that you should press EXECUTE to complete the edit. However, if at this point, you change your mind, press EXIT to abort. This is common for all edits on the DL1500.

Before we look at the row of six edit keys on the DL1500, let's go down a row as it is necessary to understand the operation of the IN, SYNC, OUT and SELECT CUE keys first as these are essential to the DD1500's editing.

**IN KEY**

This large key allows you to mark an IN time for an edit. When you mark an IN time, a vertical green line is shown on the monitor and the IN TIME is shown in the LCD. This indicates the start of an edit.

**SYNC KEY**

This allows you to mark a sync point in an edit or a cue and this can be used for syncing up material with other aural or visual events. For example, it could be used to precisely back-time a music cue to end at a specific point in a dialogue cue on another track or to line up a car crash with a music crescendo, whatever. When you mark a SYNC point, a yellow vertical line is shown on the monitor. The time is also shown on the LCD.

**OUT KEY**

This allows you to mark an OUT time for an edit. When you mark an OUT time, a green vertical line is shown on the monitor showing you the position of the OUT time. The OUT time is also shown on the LCD. When an edit region is marked in this way, the area in between the IN and OUT marks is highlighted green and the waveform (if selected for display) is shown in black on the monitor on the track(s) selected for EDIT. The IN to OUT length is shown on the LCD. This region may now be subjected to the editing functions on the DD1500 such as COPY, CUT, NUDGE, etc..

**NOTE:** The OUT time CANNOT be placed before the IN time. Should this happen and you try to do an edit, the LCD will display the prompt.



The same message will also be displayed if you try to do an edit and an IN and OUT time are at the same time.

You may also use IN, SYNC and OUT to select whole tracks for editing.

TO SELECT A TRACK FROM THE IN POINT TO THE END - press IN (to mark the IN time) and then, whilst holding the IN key, press OUT. This will select the whole of the track(s) from the IN time to the end. The track(s) selected for editing will be shown in green from the in point to the end of the track on the monitor screen.

TO SELECT A TRACK FROM THE OUT POINT BACK TO THE START - press OUT and then, whilst holding OUT, press IN. This will mark the track(s) from the start of the track to the OUT time. The track(s) selected for editing will be shown in green from the OUT time back to the first cue.

TO SELECT A TRACK FROM THE SYNC MARK TO THE START OR END - press SYNC and then, whilst holding SYNC, press IN. This will mark the track(s) from the SYNC marker the start of the track(s). Pressing the SYNC key and then, whilst holding SYNC, pressing the OUT key will mark the track(s) from the SYNC marker to the end of the selected track(s). The track(s) selected for editing will be shown in green from the OUT time back to the first cue.

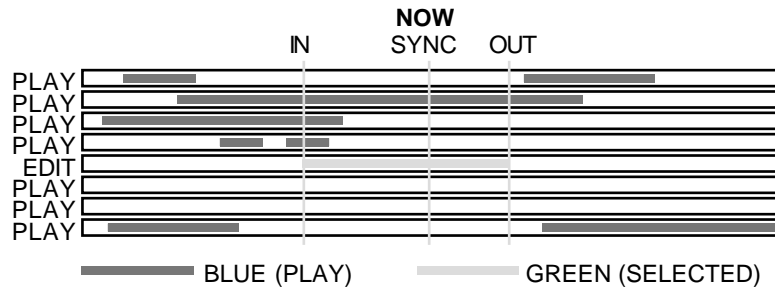
TO SELECT A WHOLE TRACK - press SYNC and then, whilst holding SYNC, press IN and then OUT (or OUT and then IN - it doesn't matter which order they are pressed). If several tracks are selected for editing, they will all be selected. The track(s) selected for editing will be shown green from the first to the last cue.

The SYNC and OUT keys can also be used when pasting or inserting to paste/insert to specific sync points you may have marked or to back-time an edit. We will look at this when we come to examine PASTE and INSERT.

**SELECT CUE**

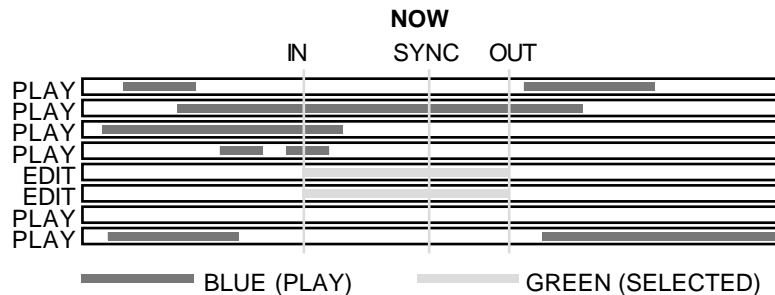
SELECT CUE marks the IN and an OUT at the start and end of a cue. This saves you having to specifically mark the IN and OUT before you can proceed.

Typical operation is to line up the cue you are interested in on the NOW time, select the track for EDIT and press SELECT CUE. The cue will be highlighted green and the SYNC mark will be placed at the point at which it is selected. I.e.:



EXAMPLE A - SELECTING A SINGLE CUE

This also works for stereo cues. Line the cues you are interested in on the NOW time, select both relevant tracks for EDIT and press SELECT CUE. The IN and OUT will be placed at the start and end of the cues on both tracks and the SYNC marker placed at the point of selection. I.e.:

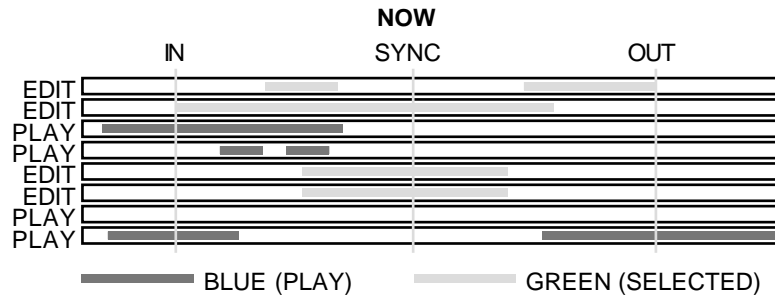


EXAMPLE B - SELECTING A STEREO CUE ACROSS TWO TRACKS

You may also select multiple cues in this way. In this case, the IN and OUT will be placed at the start and end of the longest cue(s) and anything that falls within that edit region will be selected. For example, imagine that you have this situation:



Pressing SELECT CUE will give this result:



EXAMPLE C - SELECTING MULTIPLE CUES

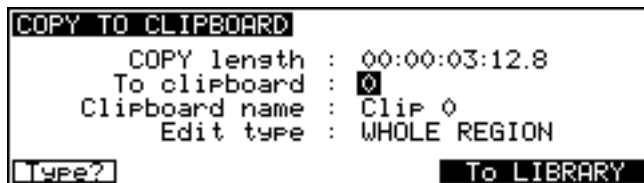
When multiple cues are selected (i.e. several tracks in edit), all selected cues are highlighted green. If you turn any of the selected tracks off, those cues are de-selected but, if you turn them back on again, they are re-selected. To select other cues on other tracks, simply turn them on for EDIT.

Cues selected using SELECT CUE may be subjected to all the various editing functions available but without the need to specifically mark IN and OUT times.

It must be said that multiple cue selection is not the prime use of SELECT CUE. Its principle use is to select a single cue on one track (or stereo cue on two tracks) for editing (copying, cutting, erasing, slipping, nudging, timestretching or for setting the level and fade up/down parameters). However, you can, if you wish, use SELECT CUE for selecting multiple cues in a larger edit region (for example, for setting the levels or a common fade down time for a group of cues). Although this can be achieved by specifically setting the IN and OUT times manually, you may find it saves you time to use SELECT CUE.

**COPY TO CLIPBOARD**

This will copy the edit region within the IN/OUT marks or will copy the currently selected CUE(s) to the clipboard. Pressing COPY will display this screen:



You can see the length of the edit region/cue(s) in the COPY LENGTH field. You cannot access this field and is shown for information purposes only.

When you press COPY, the EXECUTE key's LED will flash. Simply pressing the EXECUTE key at this point will copy the edit region/cue(s) to the default edit clipboard 0 and will also close this screen. If you wish, however, you may like to copy the current edit region/cue(s) to one of the numbered edit clipboards 1-9. To do this, press one of the number keys 1-9 on the numeric keypad before pressing EXECUTE. The clipboard number will be shown on the LCD. Pressing EXECUTE will copy the edit region/cue(s) to the selected clipboard. For example, to copy the edit to clipboard 5, press COPY, 5, EXECUTE.

If you wish, prior to copying the edit to a clipboard, you may give it a name for easier reference later on. If you do not name it, it will take the name of the currently selected cue or the cue within the edit region. If multiple cues are selected, the name of the first cue will be shown in the selected clipboard. However, when you come to paste this back in, the other cues in the region will retain their original name.

To name the edit prior to copying it, press the NAME key. The CLIPBOARD NAME field will 'open':



You may enter a name of up to ten characters using the track select keys on the upper panel of the DL1500. Press EXECUTE to complete the naming action and then EXECUTE again to complete the copy.

If you are using a computer keyboard with the DL1500, just start typing to name the clip. Press RETURN to complete the naming process and RETURN again to complete the edit.

**NOTE:** if you rename a cue when copying it will use this name when subsequently pasted back in. If you name a region that has multiple cues in it, ALL the cues will share the same name when you come to paste it back in.

## 14 - EDITING

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You may also select the type of edit you wish to copy using F1 - TYPE? (or by moving the cursor specifically to the EDIT TYPE field). There are two choices you can make. WHOLE REGION selects that everything within the IN/OUT region will be erased:



Selecting ONLY WHOLE CUES will copy only the whole cues whose' start and end fall within the edit region:



Cues whose start and end fall outside the edit region will not be copied. When ONLY WHOLE CUES is selected, the selected cues will be highlighted ochre on the external monitor.

**NOTE:** The selection made in this field is retained when you leave the page. When you subsequently re-enter the COPY page, the selection you made previously will be shown.

**COPY TO LIBRARY**

You may also copy the edit region/cue(s) to a library. To do this, press either F5 or F6 - **To LIBRARY**. If this is the first time you have copied to a library, you will receive a screen something like this:



If the selected library is a new one, then it will be empty as shown above.

When you press F5 or F6 - **To LIBRARY** - it allows you to copy the selected edit region/cue(s) into a library for use later on. Prior to copying the edit region/cue(s) into the library, you may give it a new name. To name a clip prior to copying, press the NAME key on the top panel. The NEW CLIP NAME field will 'open':



The cue's name will be shown and you may enter a new ten character name if you wish. Press EXECUTE to complete the naming process and EXECUTE again to copy the edit to the library. If you are using a computer keyboard with the DL1500, just start typing in the new name and press RETURN to complete the naming process and RETURN again to copy the edit to the library. There is no need to specifically press the NAME key.

If the library shown is not the one you want to copy to, assuming you have more than one library on disk, move the cursor up to the top line until it is resting on the library name (in this case 'NewLib 1') and then use the DATA +/- keys to select a different library. You will receive the message:



You should respond accordingly using EXECUTE or EXIT.

Once the correct library to copy to is selected, finish the action off by pressing EXECUTE. If, for some reason, you change your mind, press EXIT to return to the main COPY TO CLIPBOARD page.

### **COPYING TO AN EXTERNAL DISK**

It could be that you want to build a library up on an external disk. For example, your system may have a fixed hard drive where you keep your central library of sound effects, music cues, etc., and the removable MO is a 'project' disk which you treat much like a reel of tape that can be taken out at the end of a session and transferred to the mixdown room or wherever. It is possible to import clips from libraries on other disks and, similarly, you may copy edits across to external disks.

To do this, move the cursor to the DISK: field in the top right hand corner and select the drive you wish to copy to. When you change the disk number, it will select the first library it can find on that disk. If it is not the correct one, select as appropriate.

You may now copy edits to that library on the external disk as normal. However, you will note one important thing when copying to an external disk.

When you copy an edit to an external disk, the audio is copied with it. The reason for this is that it is meaningless to have a clip on a disk without the audio associated with it - if the two disks get separated, the clip on the external disk could not be used. Similarly, if the audio on the original disk is deleted, the clip you copied to the external disk could never be used again!

However, please note that when you copy an edit to an external disk, only the audio within that edit is copied. For example, if the edit you are copying is just a 2 second section of a longer 5 minute recording, only the 2 second section is copied, not the whole recording it references. A 10% 'handle' of audio either side of the 2 second section is also copied so that you have some leeway for trimming it at a later date.

When you copy to an external disk, therefore, it does take a little longer as the audio is copied across as well.

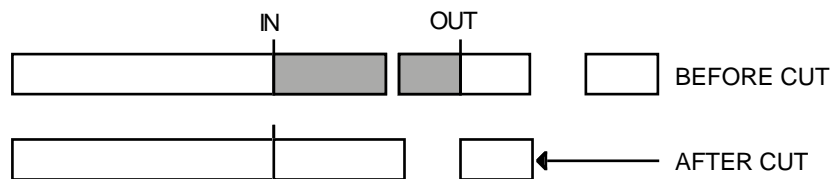
If you try to copy to an external disk that has no libraries, the screen will prompt you accordingly.

<b>NOTE:</b> <i>This applies to CUT and ERASE as well.</i>
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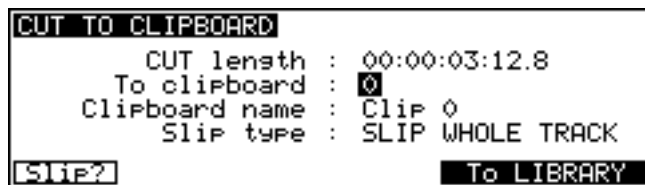


**CUT TO CLIPBOARD**

CUT is similar to COPY except that, as well as copying the edit region/cue(s) to a clipboard, it also removes the audio from the GRID and closes the gap thus created, shifting all audio after the edit accordingly. For example:



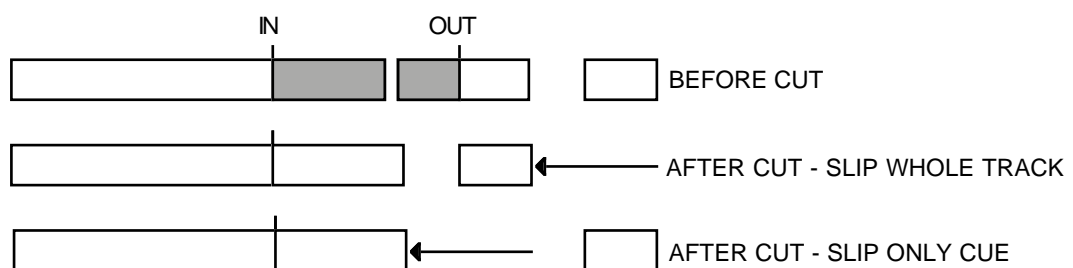
Pressing CUT will display this screen:



The length of the edit region/cue(s) is shown in the CUT LENGTH field. The EXECUTE key's LED will flash and if you press EXECUTE at this point, the selected edit region/cue(s) will be cut into the default clipboard 0. As with COPY, you may also cut an edit into the edit clipboard 1-9 using the numeric keypad simply by pressing a number key as appropriate before pressing EXECUTE. You may also name the edit prior to cutting it to the clipboard by pressing the NAME key and entering a suitable ten character name. Press EXECUTE to complete the naming process and EXECUTE again to complete the CUT. If you are using a computer keyboard, there is no need to press the NAME key and as soon as you start typing the name, you will start naming the edit. Press RETURN to complete the naming process and RETURN again to complete the CUT.

**NOTE:** As the process is identical, please refer to COPY TO CLIPBOARD for a detailed description of naming a clipboard.

F1 - **SLIP?** - allows you to decide how subsequent audio will slip. Pressing this key will toggle between SLIP WHOLE TRACK and SLIP ONLY CUE in the SLIP TYPE field. The effect is:



With SLIP whole track, everything after the CUT slips to accommodate the edit whereas with SLIP ONLY CUE selected, only the current cue is slipped. In this way, you can create cuts without affecting subsequent cues which will remain unaffected.

**NOTE:** The selection made here is retained when you leave the page. When you subsequently re-enter the CUT page, the selection you made previously will be shown.

### CUT TO LIBRARY

You may also cut an edit region or cue (or group of cues) to a library.

By pressing F5 or F6 - **To LIBRARY** - you will see something like this screen:

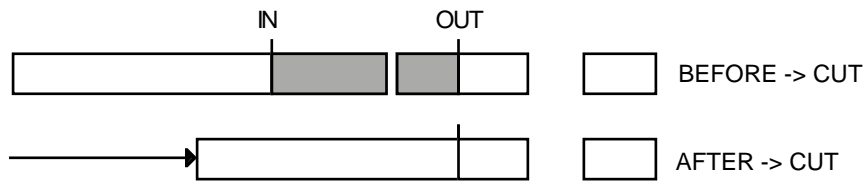
```
CUT TO LIBRARY          SFX Lib 1  Disk: 0
THUNDER 1 | THUNDER 2 | Lightning ↑
RAIN FX 1 | THUNDER 3 | Big Thund
Rainloop 1 | HEAVY RAIN | RAINDROPS
RAIN+WIND1 | WIND+RAIN2 | WIND HOWL ↓
New clip name : WIND HOWL1
```

Here we see the library and, as with COPY, you may give the edit a name prior to cutting it from the GRID to the selected library. You may select another library to cut to and you may select a different library on another disk if you wish.

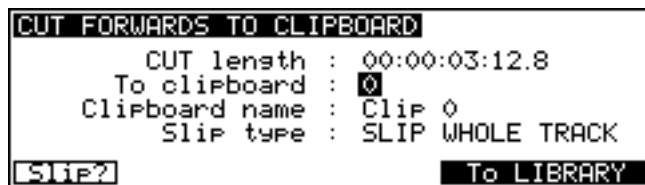
**NOTE:** Please refer to COPY TO LIBRARY for specific details on all of this as the principles are exactly the same.

**-> CUT TO CLIPBOARD (SHIFT+CUT)**

This key's shift function does the opposite of CUT in that removes the selected edit region or cue(s) but slips all audio *before* the edit in time accordingly:



This type of cut may be used when you need to get rid of something but all audio after the cut point is perfectly synced. As with CUT, you may cut the edit region/cue(s) to a clipboard. Pressing -> CUT will display this screen:

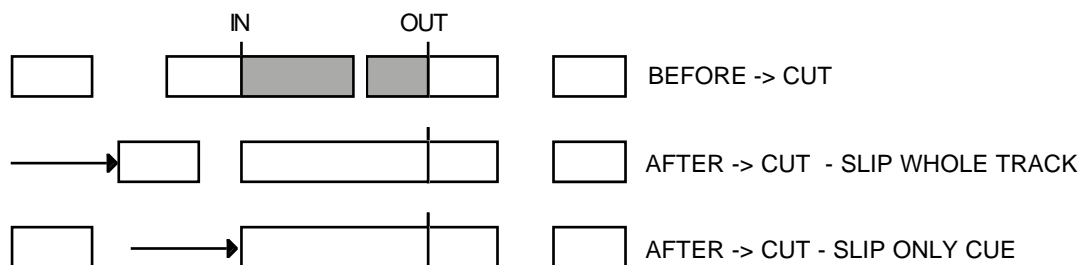


The length you are about to cut is shown in the CUT LENGTH field. You may cut the edit region/cue(s) and place it in the default edit clipboard 0 simply by pressing EXECUTE at this point. You may wish to cut it and place it in one of the clipboards 1-9.

You may also name the edit prior to cutting it to the clipboard by pressing the NAME key and entering a suitable ten character name. Press EXECUTE to complete the naming process and EXECUTE again to complete the edit. If you are using a computer keyboard, there is no need to press NAME and as soon as you start typing in a name, you will start naming the edit. Press RETURN to complete the naming process and RETURN again to complete the CUT.

**NOTE:** As the process is identical, please refer to COPY TO CLIPBOARD for a detailed description of naming a clipboard.

The **SLIP?** key (F1) allows you to decide how material before the cut will be affected. With SLIP WHOLE TRACK selected, all material prior to the cut will skip to accommodate the edit. With SLIP ONLY CUE selected, only the cue you are working on will be affected. For example:



**NOTE:** The selection made here is retained when you leave the page. When you subsequently re-enter the >CUT page, the same selection as you made previously will be shown.

## 14 - EDITING

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### -> CUT TO LIBRARY

As with normal CUT, you may cut the selected edit region/cue(s) and place it in a library. Pressing F5 or F6 will display this screen:

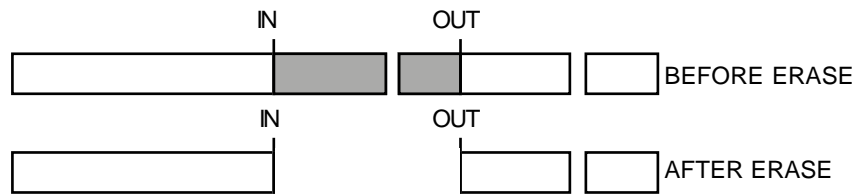
```
CUT FWD TO LIBRARY      SFX Lib 1  Disk:0
THUNDER 1      | THUNDER 2      | Lightning  ↑
RAIN FX 1      | THUNDER 3      | Big Thund
Rainloop 1     | HEAVY RAIN     | RAINDROPS
RAIN+WIND1     | WIND+RAIN2     | WIND HOWL  ↓
New clip name : WIND HOWL1
```

The same principles for cutting forwards to the library apply - you may name the edit region/cue(s) prior to cutting to the library and you may select a different library to place it in. You may select a different library on a different disk if you wish. Pressing EXECUTE will complete the action.

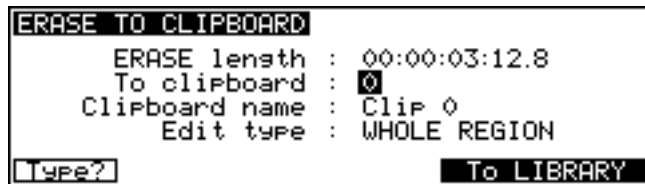
**NOTE:** Please refer to *COPY TO LIBRARY* for specific details on this as the principles are exactly the same.

**ERASE TO CLIPBOARD**

ERASE is similar to CUT except that it will remove the currently selected edit region/cue(s) but will keep the gap thus created.



Pressing ERASE will give you this screen:



As with the other screens we have seen so far, the length you are about to erase is shown. When you press EXECUTE now, the selected edit region/cue(s) will be erased and placed in default clipboard 0 and given the default name Clip 0. If you wish, you may erase the edit region/cue(s) and place it in one of the clipboards 1-9. You may also name it prior to erasing it by pressing NAME and entering a ten character name.

You may also select the type of edit you wish to erase using F1 - TYPE?. There are two choices you can make. WHOLE REGION selects that everything within the IN/OUT region will be erased:



Selecting ONLY WHOLE CUES will copy only the whole cues whose' start and end fall within the edit region:



Cues whose start and end fall outside the edit region will not be erased. When ONLY WHOLE CUES is selected, the selected cues will be highlighted ochre on the external monitor.

**NOTE:** The selection made here is retained when you leave the page. When you subsequently re-enter the ERASE page, the same selection as you made previously will be shown.

### ERASE TO LIBRARY

You may also erase audio and place it in a library. Pressing F5 or F6 will give you this screen:

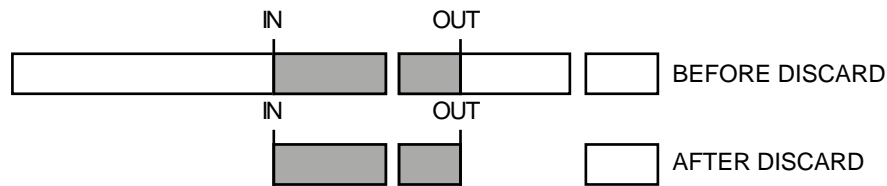
```
ERASE TO LIBRARY      SFX Lib 1  Disk:0
THUNDER 1           | THUNDER 2           | Lightning  ↑
RAIN FX 1           | THUNDER 3           | Big Thund
Rainloop 1          | HEAVY RAIN          | RAINDROPS
RAIN+WIND1         | WIND+RAIN2          | WIND HOWL  ↓
New clip name : WIND HOWL1
```

The principles are exactly the same as for copying or cutting to the library. You may name the edit region/cue(s) you are about to erase and you may select a different library to place it in. You may select a different library on a different disk if you wish. Pressing EXECUTE will complete the erase action, removing the audio from the grid, keeping the gap and placing the extracted audio into the selected library.

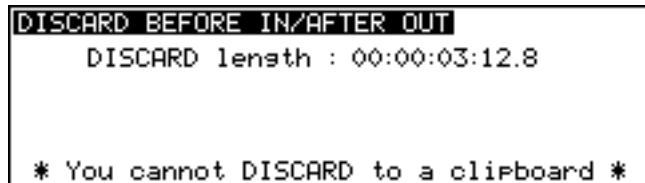
**NOTE:** Please refer to *COPY TO LIBRARY* for specific details on this as the principles are exactly the same.

**DISCARD (SHIFT+ERASE)**

The ERASE key's shift function will discard material either side of the IN/OUT area but will not slip any subsequent audio.



Pressing DISCARD will show this LCD:



Pressing EXECUTE will complete the action.

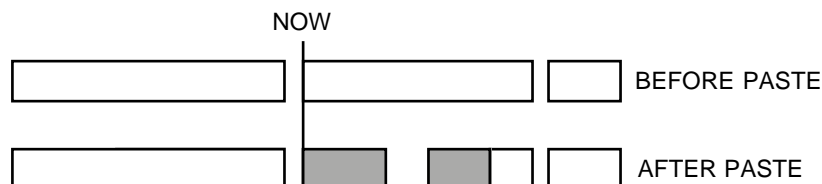
The main use for DISCARD is to get rid of any rubbish in a cue before a certain point and after a certain point. For example, you may have a sound effect of a door slam which you recorded especially and, either side of the effect is talking, background noise and other such noises. To get rid of this, mark the start and end of the door slam and press DISCARD (SHIFT+ERASE) - this will keep the slam and remove the unwanted material either side of the IN/OUT marks.

Because this function's primary use is purely to clear out unwanted 'handles', you cannot discard the material either side of the IN/OUT marks to a clipboard or a library. If, for some reason, you really want to keep this material for later, you should mark these regions specifically and use ERASE and place them in a clipboard or library.

So far we have seen how to copy and remove audio from the GRID. Now let's have a look at how to put material into the GRID.

### PASTE FROM CLIPBOARD

This will paste an edit *over* any material at the current NOW time. You will note that any gaps in the material being pasted will be pasted over any material that exists at the paste point. For example:



Pressing PASTE will give you this screen:



You can see the length of the audio you are about to paste. The default shown is that of the audio in clipboard 0. The EXECUTE key's LED will be flashing and should you press EXECUTE now, you will paste in clipboard 0 at the current NOW time (you will note that there is no need to have to mark an IN or OUT time when pasting - the edit is simply pasted in on the selected track(s) at the current NOW time). If you select another clipboard 1-9 (using the numeric keypad), the length field will change to reflect the material in the selected clipboard. Pressing EXECUTE will paste from the selected clipboard.

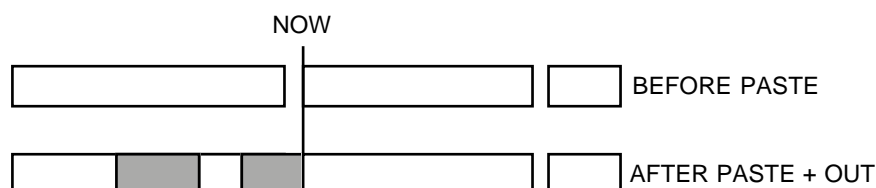
If you want to audition the clipboard prior to pasting it in to make sure you have selected the correct one, press PLAY (F3/F4). You will note that there is a small delay in playing audio from the clipboard.

### PASTING TO OUT AND SYNC REFERENCES

It is also possible to paste material in a variety of different ways. The default is to paste the IN point of the source material at the current NOW time. For example:



However, you may paste in material referenced to the source material's OUT point simply by pressing the OUT key prior to pasting. This will place the source material's OUT point on the NOW time pasting over preceding material. For example:

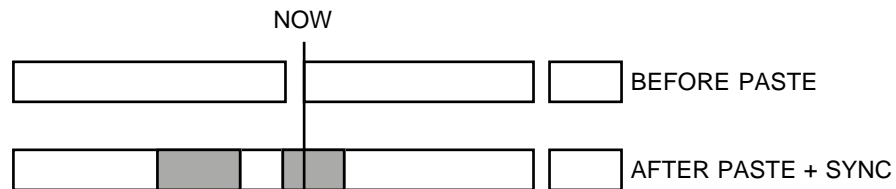


Known as 'back-timing', this is useful where you want a cue to end at a specific point but its start point is not so important. For example, you may want a piece of music to end at a certain point (maybe at the end of a scene). Locate to the end of the scene and jog over



the exact point you want and then press PASTE, OUT, EXECUTE (to paste from default clipboard 0) or PASTE, OUT, 1-9, EXECUTE (to paste from the edit clipboard)<sup>2</sup>. As you press the OUT key, so you will see the LCD's 'REFERENCED TO' field change to SOURCE OUT. If you wish, you may specifically move the cursor to this field and change it using the DATA ENTRY +/- keys.

It is also possible to paste material referenced to the source material's SYNC point. Assuming you marked a SYNC point in the source material, press PASTE, SYNC, EXECUTE. The following will occur:



You may also paste and sync an edit from the clipboard - i.e. PASTE, SYNC, 8, EXECUTE to paste the sync point of clipboard 8 to the current NOW time<sup>2</sup>.

This is similar to back-timing except that you can set the exact position you want synced, not just the end. You may use this, for example, to sync up a music crescendo with a dramatic point in the visuals or you may use this to back time the end of some music or dialogue or a sound effect (some passing traffic, perhaps) so that the very end of the cue maybe trails over into the next scene. Whatever. There are many uses for this which you will no doubt discover for yourself.

**NOTE:** If you try to paste referenced to a SYNC mark and there isn't one, it will paste referenced to the source material's IN point

<sup>2</sup> In fact, the actual order in which you press the keys is not that important. For example, you may press PASTE, 8, OUT, EXECUTE to paste the out time of clipboard 8 the current NOW time or you may press PASTE, OUT, 8, EXECUTE to achieve the same effect. Similarly, the order you press the clipboard and SYNC keys is not important.

### PASTE FROM LIBRARY

It is also possible to paste material into the GRID from libraries. Pressing F5 or F6 will display this screen:

```
PASTE FROM LIBRARY      SFX Lib 1  Disk:0
THUNDER 1              THUNDER 2      Lightning  ↑
RAIN FX 1              THUNDER 3      Bis Thund
Rainloop 1            HEAVY RAIN      RAINDROPS
RAIN+WIND1           WIND+RAIN2     WIND HOWL  ↓
INFO                  PLAY CLIP      From CLIPBD
```

Here, you may scroll up and down the list of library clips and select the one you wish to paste and then press EXECUTE to paste it. You may, if you wish, scroll to the top of the screen so that the cursor is resting on the library name and select a different library to paste from using the DATA ENTRY +/- keys.

If you are at all unsure about a particular clip, you can use the INFO key to display information about the currently highlighted clip. For example:

```
CLIP INFO              Name: THUNDER 1  Disk:0
                       Clip length : 00:00:04:03.6
                       Number of tracks : 2
This is a stereo thunder clap SFX.
```

This example shows that this clip is just over four seconds long and uses two tracks and has two cues and the comments that have been attached give some information about it. Press EXIT to close this screen and return to the library page.

You may also audition the selected clip prior to pasting it in by pressing the PLAY key on F3/F4.

Once you have selected the clip you want, press EXECUTE to paste it and close the library screen.

**NOTE:** If you wish to keep the library page open to repeatedly paste clips into your project, you can press SHIFT+EXECUTE. This will paste the selected clip into the project but will keep the library page open so that you can maybe jog to a new position and paste in another clip without needing to leave this library page.

As with pasting from the clipboard, it is also possible to paste from the library referenced to the source material's SYNC or OUT point. Prior to going into the library page, press SYNC or OUT as appropriate. Now press F5/F6 to enter the library page and select a clip to paste followed by EXECUTE. This will paste the selected clip in at the NOW time referenced to the clips SYNC or OUT point. The important thing to remember is to select the reference point *before* entering the library page. However, should you forget, you can return to the PASTE FROM CLIPBOARD page by pressing F5/F6, select SYNC or OUT as appropriate and then return to the FROM LIBRARY page.

**NOTE:** If you try to paste referenced to a SYNC mark and there isn't one, it will paste referenced to the clip's IN point

### PASTING CLIPS FROM EXTERNAL DISK DRIVES

You may select different libraries on different disks as you require by moving the cursor to the DISK field and selecting as appropriate. When you select an external drive, it will find the first library on that drive and list its contents (if any). You should select the library you want to paste from.

However, it is important to remember that when you paste a clip into a project from an external drive, the audio is not copied to the project's disk. There are several reasons for this. Firstly, it would slow the editing process down considerably if you copied audio across each time. Secondly, you may be playing the project from several drives and do not need to copy the audio across as the different pieces of audio will play from their respective disks.

The only problem with this is that if you do paste in clips from libraries on different disks and those disks become separated, the cues to be played from the external drive will not sound when the project is subsequently played back (the missing cues will be shown in a bright yellow). To overcome this, it could be argued that when you come to paste something from an external drive, you are offered the choice of also copying the audio across from the external drive or not. This has some merit except that there may be occasions when you do bring the audio with the paste and times when you don't so that still doesn't cure the problem of the disks becoming separated and some of the cues in the project being detached from their audio.

However, to overcome this problem, the SAVE page offers a function called COMPILE. This saves the project and searches all connected disks for any audio on external disks being referenced by the project and copies the relevant bits of audio from these disks to the 'master' disk. In this way, you can work as normal, pasting in clips from libraries on external disks into a project very quickly and then, at the end of the session (or any time you choose), you save the project using COMPILE to create a 'master' project with all associated audio being on the one disk. Of course, if you plan to play the project back using multiple disks, a normal SAVE will do this but, when building up a project from a number of disks, to create a 'master' disk that can play the whole project successfully without needing to have all disks on-line, you should use the COMPILE function to save the project.

Here is a practical example.

You may have a system with a fixed hard disk (or disks) that contains your sound effects, music cues, etc., and you receive an MO disk with dialogue on that needs 'sweetening' in post production with the addition of sound effects, foley, music, etc.. Ultimately, that MO disk will be transferred to the mixdown room for final mixdown.

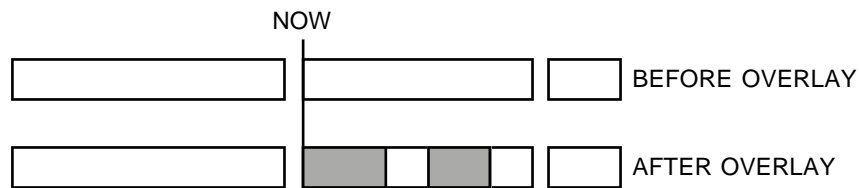
You can build the project on the MO by pasting in the sound effect, music cues, etc., from your central library on the hard disk(s) and then, when you have finished, use COMPILE so that all audio on the external disk(s) being used in the project on the MO is copied across so that the MO can be removed and transferred to the mixdown room where everything will play back from that one MO disk without having to have all the other disks on-line.

To expand on that, your job may only be to add sound effects - someone else may do the music editing whilst someone else does the foley. You add the sound effects as appropriate from your hard disk, finishing off with a COMPILE. The MO is then passed to the music editor who adds the music cues as appropriate. He also runs COMPILE and passes the MO on to the foley editor who, at the end of his contribution runs COMPILE. You now have a 'master' disk with all the audio elements from the different stages of production all on the one MO.

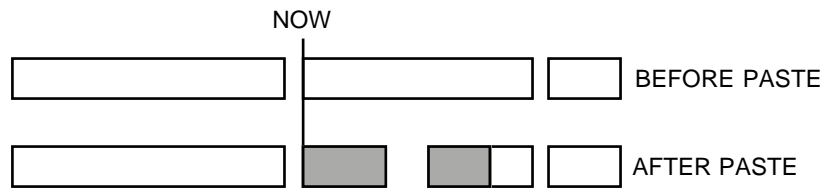
See the section SAVING PROJECT for more information on COMPILE.

### OVERLAY (SHIFT+PASTE) FROM CLIPBOARD

Overlay is similar to PASTE in that it pastes *over* any existing material at the point of pasting but, if there are any gaps in the material being pasted, these are 'transparent' and will reveal any audio 'underneath'. For example:



Compare this with PASTE where the gap in the pasted material 'obscures' the material beneath it.



When using PASTE, the area 'underneath' the gap being pasted over would not be heard whereas with OVERLAY it would.

Pressing OVERLAY (SHIFT+PASTE) will display this screen:

```
OVERLAY FROM CLIPBOARD
OVERLAY length : 00:00:03:12.8
From clipboard : 0
Referenced to : SOURCE IN
[PLAY CLIPBD] From LIBRARY
```

As with paste, you may overlay material from the default clipboard 0 or from clipboards 1-9. EXECUTE completes the action and closes the screen. If you are not sure of the clipboard you have selected to OVERLAY, you can press PLAY to audition it prior to committing it.

### OVERLAYING TO OUT AND SYNC REFERENCES

You may overlay referenced to the source material's SYNC or OUT points simply by pressing SYNC or OUT prior to pressing EXECUTE (see PASTING TO SYNC OR OUT REFERENCES for a detailed description of using the SYNC and OUT keys for back-timing).

**OVERLAY FROM LIBRARY**

It is also possible to overlay material from the library. Pressing F5/F6 will give the usual library page:



Operation is identical to PASTE. Use the CURSOR UP/DOWN/LEFT/RIGHT keys to select the clip you wish to overlay into your project and press EXECUTE to overlay the clip at the required point and also close the screen. If you are at all unsure about a particular clip, use the INFO page to find out more. You may select different libraries to overlay from if you wish and, of course, you may select different libraries on different disks.

**NOTE:** Please refer to PASTE FROM LIBRARY for specific details on this as the process is identical.

You may audition a clip at any time by pressing PLAY on F3/F4.

**NOTE:** If you wish to keep the library page open to repeatedly overlay clips into your project, you can press SHIFT+EXECUTE. This will overlay the selected clip into the project but will keep the library page open so that you can maybe jog to a new position and overlay another clip without needing to leave this library page.

You may also overlay a clip referenced to its OUT point or SYNC marker (if one has been marked) by pressing OUT or SYNC prior to pressing EXECUTE.

**NOTE:** If you try to overlay referenced to a SYNC mark and there isn't one, it will overlay referenced to the source material's IN point

**INSERT FROM CLIPBOARD**

This will insert an edit at the current NOW time and will cause any audio after the insert point to be shifted.



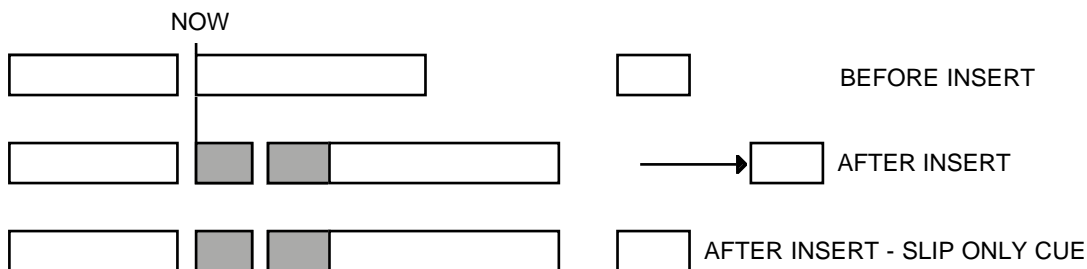
Pressing INSERT will show this screen display:



The default selection is to insert material from clipboard 0 but you may, of course, insert material from any of the clipboards 1-9 by selecting the appropriate number on the numeric keypad. The length of the insert will be shown in the INSERT LENGTH field. Press EXECUTE to complete the insert.

Prior to inserting the item from the clipboard, if you at all unsure what it is you are inserting, use PLAY to audition it.

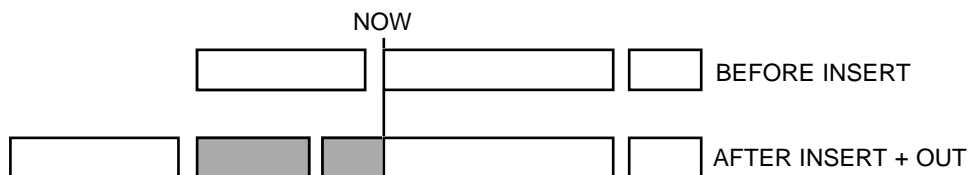
You can use the **SLIP?** key to select whether the whole track will slip to accommodate the insert (SLIP WHOLE TRACK) or just the remainder of the cue at the point of insert (ONLY SLIP CUE) will slip. The result would be:



**NOTE:** The selection made here is retained when you leave the page. When you subsequently re-enter the INSERT page, the same selection as you made previously will be shown.

**INSERTING TO OUT AND SYNC REFERENCES**

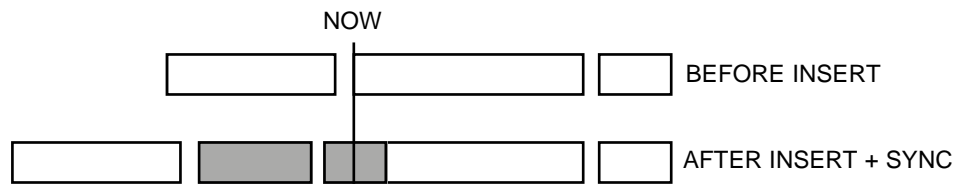
As with PASTE and OVERLAY, you may also insert material referenced to the source material's OUT point by pressing INSERT, OUT, EXECUTE. The REFERENCED TO field in the LCD will show OUT and the effect would be as follows:



In this example, the inserted material all audio *before* the NOW time would slip allowing you to back-time the insert.

You may also insert referenced to the source material's SYNC mark. This is useful for bringing in material that needs to synchronise to specific visual events or to another piece of audio (a clichéd example would be to sync a music crescendo to a gun shot).

Pressing INSERT, SYNC, EXECUTE would give this result:



**NOTE:** If you try to insert referenced to a SYNC mark and there isn't one, it will insert referenced to the source material's IN point

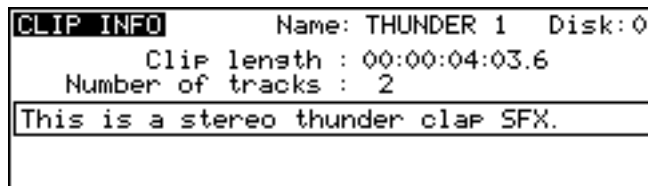
In both examples, you may also use the clipboards 1-9. For example, INSERT, OUT, 6, EXECUTE would insert clipboard 6 referenced to its OUT point.

### INSERT FROM LIBRARY

You may also insert clips into your project from the library. Pressing F5 or F6 will display this screen:



As with PASTE and OVERLAY, you may use the CURSOR keys to scroll around this list of library clips and pressing EXECUTE will insert the currently highlighted clip into the GRID at the NOW time. If at any time you are unsure what exactly you have selected, press the INFO key to see details about the selected clip. You will see something like the following:



This shows that the currently highlighted clip is a stereo thunder effect and someone has been kind enough to include some helpful comments about it for your information.

You may also audition the clip by pressing PLAY (F3/F4)

Once you have selected the clip you want, press EXECUTE - this will insert the clip and close the screen ready for you to move on and do the next one.

**NOTE:** If you wish to keep the library page open to repeatedly insert clips into your project, you can press SHIFT+EXECUTE. This will insert the selected clip into the project but will keep the library page open so that you can maybe jog to a new position and insert another clip without needing to leave this library page.

You may also insert clips from the library referenced to their SYNC or OUT marks. To select SYNC or OUT, press the appropriate key SYNC or OUT then press F5 or F6. When you insert the selected clip, it will inserted referenced to the clips SYNC mark (if any) or OUT point.

**NOTE:** If you try to insert a clip referenced to a SYNC mark and there isn't one, it will insert the clip referenced to its IN point

You may, of course, insert clips from other libraries and from external disks.

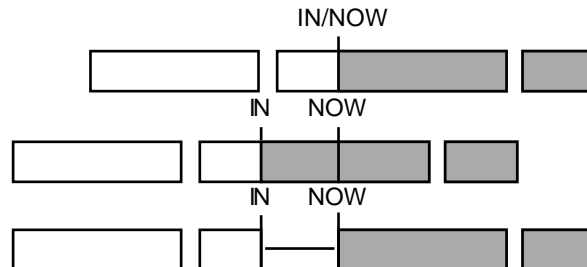
**NOTE:** Please refer to PASTE FROM LIBRARY for specific details on this as the process is identical.



**IN->NOW (SHIFT+INSERT)**

The INSERT key's shift function, IN->NOW, allows you to slip audio by slipping the marked edit region/cue(s) time to the current NOW time.

For example, to move a piece of audio to a new position, mark an edit region as appropriate, play, jog, locate or whatever to the point you want it and press IN->NOW. The edit region's IN point will be repositioned at the current NOW time. I.e.:



In this way, you may move a piece of audio into sync. Let's take a practical example. Imagine you are working with the DD1500 connected to a VTR using RS422. You have pasted or inserted a few dog bark sound effects but one of them is slightly early and out of sync with the picture. Firstly, mark an IN at the start of the out-of-sync dog bark and then mark an OUT at the end of it (or line up the dog bark on the NOW time and press SELECT CUE). For example:



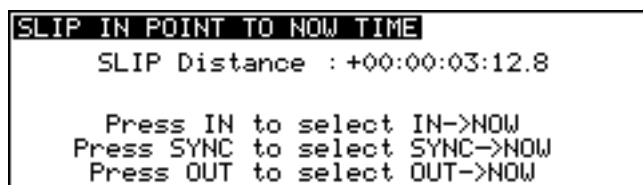
Now, jog the video forward from the DL1500's jog wheel (ignore the audio for the moment) until you see where the dog's mouth is just beginning to open. Jog back and forth until you get an exact sync point and press IN->NOW (SHIFT+INSERT) followed by EXECUTE. The offending dog bark will be moved forward and re-positioned at the exact point where the mouth opens. I.e.:



Of course, it may be that you need to slip the entire track in this way. To achieve this, press IN and then, whilst holding the IN key, press OUT - this will select the whole of the track from the IN time onwards and will slip it backwards or forwards accordingly.

If you wish to slip only a cue, use SELECT CUE. This will mark the IN and OUT at the start and end of the selected cue and IN->NOW will slip the cue accordingly.

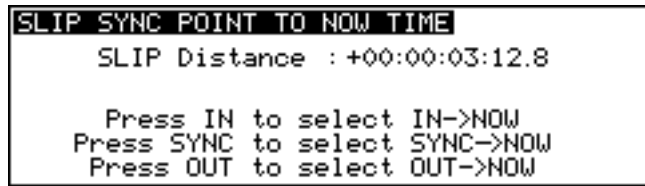
Pressing IN->OUT gives this screen:



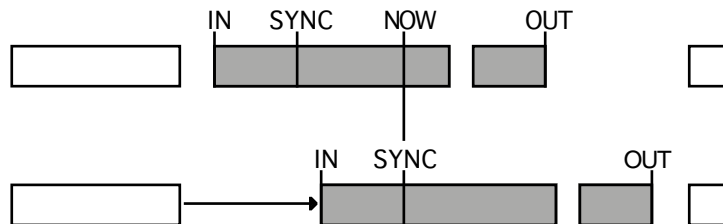
You can see how much you have moved the IN time in the SLIP DISTANCE field. If you move forwards (i.e. jog clockwise, fast forward, play), a '+' appears before the SLIP DISTANCE field; if you move backwards (i.e. jog counter clockwise, rewind or play reverse), a '-' sign appears. As you jog or play or rewind with this page open, you will see this time field changing. Press EXECUTE to complete the action.

Of course, you may not always want to slip the IN time to the NOW position - you may wish to move an edit region's/cue's SYNC marker or OUT point to the NOW time.

As the screen informs you, these are selected using the SYNC and OUT keys. Pressing SYNC displays this screen:



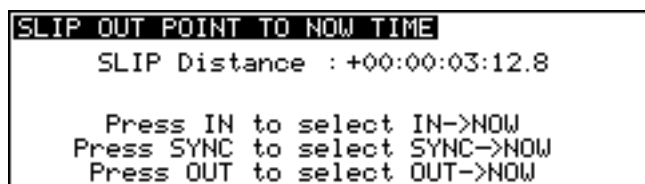
The effect of this would be as follows:



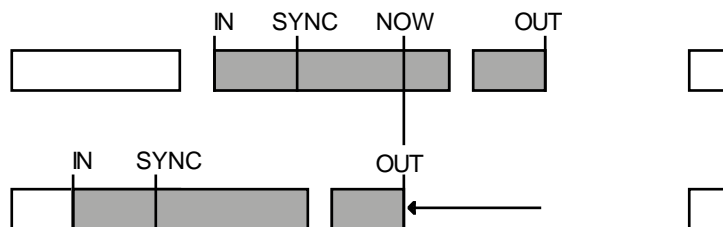
The SYNC point is moved to the NOW time. Of course, if you were to have pressed SYNC and then OUT together, you would have selected the whole track from the SYNC point to the end and the whole track would be slipped accordingly. You could also press SYNC plus IN and OUT together to slip the whole track from start to finish referenced to the SYNC point. In the above example, however, we have marked a specific edit region to slip.

You may use SELECT CUE to good effect in this case. Because the action of selecting a cue marks a SYNC mark at the point you press SELECT CUE, line up the cue at the point you want to sync and press SELECT CUE. The cue will be selected and the SYNC will be marked. Now use SYNC TO NOW followed by EXECUTE.

You may also need to slip the edit region's/cue's OUT time to the NOW time. Pressing OUT displays this screen:



The effect of this using the above example would be as follows:



Here, the OUT point has slipped backwards to the NOW time when you press EXECUTE. However, this function could be used to slip a cue forwards, slipping the cue's out point to the NOW time. By pressing OUT and holding it while you press IN, you may slip a track from its start to the selected OUT time backwards and forwards.

To revert to slipping the IN time to the NOW time after selecting SYNC to NOW or OUT to NOW, press the IN key.

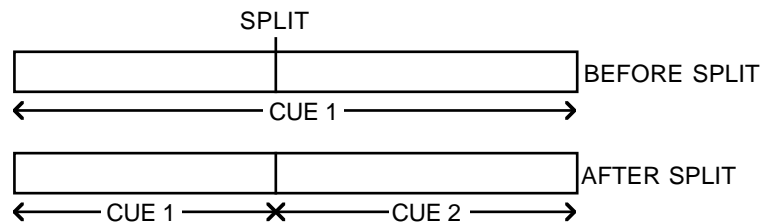
**NOTE:** You will note that the *IN->NOW* (and *SYNC* and *OUT->NOW*) can paste over material (as in the above example of *OUT->NOW*). Please be careful not to accidentally lose data this way. If you make a mistake, you can use *UNDO* to repair it.

Of course, you can also use the *NUDGE* function to move and slip audio around but the *IN->NOW* and its associated functions are particularly useful because, using RS422 machine control, you can jog the VTR to achieve very precise picture sync, jogging back and forth until you see the actor's mouth open when syncing dialogue, jogging back and forth until you see the precise point the gun goes off when syncing a gunshot effect or the exact point a door closes or jogging the VTR to find an exact visual reference point for syncing up a particular point in a music cue. In non-picture applications (such as radio drama, for example), this is a very good way to line up cues with others. It's a very tactile and 'physical' way of syncing audio to picture that nudging (whilst also useful) does not always offer.

**TIP!** A very quick way of achieving the same function is to press *SHIFT+IN*, *SHIFT+SYNC* or *SHIFT+OUT*. The same screen will be shown and the function works exactly the same way.

### SPLIT CUE

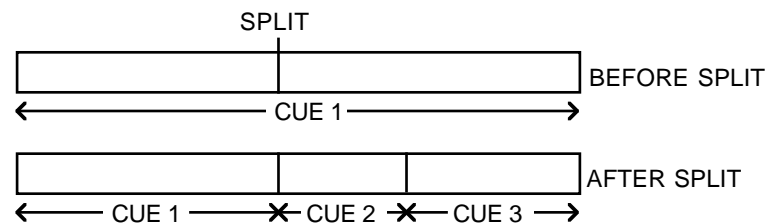
As its name suggests, SPLIT will split a cue in two. Although this can be done in other ways (NUDGE, IN->NOW, CUT, ERASE, etc.), these all involve either removing audio or moving it. SPLIT just splits the cue in two, making two cues out of one. Each cue may then be edited separately. I.e.:



The process can be repeated almost indefinitely within one cue, splitting it up into smaller sections each time. EXECUTE is not required for SPLIT CUE.

You may find this function useful in many ways. You may like to chop up individual sentences and phrases in a dialogue recording or split a music cue into smaller sections.

You may use it to create a cue within a longer cue. For example, you may wish to 'duck' a section of a long music cue so as not to overpower a bit of dialogue or a specific sound effect. Firstly, go to the start of the section in CUE 1 you wish to 'duck' and press SPLIT. This will create CUE 2. Now find the end of the section you wish to 'duck' and press SPLIT again - this will create CUE 3. You will end up with this:

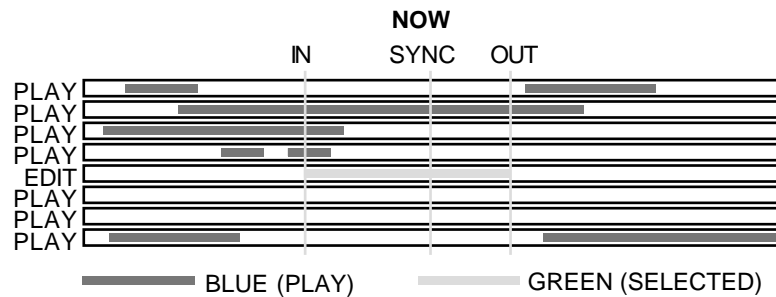


Now jog back into CUE 2 (or hold down GOTO and press the DATA ENTRY '-' key to go to the previous cue) and press SELECT CUE, followed by EDIT CUE - you may now edit CUE 2's level parameter, bringing it down by a few dB's.

(See next page for details on EDIT CUE and setting cue levels)

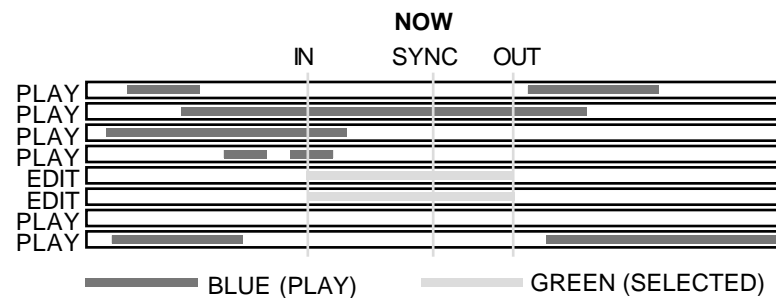
**SELECT/EDIT CUE**

EDIT CUE allows you to edit a cue's level and fade up and fade down parameters. Typical operation is to move the cue you are interested in onto the NOW time, select the appropriate track for editing and press SELECT CUE. This will select that cue for editing, marking an IN at the start of it, OUT at the end of it and a SYNC mark at the current NOW time. You can then enter the EDIT CUE page to set that cue's level and fade parameters. When you press EDIT CUE, the selected cue will be shown ochre on the external monitor. E.g.:



This will select that cue for editing, marking an IN at the start of it, OUT at the end of it and a SYNC mark at the current NOW time. You can then enter the EDIT CUE page to set that cue's level and fade parameters. When you press EDIT CUE, the selected cue will be shown ochre on the external monitor.

You may also select 'stereo' cues in the same way by selecting two tracks for editing. E.g.:



When you press EDIT CUE, the selected cues will be highlighted in ochre.

It is also possible to select non-related multiple cues across several tracks if you wish. In this way, you can set levels and fades for many cues in one action. This is explained a bit later in this sections.

Pressing EDIT CUE will display this screen:

```
EDIT CUE Cues: 1/Len: 00:00:09:03.00
Name : VoiceOver1
Original : 00:00:05:00.00 Level : +0.0 dB
Fade up : 00:00:00:00.00 CURVE : LINEAR
Fade dn : 00:00:00:00.00 CURVE : LINEAR
[RESET PARAMS]
```

The parameters are:

**CUES** This field is not accessible and it shows the number of cues currently selected.

**LENGTH** This field is also not accessible and shows the entire length of the cue(s) selected or the length of the edit region.

**NAME** This field shows the name of the currently selected cue(s). It also allows you to rename the cue(s). To do this, move the cursor to this field and press the NAME key and enter a ten character name using the track select keys. Press EXECUTE to complete the name and EXECUTE again to rename the cue. If you are using an external PC keyboard, move the cursor to this field and simply start typing - there is no need to press the NAME key. Press RETURN to complete the name and RETURN again to rename it.

If only one track is selected for edit, you will, of course, only rename that one cue. If more than one track is selected (for example, when editing a stereo cue across two tracks), the name of the cue on the lowest numbered track will be shown. Naming stereo or multiple cues will cause all the cues selected to share the same name.

If no cues are selected when you enter EDIT CUE, this field will display \* NO CUES \*. If you try to name this, you will receive the pop-up prompt:

```
EDIT CUE Cues: 0/Length: 00:00:00:00.0
Name
Level
Fade up
Fade dn
Cannot rename!!
No cues selected
: LINEAR
: LINEAR
[RESET PARAMS]
```

**ORIGINAL** This shows the cue's 'original' time (i.e. the actual time in the project where it was originally recorded). This field is not accessible and is for information only.

**NOTE:** *If you wish to place a cue back at its original time, please use the ORIGINAL function found on the main edit screen. This is described later in this section.*

**LEVEL** You may set the level of the cue(s) in this field. Actually, there is no need to specifically move the cursor to this field as the fader is always active for setting levels when this page is open. You may, however, like to input data numerically or using the DATA +/- keys if the level adjustment you require is particularly fine (i.e. -3.5dB) where setting it manually from the slider may be a bit awkward. To do this, move the cursor the LEVEL field and type in a number as appropriate.

If several cues are selected, this parameter allows you to set the level for all cues. You will note, however, that, as with all EDIT CUE parameters, as soon as you edit the level here, ALL cues will be set to the same level. If you need to adjust levels of cues relative to each other, each cue should be edited separately.

**FADE UP**

Here you may set a fade up time for the cue. When a fade up time is set, it will be displayed on in the cue's block display on the monitor screen (if selected in SHOW). The fade up time can only be as long as the cue itself or the length of the cue minus any fade down that may have been set.

If stereo or multiple cues are selected, you can set the fade up for all of them simultaneously.

**CURVE**

This selects the fade up curve and you have a choice of three.

LINEAR ( / ) - This selects a straight, linear fade curve.

LOG ( ) - This selects a logarithmic curve as shown.

SINE ( ) - This selects an equal power fade curve that ensures an even level across crossfades.

**FADE DN**

Here you may set a cue's fade down time. When a fade down is set, it is shown graphically on the monitor screen (if selected in SHOW). The fade down time can only be as long as the cue itself or the length of the cue minus a fade up time that may have been set.

**CURVE**

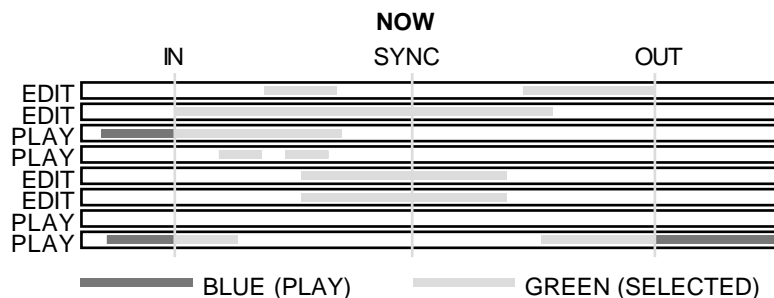
As for FADE UP.

Pressing F5/F6 - RESET PARAMS - will reset the EDIT CUE parameters to zero - i.e. level to 0.0dB and fades to 00:00:00:00.0. This may be useful if you change your mind about some settings you have made and wish to start again.

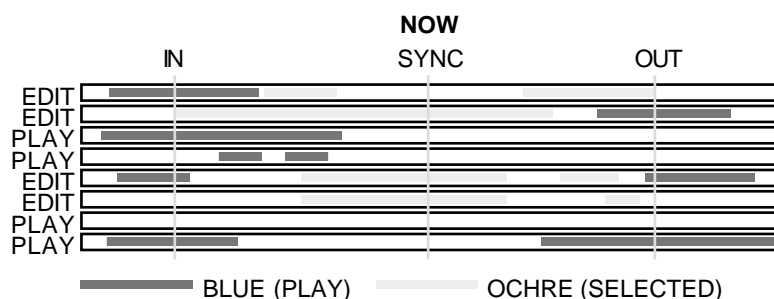
You may also UNDO your efforts in EDIT CUE. You cannot undo anything whilst actually in EDIT CUE but, as soon as you leave EDIT CUE, you can restore the parameters to the state they were in when you entered it.

### USING EDIT CUE TO AFFECT MULTIPLE CUES

You can also set the level and fade parameters for groups of cues by marking an IN and OUT time (or using SELECT CUE). This will select all cues within the IN/OUT region thus:



Pressing EDIT CUE will select only those cues whose start and end points fall within the edit region. Those cues whose start and end do not fall within the edit region will not be selected. For example, pressing EDIT CUE in the above example would show this:



When several cues are selected for editing in this way, all cues take as their parameters those you have set in the EDIT CUE page and all the cues selected will be set to the same value(s).

However, whilst this can be useful in some cases (for example, setting the fade down and level parameters of a group of footstep sound effects so that they are all identical), it could potentially cause problems in other cases because you may accidentally reset parameters you have previously set on some cues! The RESET PARAMS function won't help in this case as this will simply reset ALL cues' parameters to their default value of 00. Please be aware of this. In the event of a mistake, you can always use UNDO, of course.

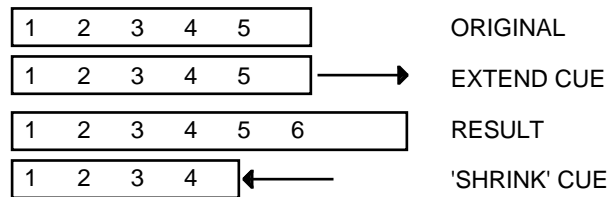
EDIT CUE is really designed to set level and fade for single or stereo cues and for re-naming cues. The multiple cue editing is included as a convenience for those times when you wish to set parameters to a group of the same or similar cues.

As mentioned, typical operation would be to line up the mono or stereo cue(s) you want to edit on to the NOW time, select the track(s) as appropriate, press SELECT CUE and then EDIT CUE and set the level, fade up and fade down parameters as necessary. Then press GOTO +/- to select the next or previous cue, hit SELECT CUE again and repeat the process if necessary.



**TRIM**

This allows you extend (or otherwise) a cue's start and end point. For example, imagine you have a recording of dialogue saying "one", "two", "three", "four", etc., up to "seven" but for some reason, you have edited out one of the numbers. TRIM allows you to extend the cue's end point to 'reveal' those missing numbers. For example:



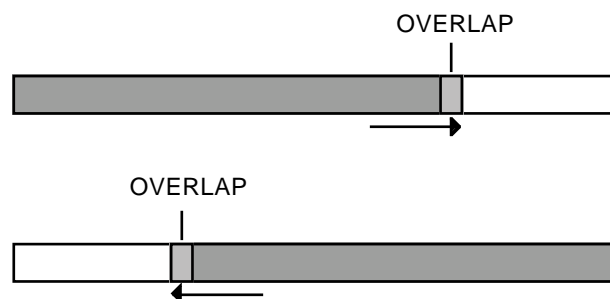
In this cue, we can see how we can 'drag' the end out to reveal numbers in the original recording. We can also 'drag' the cue's end point backwards to 'hide' part of the original (although, it must be said that this latter example could just as easily be achieved using ERASE or CUT).

We can also do the same for a cue's start point. I.e.:



In this example, we have a recording of the numbers "seven", "six", "five", "four" etc., down to "one". Using TRIM, we can drag the cue's start backwards to reveal the original recording or push it forwards to hide more of it (although, as above, this could equally well be done using ERASE or CUT).

It is also possible to extend a cue over another to create overlaps and crossfades. You may extend the end of a cue over the start of the next cue or you may extend the start of a cue over the end of the previous:



The overlap length is limited to 80mS and is used primarily for getting rid of clicks at edit points and for making butt edits smoother. You can create a crossfade out of an overlap by setting a fade up and fade down time for each cue in EDIT CUE. If you require overlaps and crossfades longer than the 80mS limit, then you must place the cues on separate tracks.

The overlap limit is set in the TRIM SET page.

**NOTE:** The reason there is a limit to the overlap length is not a deficiency of the DD1500 but due to disk speed and SCSI bandwidth. If infinite crossfade length were possible, you would halve the number of tracks available to you. The DD1500, however, does have enough 'headroom' to maintain the number of tracks AND have a short overlap.

## 14 - EDITING

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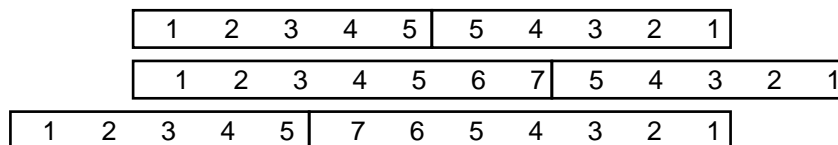
It is also possible to 'slide' splices between butted cues around. For example, imagine the two recordings of numbers being spoken shown above are spliced together, you can trim the splice point as follows:



You can extend the previous cue's end 'over' the second cue's start, thereby revealing more of the first cue and hiding more of the second or you can extend the second cue's start, dragging it over the first cue's end.

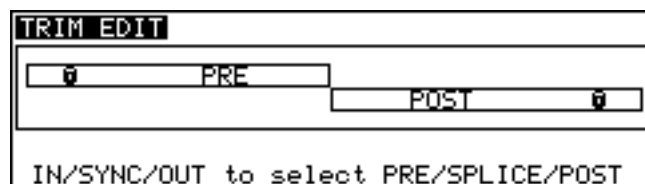
When cues overlap, you may also 'slide' the overlap backwards and forwards, maintaining the overlap but just changing its position.

However, there is more to TRIM than that as you may physically move cues around as you trim.



Here, you can see that as you extend the first cue's end you actually move the second cue in time. Likewise, as you move the second cue's start, the first cue slips in time. All of this is done in the TRIM pages.

Pressing TRIM will give this display:



This screen forms the basis of all the TRIM pages. The box labelled PRE refers to the first cue you may be trimming and the box labelled POST refers to the second cue you are trimming. In TRIM, we always trim the PRE OUT (the first cue's end point) or the POST IN (the second cue's start). You may also trim a SPLICE between two cues as we shall see later on.

You should first locate to the point you wish to trim. This is probably most easily achieved using GOTO and the DATA ENTRY +/- keys to step through each cue in turn until you arrive at the one you wish to trim. Of course, the track the cue you want to trim is on should also be selected for edit.

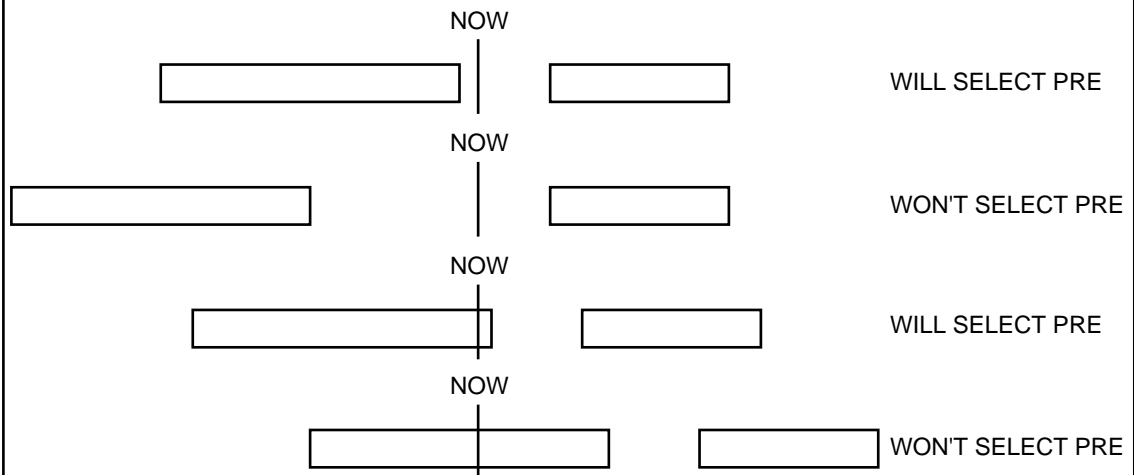
To trim PRE, the end of the cue you wish to edit should be on the NOW time. To select POST, the start of the cue you wish to trim must be on the NOW time and to select SPLICE, you must place the splice of two butted cues on the NOW time.

You select PRE, SPLICE or POST using the IN, SYNC or OUT buttons located directly above the jog wheel. Because you are editing the PRE cue's out time, the OUT key selects the PRE cue, the SYNC key selects SPLICE and because you are editing the POST cue's in time, the IN key selects the POST cue.

**NOTE ABOUT SELECTING TRIM POINT**

*Ideally, the trim points should be on the NOW time. However, the DD1500 can make some reasonable assumptions about which trim point you are intending to edit if the trim point is not exactly on the NOW time and can take you to it automatically.*

*For example, if you intend to edit a PRE cue's end, just lining that cue's end point within ten seconds to the NOW time will be close enough for the DD1500 to take you there. You may find GOTO plus the DATA ENTRY keys is the easiest way to locate to a trim point.*

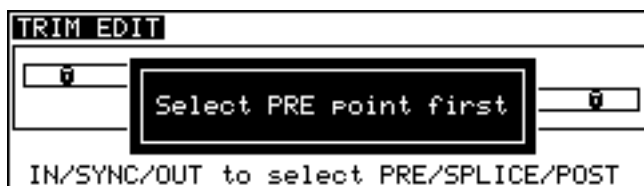


*The same would be true for POST and SPLICE - if these trim points are too far away from the NOW time, the DD1500 cannot tell which one you intend to edit and so will not select anything. In the event of the DD1500 not selecting the trim point for you, you will be prompted: SELECT PRE (or SPLICE or POST) POINT FIRST.*

*To select an overlapping SPLICE for trimming, you must place the cues so that the NOW time is within ten seconds of the overlap region .*

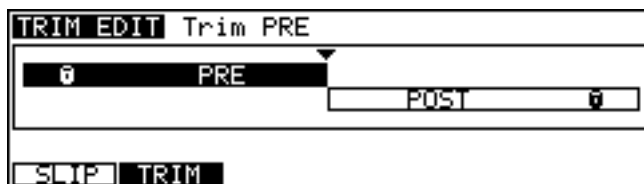
**TRIMMING PRE**

For the moment, we will trim the PRE cue's out time. This is selected by pressing the OUT key. If you have not selected a suitable PRE trim point (i.e. the end of the cue is not on the NOW time or is too far away for the DD1500 to select it for you), you will receive this screen:



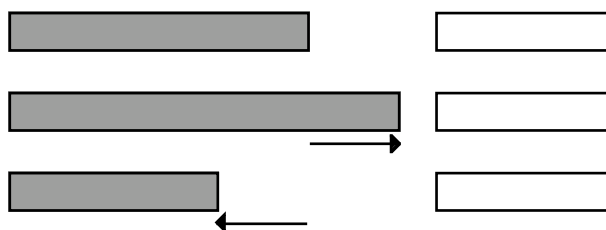
This indicates that the trim point is nowhere near the NOW time. Please check and make sure the end of the cue is on or within ten seconds away from the NOW time and try again. As mentioned in the notes on the previous page, holding down GOTO and pressing the DATA ENTRY +/- keys is probably the best way to line up the end of a cue on the NOW time.

Assuming you have selected the trim point successfully, you will be taken to the TRIM PRE screen:



The top of the screen informs you that you are trimming PRE and the PRE block highlights. The selected cue will also highlight in ochre on the external monitor as further indication. You will note that the JOG key's LED flashes indicating that the jog wheel is now trimming the edit rather than just jogging over it.

You can use the jog wheel to trim the cue. As you jog, you will hear the other tracks selected for play (if any) and also the cue you are trimming. You may also use the DATA ENTRY +/- keys to nudge the trim backwards and forwards in increments of frames (although the amount of 'nudge' can be set in the TRIM SET page. You may also use the numeric keypad's -/< and +/> keys to nudge the trim backwards and forwards in increments of sub-frames (the actual amount may be set in the TRIM SET page).



**NOTE:** When using either the DATA ENTRY +/- or the numeric keypad's +/- keys to nudge the trim, you will not hear audio although you can refer to the waveform display on the external monitor to keep track of where you are in the sound.

As you move the jog wheel, you will see the selected cue extending (getting longer) or contracting (getting shorter). The DL1500's special video graphics LSI allows this to happen in real-time and you will also hear the cue as you jog it so that you can use your ears as well as your eyes to trim the cue's end. To speed up the trimming process, by holding the SHIFT key whilst you move the jog wheel, you can trim the edit at double speed (or whatever is the SHIFT+JOG LIMIT set in the JOG/SPOOL SET page - see SHIFT+JOG).

**NOTE:** The graphic representation on the LCD is just that - a representation. It does not actually display the actual cue you are editing but is there to show which type of trim you are performing.

When turning the jog wheel clockwise (or using either of the '+' keys), once you reach the limits of the cue's original source audio, you will receive this prompt:



This indicates that there is no more audio to extend.

Similarly, when jogging clockwise (or using either of the '+' keys), if you extend the cue's end over the start of the next cue, when the overlap limit set in the TRIM SET page is exceeded - i.e.:



you will receive the same prompt.

When jogging counter-clockwise (or using either of the '-' keys), when you hit the start of the cue you are trimming - i.e.:



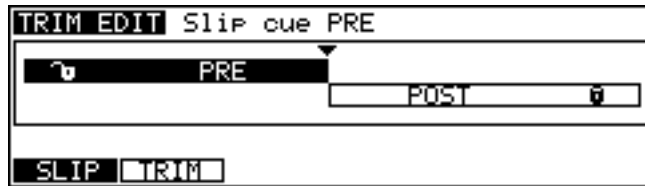
you will receive the same prompt.

**NOTE:** You cannot trim back further than the cue's start point even if there may be audio beyond it. To extend the cue's start point, you must line it up on the NOW time and select TRIM POST - see below.

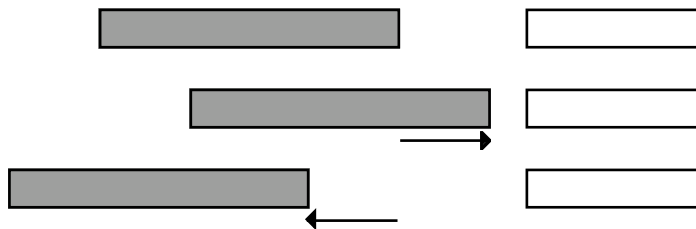
However, even if you do trim right the way back to the start of a cue, the DD1500 will leave just enough so that you can come back to this cue and trim it again, extending the cue's end point to reveal the original audio. When you do this, the cue will be indicated on the external monitor by a single black line. You will note, however, that this black line may only be visible when you have zoomed in horizontally quite a bit.

**SLIPPING PRE**

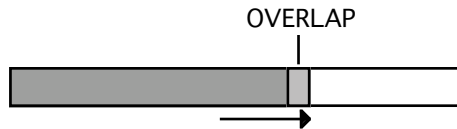
It is also possible to physically move or slip the cue when using TRIM. You will have noticed the two soft keys SLIP and TRIM on F1 and F2. The default selection is TRIM but you may also select SLIP. Pressing SLIP will show this screen:



The top line of the screen shows that you are slipping the PRE cue, the 'padlock' in the PRE block 'opens' indicating the cue is unlocked and the SLIP key is highlighted to show that SLIP is selected. As you move the jog wheel or use the DATA ENTRY +/- or numeric keypad -/< or +/> keys, the cue's end time will be trimmed and the whole cue will slip backwards or forwards. I.e.:



This is not dissimilar to NUDGE AUDIO in many ways. The most notable exception is that when the cue being slipped overlaps the next or previous cue and the overlap limit is reached - i.e.:



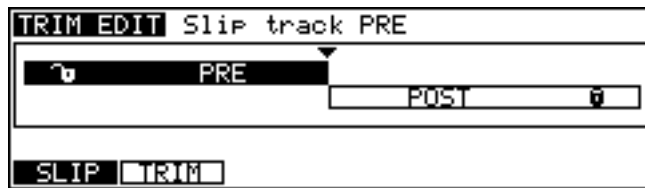
you will get the prompt:



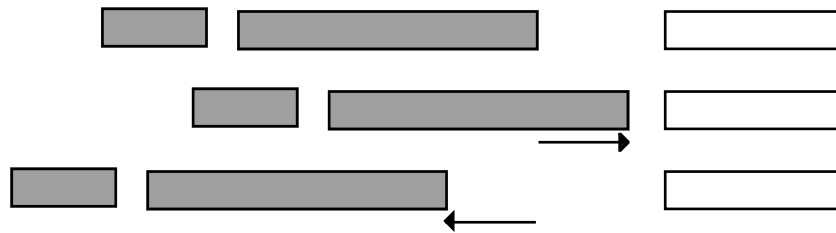
When using NUDGE AUDIO, this wouldn't happen and the cue would effectively be pasted over the next or previous cue.

**SLIPPING WHOLE TRACK USING SLIP PRE**

In the TRIM SET page (SHIFT+TRIM), you may also set whether slipping a cue in TRIM will cause only the cue you are trimming to slip or the all audio before it. When SLIP WHOLE TRACK is selected, the LCD will display this screen:



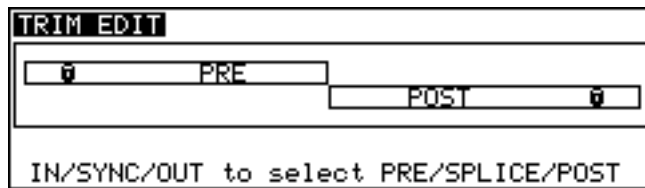
This indicates that all cues before the cue being slipped are also 'active' and will slip in time. The effect on the audio would be:



**NOTE:** In *SLIPPING PRE*, when the start of the very first cue in the project reaches zero (00:00:00:00.0), you will receive the *TRIM REGION LIMIT* prompt as you will have run out of room to slip cues any further.

**TRIMMING POST**

Trimming the POST cue's IN time is exactly the same as trimming PRE except that you are working on the start of a cue. To select POST, press TRIM to receive the 'trim entry' page:

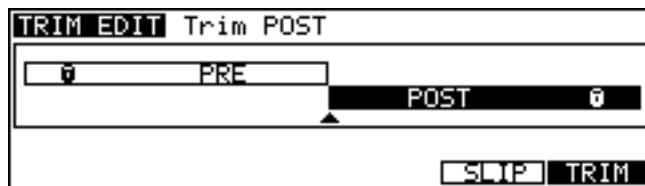


As the prompt suggests, you should locate to the start point of the cue you wish to trim and then press IN. If you have not lined up the start on the NOW time (or within ten seconds of it), you will receive the prompt:



You should act accordingly.

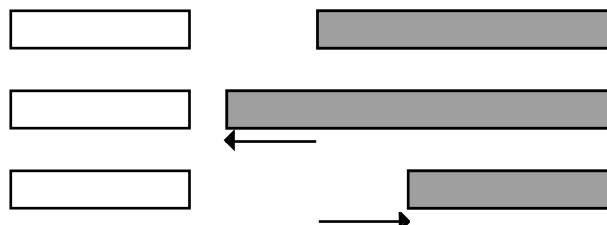
Assuming the start of the cue you wish to trim is lined up on the NOW line or within ten seconds of it, when you press OUT, you will receive this screen:



The top line of the screen reads TRIM POST and the POST block is highlighted for further visual indication. On the external monitor screen, the selected cue will be highlighted ochre. You will notice that the SLIP and TRIM soft keys have moved as these are now used with the POST cue (you will see the relevance of them moving when we come to look at SPLICE).

Operation is basically identical to trimming PRE. You can use the jog wheel to extend or reduce the length of the cue. As you jog, so you will hear the audio. You can also use the DATA ENTRY or numeric keypad's +/- keys to 'nudge' the trim point. The amount by which the trim will be nudged by these keys is set in the TRIM SET page.

The result would be this:



As with trimming PRE, there is a limit to the amount you can trim a cue. Of course, you cannot extend it beyond the range of the original audio associated with the cue.



Neither can you overlap it over the end of the previous cue beyond the overlap limit set in TRIM SET. I.e.:

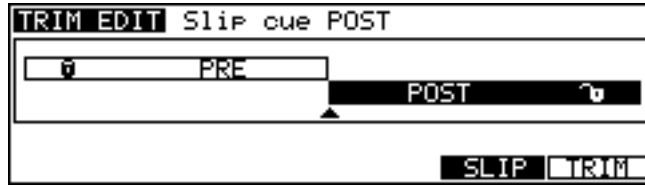


Also, you cannot extend the cue's start beyond the end of the cue your are trimming. In any of these situations, you will receive the prompt:



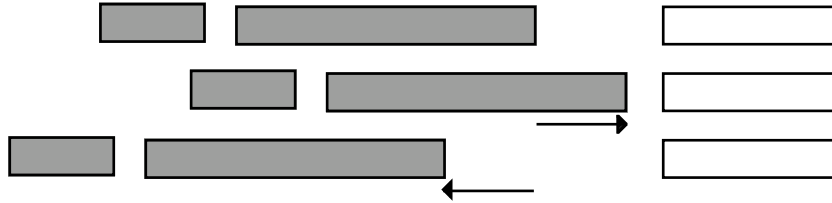
### SLIPPING POST

As with PRE, you may also trim the POST cue and slip it in time. To do this, press the SLIP key. You will receive the following screen:



The top line of the screen shows SLIP CUE POST, the POST block's padlock symbol is shown as 'unlocked' and the SLIP key is highlighted.

You can use the jog wheel to trim the cue's start point and slip it in time. I.e.:



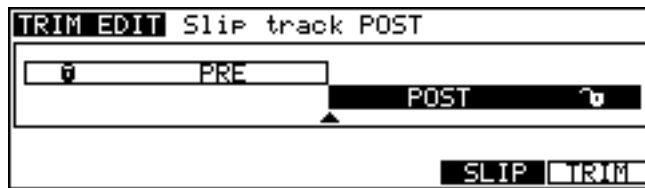
If the cue overlaps another cue when you slip it, when the overlap limit is reached, you will receive the prompt:



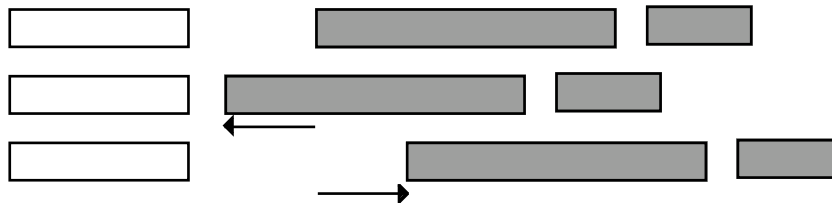
Slipping a cue in this way is similar to using NUDGE except that you may only slip it between two cues with a small overlap (NUDGE allows you to move a cue over another, effectively 'pasting' over it).

**SLIPPING WHOLE TRACK USING SLIP POST**

In TRIM SET (SHIFT+TRIM), you can set whether slip will affect the whole cue or will slip all audio after the cue. When SLIP WHOLE TRACK is selected in TRIM SET, the TRIM screen will show this display:

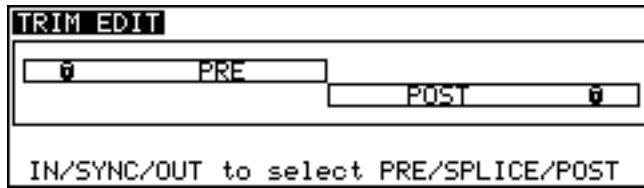


This indicates that all audio after the cue you are editing is active and will slip. The effect would be thus:



**TRIMMING A SPLICE EDIT**

When two cues are butted together or overlapping, you may move the splice point around in TRIM. To select a splice for trimming, place the splice/overlap you are interested in on (or very close to) the NOW time and press TRIM to receive the 'trim entry' page:

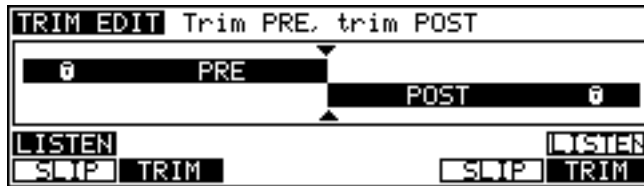


Now press the SYNC key. If the splice is not on or close to the NOW time, you will receive the prompt:



You should move the splice point onto the NOW time or nearer to it.

Once you have successfully selected SPLICE, you will receive this screen:



**TRIMMING A SPLICE - BOTH LOCKED**

The top line of the screen shows TRIM PRE, TRIM POST and both blocks are highlighted. On the external monitor, both cues either side of the splice will be highlighted ochre. As you move the jog wheel or the DATA ENTRY or numeric keypad +/- keys, you will see the splice point move. Because both cues are locked, only the splice point moves. It is possible to trim the splice point and also slip either the PRE cue or the POST cue accordingly. We shall come to this a bit later.

If we go back to the example where we have two recordings, one counting from "one" to "ten", the other counting from "ten" to "one", moving the splice would have this effect:

1	2	3	4	5	5	4	3	2	1
1	2	3	4	5	6	7	3	2	1
1	2	3	7	6	5	4	3	2	1

You can reveal more or less of the PRE or POST cue's source audio as you 'slide' the splice point around.

The same restrictions apply when trimming regarding the region in which you may move this splice point when trimming with both the PRE and POST cues locked. You cannot move the splice point further than either the PRE or POST cues' original source audio. Also, you cannot move the splice point beyond the extremes of the two cues (i.e. before the PRE cue's start and after the POST cue's end). If you do try to move the splice beyond these regions, you will receive this prompt:

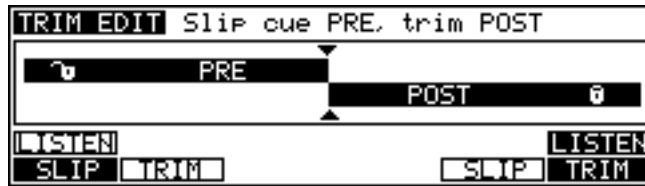


**LISTEN**

Two new soft keys appear on SHIFT+F1 and SHIFT+F6 both called LISTEN. These allow you to select which side of the splice you will listen to when using the jog wheel to move the splice point. Pressing SHIFT+F1 allows you to listen to the PRE cue's audio as you trim and pressing SHIFT+F6 allows you to hear the POST cue's audio as you trim. They highlight to show which one is selected.

**TRIMMING A SPLICE - PRE SLIP**

It is also possible to trim the splice point as described above but set it so that the PRE cue slips in time. To achieve this, press F1 - SLIP. You will receive this screen:

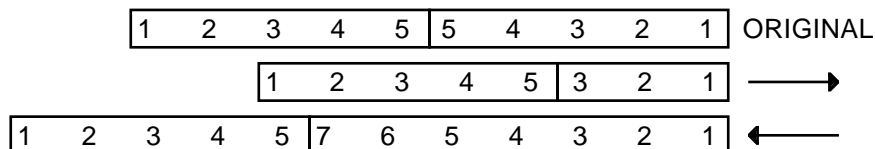


The top line shows that you are slipping the PRE cue and trimming the POST cue, the PRE block's padlock 'opens' to further indicate the condition and the PRE SLIP key is highlighted.

**NOTE 1:** If you had POST SLIP selected (see below) when you press PRE SLIP - F1, POST SLIP is automatically switched. You cannot have PRE and POST set to slip simultaneously.

**NOTE 2:** When PRE SLIP is selected, the pre cue's LISTEN is automatically selected. This is because you cannot listen to a cue as it is being slipped. Pressing SHIFT F1 will do nothing in this page.

With PRE SLIP selected, trimming the splice point would have this effect:



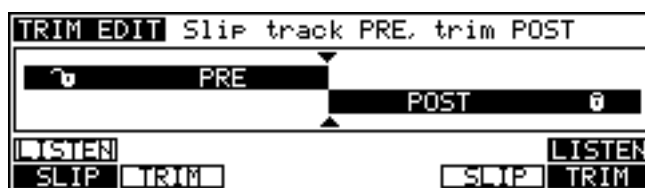
The POST cue stays locked in time but you may extend its start point, pushing or dragging the PRE cue along with the splice.

The usual restrictions apply when trimming the splice in this way. You cannot extend the splice point further than the start of the POST cue's original source audio and you cannot move the splice point *after* the POST cue's out point. Also, when pushing the PRE cue back, when the PRE cue's start point 'hits' the cue before it, you will receive the prompt:



**SLIP WHOLE TRACK USING TRIM SPLICE (PRE SLIP)**

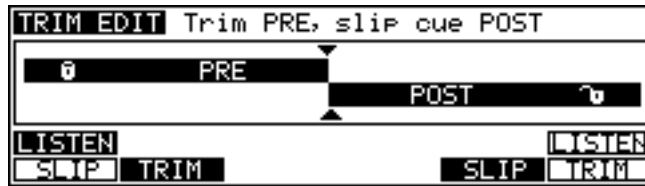
When SLIP WHOLE TRACK is selected in TRIM SET, the LCD will show this screen:



All cues before the splice will slip as you move the splice point.

**TRIMMING A SPLICE - POST SLIP**

It is also possible to trim the splice point as described above but set it so that the POST cue slips in time. To achieve this, press F5 - SLIP. You will receive this screen:

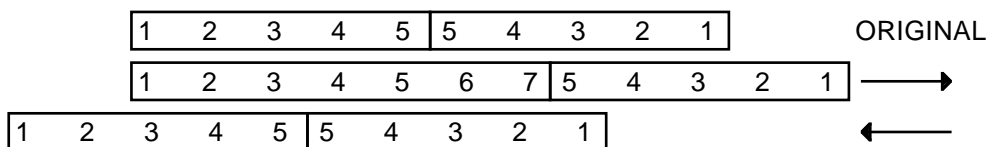


The top line shows that you are trimming the PRE cue and slipping the POST, the POST block's padlock 'opens' to further indicate the condition and the POST SLIP key is highlighted.

**NOTE 1:** If you had PRE SLIP selected (see above) when you press POST SLIP - F5, PRE SLIP is automatically switched. You cannot have PRE and POST set to slip simultaneously.

**NOTE 2:** When POST SLIP is selected, the PRE cue's LISTEN is automatically selected. This is because you cannot listen to a cue as it is being slipped. Pressing SHIFT F6 will do nothing in this page.

With POST SLIP selected, trimming the splice point would have this effect:



The PRE cue stays locked in time but you may extend its start point, pushing or dragging the POST cue along with the splice.

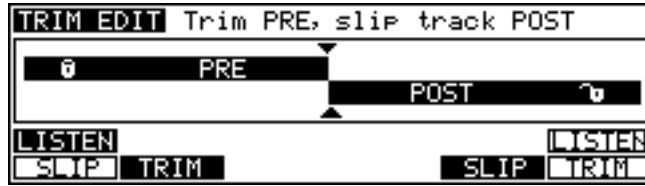
The usual restrictions apply when trimming the splice in this way. You cannot extend the splice point further than the end of the PRE cue's original source audio and you cannot move the splice point *before* the PRE cue's start. Also, when pushing the POST cue, when the POST cue's end 'hits' the cue immediately after it, you will receive the prompt:





**SLIP WHOLE TRACK USING TRIM SPLICE (POST SLIP)**

When SLIP WHOLE TRACK is selected in TRIM SET (SHIFT+TRIM) the LCD will show:



All cues after the cue you are editing will also slip with the splice.

### **UNDOING A TRIM**

You cannot undo a trim within any of the TRIM pages but, when you leave the TRIM pages and return to the main working page, pressing UNDO will undo the trim you have just done.

**TRIM SET (SHIFT+TRIM)**

It is possible to set the certain parameters relating to trimming cue in the TRIM SET page. Pressing SHIFT+TRIM will display this screen:

```
SET NUDGE AMOUNT
Trim slip type : SLIP WHOLE TRACK
DATA +/- keys : 1 Frame(s)
NUMERIC +/- keys : 1 Sub-frame(s)
Overlap limit : 50mS
SLIP?                DEFAULT
```

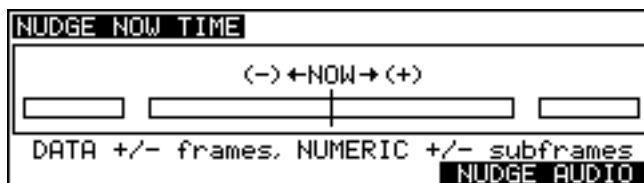
The fields on this page are:

- SLIP TYPE** This allows you set whether what you do in TRIM affects all audio on the track or only the cue you are trimming. The choices here, not surprisingly, are ONLY CUE and SLIP WHOLE TRACK.
- DATA +/- KEYS** Here you may set the amount the DATA +/- keys will 'nudge' a trim point. The usual selection (and hence the default) is 1 frame. You may select from 1-25 frames (or 24 or 30 depending on the frame rate of the timecode type you are using).
- NUMERIC +/- KEYS** This field allows you to set the amount by which the numeric keypad's +/- keys will 'nudge' a trim point. The default is 1 sub-frame and you may select from 1-9 sub-frames.
- OVERLAP LIMIT** This allows you to se the maximum amount cues can be overlapped when using trim to extend one cue over another. The range is 0 (no overlap) to 80mS.

Pressing EXIT will leave this screen at any time.

### NUDGE

This allows you to use the DATA ENTRY +/- keys to slip and nudge edits or audio into position. Pressing NUDGE gives this screen:



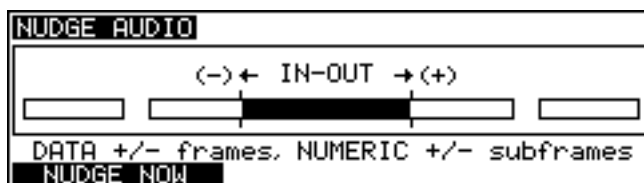
This is a graphic representation of what is happening when you nudge. This page allows you to nudge the NOW time into position prior to marking an IN, SYNC or OUT time. For example, if you cannot set an edit precisely using the JOG wheel, you can use this page to nudge the NOW time into position using the DATA ENTRY +/- keys which will nudge the NOW time, frame by frame, until it is at exactly the right position. Typically, you would use this by roughly jogging over an edit point using the JOG wheel, pressing NUDGE and use the + or - keys to nudge backwards or forwards in increments of frames, maybe use PLAY TO, OVER and/or FROM to audition the point and then mark an IN, SYNC or OUT point as appropriate.

You can also use the NUMERIC KEYPAD's -/< or +/> keys to nudge in increments of subframes (however, please see below - NUDGE SET - as you can set the increments by which the NOW time will be nudged).

You may also use NUDGE with SELECT CUE to set the SYNC point at which you mark the cue. Line up the cue you are interested in on the NOW time and press NUDGE. Now use the +/- keys to nudge the NOW time and, when you're happy with the position, press SELECT CUE. The cue will be selected and the SYNC point will be marked on the NOW time you have just set.

### NUDGING AUDIO

It is also possible to physically nudge and slip audio into position using the NUDGE function. Pressing F5/F6 gives this screen:



To nudge audio (that is, to physically slip it in time), you must first select an IN and OUT region. This may be done before or after entering NUDGE AUDIO. Assuming the appropriate tracks are selected for EDIT, this can be done in a number of ways...

To select a single cue for nudging, line the cue you wish to nudge onto the NOW time and press SELECT CUE. The cue will be highlighted green on the external monitor. For stereo cues, select the tracks for edit as necessary.

To select a specific IN and OUT region to nudge, mark the IN and OUT points where necessary. The edit region will be highlighted green on the selected track. You may also select several tracks.

To select everything from the NOW time to the end of the track to nudge, press and hold the IN key and press OUT. Everything from the IN time to the end of the track will be selected and highlighted green on the external monitor. You may do this across several tracks.

To select everything from the NOW time to the start of the track to nudge, press and hold the OUT key and press the IN key. Everything from the NOW time back to the start of the track will be selected and highlighted green on the external monitor. You may do this across several tracks.

To select the whole track to nudge, press and hold SYNC then press IN and OUT together. This will mark the whole of the selected track and it will be highlighted green on the external monitor. You may, of course, have multiple tracks selected for editing.

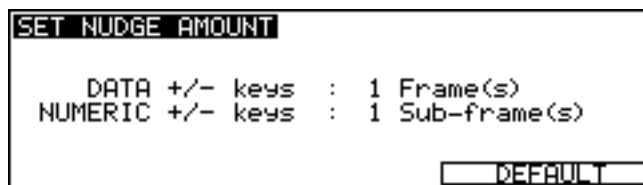
However you mark it, as soon as you press the DATA ENTRY + or - keys, the selected audio will slip forwards or backwards in increments of one frame or you may also use the numeric keypad's +/- keys to slip in smaller increments of sub-frames (however, please see below - NUDGE SET - as you can set the increments by which the audio will be nudged). If you are in the middle of a cue, as soon as you nudge it, the cue will be split and the audio slipped.

**UNDOING A NUDGE**

You cannot undo a nudge directly within the NUDGE pages but, when you leave the page, if you feel the result was unsuccessful, you may undo it. When in the NUDGE page, if you feel an edit is not working well, leave NUDGE temporarily, hit UNDO and re-enter NUDGE to have another attempt.

**NUDGE SET (SHIFT+NUDGE)**

The NUDGE key's shift function, SET, allows you to set by how much the +/- keys will nudge. Pressing SHIFT+NUDGE will display this screen:



The fields on this page are:

**DATA +/- KEYS**

Here you may set the amount the DATA +/- keys will nudge. The usual selection (and hence the default) is 1 frame. You may select from 1-25 frames (or 24 or 30 depending on the frame rate of the timecode type you are using).

**NUMERIC +/- KEYS**

This field allows you to set the amount by which the numeric keypad's +/- keys will nudge. The default is 1 sub-frame and you may select from 1-9 sub-frames.

Pressing EXIT will leave this screen at any time.

### ORIGINAL FUNCTION

The ORIGINAL function appears on the main edit screen (F5).

```
AKAI DD1500 DIGITAL AUDIO EDITOR
      IN TIME : 00:00:00:00.00
      SYNC TIME : 00:00:00:00.00
      OUT TIME : 00:00:00:00.00
      IN OUT LENGTH : 00:00:00:00.00
PRINT TRACK ORIGNL [SP] [ ] [ ] [ ]
```

This allows you to move the selected cue/edit region to the time where it was originally recorded. For example, if you have slipped a piece of dialogue to a new position but wish to place it back to the point at which it was originally recorded, press ORIGNL. Pressing ORIGNL will display this screen:

```
MOVE TO ORIGINAL TIME 01:23:12:13.11
Move the selected region to the time
where it was originally recorded.
* EXIT to abort/EXECUTE to move *
```

Pressing EXECUTE will move the cue/region to its original record time.

**NOTE 1:** *If the recording was not made to external timecode, it will be moved to 00:00:00:00.0.*

**NOTE 2:** *You can also see a cue's original timecode position by going to EDIT CUE.*

**TRACK MOVE**

The TRACK key allows you to move a cue or an edit region to another track. This is faster and more convenient than using ERASE to remove the cue/region from one selected track, de-selecting that track and selecting the destination track and then pasting it back in.

To move a cue/region from one track to another, select the source track using the TRACK EDIT keys and then select the cue or mark the region you want to move. Press TRACK (F4). You will see this screen:

```
MOVE REGION TO NEW TRACKS
      To track : 1
* EXIT to abort/EXECUTE to move *
```

Select the 'destination' track in the TO TRACK field and press EXECUTE to move the track. The cue/region on the track selected for editing will be moved from the 'source' track and will be placed at exactly the same time on the track specified in this field.

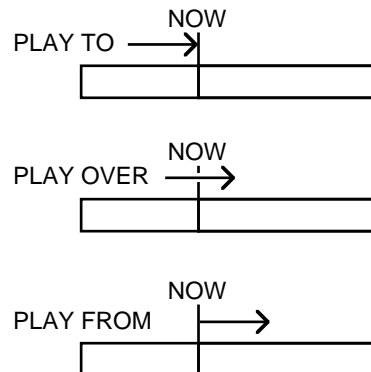
In the case of moving several tracks, the TO TRACK field sets the first track the lowest numbered track will move to - all other tracks selected for edit will be moved to adjacent tracks. For example, select tracks 6, 7, 8 for EDIT, press TRACK, select 1 - tracks 6, 7, 8 will be moved to tracks 1, 2, 3.

**IMPORTANT NOTE:** Existing cues or overlapping cues on the destination tracks will be pasted over.

This function is only intended as a simple way to move audio from one track to another at the same time location. For more complex moves, you should use CUT/ERASE and PASTE/INSERT.

### EDIT PLAY KEYS

The five special play keys above the main transport keys are normally used when editing. Typical operation is to jog over an edit point and use PLAY TO, PLAY OVER or PLAY FROM to audition them quickly.



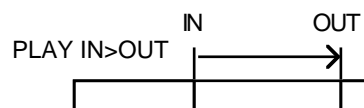
Playback response time of these keys is extremely fast allowing rapid auditioning. Once you are happy that you are at the right point, you can mark an IN, SYNC or OUT time as appropriate. Of course, you may mark the IN, SYNC or OUT and then use these edit play keys, maybe nudging the NOW time, auditioning and re-marking the point.

The default play duration for these keys is 1 second but, if you need longer times, pressing SHIFT and any of these keys will display this screen:

```
PLAY DURATIONS
PLAY TO duration : 1 Second(s)
PLAY FROM duration : 1 Second(s)
* TO + FROM time = PLAY OVER duration *
[RESET]
```

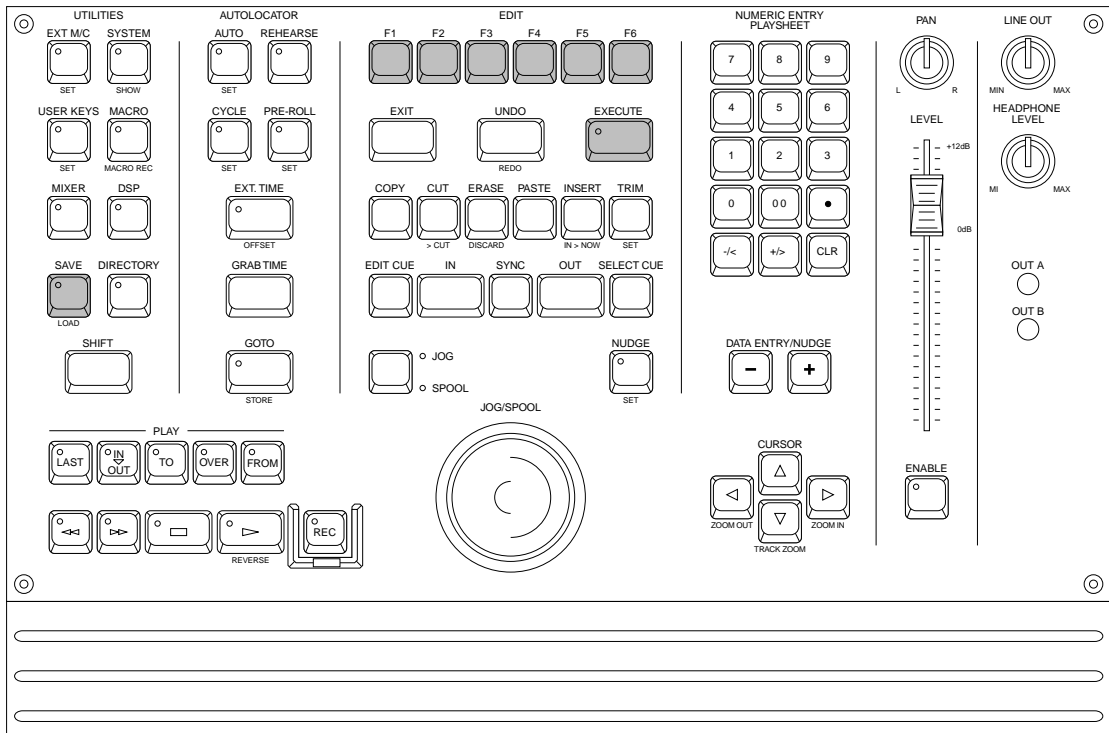
Here, you may set the play duration for the PLAY TO and PLAY FROM keys. The total length of the PLAY TO and PLAY FROM duration sets the PLAY OVER duration. In this way, you can have a PLAY TO duration of 2 seconds and a PLAY FROM duration of 3 seconds giving a total PLAY OVER duration of 5 seconds. You may reset the play durations at any time by pressing F6 - RESET.

Once an edit region has been marked or a cue has been selected, you may use the PLAY IN > OUT key to listen to the edit region:



PLAY LAST allows you to play the very last thing you played enabling you to listen to something repeatedly.

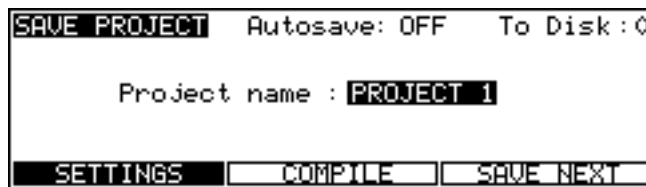




Now that we have some material recorded and edited, it's time to save the project.

**SAVING PROJECTS**

Pressing SAVE displays this screen.



The page shows the name of the currently loaded project. Just press the flashing EXECUTE key to save (or EXIT to abort). This will save the project and leave the page. You will receive the following pop-up prompt when you leave the page after the file has been saved:



This message will flash up very quickly to confirm the project is saved.

**NOTE:** No ARE YOU SURE? prompts are given as it is felt that a quick way to save projects is very important. However, please be careful not to accidentally save something you do not wish to keep!!

If, at any time, you change your mind and do not wish to save the project, press EXIT to leave the SAVE page.

## 15 - UTILITIES - SAVING PROJECTS

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### SAVING A PROJECT WITH A DIFFERENT NAME

To save a project with a different name, press the NAME key. You will receive this screen:

```
SAVE PROJECT  Autosave: OFF  To Disk : 0
Project name : PROJECT 1
SETTINGS  COMPILER  SAVE NEXT
```

The name field is automatically 'opened' for naming (and the NAME key will flash). The bottom line will prompt you to enter the name and complete the action by pressing EXECUTE. When you press EXECUTE, you will receive the following prompt:

```
EXECUTE to SAVE (EXIT to abort)
```

You should respond accordingly with EXECUTE (YES) or EXIT (NO/CANCEL). EXECUTE will save the project and leave the screen; EXIT will just cancel the process.

If you are using an external PC keyboard, there is no need to press NAME - simply start typing on the keyboard to enter a new name. Press RETURN to enter the name and RETURN again to finish the naming process and save the project with the new name.

If the name has a number in it (i.e. PROJECT 1), you can save it with a new number just by pressing any of the number keys on the numeric keypad. For example, to save PROJECT 1 as PROJECT 2, simply press 2, EXECUTE, EXECUTE.

If the name you give the project already exists, you will receive this prompt:

```
File exists! Do you wish to overwrite??
```

You should press EXECUTE to overwrite the file or EXIT to cancel the process.

Pressing EXECUTE will save the project with the new name and you will leave this page.

You can also use the SAVE NEXT key to save the project with a unique name automatically generated by the DD1500. The basic name is retained and a unique number is appended to the end. Pressing SAVE NEXT will display this prompt:

```
Save Project with unique name?
```

Pressing EXECUTE saves the file with a unique numeric suffix and will return you to the screen you were in previously. EXIT will cancel the process. Please note, however, that the last four characters in the name are reserved for the auto-naming process to allow for up to 9,999 unique names. For example, if you were to use SAVE NEXT with a file called PROJECT 1, pressing F1/F2 - SAVE NEXT - would save the file as PROJEC 1. The next project you save would be called PROJEC 2, and so on.

**NOTE:** It is not possible to save the project to another disk and the TO DISK field is shown for information only. The DD1500 always saves the project back to the disk it was loaded from. This is because saving a project to another disk would detach the project from the audio. Imagine the situation where you load a project from hard disk on SCSI ID#0 and save it to an MO on SCSI ID#1. When you remove the MO and try to play it elsewhere, because the audio is not on that disk, the project would not play.

If you really want to have the project on another disk with its associated audio, you should copy the project using the DISK COPY functions.

### COMPILING A PROJECT

When working with multiple disk drives, you will probably often have the situation where a project is created using audio taken from these external disks. For example, one common setup is to have a system with an MO drive which is used to take the removable master project disk and have banks of sound libraries on the fixed hard disks also connected to the system. Projects are built by 'sweetening' the master MO with sound effects, foley, music etc., from these hard disks. For example, you may receive an MO with all the dialogue on to which you have to add sound effects, music, etc.. During the track laying process, you will probably be playing these sound effects from the external hard disks but, ultimately, of course, you wish to remove the master MO disk for transfer to the mixing room for the final mix at which point you need to make that MO disk 'self contained' so that it contains all the audio elements used in the project. In other words, you want to 'compile' your project.

The COMPILE function on the DD1500 is a special type of save routine and is used to create one 'master' disk for a project to be played from. Without COMPILE, if you were to remove the master MO and try to play it back without the hard disk(s) also being on-line, any cues in the project that were created using clips from libraries on the external hard disk(s) would not be played. COMPILE overcomes this by copying all audio referenced in the project from the hard disk(s) onto the one 'master' MO. After the project has been compiled, all cues will play back successfully from the MO.

To compile a project, press F3/F4. You will receive this screen prompt:

```
Compile master disk and save project?
```

The EXECUTE key will flash and you should press EXECUTE (YES) or EXIT (NO/CANCEL) as appropriate. If you choose to compile the project, you will see this prompt as the DD1500 copies all relevant bits of audio from the external disk(s) to the main disk.

```
Compiling project. Please wait...
```

The DD1500 will scan the project, find out which bits of audio are being used and which disks they come from and will copy the relevant pieces of audio across. However, please note that because audio is being copied from the external disk(s), compiling a project can take some time. Exactly how long depends on the amount of audio that needs to be copied. If you have only taken a few short door slam sound effects from the external hard disk(s), it will take a very short time but if you have used lots of clips from the external disk(s) or they are very long, the process will take longer. As each piece of audio is copied across, so the prompt shown above will highlight to indicate progress.

**NOTE:** *In the case where you are copying small clips across that are part of longer recordings, only the section of the audio being transferred will be copied. For example, if you have used a short 1 second door slam clip that is actually part of a longer 5 minute recording, only 1 second will be copied with a 10% 'handle' either side to allow some leeway for trimming it within the project if necessary.*

When creating projects using clips from external disks, it is recommended to use COMPILE to prevent the possibility of audio becoming separated from the project. However, please note that because you are copying audio across, you will use up more disk space on the 'master' disk so you should make sure you have enough free disk space to allow for this. If there is insufficient space, the DD1500 will prompt you.

### **SAVING MIX SETTINGS AND AUTOLOCATE MEMORIES**

When a project is saved, if that project has locate memories or mix settings associated with it, they will also be saved. A 'system settings' file will also be saved automatically which will save the system sample rate, timecode settings, etc., relevant to the project. The status of the track select keys (PLAY, RECORD, EDIT) will also be saved as will your SHOW selections on the external monitor (i.e. SHOW names, fades, waveforms, etc.) and track zoom settings. The current NOW time will also be saved along with the status of keys such EXT. TIME, EXT M/C, etc., allowing you to return to exactly the same state as you left the project when you saved it. If you have been making recordings in the project you are saving and have named recordings specifically, the last name you created will also be saved allowing you to return to the project and carry on recording where you left off.

**SAVING SETTINGS FILES**

You may also save settings files separately. As explained above, whenever you save a project, its settings are also saved automatically so that system parameters, mix settings, etc., relevant to that project are also saved.

However, you may wish to save settings files separately. For example, you may wish to save a set of default settings parameters that you use whenever you are working with the DD1500. Furthermore, you may save a number of different settings files. For example, you may save one settings file set up to record through the analogue inputs. You may save another to record through the digital inputs. You could save another that sets the system to control an RS422 device and be synchronised to external timecode at 25fps, EXT. TIME key on, zoomed in to 8 tracks, sync'd to external video 'house' sync, etc.. Basically, you may set the system any way you like and save the settings to the disk so that you can load these very easily without having to reset all the parameters manually every time you want to use them.

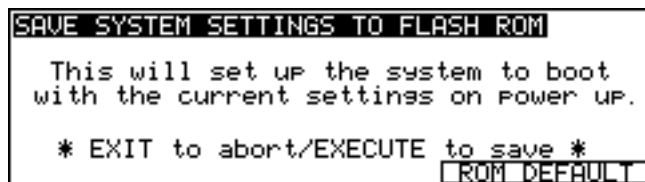
Furthermore, you may also save a default system settings file to the DD1500's flash ROM so that the system always boots up exactly as you want it. If you are always track laying to picture on a VTR using an MO disk, you could set the system up as described in the example given above so that the system always boots up like this.

To save a settings file, press SETTINGS (F1/F2). You will receive this screen:



You may name the settings file if you wish by pressing the NAME key and typing in an appropriate ten character name. Press EXECUTE to finish the name and EXECUTE again to save the settings file. If you are using a computer keyboard, simply start typing in a suitable name of up to ten characters then press RETURN twice.

To save the settings to flash ROM, press FLASH ROM (F1/F2). You will receive this screen:



As the screen informs you, the system will power up according to the settings you save now. If you wish, you may also reset the system settings to the default settings contained in the operating system by pressing ROM DEFAULT (F5/F6).

### **NOTES ON USING SETTINGS FILES**

*The settings files are an extremely useful way of configuring your system according to your needs or application. As mentioned, if you have a particular way of working that does not change, you can set the system up as necessary and then save those settings. In this case, it would probably be best to save the system settings to flash ROM so that the system always boots up exactly as you want it when you power the system up.*

*If, however, you have several ways of working, you may prefer to save a variety of different settings files, each with different system settings, to disk so that you can load these at any time whenever you need to re-configure the system.*

*When you save a settings file (to disk or flash ROM), the status of the whole system is saved. These include:*

*Track select (PLAY/RECORD/EDIT) status.*

*GROUP keys' memories.*

*ZOOM IN/OUT level both vertically and horizontally.*

*Current NOW time.*

*Current IN/SYNC/OUT times.*

*Current autolocator memories.*

*Last record name.*

*Input routings.*

*RECORD SETUP parameters.*

*Input levels.*

*MIXER settings.*

*All SYSTEM parameters (i.e. timecode type, wordclock sync source, sample rate, timecode generator and bi-phase generator parameters, GPI/O assignments, digital output settings, etc.).*

*All special EDIT parameters (i.e. CUT/->CUT/INSERT/TRIM SLIP and TYPE fields and COPY/ERASE EDIT TYPE fields)*

*NUDGE SET and TRIM SET parameters.*

*JOG/SPOOL SET parameters.*

*PRE-ROLL and PLAY TO/OVER/FROM times.*

*EXT/TIME key status.*

*EXT M/C key settings and status.*

*When saved to flash ROM, the settings of these parameters will automatically be booted. Also, when you create a new project using NEW PROJECT in LOAD (see next section), these settings are used as the basic defaults for the new project. This means that, for example, if you always use an 8-track MO disk, and always start work at 10 hours, zoom in to 8 tracks, locate to 10:00:00:00.0 and save these parameters so that a default project customised to your requirements is always created.*

**AUTOSAVE**

In the SAVE page, there is an option for selecting AUTOSAVE:



With AUTOSAVE switched OFF, the DD1500 behaves as normal and you must specifically save projects when you feel it is appropriate. With AUTOSAVE switched to ON, whenever you do anything, the project is saved (saving is very fast - you won't notice any deterioration in speed or performance). After you record, cut, paste, erase, slip, undo, whatever, the project is saved automatically. As well as alleviating the need for a manual save, it has the added advantage that should anything go wrong, the project is safe.

However, please be advised that if you perform a lot of edits or recordings, whatever, there may come a point, of course, where you have exceeded the number of UNDOs available (20) and, because the project is saved, you may have to re-construct things if you change your mind about any edits you may have done.

Basically, there are pros and cons to the AUTOSAVE function - some users like not to worry about having to save and are happy for their every action to be saved immediately, others prefer to save manually as and when they like. You have the choice!

When AUTOSAVE is switched on, it is shown on the VGA monitor to the top right of the GRID. I.e.:

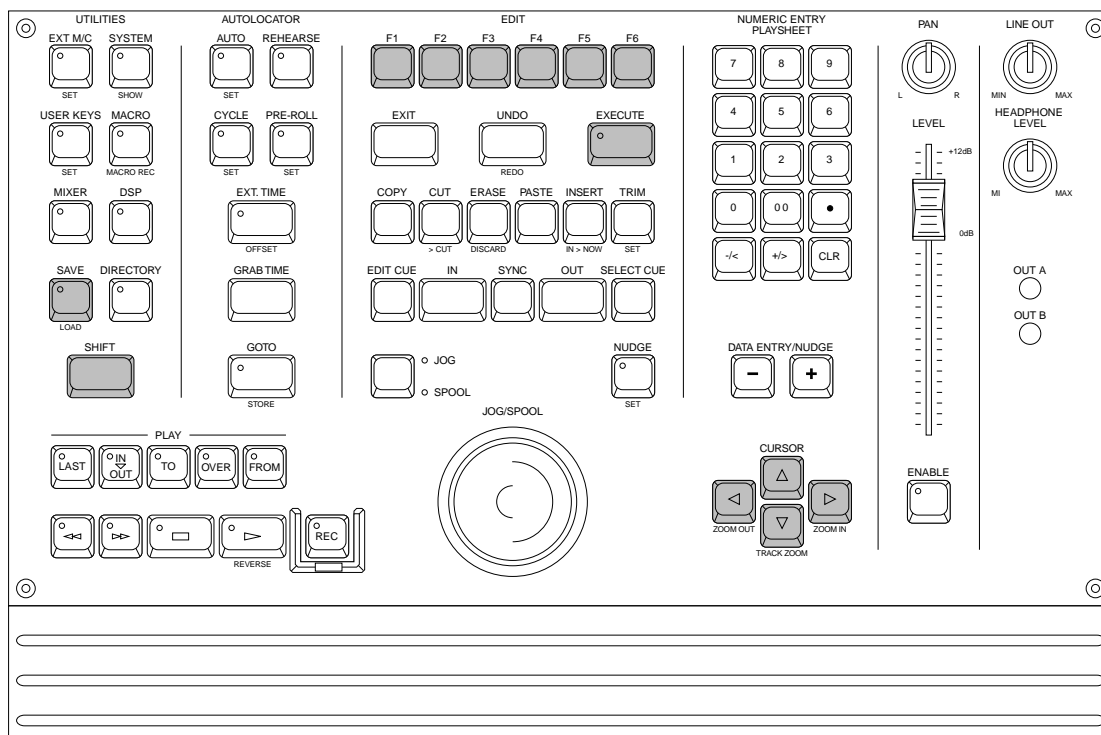


**NOTE:** *If you use a DR8 disk on the DD1500, AUTOSAVE is automatically switched ON.*

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

**IF YOU ARE USED TO WORKING WITH AUTOSAVE SWITCHED ON ALL THE TIME, BE AWARE THAT YOU MAY BE GIVEN A DISK TO WORK ON WHICH HAS THE AUTOSAVE FUNCTION SWITCHED OFF.**

**IN THIS CASE, YOU WILL EITHER NEED TO ENABLE AUTOSAVE OR YOU WILL NEED TO SPECIFICALLY SAVE THE PROJECT MANUALLY BEFORE EJECTING THE DISK OTHERWISE YOU WILL LOSE DATA.**



Once you have a number of projects saved, it follows that you will want to load them into the DD1500. You may also want to initialise the DD1500 in order to create a project from scratch.

## LOAD

Pressing SHIFT+SAVE (LOAD) will give you this screen:



Here you can see a list of projects on the currently selected disk. As is the convention in file lists, if there are projects 'above' or 'below' the screen, an upwards and/or downwards pointing arrow will be shown (↑ / ↓). You may view and load projects on other disks by moving the cursor to the DISK field and selecting an external drive as appropriate.

To load a project, simply select the one you want and press the flashing EXECUTE key. The project will be loaded and you will leave the load page. The following prompt will flash up on the screen to confirm the project is loaded:





If you have been working on a project and have not saved it, if you request the system to load a project (or create a new one), you will now see the following prompt:

```
*** WARNING ***
Current project not saved!
Proceed without saving?
EXIT to abort / EXECUTE to proceed
```

This is telling you that pressing EXECUTE will load the new project and any changes you may have made to the existing project will be lost. Press EXIT to abort the load (and save the current project?).

If you have a project loaded but have not made any changes, if you try to load another or create a new project, this prompt will not appear.

Whenever you load a project, if that project has locate memories or mix settings associated with it, they will also be loaded automatically. A 'system settings' file will also be loaded automatically which will load the system sample rate, timecode settings, etc., relevant to the project. The status of the track select keys (PLAY, RECORD, EDIT) will also be recalled as will your SHOW selections on the external monitor (i.e. SHOW names, fades, waveforms, etc.) and the zoom in/out factor selected at the point of saving thereby returning you to exactly the same status as you left the project when you saved it.

**NOTE:** *When you load a project and select tracks for playback, the cues will be shown blue on the external monitor. If, however, any are shown in a pale yellow colour, this indicates that, although a cue exists at that point in the project, the audio associated with it is not on any disk currently on-line.*

*This is not that likely to happen very often, however. Instances where it might occur is where you have pasted in a cue from a library on an external disk but that disk is not now on-line (or the wrong MO or the wrong side of the MO has been inserted into an external drive).*

### CREATING A NEW PROJECT

Using NEW PROJECT, it is possible to create a new, empty project. You will receive the prompt:

```
Create a new project?
```

As usual, you should press the flashing EXECUTE key to answer YES or EXIT to cancel. An empty project will shown on the external monitor screen into which you may now start recording or pasting/inserting library items. The new project will be given a name automatically. You may rename this when you come to save it.

As with loading a project, if the project currently in the DD1500's memory has been edited and those changes have not been saved, you will receive the prompt:

```
*** WARNING ***  
Current project not saved!  
Proceed without saving?  
EXIT to abort / EXECUTE to proceed
```

You should press EXECUTE to create the new project without saving or EXIT to abort the process.

### **NOTES REGARDING CREATING A NEW PROJECT**

*Whenever you create a new project, the system's default SETTINGS file is loaded from flash ROM. This allows you to configure the system as you like so that starting work with a new project always loads the correct settings.*

*For example, you may always work on an 8-track MO at 44.1kHz starting at 10 hours. By zooming in to 8 tracks, setting the sample rate to 44.1kHz in the SYSTEM page and locating to 10:00:00:00.0 and saving the settings to flash ROM, this is how a new project will be initialised.*

*Furthermore, the status of keys such as the track select keys, the EXT. TIME key, the EXT M/C key, etc., is also saved and subsequently recalled when you create a new project.*

*Please see the section SAVING SETTINGS FILES for more information.*

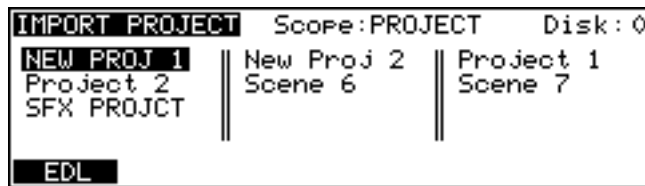
**IMPORTING A PROJECT INTO A PROJECT**

So far, we have seen how the LOAD page is used to load entire projects into the DD1500. It is also possible to import DD1500 projects into other projects.

For example, on separate DD1500s dotted around a large facility, one team may be working on dialogue editing, another team on music editing and another on foley recording and editing. Each team will end up with a disk that contains a finished project comprising a couple of tracks on separate disks. These disks can all be brought to one final master DD1500 where the different elements can be brought together into the final master project for the mixdown using the IMPORT PROJECT function.

Alternatively, two 8-track projects may have been recorded onto two separate Akai DR8s at different location recordings. Again, these can be merged into one composite 16-track project on the DD1500 using the IMPORT PROJECT function.

This is done in the LOAD-IMPORT page. Press LOAD (SHIFT+SAVE) and then press IMPORT (F3/F4). You will see this screen display:



Importing a project is much like loading one except that you must first specify which tracks it will be imported onto using the TRACK EDIT keys. In a way, you can almost think of IMPORT as a 'paste from disk' function.

Once you have selected which tracks the imported project will appear on, simply move the cursor to project you want to import and press EXECUTE. The imported project will be placed on the tracks selected for edit and the cues will all be placed at the times at which they appear in the original project (i.e. a cue that is at 10:01:23:12.0 on the imported project will be placed at that time in the destination project after being imported into it).

**NOTE:** *Importing a project will replace any audio that may exist on the tracks selected for edit.*

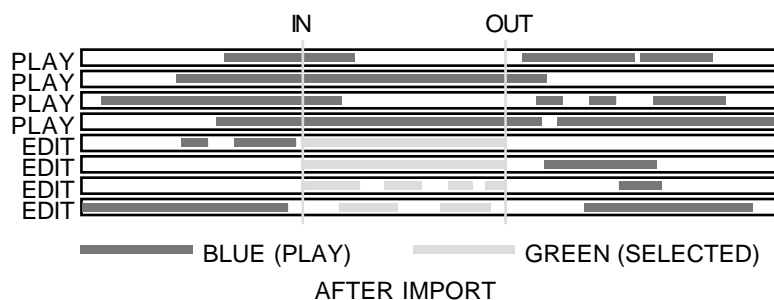
### IMPORTING PART OF A PROJECT INTO ANOTHER PROJECT

It is also possible to import only part of another project by marking an IN and OUT region as appropriate in the destination project and then selecting SCOPE: IN > OUT in the IMPORT PROJECT page.

For example, first load the 'destination' project. In that project, locate to the point at which you want the other project to be imported and mark an IN. Now locate to the point where you want the imported project to end. You should have something like this:



Now press LOAD - IMPORT and, assuming you have selected some edit tracks as appropriate and that SCOPE: IN > OUT is selected in the IMPORT PROJECT page, move the cursor to the project you want to import and press the flashing EXECUTE key. The portion of the project you have selected to import will be inserted between the IN and OUT points. I.e.:



Note how you have been able to import part of the other project into the destination project without disturbing material either side of the IN/OUT markers.

As with importing an entire project, the portion of the imported project will be placed on the tracks selected for edit at the times at which they appear in the original project (i.e. a cue that is at 10:01:23:12.0 on the imported project will be placed at that time in the destination project after being imported into it).

**NOTE:** Importing a project in this way will replace any audio on the tracks selected for edit that may lie between the IN/OUT points.

### USING THE IMPORT PROJECT FUNCTION

The IMPORT PROJECT function has many applications for combining and merging many different projects.

- As mentioned, different people working on different elements of a production could merge their contributions together to create one composite, master project.
- Two 8-track MOs from two different Akai DR8s may also be combined into one 16-track project on the DD1500.
- You could, of course, merge two projects from DR8s into one 16-track project on the DD1500. That project could be saved and then taken to an Akai DR16 if all you want is a simple playback machine for mixdown (the same could be done with a DR8 as the playback machine providing the total number of tracks does not exceed 8).
- Work done on an Akai DD1000 can also be imported into a DD1500 project.

However, you should note that when one or more projects are imported into another project, all the disks that contain the source audio (i.e. the disks that contain the projects that were imported) must be connected to the DD1500 (or DR16) that will play the final merged project. If you wish the final project to exist on just one disk, you should use the COMPILE function found in the SAVE pages to compile all the source audio from the original project disks onto the final destination disk.

## 16 - UTILITIES - LOADING PROJECTS

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### LOADING SETTINGS FILES

As described in the section SAVING SETTINGS FILES, you may save settings files to disk or to the flash ROM. When saving to disk, you may save several different system configurations for immediate recall in the LOAD page.

To load a settings file, press SETTINGS (F1/F2). You will receive this screen:

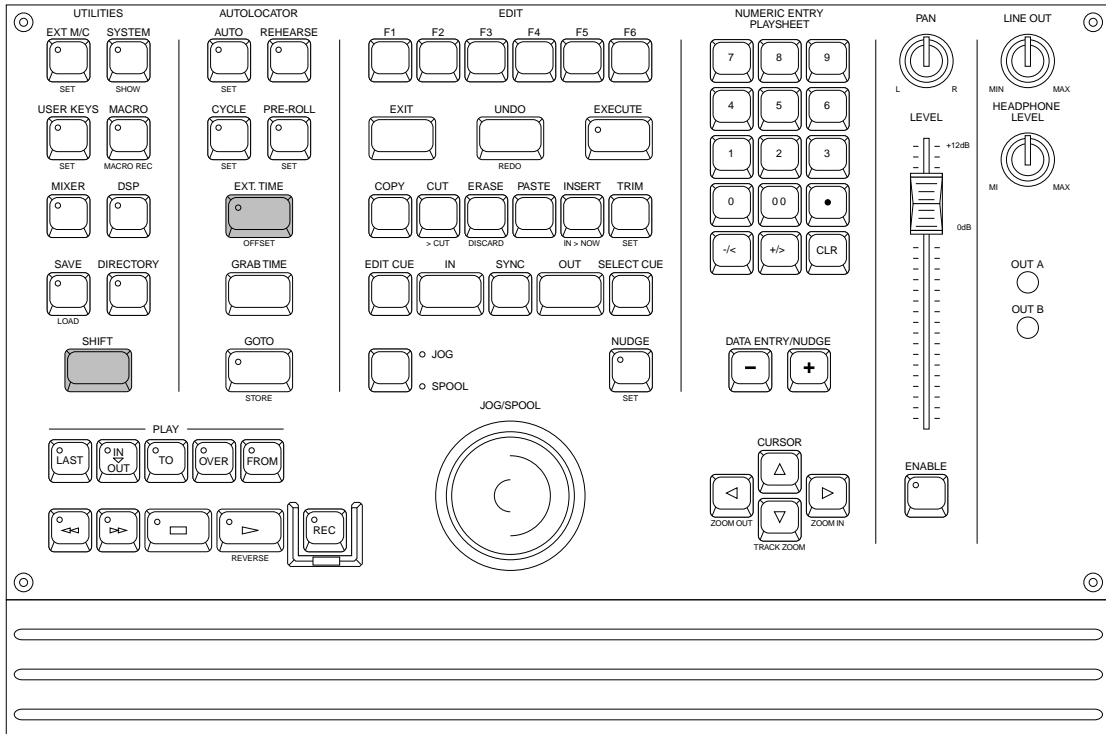
```
LOAD SYSTEM SETTINGS                               Disk: 0
NEW PROJ 1 || New Proj 2 || Project 1
Project 2  || Scene 6   || Scene 7
SFX PROJCT || SteveSet 1 || T/C 30fps
FLASH ROM  || NEW PROJECT
```

You will note that most of the files listed here have the same name as the projects. These are the projects' settings files that are saved every time you save a project. However, you will note that there are two other files not be found on the LOAD PROJECTS page, namely STEVESET 1 and T/C 30FPS. These could be two distinctly different system configurations. STEVESET 1 is probably a settings file set to configure the system to the way an engineer called Steve works whilst T/C 30FPS may be a settings file that will configure the system to work with 30FPS SMPTE timecode. You may save any number of settings files, each configuring the system to a particular way of working.

On occasions, you may have been working and changed many of the system's basic parameters and wish to revert to them. You could, of course, reset every parameter you have changed but an easier way would be to re-load the default settings from the flash memory. To do this, press FLASH ROM (F1/F2). You will see this screen:

```
LOAD SYSTEM SETTINGS FROM FLASH ROM
This will reset the current parameters
to the power-up settings.
* EXIT to abort/EXECUTE to load *
```

As the screen informs you, this will reset the current system setup to the power up default settings you may have saved. If you haven't saved a settings file to the flash ROM, the operating system's default settings file will be loaded. You should press EXECUTE to load the default settings from flash ROM or EXIT to abort the process.



**EXT. TIME KEY - SYNCING TO EXTERNAL TIMECODE**

There is nothing very special to do for this. Assuming a suitable timecode source is connected to either the SMPTE, VITC or BI-PHASE inputs, select the type of timecode you wish to sync to in the main SYSTEM page using the EXT. TIME SOURCE field and switch the EXT. TIME key on. With the EXT. TIME key switched on, when you press PLAY on the DD1500, nothing will happen until the system receives timecode from the external source. A momentary prompt will appear in the LCD:



Also, the EXT T/C RCV LED found to the left of the DD1500's timecode display will flash indicating a problem with external timecode receive.

When external timecode is being received successfully, the DD1500 will play synchronised to that timecode and the EXT T/C RCV LED will be steadily lit. If at any time, the EXT T/C RCV LED flickers, this indicates a problem with the external timecode such as dropout. The DD1500 will 'flywheel' for a short while in the event of timecode dropout but, if the dropout is too long, the DD1500 will stop playing.

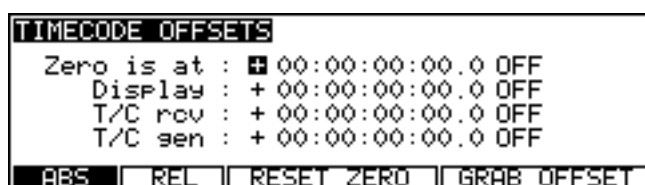
**NOTE:** When you switch on the EXT. TIME key, PLAY is also engaged so that the DD1500 will automatically play whenever timecode is received and will stop when external timecode is stopped. However, if you specifically press the STOP key to stop playback, you will need to press PLAY again for it to follow external timecode.

## 17 - EXTERNAL TIMECODE

### EXTERNAL TIMECODE OFFSET

Before we look at the functions on this page, it must be said that some of the parameters in this page are a bit specialised and apply only to certain applications. If you need these specialised functions, you will know what you want. However, if all you need to do is set an offset against incoming timecode, you can ignore much of this and skip straight to SETTING TIMECODE OFFSETS on the next page.

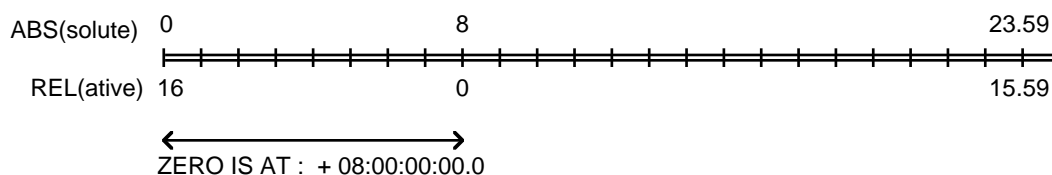
Sometimes, it is necessary to set an offset between the DD1500 and the external machine. For example, your project may start at 00:00:00:00 but the visuals start at 10:00:00:00. Using SHIFT+EXT. TIME (OFFSET), you may set offsets so that the two machines play in sync without you having to extensively modify the project's start time. You may also set offsets for the timecode displays on the DL1500 and external monitoring as well as setting absolute and relative times. Pressing OFFSET gives this screen:



The fields are:

ZERO IS AT

This sets a relative offset and allows the 00:00:00:00.0 reference time to be placed at a time other than absolute zero. For example:



A DD1500 project can be likened to a 24 hour reel of tape and, using the REL(ative) setting, you can play across 'midnight'.

The soft keys F1/F2 (ABS/REL) switch between absolute and relative time display.

ZERO (F3/F4) sets the current time as the ZERO point. This also has the effect of automatically switching ZERO IS AT (i.e. the REL) time display to ON. You may select ABS(olute) or REL(ative) more conveniently using the soft keys F1 or F2 (ABS or REL) if you wish. You will note that as you switch the ZERO IS AT field on or off the ABS/REL keys highlight to indicate selection.

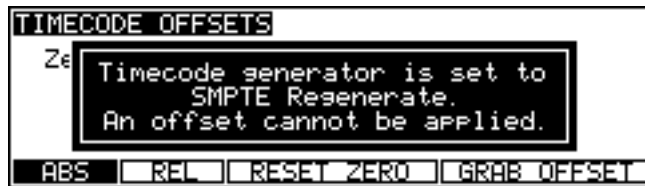
**NOTE 1:** You may find it useful when starting a project from scratch to always start at, say, 1 hour and use the relative time display so that the project effectively still starts at zero. In this way, if you suddenly find you need to add cues before 00:00:00:00, you can. If you use absolute and start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

**NOTE 2:** When using bi-phase, it is necessary to set the relative start of the film against the audio on the DD1500. This is done by locating the film to the very first frame and then locating the DD1500 to the start of the audio and pressing RESET ZERO. Please see the section SYSTEM - TIMECODE GENERATOR for details on this.



DISPLAY	<p>This offset is added to relative time before it is displayed. The options are OFF, ON, LED ONLY.</p> <p>OFF and ON should be fairly self-explanatory. LED ONLY applies the offset to the LED timecode display on the DL1500's upper panel only - the timecode display on the external monitor does not show this offset. This is a special requirement for in situations where film and SMPTE/EBU equipment is being used together. In this case SMPTE/EBU timecode can be displayed on the DL1500's LED timecode display and zero-based feet/frames display can be displayed on the VGA monitor's timecode display (for example, the first frame of the film is at a SMPTE/EBU time of 10 hours but, as no film footage has elapsed, the feet/frames display on the external monitor shows 0000 feet/00 frames).</p>
T/C RCV	<p>This is an abbreviation of TIMECODE RECEIVE OFFSET and sets an offset that is applied to incoming timecode.</p>
T/C GEN	<p>This is an abbreviation of TIMECODE GENERATE OFFSET. This offset is applied to generated timecode.</p>

**NOTE:** The T/C GEN offset is not applied to the timecode generator when SMPTE REGENERATE is selected in the SYSTEM - T/CODE page. If you attempt to turn T/C GEN on with this selection, you will receive a prompt saying:



## 17 - EXTERNAL TIMECODE

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### SETTING TIMECODE OFFSETS

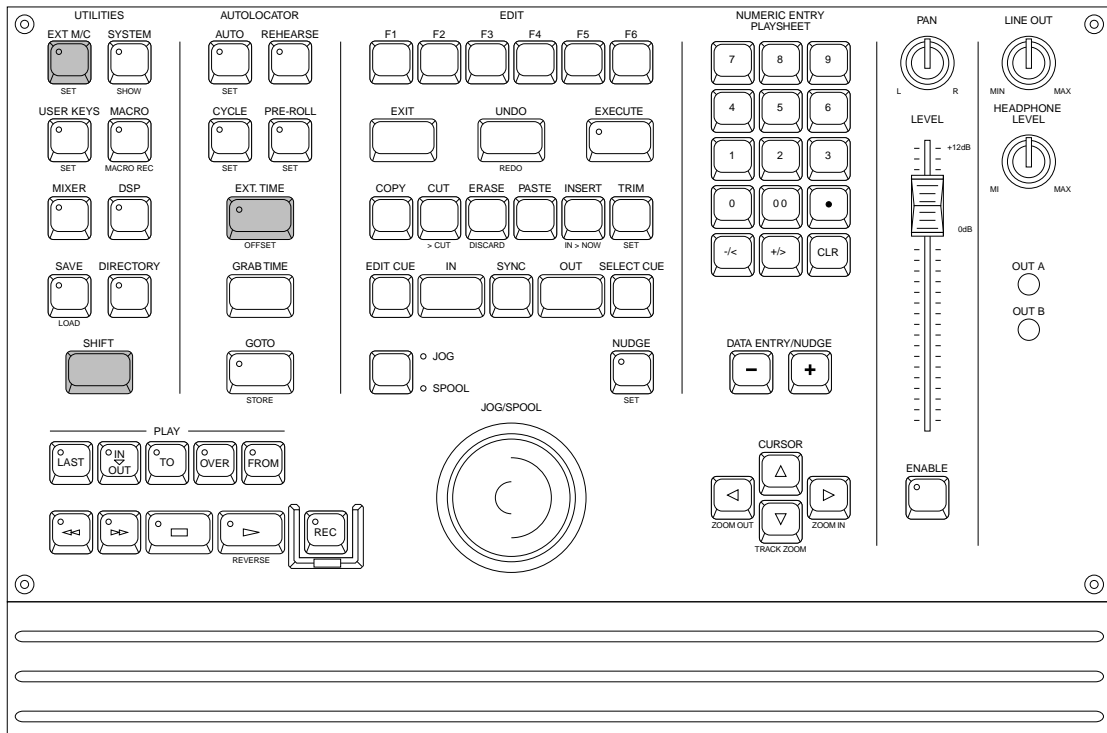
If the project starts at 00:00:00:00.0 but the incoming timecode starts at 1 hour, you should set a TIMECODE RECEIVE OFFSET (T/C RCV) of -01:00:00:00.0. This will subtract 1 hour from the incoming timecode, thereby effectively providing the DD1500 with timecode starting at 00:00:00:00.0. Conversely, if the project starts at, say, 10 hours but the incoming timecode starts at 1 hour, you would need to set +09:00:00:00.0 in the T/C RCV field, 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 OFFSET softkey. Locate the project and the incoming timecode to their respective start times and press GRAB. The offset will be calculated automatically.

When GRAB OFFSET is used the timecode offsets are set as follows:

DISPLAY field	This will automatically compensate for the timecode receiver offset when the T/C RCV field is switched ON. When DISPLAY is OFF, the timecode displays will show either absolute or relative time as selected. When DISPLAY is ON, the timecode displays will show incoming timecode time. When DISPLAY is LED, the external monitor's timecode display will show absolute/relative time as selected but the DL1500's timecode display shows incoming timecode time.
T/C RCV	When the T/C RCV field is set to OFF, the offset will not be added to/subtracted from the incoming timecode.  When the T/C RCV field is set to ON, the offset will be added to/subtracted from the incoming timecode so that the DD1500 and external time are locked at the current absolute/relative time position.
T/C GEN	This compensates for the timecode receiver offset.  When the T/C GEN field is set to ON, the timecode generator generates the timecode being received.  When the T/C GEN field is set to OFF, the timecode generator will generate absolute/relative time as selected.

**NOTE:** The various offset parameters are stored as part of a settings files when a project is saved so that loading any project will recall the offset parameters unique to that project. Alternatively, if you always work in a particular way with offsets, you can save these as flash ROM settings files so that they are always recalled on power up and/or whenever you create a new project.



**DD1500 AS AN RS422 MASTER**

The DD1500 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 DD1500 allowing you to control a VTR equipped with RS422 and the DD1500 together. Connections should be made as shown in the CONNECTIONS section with the DD1500m's RS422 output connected to the VTR and the timecode output from the VTR connected to the DD1500m's timecode input.

Switching on the EXT M/C key engages the RS422 function. Because it is necessary for the external VTR to 'report back' its timecode position to the DD1500 via the SMPTE IN and EXT. TIME key, when you switch EXT M/C on, the EXT. TIME key automatically switches on to ensure correct lock up of both the DD1500 and the VTR.

However, because of the frame accuracy limit imposed on the DD1500 by the VTR over RS422, it is sometimes necessary to 'isolate' the DD1500 for greater editing accuracy, To do this, simply switch off EXT M/C and EXT. TIME - this will allow the DD1500 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 EXT M/C and EXT. TIME, you can momentarily disengage the VTR, 'isolating' the DD1500 and you can place the sound effect, nudging it backwards or forwards in sub-frame increments on the DD1500 until you think it's at the right position. You can then re-engage the VTR by switching on EXT M/C and EXT. TIME again and trying it out against picture. You can repeat this process until it's perfectly in sync.

For those few occasions where it may be necessary to control *only* the VTR, it is also possible to disengage the DD1500 by only switching off the EXT. TIME key when the EXT M/C key is on. In this case, the DD1500 is effectively disabled and you can control just the VTR from the DL1500.

### EXT M/C SET

SHIFT+EXT M/C (SET) allows you to set the RS422 functions up to cater for the VTR's transport mechanism. Pressing SHIFT+EXT M/C gives this screen:

```
RS422 MACHINE CONTROL SETUP
RS422 Mode : OFF
```

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

```
RS422 MACHINE CONTROL SETUP
RS422 Mode : MASTER
Edit delay : 2 frames
VTR locate offset : 00:00:00:00:00
LAYBACK
```

The parameters are:

#### EDIT DELAY

This sets the delay between the edit instruction being issued and the machine responding to that command. Every machine is different (for example, a U-Matic is 6 frames and a Betacam is 2 or 3 frames - you should consult your VTR's or edit controller's operator's manual for information on this).

#### VTR LOCATE OFFSET

Most VTRs require a certain amount of 'run up' time when synced 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 DD1500 will actually locate to 55 seconds.

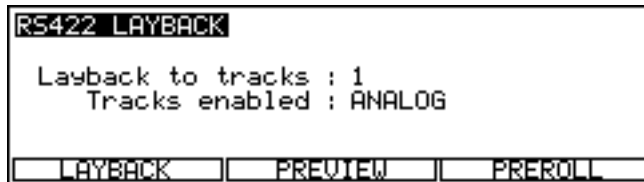
**NOTE: YOU MUST SELECT ONE OF THE SMPTE/EBU+RS422 OPTIONS AT A FRAME RATE APPLICABLE TO YOUR AREA WHEN USING RS422 MASTER.**

*These options are available at all frame rates. SMPTE/EBU from the VTR is still connected as usual via the EXT. TIME input and the EXT.TIME key must be switched on (as must the EXT. M/C key). The DD1500 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.*

**LAYBACK FUNCTION IN RS422 MASTER**

LAYBACK is a process where you have material on the DD1500 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 DD1500 where it may be edited and tidied up if necessary and sound effects, music and other 'sweeteners' can be added using the DD1500's multi-track capabilities. Finally, the whole thing is transferred back to the VTR.

To use the LAYBACK function, press LAYBACK (F1/F2). 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:

- PREROLL                Pressing this key will cause the VTR to locate to the IN time minus the amount set in the VTR LOCATE OFFSET field (if this parameter is set to zero, then the default value of 5 seconds is used).
- PREVIEW                This allows you to 'rehearse' 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 DD1500, they will be ignored when using the LAYBACK function.

### USING THE LAYBACK FUNCTION

The DL1500's IN and OUT markers set the record in/out points for the VTR. Assuming the functions described above are set as appropriate, you must first press PREROLL<sup>3</sup>. You then 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 PREVIEW and, when you're happy with the results, press LAYBACK to actually 'commit' the recording (in both instances, you must use PREROLL to locate to a time a bit before the IN point<sup>1</sup>).

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 (F1/F2) 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 DD1500 may be laid back to an RS422 equipped DAT machine thus preserving the dialogue on the original video with a synchronised 'master' on DAT.

---

3 The layback function will not work if the machine(s) are not located to a point before the IN time. The layback function requires that there be some form of pre-roll.

**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 and 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 DD1500's audio jogging and so is ideal for spotting audio to picture.

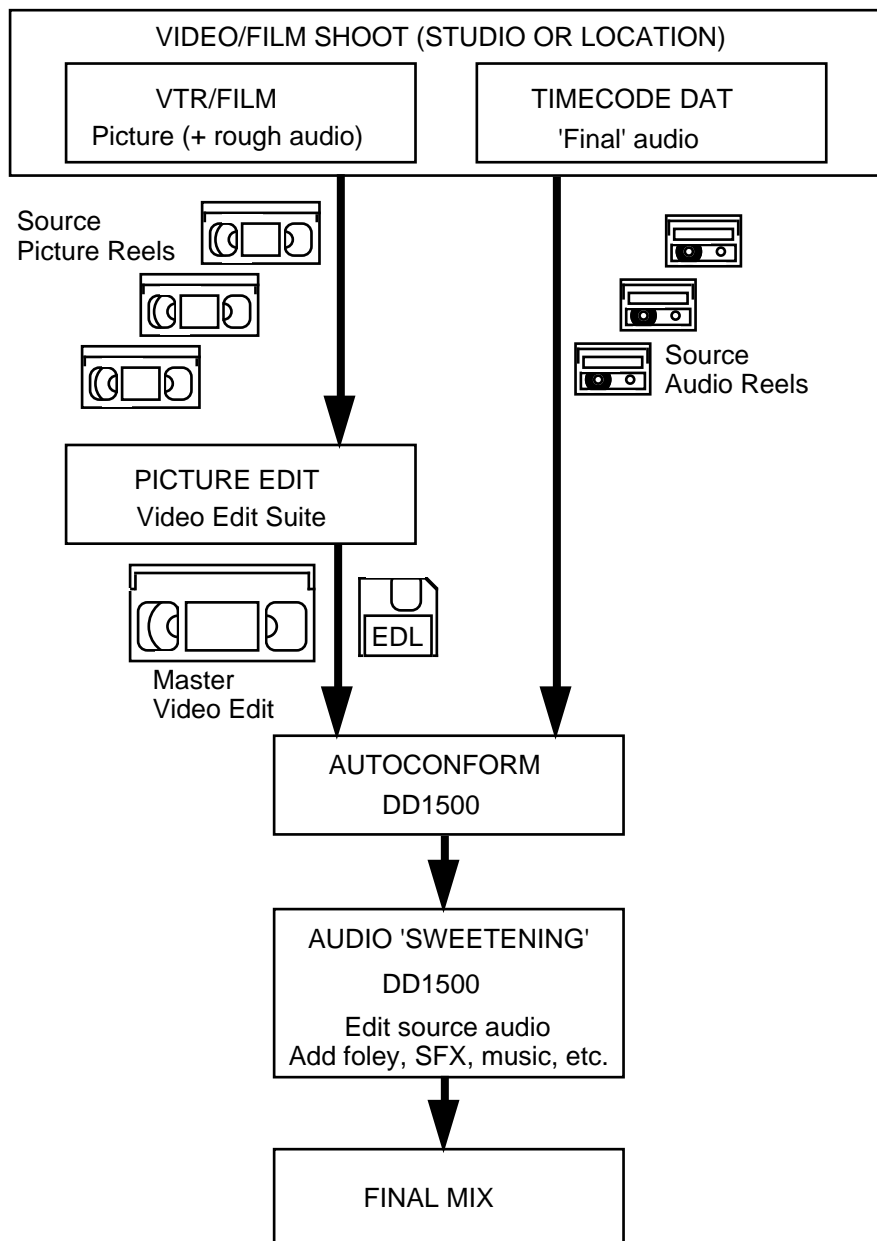
However, please note that because of inaccuracies in the timecode sent via RS422, when playing at nominal speed, there may be instances where there is a  $\pm 1$  frame offset. This can be overcome by switching to SMPTE+RS422 for playback and using RS422 only for jogging and spotting. Of course, in RS422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

### AUTO CONFORM

Auto conforming is a vital part of the non-linear audio post production process for program material shot on film or video. It allows the required location sound to be automatically loaded into a digital audio workstation prior to the addition of music, foley and other sweetening. The sound loaded will be in sync with the time code on the video master produced during a previous picture edit.

For the benefit of those readers who might be becoming involved in auto conforming for the first time, the production process for a film or video shoot will be described briefly below. Experienced users of auto conform on other systems might like to skip to "Setting up the DD1500 for Auto Conform".

### OVERVIEW OF AUTO CONFORM





You will appreciate that there are many variations on the complex process of film making. The following description is intended as a general overview and is unlikely to represent exactly any actual production!

Scenes are shot in the studio or on location. Pictures are recorded onto either film or video depending on the creative requirements of the director. Sound is usually recorded onto Nagra tape machines, but may also be recorded onto time-coded DAT or even onto the audio tracks of the video itself. Some productions may record multiple mono and/or stereo sounds onto several recorders during the picture shoot.

The time code striped onto the audio recorders is known as 'time of day', referenced to a quartz crystal locked clock. Film, of course, has no time code recorded onto it at the shoot, and time information must be obtained later from the clapperboard and camera operator's log. Video cameras do stripe the picture tape with time code and this is also generated from a separate quartz crystal-locked clock. Usually the camera and sound operators will synchronise their clocks at the beginning of a day's work, but sometimes, being human, they might forget. So it is possible that even on a video shoot there might be several seconds of difference between audio and picture time code.

Once the shooting is over, any film shot will be sent for developing and telecine transfer to video. Audio will often undergo a process called "syncing rushes", where the audio is recorded into a digital audio workstation, synchronised to the video picture and then replayed out with time code to a time coded DAT tape to produce "sync DATs".

The picture rushes are edited together either in a conventional video editing suite or on a non-linear video editing system to produce a master tape. In some cases some preliminary sound editing may also be done. Particularly in the case of a non-linear video edit, this sound editing might be quite extensive and the director may require some of the sound chosen at this stage to be used in the final production. Hence an 8 track digital tape of the audio from the non-linear editing system may also be added to the growing pile of video tapes and sync DATs.

When the picture edit is complete, the editing system will output an Edit Decision List (EDL) onto a 3.5" floppy disk in one of a number of standard formats (CMX, Sony, Grass Valley, etc.). This EDL contains all of the information from the editing session about which parts of the source tapes were chosen. A typical entry in this EDL may look something like this:

No	Reel	Edit	SOURCE		DESTINATION	
			IN	OUT	IN	OUT
012	012345	A12V	01:12:23:05	01:13:23:05	00:15:10:00	00:16:10:00

The fields shown across the top of the EDL are as follows:

The NO field shows the edit number - in this case, this is edit 012.

The REEL field shows the number of the source reel (i.e. tape) which the material comes from. Each reel has its own unique number. In this case the reel number is 012345.

The EDIT field shows the type of edit being made (i.e. video, audio or video+audio). In this case the edit is on audio tracks 1 and 2 and video (A12V).

The SOURCE IN/OUT fields show the start and end times for material as it exists on the source reel.

The DESTINATION IN/OUT fields show the start and end times for the material as it will be placed on the master tape.

At the end of the process, you will have an EDL containing hundreds of such edits that dictate where the original material comes from and at what times it will be placed in the final edit (i.e. the destination reel or master tape).

To start the auto conform process the EDL floppy disk is inserted into the DD1500 and the DD1500 reads that EDL. It now knows where all the original source audio is and which reel it is on and it also knows the destination times for those pieces of audio (i.e. where they will be placed in the final production). Using RS422, the DD1500 will control the audio machine (typically an RS422 DAT machine but maybe Betacam, etc.), winding it on to the source in time of the audio and automatically recording it into the DD1500. When that's done, it will look at the next edit, wind the DAT to the source in time of the next piece of audio that is required and again, will drop in and out of record. And so on. Although it is an automated process, you can't quite leave the process unattended because when the DD1500 has recorded all the source audio from one reel, it will prompt you to insert the next reel (i.e. tape) into the DAT machine.

Once the DD1500 has recorded all the audio required from the source reels(s), it then looks at the destination times in the EDL and will automatically place the required pieces of audio between the destination in/out times as dictated by the EDL.

At the end of the process, you will have a project on the DD1500 that has all the source audio automatically placed at the DESTINATION times dictated by the EDL. You have a copy of the master video tape and so now, all the source audio and the assembled picture are synced up.

Of course, with the location sound now in the DD1500, you can edit it, tidying up dialogue, etc.. You can also add foley perhaps and sound effects, music, etc., on other tracks of the DD1500 to sweeten' the final production. Once that's done, the whole thing gets mixed down.

This is a basic description of the process. There are other ways the DD1500's Auto conform process can be used, however. Often the director will supply a rough master tape and EDL and the auto conform will be done. Later, after considerable work has been undertaken on the post production, the director will supply the final version of the picture (honestly...), together with a new EDL and a list of changes from the previous EDL (if you are lucky...). DD1500 editing can then be used to make space for new or extended scenes or to delete unwanted ones. New material can be conformed into the new scenes using the IMPORT function with scope set to IN->OUT, followed by another pass of auto conforming. Similarly, single tracks from the EDL can be imported to a selected DD1500 track for editing of the conform cues prior to actual recording in an auto conform.

Let's now see how the DD1500's Auto conform operates.

**SETTING UP THE DD1500 FOR AUTO CONFORM**

During an auto conform, the DD1500 is automating recording synced to external timecode and controlling an external RS422 device, rewinding and fast forwarding that device to timecode positions on that external machine, automatically dropping in and out of record, placing the recording(s) into the final project, and so on.

Setting up the DD1500 for an Auto conform is not a trivial process and there are a number of things you must consider if the auto conform is to go smoothly.

- You must take care to match the SMPTE/EBU frame rate so that it matches that which was used on the original source tapes.
- You must take care to ensure that the system's sampling rate is set correctly so that conformed cues match others in the project.
- In the REC/# ROUTE INPUTS page, you must route the inputs from the source reels' machine as appropriate (i.e. DIGI or ADC to the appropriate tracks on the DD1500).
- You must assign the tracks designated for the conform cues in the EDL to the DD1500's tracks so that conformed audio ends up on the tracks you want them to.

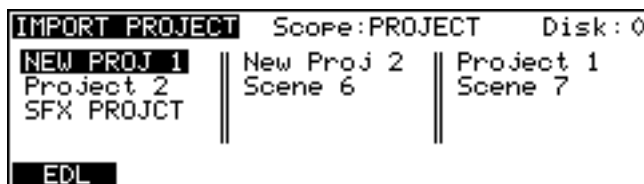
It is likely that all of the above variables will change between one production and the next, so a trouble free auto conform requires the operator to keep their wits about them!

**SETTING UP TO IMPORT AN EDL**

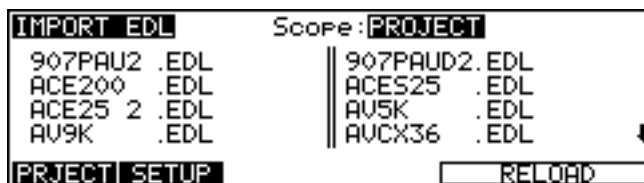
The floppy disk containing the EDL from the video editor is inserted into the DL1500's floppy disk drive. Pressing LOAD will display this screen:



Press IMPORT to display the following screen:



This is the IMPORT PROJECT page. This allows you to import another DD1500 project into the one currently loaded. Pressing EDL will take you to this screen display:



Here, you see a list of the EDLs contained on the floppy disk. The EDL you wish to import is selected just like a project by moving the cursor to it. The ↓ arrow indicates that there are EDLs 'below' the list which you can access using the CURSOR DOWN key. An upwards facing arrow will be shown if there are EDLs 'above' the screen to access.

**NOTE:** The RELOAD key on F5/F6 allows you to 'refresh' the IMPORT EDL list in the event of you inserting a floppy disk into the drive after you have entered this page or if you change disks whilst in the page.

Before importing the EDL, however, it is necessary to set a few things up. Press SETUP to enter the following page:



The NO. OF TRACKS field allows you to set how many tracks the EDL has if it's a CMX type EDL you are using where 'AA' in the CMX EDL means edit on all tracks. If you are not using CMX style EDLs, you do not have to bother with this field.

The REEL NAME field allows you to select which half of the reel name you wish to use. When a cue is imported into the DD1500, it is automatically given a name by the DD1500 according to the reel number, edit number and the track set for that edit in the EDL. E.g.:

Clipname	RRRREEEEEII, where	RRRR =	reel number
		EEEE =	edit number
		II =	source input (e.g. A1, etc.)

A typical name given to a cue may be something like "03 0012A1", i.e. reel 3 (03), edit 12 (0012) on track A1. Note that four characters are available for the reel name and four for the edit number.

Unfortunately there is no standard for the way reels are numbered. Some people use reel numbers longer than four digits and some put the significant digits to the left (i.e. 300000) and others to the right (000003). In the first example, when you are conforming from several reels, labelled 100000, 200000, 300000, 400000, etc., you must select USE UPPER PORTION so that the DD1500 would label cues correctly (1000, 2000, 3000, 4000, etc.). However, in the case where the reels are numbered 000001, 000002, 000003, you must select USE LOWER PORTION to produce the correct reel labels (0001, 0002, 0003, 0004, etc.). It will be clear from the labels on the actual source reels which reel name convention you should use!

Those of you familiar with the DD1500 style of editing will be aware that it is possible to copy an edit to a clipboard, say from tracks 1-4, and then paste it back in on tracks 5-8. You can consider the IMPORT process as importing an EDL into an invisible clipboard and then immediately pasting it into the current project on the tracks selected for edit, but with the imported cues being pasted in at their original times, rather than relative to the NOW time as is usual. For example, when editing, you may cut out a four track section to paste elsewhere. The original tracks may have been on tracks 3 - 6 but, when you come to paste them back in, you could, if you wish, paste them on tracks 1-4 or 5-8 - you could even paste them back in on tracks 1 and 2 and 5 and 7. So with importing EDLs - you use the track edit keys to dictate which DD1500 tracks the imported audio will be placed on.

As we have seen with the earlier description of an EDL entry, an edit will be described in terms of standard terminology, e.g. A1234V would be a four track audio+video edit. It is necessary to set up a mapping to tell the DD1500 which tracks in the 16 track invisible clipboard this edit will be loaded onto. If edits in the EDL are referred to as A1234, etc. use the ANALOGUE track mapping page, else if the edits are referred to as D1234, etc. use the DIGITAL track mapping page.

EDL ANALOGUE TRACK MAPPING					
EDL Track	V	A1	A2	A3	A4
DD Track	16	1	2	3	4
EDL Track		A5	A6	A7	A8
DD Track		OFF	OFF	OFF	OFF

In the case shown above, A1-4 are mapped to tracks 1-4 respectively of the invisible clipboard, while video edits are mapped to track 16.

The DD1500 can display video edits on a spare audio track if required - this can often be a useful reference for the operator during post production. Such "video cues" will be ignored by the DD1500 during the conform process.

On top of all of this, however, is the fact that because video tracks can be mono or stereo, you have the ability to nominate two tracks for A1, A2, A3, etc.. For example:

EDL ANALOGUE TRACK MAPPING					
EDL Track	V	A1	A2	A3	A4
DD Track	16	1+2	3+4	5+6	7+8
EDL Track		A5	A6	A7	A8
DD Track		OFF	OFF	OFF	OFF

You may select 1+2 through to 15+16 for any of the EDL tracks. Furthermore, you may specify 1-4, 5-8, 9-12 and 13-16 for four channel edits plus 1-8 and 9-16 for eight channel edits and 1-16 for a full sixteen channel edit. How the tracks are to be mapped should be clear from the EDL printout you should have.

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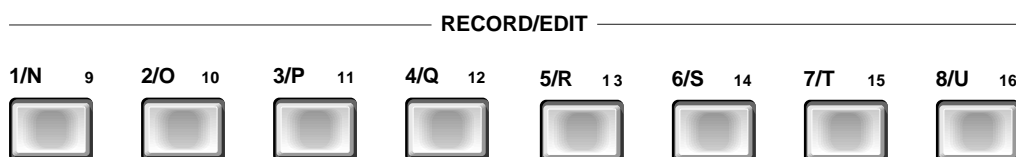
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If the EDL specifies that edits were done on the VTR's digital audio tracks, you should set the same up in the DIGITAL TRACK MAPPING page. In the EDL SETUP page, press DIGITAL. You will see this screen display:

EDL DIGITAL TRACK MAPPING					
EDL Track	U	D1	D2	D3	D4
DD Track	16	1	2	3	4
EDL Track		D5	D6	D7	D8
DD Track		OFF	OFF	OFF	OFF

Functionally, it is identical to the ANALOGUE TRACK MAPPING page.

Now that we have set up how EDL tracks will be mapped to tracks in our notional invisible clipboard, we must set up which actual tracks the cues will appear on by selecting the required DD1500 tracks for edit.



If we required the cues to end up on DD1500 tracks exactly as per the digital track mapping table above, we would select DD1500 tracks 1,2,3,4 and 16 for edit. Import would then put the cues on those tracks. However, if we were to select DD1500 tracks 5,6,7,8 and 9 for edit, import would then put D1 edits to 5, D2 to 6, D3 to 7, D4 to 8 and V to 9.

This may all seem over complicated but it does allow for great flexibility as it allows you to re-assign edits to tracks on the DD1500 as you like. For example, you may want to re-arrange all the edits onto tracks that are more in keeping with the way you work. Perhaps some dialogue has been edited on A1 and A2 and other dialogue has been done on A3 and A4 but you want to swap those so that the dialogue on A1/A2 goes to tracks 7 and 8 and the dialogue on A3/A4 gets placed on tracks 5 and 6 on the DD1500. Without this flexible track assignment function, you would have to force the A1/A2 cues to be conformed onto tracks 5 and 6 and the A3/A4 cues onto tracks 7 and 8 and then somehow swap them around after they have been conformed into the DD1500.

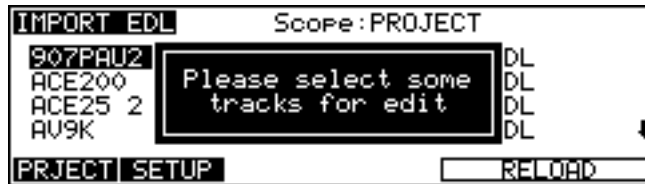
**IMPORTING THE EDL**

Before importing an EDL, you must load a project. Depending on the situation, you should either load the project you want to import the EDL into or use NEW PROJECT to create a brand new, empty project. Once you have done that and assuming you have set everything accordingly, go o the IMPORT EDL page to see this screen:

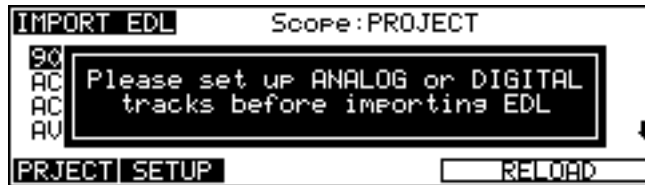


Just as you would load a project, select the EDL you wish to import and press the flashing EXECUTE key. You will see the floppy disk LED come on and you will see a prompt telling you the EDL is being loaded.

If you have not selected tracks for edit, you will see the message when you press EXECUTE:



Similarly, if the tracks have not been mapped, you will see this message:



Take the appropriate action in both cases.

Assuming everything has been set up correctly, the EDL will be imported into the current project on the tracks selected for edit.

In the GRID, you will see the cues in the EDL as they will appear once the auto conform process has been completed- i.e. you will see the cues at their destination times. These cues will be shown in a dark grey colour. You will automatically be taken to beginning of the first imported cue.

### PERFORMING THE AUTO CONFORM

To start the auto conform process, press the REC/# key. You will see this screen display:

```
RECORD                               Record Disk : 0
Recording name : TAKE 1
Record mode : PROJECT ONLY
Library name : ANIMALS
Free on disk : 00:10:23:10.7
ROUTE INPUTS | AUTOCONFORM | SETUP
```

Pressing AUTO CONFORM will give this screen display:

```
AUTOCONFORM                          From reel : ALL
Record handle : 00:00:00:00.00
Record minimum gap : 00:00:00:00.00
UTR locate offset : 00:00:00:00.00
Conform from : SOURCE
* EXECUTE to proceed/EXIT to abort *
```

The fields are as follows:

- FROM REEL** Here you may select which reel you will conform from. The usual selection will be ALL but you may choose specific reels if you are only performing a partial auto conform. For example, you may only wish to conform the cues from Reel 3. When NUMBER is selected, a field to the right allows you to type in the reel number you wish to conform from.
- RECORD HANDLE** Most recordings made on location are usually longer than what actually gets used in the final EDL. The RECORD HANDLE field allows you to add some time either side of the cue to give you some leeway with editing later (trimming, setting fade up/down, overlaps, etc.). If you think that you may need some extra time either side of the cues, then you should set a value here. Setting a value, for example, of 00:00:05:00.00 (i.e. 5 seconds) will add 5 seconds to the start and end of every cue.
- RECORD MINIMUM GAP** This sets the length of time between two cues that will be conformed before the DD1500 considers it one cue. For example, there may be a large portion of a source reel that is used at different times in the master edl, but interspersed with gaps of a few seconds which are not used. Setting this parameter to greater than the size of these gaps will cause the DD1500 to make a single recording of a large chunk of the source reel instead of several shorter recordings. This saves machine locating time during the conform process at the cost of recording a small amount of extra unwanted audio.
- CONFORM FROM** Here you may choose for the audio to be loaded from either the source tapes using the SOURCE times from the EDL or the master tape using the DESTINATION times from the EDL. DESTINATION is particularly useful for conforming in audio from a dump tape produced from a non-linear video editor as described earlier.

Once these parameters have been set, you can proceed with the auto conform process by pressing the flashing EXECUTE key. If you wish to abort the process, press EXIT.



When you start the process, the GRID will change. Instead of seeing the destination EDL, you will see the cues as they exist on the source reels. For example, even though the destination EDL may start at 10 hours, if the first cue to be recorded is at 1 hour, 35 minutes, the DD1500 will locate to 01:35:00:00.0 and will fast forward or rewind the source machine accordingly, will shuttle back and forth a bit and record the cue from the source reel. The source cue will be marked with the IN/OUT markers and the recording will take place in the usual fashion with the cue being recorded being indicated by a red progress bar. Once the first cue has been recorded, the DD1500 will locate to the next cue and will repeat the process recording the next cue in. This whole process will continue and you will see the DD1500 locating to the source reel's cues, fast forwarding and rewinding and shuttling them into position and recording them automatically. As the cues are being recorded, you will hear them so that you can monitor progress audibly.

Apart from the activity going on the GRID, the LCD will also display what's going on. For example, the LCD may be showing something like this:

```
AUTOCONFORM
      Conforming : REEL 0003
      Locating to : 01:35:00:00.0
Conforming... (EXIT to abort)
```

This shows that the DD1500 is locating the next cue to be recorded. You will see this happening on the GRID as well for confirmation.

You will also see this screen display:

```
AUTOCONFORM
      Conforming : REEL 0003
      Recording from : 01:35:00:00.0
      Recording to : 01:36:12:21.0
Conforming... (EXIT to abort)
```

This indicates the source in and out times for the cue being recorded and again, you will see this shown graphically on the GRID.

Once all the material from the first reel has been recorded, you will be prompted to insert the next reel. You should insert the next reel and press EXECUTE. If, however, you wish to skip this reel and proceed to the next one, press EXIT. You will be asked if you want to skip to the next reel - press EXECUTE to confirm that you do. Insert the reel into the machine and press EXECUTE otherwise, to skip to the next reel again, press EXIT and repeat the procedure described above.

At the 'Skip....?' prompt, you may abort the auto conform by pressing EXIT again. Also, as the auto conform is taking place, at any time, you may abort the auto conform process by pressing EXIT.

You will note that you do not need to specifically set up tracks for record or EXT. TIME or EXT. M/C or AUTO record or RS422 MODE functions - the DD1500 knows from the EDL which cues need to be recorded and at what time they need to be recorded and which tracks they are to be recorded onto and it will take care of these details itself.

During the conform process you will see the source cues as they are being recorded into the DD1500. It may be that some cues will be troublesome and you can note any cues which cannot be recorded and take appropriate action at the end. Maybe the cue's timecode is damaged in some way or there is insufficient run in' to the cue for it to be successfully recorded.

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When the auto conform process is over, you will be returned to the IN time of the final destination' project. Assuming all the cues were recorded successfully, they will be shown as blue blocks with their waveforms. These may be played and edited in the normal way as any other DD1500 project. Once the auto conform process is complete, you should save the project in the normal way.

**SUMMARY**

To complete the auto conform process:

**PRESS SYSTEM**

- Make sure that SYSTEM parameters such as sampling frequency, EXT. TIME SOURCE, wordsync, etc., are all correctly set. Failure to do so will result in errors in the auto conform process or even a complete failure.

**PRESS LOAD**

- Either create a new empty project to import the EDL into or select and load an existing project you want to import the EDL into.
- In the EDL SETUP pages, make sure the EDL tracks are correctly mapped to the DD1500 tracks.
- Select the appropriate tracks for editing.
- Import the EDL from the floppy disk in the LOAD - IMPORT EDL pages.

**PRESS REC/#**

- Check the ROUTE INPUTS page to make sure that the audio inputs, digital or analogue, are routed to the correct tracks on the DD1500.
- Press AUTO CONFORM - set parameters such as RECORD HANDLES, etc., as appropriate if necessary.
- Press EXECUTE to proceed, EXIT to abort.
- At any time, you may abort the auto conform by pressing EXIT.

### PERFORMING A PARTIAL AUTO CONFORM

One feature the DD1500's auto conform function has is that you can perform a 'partial' auto conform and it is possible to conform just one specific region in the project. This is particularly useful if a small change is made to an EDL you have already conformed. For example, the director may supply you with an updated EDL that adds an extra scene or contains just a few changes to some edits - instead of conforming the whole EDL again, you can simply re-conform the parts that have changed.

To do this, assuming the original conformed project is loaded in the DD1500, mark and IN and an OUT point in the project as appropriate (you should receive some documentation telling you where the changes are). Now insert the updated EDL floppy in the drive and go to the LOAD - IMPORT as normal. You will see this screen:

```
IMPORT EDL          Scope: PROJECT
907PAU2 .EDL       || 907PAUD2.EDL
ACE200  .EDL       || ACES25  .EDL
ACE25 2 .EDL       || AV5K   .EDL
AV9K   .EDL        || AVCX36 .EDL
PROJECT SETUP     RELOAD
```

At the top of the screen there is a field labelled SCOPE. The default setting for this is PROJECT - i.e. it will import the entire EDL into the currently selected project. You may change this field to IN > OUT. I.e.:

```
IMPORT EDL          Scope: IN > OUT
907PAU2 .EDL       || 907PAUD2.EDL
ACE200  .EDL       || ACES25  .EDL
ACE25 2 .EDL       || AV5K   .EDL
AV9K   .EDL        || AVCX36 .EDL
PROJECT SETUP     RELOAD
```

This will cause only those cues that fall between the IN/OUT markers to be imported. To import the selected region, press the flashing EXECUTE key as for a normal 'project' import.

**NOTE:** *Of course, all the other considerations regarding setting up for an auto conform should be observed (i.e. sampling frequency, external time source, etc., in the SYSTEM pages). Track mapping must also be set as appropriate in the EDL SETUP pages and, of course, the appropriate tracks must be selected for edit).*

Once the region has been imported from the floppy disk into the currently selected project, go to the REC/# page and press AUTO CONFORM. Set up the auto conform handles, etc., as necessary and press EXECUTE in the usual fashion. The process will begin, prompting you to insert the necessary source reel. Insert the reel and press EXECUTE - the audio required for the IN/OUT region you have specified will be recorded into the DD1500. At the end of the process, the new audio will be placed within the IN/OUT region and will replace anything may have been there originally. Here's an example of how this may be useful.

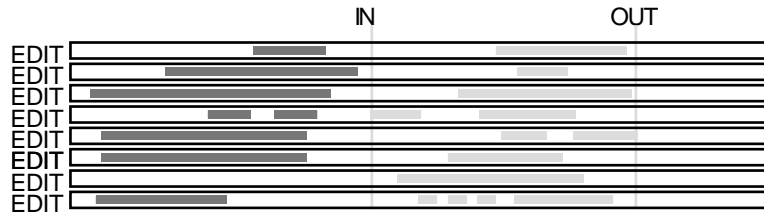
Let's imagine that you have received an EDL from the video edit and you have conformed it. However, a week later, the director decides to insert a whole new scene into the production and so he re-edits it. Of course, you will get the new, updated EDL (hopefully with some information regarding the changes).

On the DD1500, you would locate to the point where the insertion begins and, with all tracks selected for edit, you would slip everything to the point where the new scene ends. Mark an IN at the start of this new scene and an OUT at the end of it (i.e. mark the blank region that now exists in the project) and, using SCOPE: IN > OUT, conform just that region from the new source reels you will presumably have been provided with.

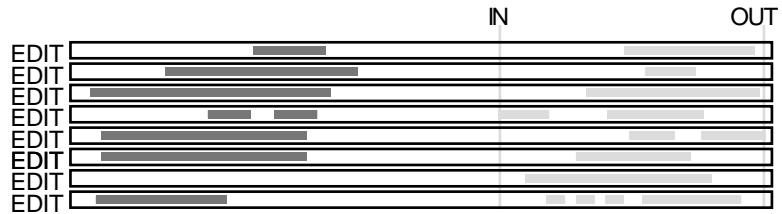
For example:



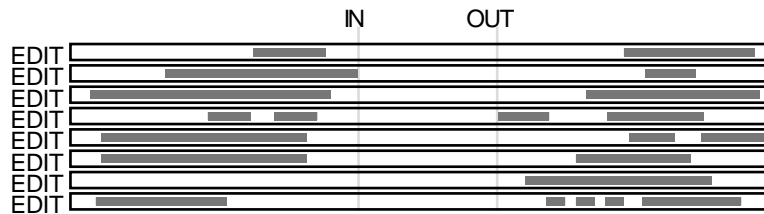
Original conformed project



Mark everything after the start of the scene to be inserted



Slip it back to accommodate the inserted scene



Mark the region to be conformed (i.e. the new scene length)

### RS422 SLAVE FUNCTIONS

It is also possible to use the DD1500m on its own under the control of a video edit controller as an RS422 slave. In this condition, the DD1500m will behave much like a VTR. In this way, as you perform your video edits, the DD1500m will capture the audio edits and so the audio tracks will be built up on the DD1500. 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.

**NOTE:** *You may prefer to use the Akai DR8 fitted with the optional RS422 board for this purpose as it's self-contained 8-track operation offers a more cost effective means to capturing audio in this way. Disks created on the DR8 are fully compatible on the DD1500 and so may be transferred for post-production easily. Please refer to the DR8 operator's manual for details on how to set up RS422 slave operation.*

*If you are using a DD1000 as an RS422 slave, these disks may also be transferred to a DD1500 for post-production although you will note that if you are using a 650Mb MO disk, there may be a limit to the number of tracks available for such purposes. If you are using a 1.3Gb MO disk with the DD1000 (either a DD1000 fitted with the latest software or a DD1000i), then you will obtain the same track performance out of it when it is transferred to the DD1500.*

To set the DD1500 as an RS422 slave, you must first configure the DD1500m with a DL1500 connected. After the DD1500m has been configured, you should save the settings to FLASH ROM (press SAVE - SETTINGS - FLASH ROM - EXECUTE). After that, the DD1500m may be controlled by the video edit controller without a DL1500 connected.

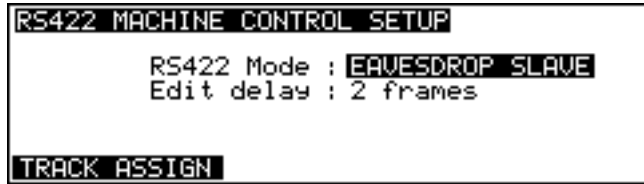
There are two ways the DD1500 may be used as an RS422 slave. The first is known as 'EAVESDROPPING' mode. Here, the DD1500 is connected to the video edit controller via a 'Y' lead that goes to the VTR and also to the DD1500's RS422 connector (LTC connection to the DD1500 is also required). In this mode, the DD1500m 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 DD1500m 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 EXT M/C SETUP page (SHIFT+EXT M/C), select EAVESDROP SLAVE in the RS422 MODE field. You will see this screen:



You will see that F1/F2 show TRACK ASSIGN. Pressing this will show this screen:

RS422 TRACK ASSIGNMENT					
UTR 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 DD1500 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 DD1500 tracks to those keys. For A1-A4, you may select individual tracks 1 to 16 for mono edits and 1+2, 3+4, 5+6, 7+8, 9+10,11+12, 13+14, 15+16 for stereo edits. You may also select tracks 1-4, 5-8, 9-12 and 13-16. Tracks 1-8 and 9-16 and also 1-16 may also be selected. When using A1, A2, A3 or A4 for your edit, the tracks assigned in these fields will be selected on the DD1500m. 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 DD1500m (for example, selecting to record on track D5 will cause track 5 to be selected on the DD1500m).

**NOTE:** Although these track select keys on the video edit controller relate to the VTR's digital audio tracks, on the DD1500m they simply select the track you will record onto with no reference to digital or analogue. If you wish to record digitally on the DD1500m, 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 EXT M/C SETUP page (SHIFT+EXT M/C), select FULL SLAVE in the RS422 MODE field. You will see this screen:

```
RS422 MACHINE CONTROL SETUP
RS422 Mode : FULL SLAVE
Edit delay : 2 frames
TRACK ASSIGN
```

You will see that F1/F2 show TRACK ASSIGN. Pressing this will show this screen:

RS422 TRACK ASSIGNMENT					
UTR 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 DD1500 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 DD1500 tracks to those keys. For A1-A4, you may select individual tracks 1 to 16 for mono edits and 1+2, 3+4, 5+6, 7+8, 9+10, 11+12, 13+14, 15+16 for stereo edits. You may also select tracks 1-4, 5-8, 9-12 and 13-16. You may also select 1-8 and 9-16 and also 1-16. When using A1, A2, A3 or A4 for your edit, the tracks assigned in these fields will be selected on the DD1500m. 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 DD1500m (for example, selecting to record on track D5 will cause track 5 to be selected on the DD1500m).

**NOTE:** Although these track select keys on the video edit controller relate to the VTR's digital audio tracks, on the DD1500m they simply select the track you will record onto with no reference to digital or analogue. If you wish to record digitally on the DD1500m, this must be set up in the usual way using the record setup page's input routing function.

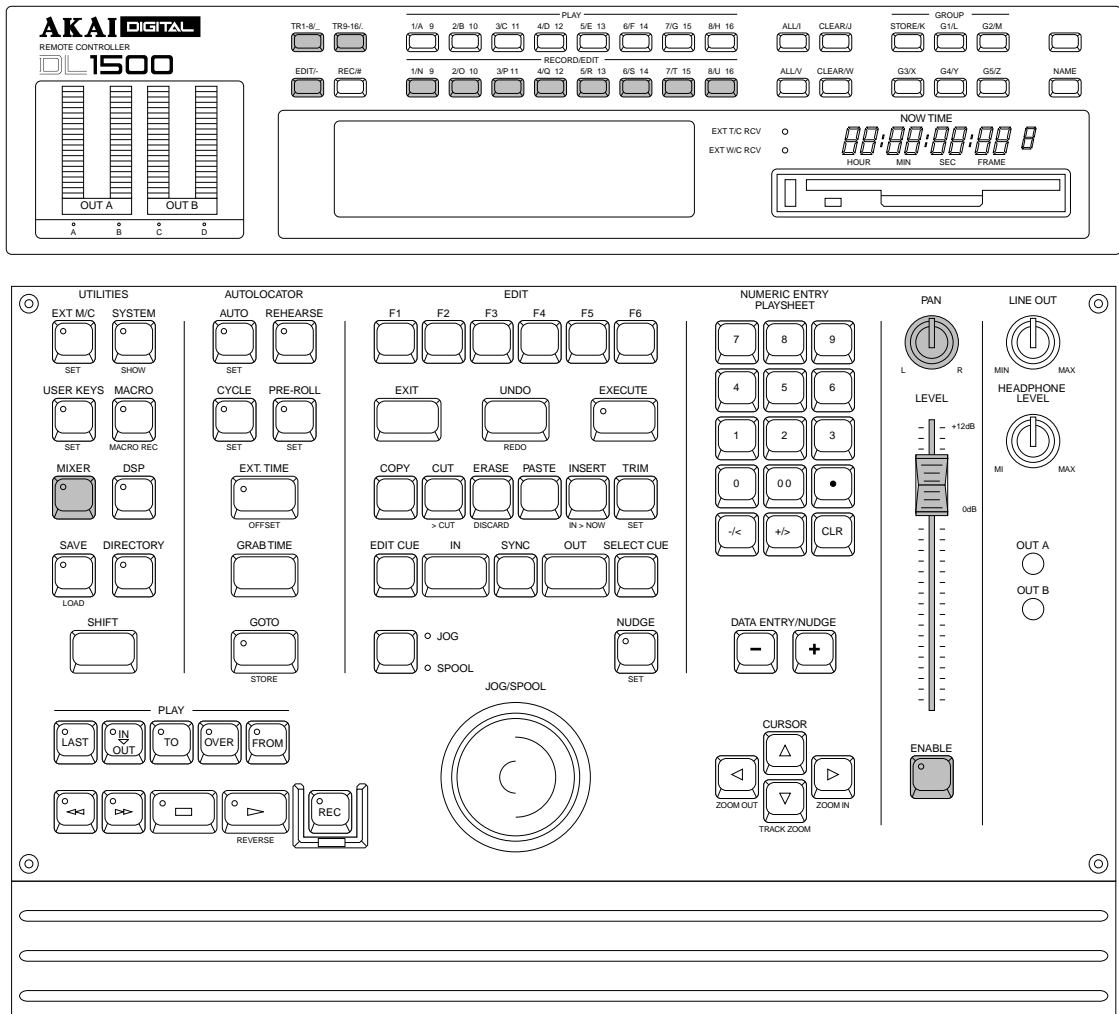
FULL SLAVE mode and EAVESDROPPING mode are virtually identical, the only difference being that FULL SLAVE reports back to the video edit controller and EAVESDROPPING mode just has the DD1500m sitting there mimicking any commands sent to it. Operation is basically identical, it's just the wiring that's different.



**USING THE VIDEO TEXT GENERATOR WITH RS422 SLAVE**

When using the DD1500m as an RS422 slave, there will be no DL1500 connected to the system as the DD1500m is being controlled by the video edit controller. In this situation, you have no way of knowing the status of the DD1500m. Using the video text generator, you may set the DD1500m so that its status can be displayed on a spare video monitor . Alternatively, you may set it so that the video text generated by the DD1500m is superimposed on the video monitor used for monitoring picture.

You can set the text generator to display the DD1500m's transport status (i.e. play, stop, rewind, fast forward, etc.), its NOW time and the amount free on disk. This is set in the SYSTEM- I/O - VIDEO page (see pages 6-7 for a description of this).



The DD1500m has inside it a 16-channel digital mixer that allows you to set the levels and pans of tracks. Furthermore, the mixer may be controlled over MIDI and automated mixing is possible using an external MIDI sequencer.

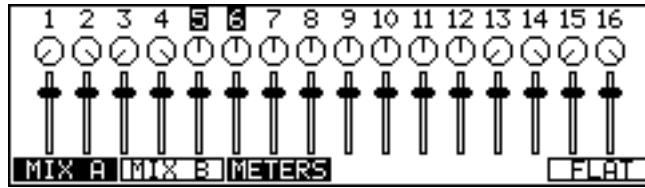
**SETTING TRACK LEVELS AND PAN**

To set the level and pan of a track, select the track for mixing in the usual way by pressing one of the EDIT track select keys and then press the ENABLE key found below the fader. Its LED will flash. You may now use the fader and the pan pot to set the level and pan for the selected track. To reset the channel, press SHIFT+ENABLE.

It is also possible to select several tracks for mixing and set their levels and pans simultaneously. This is useful for setting the levels of stereo cues across two tracks (although you will need to separately set the pan position for each track hard left and hard right accordingly). To reset the selected channels, press SHIFT+ENABLE.

The mix that you set for the channels is saved as part of the project.

Pressing the MIXER key will display something like this screen:



This displays a graphic representation of the mixer's current status and you may see the position of each tracks level and pan at a glance. As you move the fader and/or pan control, the screen will update in real time. The track(s) selected for editing are highlighted along the top.

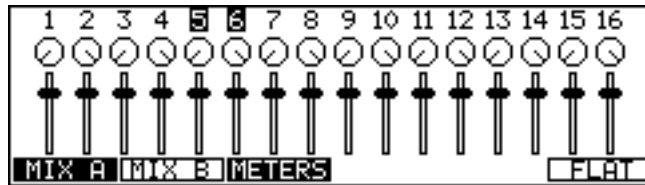
You may, in fact, set two separate mixes A and B and these appear at the MIX A and MIX B outputs. In this way, you may sub-group some sounds to appear at one output and others at another (for example, all sound effects could appear through MIX B whilst all dialogue is handled by MIX A). You could also use MIX B as a stereo effects send buss, returning the effects' outputs through some input channels (although you will lose some tracks in this way). MIX A and MIX B are set by pressing the MIX A and MIX B keys (F1 and F2) respectively.

You may 'flatten' the mix (i.e. reset all the controls of the whole mixer to default settings) by pressing F6 - FLAT. Pressing FLAT will give this prompt:

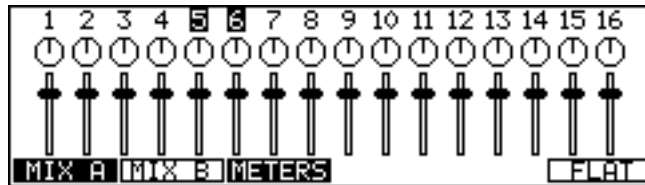


Pressing LEVEL will only reset the levels on all channels, leaving pans unaffected.

Pressing STEREO will reset all channel's levels to 0.0dB and alternate channel's pans to hard left and right respectively. I.e.:



Pressing MONO will reset all channels to 0.0dB and set all pans central. I.e.:



You may 'flatten' MIX A and MIX B separately.

**NOTE:** You do not have to have the MIXER page open to set levels and pans for tracks. Simply selecting a track (or tracks) for editing and pressing ENABLE will activate the slider and panpot to control the selected track(s)

### METERS SETUP

In both pages, you may also set certain parameters relating to signal metering on the DL1500 and the external monitor screen. Pressing METERS (F3) will display this screen:

```
METERS
Panel meters : OUT A/OUT B
VGA meters  : TRACK LEVELS
VGA peak hold : OFF
                [ DEFAULT ]
```

The parameters are:

#### PANEL METERS

Here you may select what is displayed on the DL1500's front panel meters. You may select OUT A/OUT B, TRACKS 1-4, TRACKS 5-8, TRACKS 9-12 and TRACKS 12-16. The default is OUT A/OUT B.

#### VGA METERS

Here you may select what will be displayed on the meters on the VGA monitor. You may select INPUT LEVELS (to view the inputs to the tracks selected for record), MIXER LEVELS (to view the output of the tracks *after* the DD1500m's internal mixer) and TRACK LEVELS (to show the true pre-fade level of the tracks *before* the DD1500m's internal mixer).

#### VDU METERS PEAK

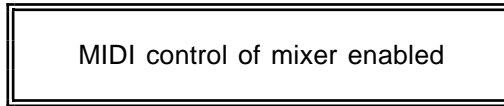
Here you can set the response speed of the external monitor's meters when reading peak levels. HOLD will keep the peak level permanently displayed until a higher peak level is received. SLOW, MEDIUM, FAST offer different peak level response speed. You may also turn peak level detection OFF if you wish.

Press EXIT to return to the mixer page you entered this page from.

**MIDI MIXER FUNCTION**

MIDI continuous controllers are assigned to the DD1500's mixer channels. Remote control of the DD's mixer is therefore possible using dedicated MIDI controllers and/or the mixing functions found in many sequencers. In fact, by sending data from a sequencer, automated mixing is possible on the DD1500.

To enable MIDI control of the mixer, press SYSTEM and SHIFT+MIDI (F3). You will see this temporary message:

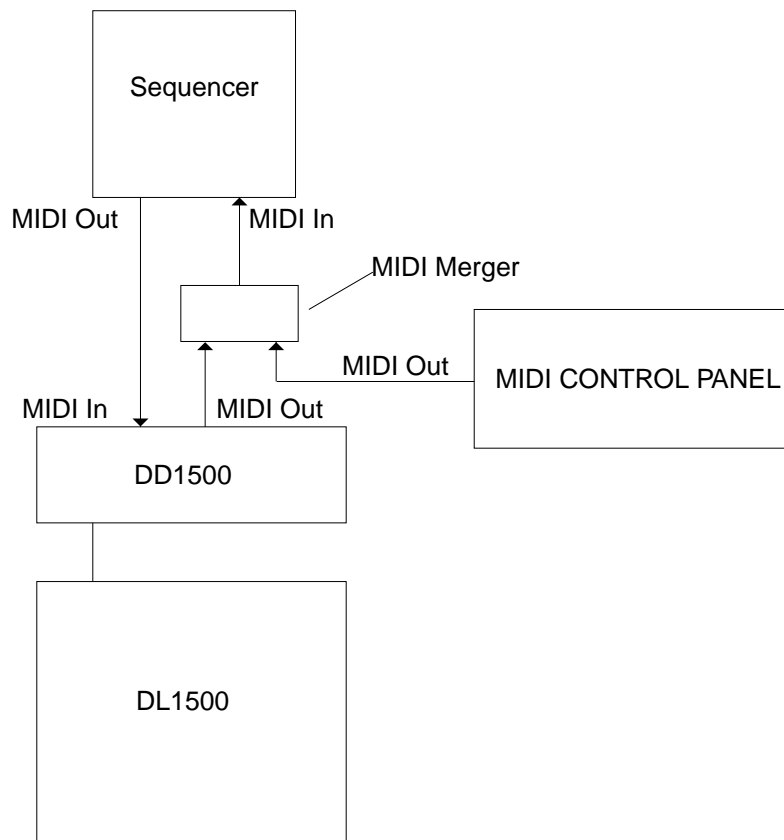


The mixer channels respond to controllers #7 (volume) and #10 (pan) with MIDI channels 1-16 corresponding to tracks 1-16 on the DD1500. If you are using a MIDI control surface, it should be programmed accordingly (please see the unit's operator's manual for details on this). The status of the mixer (i.e. enabled or not) is saved with the project.

**NOTE:** With the DD1500's MIX page open, the graphic depiction of the level and pan controls will move as the mixer is remotely controlled over MIDI.

**MIDI MIXER AUTOMATION**

Automated mixing could be achieved with something like the following setup:



The MIDI output of the DD1500 goes to the sequencer - this supplies the MTC or MIDI clock to drive the sequencer (if you are using a MIDI control panel as a mixer surface to control level and pan, you will need to use some form of MIDI merge unit if your sequencer doesn't have two MIDI ins). The mix data is recorded in the sequencer and passed to the DD1500. To record mix automation, set the sequencer to record, press PLAY on the DD1500 and use the controller to mix - the mix data will be recorded into the sequencer (you will need to consult your sequencer's operator's manual for more information on exactly how to achieve this). When you play back the sequence, the mix

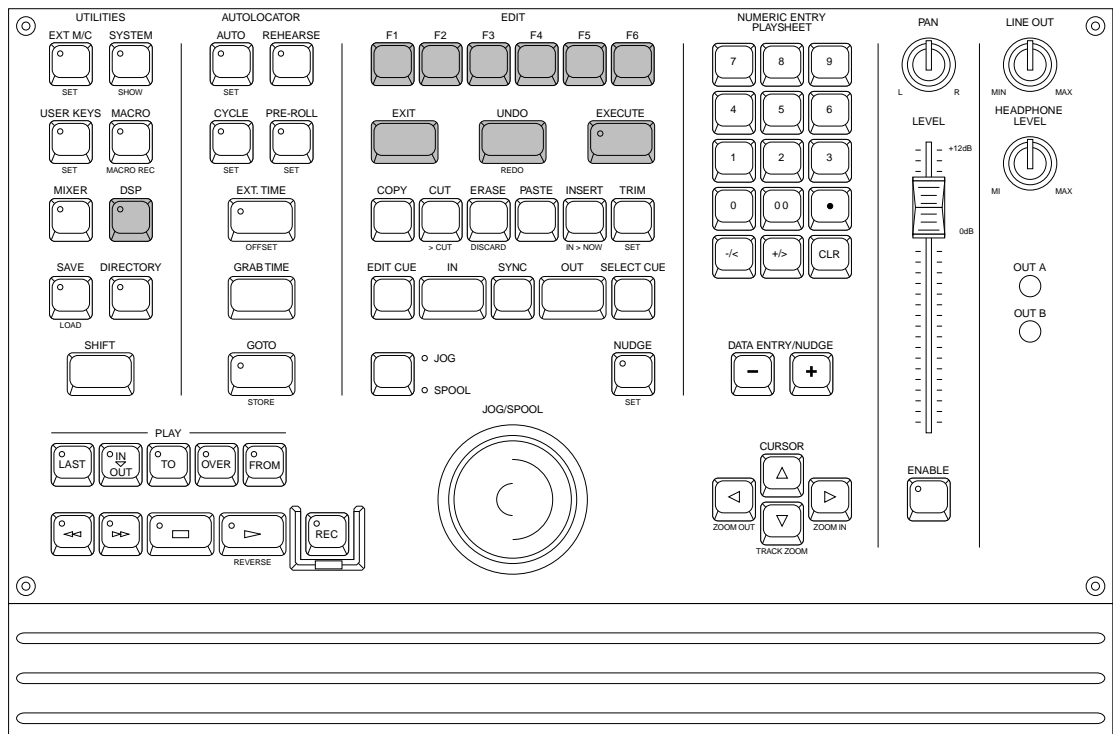
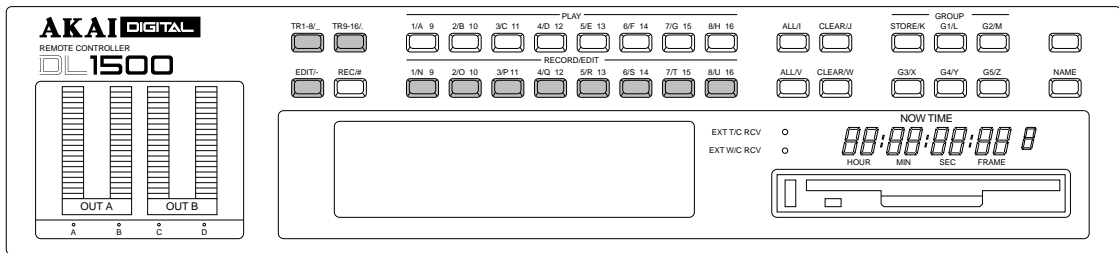
## 19 - UTILITIES - MIXER

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automation will be played back. In the absence of a mixer controller, some sequencers actually have a 'mixer page' for such purposes.

Most good sequencers also allow you to edit mix data such as this so a high degree of sophistication regarding editing may be possible depending on the sequencer you use (although please note that if you make extensive edits and changes to the project on the DD1500 after having recorded mix data into the sequencer, you may have to edit the mix data separately or re-record it but this no different to many other automated mix packages).

***TIP:*** *If you are not a sequencer user but require a simple form of level/pan automation, a simple, easy to use hardware sequencer and a MIDI control surface could offer a viable and inexpensive means to achieve this. If this idea appeals to you but you work in an industry not used to using such equipment, your Akai distributor will be able to assist as they will have a lot of experience in this field due to Akai's presence in the professional music industry.*



The DD1500 has some powerful DSP functions you can use to further augment the editing possibilities available to you. These include:

**TIMESTRETCH**

This will lengthen or shorten a recording without changing its pitch. This can be used, for example, to make a piece of dialogue or music fit a scene more precisely.

**PITCH SHIFT**

This can be used to change the pitch of a recording but without changing its length. This can be used to change the key of a music cue or, on dialogue or sound effects, to create a special effect.

**VARISPEED**

This will change both the speed and pitch of a recording (much like tweaking the varispeed control of an analogue MTR).

**EQ**

You may EQ cues in a project. This can be used for creative purposes (i.e. to create a 'telephone' effect on some dialogue) or for corrective purposes (i.e. filter out some mains hum or tape hiss or whatever).

## 20 - UTILITIES - DSP FUNCTIONS

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### REVERSE

This will play back the selected cue or edit region backwards. This may be used as a special effect or can be used as a 'profanity filter' in place of the obvious 'beep' that is usually used.

As with all other editing operations, items are selected for processing by either marking an edit region with the IN/OUT markers or using SELECT CUE to select the cue(s) you wish to affect. Single (i.e. mono) and stereo cues can be selected for processing as can multiple cues. All the DSP functions are 'off-line' processes (i.e. a cue or edit region is selected and they make a processed copy of the original).

When you press the DSP key, you will see this screen display:

```
DSP
** Please select a DSP function **
TIME | PITCH | VARI | EQ | REURSE
```

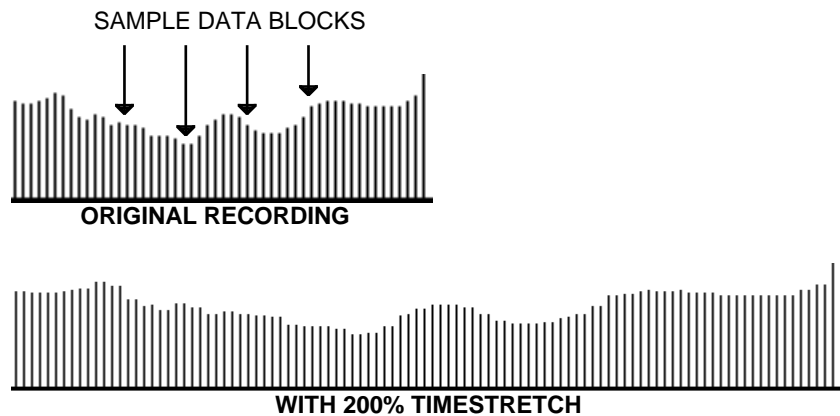
This is a 'menu' page where you can select the DSP process you wish to apply to the selected cue/region. Let's look at these in more detail.



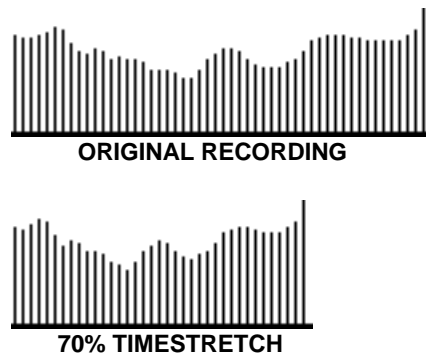
**TIMESTRETCH**

Timestretch allows you to alter the length of a sample, shortening it or lengthening it, without changing its pitch. Before we look at how to operate the timestretch functions on the DD1500, let us first look at how timestretch works.

Timestretch works by instructing the digital signal processor to analyse the signal and insert or delete blocks of sample data at appropriate places and crossfades are used to make the insertions and deletions as seamless as possible. This has the effect of lengthening or shortening a recording. As you can see from the following diagram, blocks of sample data have been inserted to create a 200% timestretch. The overall envelope of the sound data is preserved but there is twice as much data in it causing it to play back twice as slow.



In the following diagram, data has been removed to make the recording play back faster.



You can see that the length in both of these examples changes quite drastically but the envelope remains pretty much the same, thereby ensuring the integrity of the sound. The timestretch on the DD1500 works by making a copy of the original. It is necessary to make a copy for two reasons - firstly, the DD1500 needs the original data to get the data to insert. Secondly, in the event of a stretch going wrong, you still have the original to revert to using UNDO. Unfortunately, however, perfect results using timestretch are sometimes difficult to achieve. It is not a limitation of software or hardware but due to the fact that, although the processor is clever, it is not *that* clever and can sometimes make mistakes in deciding which sample to insert or remove. The end result of this is that, on occasions, especially with stretch factors exceeding 10% or so, you may get an echo or 'flam' effect on some transients because the processor has inserted a transient. When shrinking a recording, you may find a transient softened because the processor has decided to remove it. You will find this to be the case more or less on all devices that feature some form of time compression or expansion.

A lot of these problems depend on the nature of the audio material being processed and settings that process the spoken word perfectly could make a right mess of a percussive music track. The converse is also true. The biggest problem is in material that has a healthy balance of low and high frequencies because different timestretch parameters are required to process different frequency ranges - in audio material that has a wide frequency composition there is much adjustment to be done to obtain the correct compromise so that both frequency ranges are adversely affected as little as possible. Please be aware, therefore, that on occasions, you may never get absolutely perfect results and there may be occasional side effects, especially with extreme settings of stretch - of course, these side effects can be put to good use for the creation of special effects!! Over smaller ranges, however, you will find the timestretch on the DD1500 yields excellent results and will become an invaluable tool in your work, whatever application you are working in.

Some applications are:

- You could use the timestretch function to lengthen or shorten a piece of dialogue or a music cue so that it fits a scene more precisely.
- Likewise, in radio broadcast, you could stretch (or shrink) a jingle to fit an advert slot more precisely.
- You can use the timestretch function to fill a hole between cues, lengthening a cue so that it butts against the next one.
- In voice-overs and the like, you can use timestretch creatively to add some excitement. For example, by shrinking the voice over, it will sound more hurried and urgent and therefore more dramatic. Similarly, a voice over could be made more 'laid back' by stretching it.

There are many other applications which you will no doubt find for yourself.

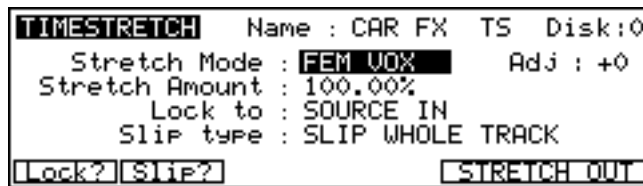
**THE TIMESTRETCH PAGE**

The TIMESTRETCH page is accessed by pressing the DSP key. You will see this screen:



This is the main DSP select page where you may select which DSP function you wish to use.

Press F1 to select TIMESTRETCH. You will see this screen:



The parameters are as follows:

**NAME** Here, you may create a name for the new recording that will be created by the timestretch process. On the DD1500, what happens is that you mark the region you want to stretch using the IN/OUT keys. When you initiate the timestretch, the process creates a new cue and replaces the existing one with the stretched version. The DD1500 will automatically append "TS" to the end of the name (this will replace the last two characters of a ten character name) and the new "TS" cue will replace the original cue/region. If you prefer, you may name the new cue in the usual way by pressing NAME and typing in a name of up to ten characters or by entering a name from a PC keyboard.

**DISK** Here you may select which disk the processed version will be recorded onto. It will default to the project disk but you may, if you prefer, place the processed version on another disk. This may be useful if your project disk is getting full.

**NOTE:** Please remember that if you do place the processed version on another disk, that disk will have to be present when you play the project at a later date.

**STRETCH TYPE** The DD1500 uses a series of preset timestretch 'templates' with which to process sounds. The timestretch process has many controls associated with it that would be very difficult to set up and would not guarantee good results. Each of the presets offers a different combination of settings for these controls and they are optimised for the type of sound described by the name. There are several alternative presets for each category and each category has an A, B and C variation. So, instead of sitting there setting the parameters for half a dozen or more meaningless, confusing controls, the idea is that you simply select a preset whose description largely fits the material you are trying to process and you press EXECUTE. If the results are not that good, simply select another preset (or one of its variations) and try again.

However, do not get too tied down with these preset descriptions because they are not sacrosanct - they are merely guidelines and the SPEECH 2B preset may do a fantastic job on a piece of classical music!

A list of the presets are given later.

### ADJ

Sometimes, our presets may not quite satisfy your needs and some kind of 'manual override' is required. This is the ADJ(ust) control.

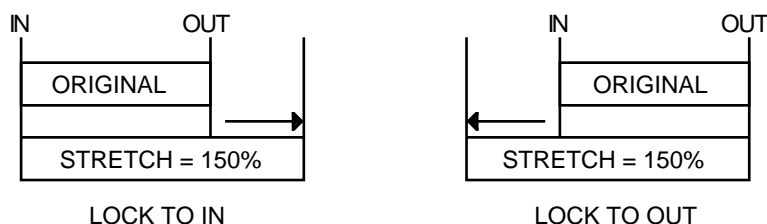
As mentioned, behind the timestretch presets are a lot of controls. The ADJ parameter gives access to the key parameters in any one preset and allows you to make adjustments to the preset with one, easy to use control. There are no strict rules to using this control other than, if the selected preset gives you almost acceptable results but there are few glitches in the processed sound, try tweaking the ADJ control and do it again.

### STRETCH AMOUNT

This sets the timestretch amount. The range is 50% (half the length of the original) to 200% (twice the length of the original).

### LOCK TO

You can select whether the timestretch will be referenced to the IN point you have marked or the OUT point you have marked. For example:



With LOCK TO IN selected, the end of the cue to be processed will be later in time.

With LOCK TO OUT selected, the start of the cue being processed will be earlier in time.

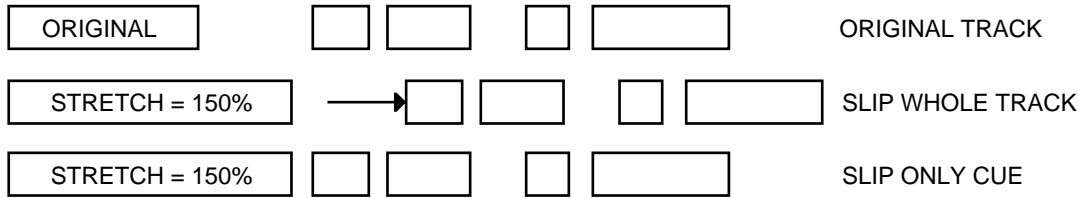
This function has just two options - SOURCE IN and SOURCE OUT. These can be selected by moving the cursor to the field specifically and using the +/- DATA keys but it may be more conveniently selected simply by pressing F1 - LOCK? - and using this as a toggle switch between the two selections.

### SLIP TYPE

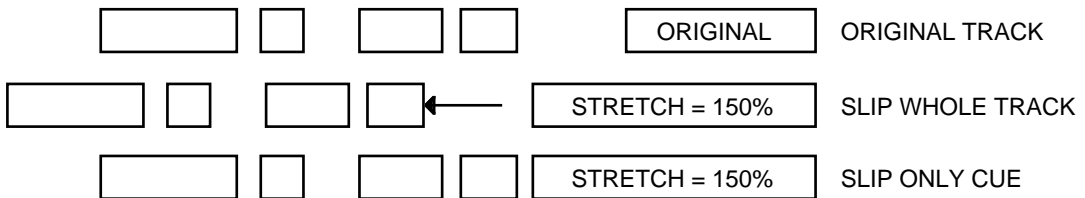
This allows you to select whether the timestretch process will slip all subsequent cues on the track or not. There are times when you may want all cues after the stretch (in the case of LOCK TO SOURCE OUT) to move accordingly to accommodate the new cue's length in which case, select SLIP WHOLE TRACK.

There may be times, however, when all cues before and after the stretched cue must remain locked.

For example, imagine you have painstakingly synced up a whole pile of foley to picture but one effect needs stretching. In this case, selecting SLIP WHOLE TRACK would knock all these foley cues out of sync and so SLIP ONLY CUE may be a better choice here! The two choices are shown graphically here.

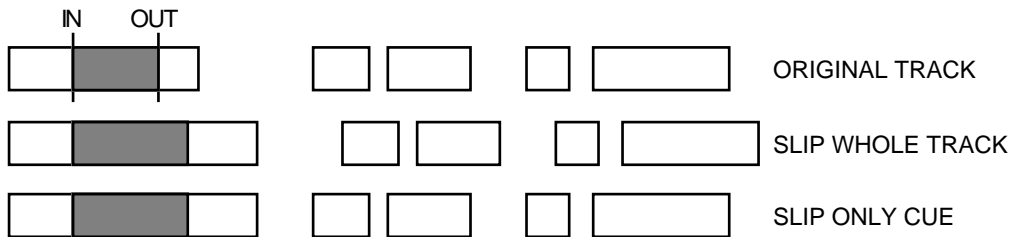


With LOCK TO OUT selected, cues *before* the stretched cue would be slipped backwards with SLIP WHOLE TRACK selected as the SLIP TYPE. I.e.:



To select the options, you may move the cursor specifically to this field if you wish or you may use F2 - SLIP? - as a toggle switch for more convenience if you prefer.

You don't have to select a whole cue. You can just stretch (or shrink) the region marked between the IN/OUT times. Again, how SLIP TYPE is set will affect all subsequent cues:



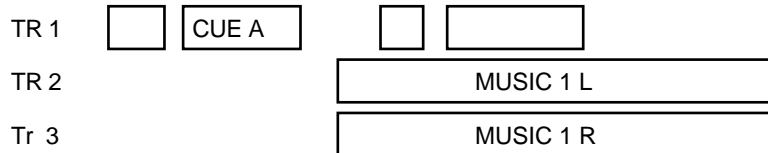
### USING THE TIMESTRETCH FUNCTION

There are several ways in which the timestretch function may be used.

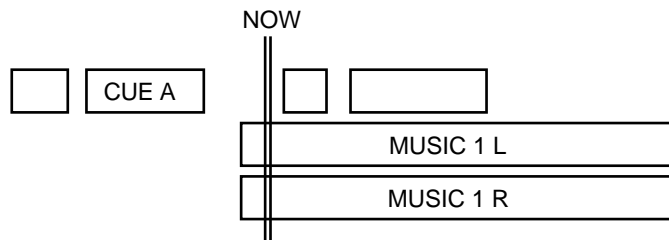
The most obvious way is to mark the region or select the cue you want to affect using the green IN/OUT keys, select the preset you think is appropriate, set a STRETCH AMOUNT percentage (either using the DATA +/- keys or by typing in a value from the numeric keypad) and press the flashing EXECUTE key. Whether you choose to give the new cue a name more suitable to your purposes is up to you. However, this method is rather hit and miss and may require repeated attempts to get the right stretch amounts.

Another way and one that may be more intuitive and useful is to use the STRETCH OUT key on F5/F6. This method is good for setting the stretch amount relative to some other reference point in the project. For example, you may want a voice over on track 1 to overlap a music cue on tracks 2 and 3 for a dissolve into a new scene. Alternatively, you may want to get rid of an overlap so that the voice over is not obscured by the music on tracks 2 and 3. You may also wish to use the timestretch process to fill a gap on a track. You could, of course, try to guess (or even calculate) the percentage of stretch required by entering a value in the STRETCH AMOUNT field but an easier and more 'tactile' approach is to use the STRETCH OUT key. Operation would be as follows:

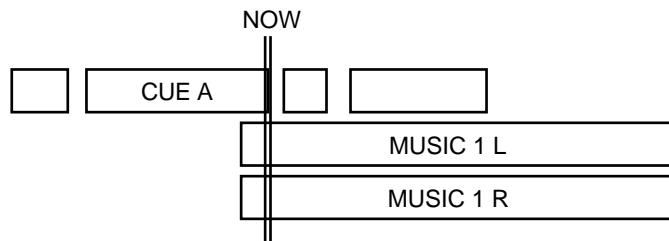
Let's imagine you have this situation displayed on the VGA monitor and you want to stretch CUE A to overlap it with MUSIC 1 L/R:



First, put Tr 1 into EDIT. Now, either mark the IN/OUT specifically or use SELECT CUE to select CUE A. Now jog so that the NOW time is slightly into the MUSIC 1 L/R cues:



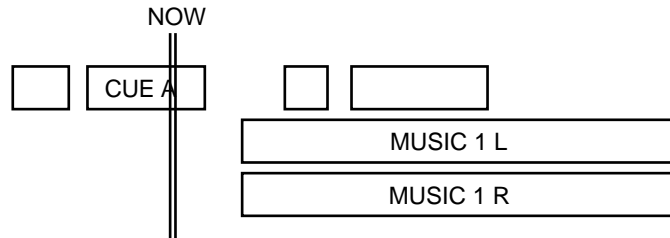
Now press STRETCH OUT in the TIMESTRETCH page. This will set the stretch percentage accordingly (in this case, about 150%). Now press the flashing EXECUTE key. CUE A will be stretched and the end result will be this:



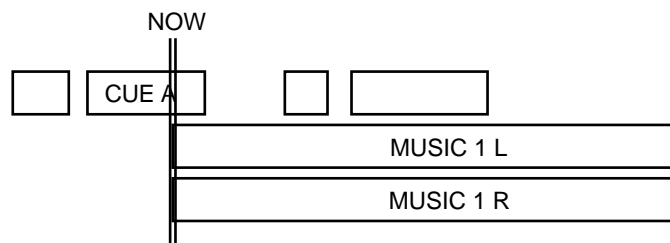
You have your overlap and you could use EDIT CUE to set a crossfade.

Now let's imagine you have the same situation but you want to stretch the music cue backwards to backtime its start so it overlaps with CUE A.

Select TRACKS 2 and 3 for edit and use SELECT CUE to select MUSIC 1 L/R. Now jog back so that the NOW time is a little way into CUE A:



Select SOURCE OUT in the LOCK TO field (use F1 to toggle it). You will note that F5/F6 becomes STRETCH IN (i.e. you will mark the in point for the stretch). Press STRETCH IN. The percentage will be set automatically (in this case, about 115%). Now press the flashing EXECUTE key. You will end up with this result:

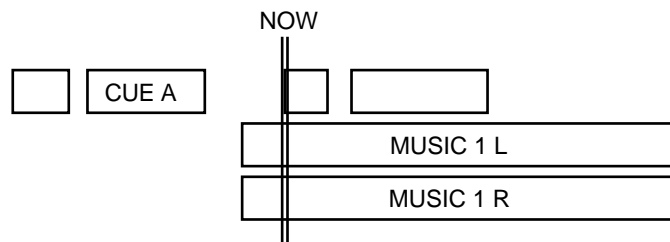


You have stretched the music cues back to overlap the voice over.

In both examples, you can use SLIP TYPE to select whether cues before or after the stretched cue will slip in time or not.

Now let's imagine we have the same situation but we want CUE A to butt up against the start of the cue immediately after it to close the gap.

Select TRACK 1 for edit and use SELECT CUE to select CUE A. Now, either jog to the start of the next cue or use GOTO + to go to the start of the following cue so that you have this displayed on the VGA monitor:

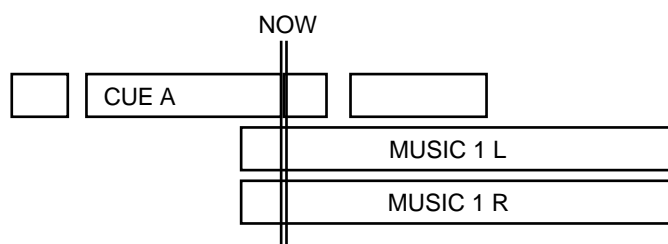


Ensuring that LOCK TYPE is set to SOURCE IN and SLIP TYPE is set to SLIP ONLY CUE (either set the parameters specifically by moving to those fields and using the DATA +/- keys or use F1 and F2 to toggle them), press STRETCH OUT (F5/6) and then press the flashing EXECUTE key.

## 20 - UTILITIES - DSP FUNCTIONS

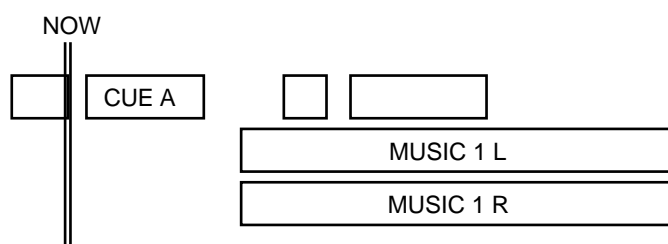
---

You will have this result:

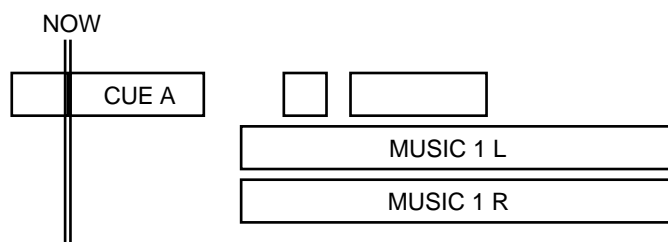


The reverse of this can be done and you can stretch CUE A to butt up to the preceding cue.

Use GOTO and the DATA - key to locate to the end of the previous cue so that you have this display:



Ensuring that LOCK TO is set to SOURCE OUT (use F1 to select), press STRETCH IN (F5/6) and then EXECUTE. You will get this result:



Of course, there are many other permutations depending on whether you select SLIP WHOLE TRACK or SLIP ONLY CUE in the SLIP TYPE field and this will dictate whether you want cues before or after the cue being processed to move in time or not.

If you jog a fair distance from the original cue or region and press STRETCH OUT (or STRETCH IN if SOURCE OUT is selected as the LOCK TYPE), you will get this pop-up message:



You will be similarly informed if try to shrink a cue/region by less than 50%.



In all cases, however you set the STRETCH AMOUNT parameter, whether it's entering a value specifically in the STRETCH AMOUNT field or using STRETCH IN/OUT, when you initiate the process using the EXECUTE key, you will see this progress display:

```
Processing... (EXIT to Abort)
```

A highlighted bar will move across the screen to indicate progress. If you change your mind during the process, press EXIT to abort the process.

At the end of the process, you will see this display:

```
Processing complete
```

If you complete the process, the processed version will replace the original. Use PLAY IN>OUT to check the results. If you are not happy with the results, press UNDO to undo the process. This will replace the processed version with the original and you may try again.

### PITCH SHIFT

PITCH SHIFT allows you to re-tune a cue to a different pitch whilst retaining its original length. This is normally used for music cues for transposing them to a new pitch but it can be used for other applications if you wish. For example, you may have a deep, car door slam sound effect from a limousine that is inappropriate against the visuals which shows maybe a small family hatchback. In this case, you could tune the cue up a few semitones to achieve a more appropriate effect. The process is also useful as a special effect on dialogue. With upwards pitch shift you can get the 'mickey mouse' or 'helium' effect and with downwards pitch shift, you can make dialogue deeper and maybe more imposing. Whichever you choose, the length of the processed cue will be the same as the original but at a different pitch.

The PITCH SHIFT process is pretty much the same as for TIMESTRETCH. Pressing PITCH in the main DSP page will give you this screen:

```
PITCH SHIFT Name : CAR FX PS Disk:0
Pitch Shift Mode : FEM UOX Adj : +0
Semitones : +0.00%
```

You may name the new cue to be created by the process if you wish but a default name is given where "PS" is appended to the last two characters in the name. You may also select the disk the processed cue will be placed on (although the same restrictions apply in that if placed on a disk other than the project disk, that disk will have to be present to ensure correct playback of the project).

As with TIMESTRETCH, a series of presets are used with the ADJ(ust) control and you should select a preset whose name roughly describes the type of material you wish to pitch shift.

The SEMITONES field allows you to tune the processed version over a range of +/-12 semitones (i.e. +/- one octave).

The process is much the same as for TIMESTRETCH. Mark and IN and OUT point to select the region you wish to re-tune (or use SELECT CUE to select a whole cue). Because the cue will stay the same length, no LOCK TO or SLIP TYPE fields are provided and the cue will simply be transposed according to the setting in the SEMITONES field.

To process the cue, simply press the flashing EXECUTE key. As with TIMESTRETCH, you will see this progress bar:

```
Processing... (EXIT to Abort)
```

Press EXIT to abort the process if you wish.

At the end of the process you will see this display:

```
Processing complete
```

If you complete the process, the processed version will replace the original. Use PLAY IN>OUT to check the results. If you are not happy with the results, press UNDO to undo the process. This will replace the processed version with the original and you may try again.

**THE TIMESTRETCH/PITCH SHIFT PRESETS**

The presets used for timestretch and pitch shift are as follows:

FEM VOX	This works well on female speech.
MALE VOX	This works well on male speech.
LMALE VOX	This is more appropriate for deeper male speech.
VOCAL	This works well with solo and ensemble singing voices in isolation and, in music studio applications would be applicable for processing backing vocals and the like.
HF RHYTHM	This works well with rhythmic material with little bass content or bass content that is short.
MF RHYTHM	This works well with rhythmic material. HF and MF is handled well and short as are sharp bass sounds.
LF RHYTHM	This is also suitable for rhythmic material but will handle longer bass components better.
PERC	This works on very rhythmic material, especially solo drums, etc., but can upset bass content.
LF PERC	This also works well on percussive material but can handle bass content better.
STACCATO	This works well processing material that is percussive, staccato and rhythmic with a wide frequency range (although sustained bass content may 'wobble').
LF SLOW	This works well on material that has long, sustained LF content. Musically, it is effective for processing slow ballads and handles long bass notes quite well but you may occasionally experience slight 'flamming' (i.e. double triggering) with some percussive sounds.
MUSIC 1, 2 and 3	Suitable for processing a wide range of musical styles that have a broad band of bass and high frequency content and rhythmic elements.
SOFT PERC	This works well on material with a wide frequency range that is not too percussive.
HF ORCH	This works well on orchestral music with lively dynamic strings and HF content.
LF ORCH	This is optimised to handle bass content better.
SLO ORCH	This is better suited to slow orchestral material with long, sustained notes.

Each preset has three variation A, B and C. The A variations make a more general analysis of the original sound and although they process the selected cue/region more quickly, the end result may not be as accurate as using either the B or C variations which make a more detailed analysis of the original material (but take slightly longer to process).

### HOW THE PRESETS WERE CREATED

In deciding the presets, our engineers took a wide variety of different types of material and spent considerable time adjusting the many parameters associated with the process until good results were obtained with each of the different categories of material. The presets were then defined and then differing types of material were gathered and processed using these presets. It was found that the different types of material (speech, music, rhythmic, etc.) were all, by and large, processed successfully by selecting a preset whose description roughly matched that of the material being processed. For example, it was found (much to everyone's relief!) that taking any bit of male speech was usually processed quite successfully using the MALE VOX presets. Likewise, the ORCH presets generally processed classical and orchestral music fairly well. To tie you down to a selection of presets may appear limiting but, take our word for it - it's a lot easier and quicker than having to adjust a screen full of obscure and difficult to use parameters!

The basic premise to using the DD1500's timestretch and pitch shift presets is - "what is the nature of the material I want to process? - choose a preset whose name roughly describes it and give it a go. If it doesn't work out, hit UNDO and try again, selecting one of the one of the A, B or C variations. If that's still not successful, try the ADJ parameter. If all else fails, try another preset.

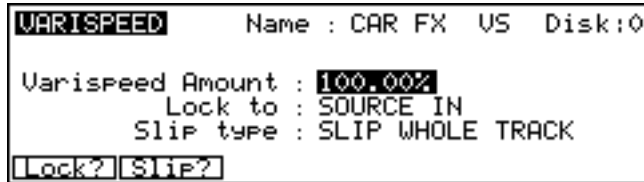
Compare this with...

Adjust MINIMUM CYCLE LENGTH, adjust MAXIMUM CYCLE LENGTH, adjust SAMPLE INSERT RATIO, adjust MATCH LENGTH, adjust CROSSFADE TIME, adjust CROSSFADE WIDTH, adjust CROSSFADE CURVE, set SEARCH PERIOD, press EXECUTE. If these parameters don't produce acceptable results, repeat all of the above again (and again and again!).

**VARISPEED**

Although it is possible to use SPOOL to play back a project at different speeds, you may wish to varispeed just one cue or region. This can be achieved using the VARISPEED function. Unlike TIMESTRETCH which makes a recording longer without changing pitch or PITCH SHIFT which will transpose a recording's pitch but keep the length the same, VARISPEED makes the recording longer and lower in pitch or shorter and higher in pitch.

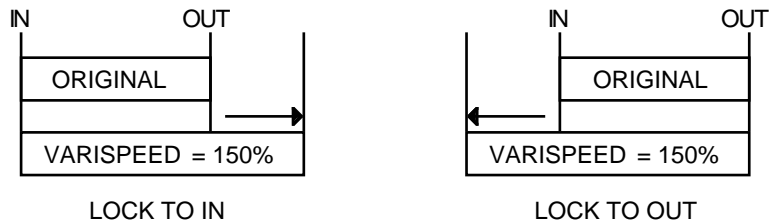
Selecting VARI in the main DSP select page will give this screen:



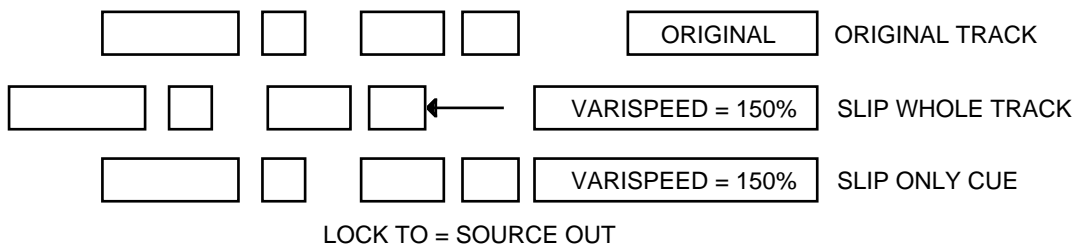
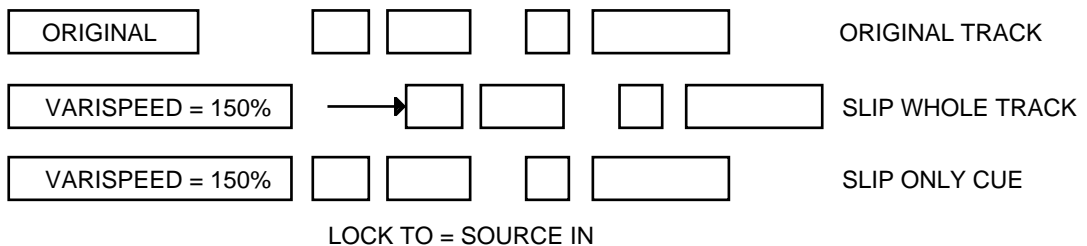
Operation is the same as TIMESTRETCH. You mark an IN and an OUT point to mark the region you want to varispeed (or use SELECT CUE to select an entire cue) and you use the VARISPEED AMOUNT parameter to set the amount by which the selected region/cue will be affected (the range is 50% to 200%).

**NOTE:** Please note that although the process seems to be identical to timestretch, the VARISPEED AMOUNT percentage has a different effect on the processed cue. With timestretch, a value of 110.00% will make the new cue LONGER but, with varispeed, the same value will make the new cue SHORTER (and higher in pitch).

Because the processed version will be longer or shorter in length, the same LOCK TO and SLIP TYPE fields that we saw in TIMESTRETCH are provided. LOCK to allows you to select SOURCE IN or SOURCE OUT. Depending on your selection, the results would be something like this:



The SLIP TYPE parameter selects whether cues before/after the processed cue will move in time or not:



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To process the cue/region, press the flashing EXECUTE key. You will get this display:

```
Processing... (EXIT to Abort)
```

Press EXIT to abort the process if you wish.

At the end of the process you will see this display:

```
Processing complete
```

If you complete the process, the processed version will replace the original. Use PLAY IN>OUT to check the results. If you are not happy with the results, press UNDO to undo the process. This will replace the processed version with the original and you may try again.

**DIGITAL OFFLINE EQ**

Another DSP function on offer is DIGITAL EQ. This is an off-line EQ process giving four bands of EQ plus a low and high pass filter.

Pressing EQ in the main DSP page will take you to this screen:



As with all the other off-line DSP functions, the EQ process creates a new cue. A default name is given to the new cue but you may enter your own name here in the usual manner if you prefer. You may also select which disk the processed cue will be placed on.

You can see the four bands laid out across the screen. Parameters are adjusted by moving the cursor to them and using the DATA +/- keys. The ranges for the EQ section are:

LOW	20Hz - 4kHz	+/-18dB	Shelving
LMID	200Hz - 9kHz	+/-18dB	Parametric with variable Q
HMID	1kHz - 20kHz	+/-18dB	Parametric with variable Q
HIGH	8kHz - 20kHz	+/-18dB	Shelving
LF	20Hz - 9kHz		Highpass filter
HF	200Hz - 20kHz		Lowpass filter

The four bands have overlapping frequency ranges and variable gains (with the LMID and HMID having variable Q as well). The LF and HF bands are simply ON or OFF and are useful for removing unwanted mains hum or hiss or whatever although can be used for other purposes and special effects.

To set the EQ, you should set the parameters as appropriate and use the AUDITION EQ key to hear the EQ settings. As the cue is playing, you will see this at the bottom of the screen display:

Auditioning EQ... (EXIT to Abort)

**NOTE:** Please note that it is not possible to adjust any of the EQ controls during audition. If you need to make an adjustment, press EXIT to stop playback and then make your adjustment

Once you are happy with the result, press the flashing EXECUTE key. You will see this display:

Processing... (EXIT to Abort)

Press EXIT to abort the process if you wish.

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At the end of the process you will see this display:

```
Processing complete
```

If you complete the process, the processed version will replace the original. Use PLAY IN>OUT to check the results. If you are not happy with the results, press UNDO to undo the process. This will replace the processed version with the original and you may try again.



**REVERSE**

Reverse allows you to mark an IN and an OUT region or to select a cue and have it play backwards. This can be useful as a special effect although it is also being used these days as a way of hiding profanities and expletives - rather than just 'bleep' it out which is rather obvious, some organisations now reverse the offending word(s) so that you still get speech but the profanity is disguised (however, be careful when using reverse play on profanities that have been reversed using this process with clients who may be sensitive to bad language!).

Pressing REVERSE in the main DSP page will give this display:

```
REVERSE      Name : CAR FX RV  Disk:0
** Reverse audio between IN and OUT **
```

There are no parameters to set as such- simply pressing the flashing EXECUTE key will cause the selected cue/region to be reversed. You can, of course, give the new cue that will be created by the process a more meaningful name if you prefer but, otherwise, "RV" will be appended to the last two characters in the name. You may also select which disk the new reversed cue will be placed on if you wish.

As with all other DSP processes, when you press EXECUTE, you will see this display:

```
Processing... (EXIT to Abort)
```

Press EXIT to abort the process if you wish.

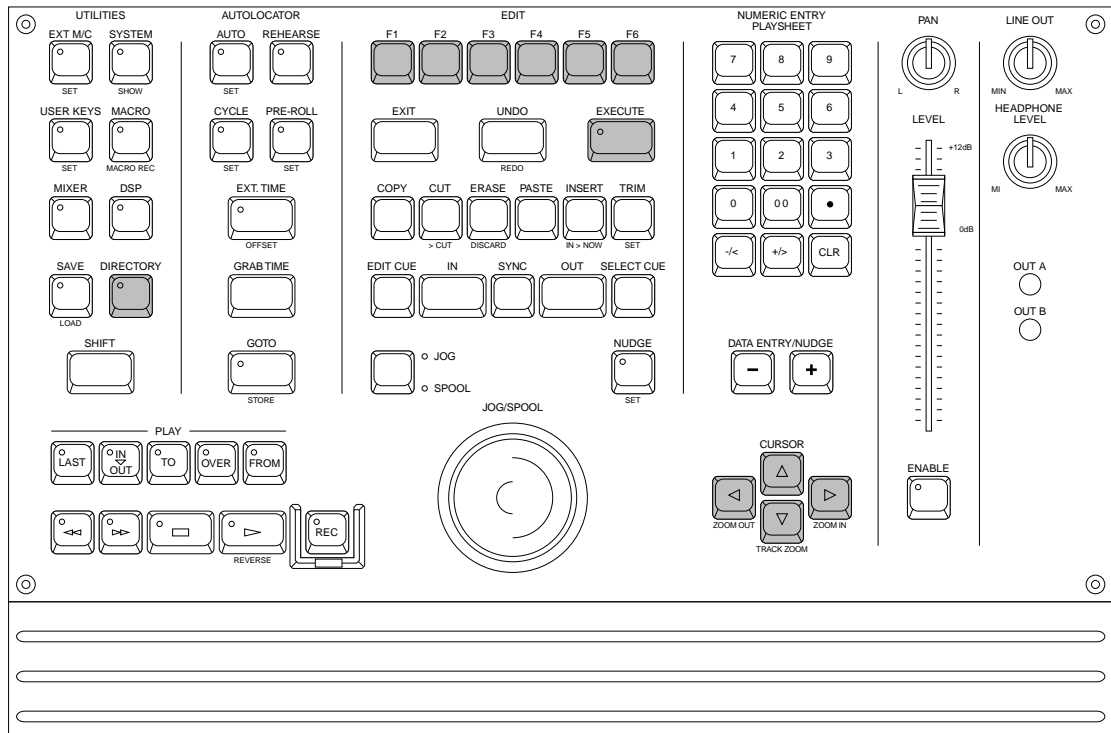
At the end of the process you will see this display:

```
Processing complete
```

If you complete the process, the reversed version will replace the original. Use PLAY IN>OUT to check the results. If you are not happy with the results, press UNDO to undo the process. This will replace the processed version with the original.

### PROCESSING TIMES

Being off-line processes, all the DSP functions take time to process the data. With timestretch and pitch shift, the actual time it takes depends on the preset being used but generally, all the DSP functions take about 3 x the length of the audio being processed. In other words, a 10 second cue will take around 30 seconds to process. You will note, of course, that if you are processing stereo cues, this time doubles. Likewise, if you try to process multiple tracks, the time it takes will increase proportionally.



In the RECORDING section, we saw how we can record audio into a project and have it automatically placed into a library. In the EDITING section, we looked at the DIRECTORY key and LIBRARIES very briefly and we saw how we can create libraries and copy, cut or erase edits from a project into a library and paste or insert from libraries. In this section, we will delve a little deeper into the use of libraries.

Libraries are the key to organising audio on the DD1500. Much like you organise your work into folders in a Windows™ computer (or directories in DOS), so audio can be organised in libraries on the DD1500 making file handling that much easier.

For example, as you start building up recordings and editing them in projects, you can start copying off good bits of audio as clips to libraries, thus building up a central library of sound effects, music cues, foley, atmos's, etc., and these can be organised by type in libraries (i.e. ANIMALS, AUTOS, BIRDSONG, CARS, DOGS, FARMYARD, MUSIC, TRAFFIC, etc.). Each library may hold up to 256 clips<sup>4</sup> but, if this isn't enough, it's is very easy to create a new library with just a few key presses and add more clips to the new library.

4      Actually, this depends on whether the clips are mono or stereo. The figure of 256 relates to mono cues. You could have around 200 stereo cues, less if you start adding multi-track cues to a library.

### RECORDING TO A LIBRARY

Whenever you make a recording, it is possible to set the DD1500 so that the recording automatically gets placed into a library of your choosing. You may wish to keep all recordings in their 'raw' format in a library called RECORDINGS so you should create a library called RECORDINGS and always select that recordings are placed in there when you record. In this way, you can always go back to the original recording at any time. As an example, you may record something into a project and then edit it extensively. After all the editing, you may not like the result so you could just paste in the original recording and start again. Alternatively, you may record into one project but want to use all or part of that recording in another. This could be done simply by pasting in the original recording into a new project from the RECORDINGS library.

You can, of course, place particular types of cues into specific libraries. You could place all music cues into a library called MUSIC when you record them and place all dialogue recordings into a library called DIALOGUE.

Recording into a library will also help in the event of something going wrong. For example, you may make a recording, do a lot of work on it and then, for some reason, inadvertently create a new project or load an existing one without first saving your work. In this case, although it would be tiresome to have to repeat all the editing work you have done, you do at least have the original recording(s) to fall back on to re-build the project you lost. Similarly, in the event of a particular project being inadvertently erased, you could reconstruct it again using the original recordings from your library.

It's worth remembering that recording into a library and a project does not take up any more disk space than recording into a project only and so it is recommended that you select to record to PROJECT+LIBRARY in the RECORD (i.e. REC/#) page for added security.

**COPYING EDITS FROM PROJECTS TO LIBRARIES**

It is also possible to build libraries using the DD1500's editing functions. In this way, you can copy perfectly edited cues from a project to a library for use at a later date.

For example, you may be working on a project that requires a thunder clap so you scour your CD sound effects collection and record a thunder clap that is appropriate. Naturally, the recording needs some 'tweaking' so you edit the thunder clap. Maybe you use DISCARD to get rid of unwanted rubbish either side of the IN and OUT times. Then you maybe mark a SYNC marker at the point where the thunder clap 'explodes'. Maybe you set a fade in and fade out to finally tidy it up and then adjust its level. This could then be copied to a library called WEATHER as a generic thunder clap sound effect for use in another project at some later date. When copied to the library, the fade in/out and level set in EDIT CUE would be stored as would the SYNC point so that, in future, whenever you need a good thunder clap, all you need do is call up that sound effect (from your WEATHER library) and paste or insert it, perfectly synced and edited into some other project.

This could take place when you are working on a project and you think that a particular element of that project could be useful at a later date. However, you could use the DD1500's recording and editing to specifically build a central library of useful recordings for general use.

There are several ways this can be done.

Firstly, create a new, empty project using NEW PROJECT in LOAD (SHIFT+SAVE). You could take your sound effects (or music - whatever) CD, DAT, TAPE (whatever) and record that into the new project. At this point, you could select to also place this recording into a library of your choosing so that you always have the 'raw' recording to fall back on. You could just let the CD/DAT/TAPE run, recording everything as one long recording. When that's done, you could go through the recording, isolating each sound effect by setting IN, SYNC and OUT times as necessary, using SPLIT to create separate cues, setting level and fade up/down parameters in EDIT CUE and copying them off to libraries you may have created as appropriate (using COPY, TO LIBRARY, naming as you wish, EXECUTE). You may, if you wish, choose to save this project but you may prefer to just abort this, using the project just as a 'scratchpad' to get audio into the system.

Another method may be to record each sound effect in separately directly to the project (and not to a library), editing each recording immediately after recording (DISCARD, EDIT CUE fade up/down, etc.) and copying (or cutting) each one to an appropriate library. Because the project you are using is just a 'scratchpad', that project need not be saved as it was just a vehicle for getting the recordings in. It's up to you! Also, whether you choose to place these 'raw' recording in a library is for you to decide.

There are many ways in which you can build libraries and no way is better than others. No doubt, you will find your own method depending on what's best for your working practices. However you choose to do it, operation is consistent - record the material into a project, edit it if necessary and copy it to a library.

### MANAGING YOUR LIBRARIES

Once you start building your libraries, you need to be able to organise them. One way to do this would be to create empty libraries with suitable names in advance and selecting one as appropriate at the time or copying. However, as it is not really possible to anticipate what you may need except in the broadest of terms, you might like to create a 'dumping ground' library called something like MISC SFX or MISC MUSIC into which recordings and/or edits can be placed while you work and then come back to that and move the clips from this library to a more appropriate library later on.

### CREATING A LIBRARY

If you are using the DD1500 for the first time or are using a newly formatted disk, pressing DIRECTORY displays this screen:

```
DIRECTORY List of libraries on Disk: 0
      ||
      ||
PRINT NEW OPEN
```

This shows us that there are no libraries on this disk. To create a library, simply press F1/F2 - NEW LIBRARY. You will receive this prompt:

```
Create new, empty library?
```

The EXECUTE key will flash and you should respond accordingly pressing EXECUTE to create the library or EXIT to abort/cancel. Assuming you press EXECUTE, you will see this screen:

```
DIRECTORY List of libraries on Disk: 0
NewLib 1 ||
      ||
PRINT NEW OPEN
```

A library with the default name NEWLIB 1 has been created. You can repeat the process creating NEWLIB 2, NEWLIB 3, NEWLIB 4, etc., by pressing the NEW LIBRARY soft keys again.

Once you have a few libraries created, in order to keep track of them more easily, you will probably want to rename them to something more meaningful.

### RENAMING A LIBRARY

To rename a library, first select the library you want to rename and press the NAME key and enter a suitable name of up to ten characters using the track select keys. Press EXECUTE to finish off entering the name and then EXECUTE again to actually rename the library.

If you are using an external PC keyboard (recommended if your plan to do a lot of naming), simply move the cursor to the library you wish to rename and start typing on the keyboard. The file name will automatically go into 'name mode' and you can enter the name. Hit RETURN to complete the name and RETURN again to rename the library.

### SORTING LIBRARIES

Libraries are automatically sorted alphabetically. If a library called ANIMALS is renamed ZEBRAS, it will be sorted from one end of the list to the other! This makes finding a library easier.

**OPENING A LIBRARY**

Once you have created some libraries and copied some clips into them from a project, you may have something like this screen display:



This shows a typical list of libraries. As you can see, there are libraries relating to certain categories of sounds you have on disk and these are listed alphabetically. The arrows alongside the list indicate that there are libraries 'above' and 'below' the screen which you may scroll to. Pressing OPEN in the DIRECTORY page will display something like this screen:



Here we can see a list of clips in the library DEMO LIB 1 on DISK 0. As in the main DIRECTORY page, the two arrows at the right of the screen indicate that there are clips 'above' and 'below' the screen which you may scroll to. You cannot select a different library here - you must close the current library and chose a different one to open from the main DIRECTORY page.

You may audition a clip at any time by pressing PLAY CLIP. You may wish to rename these clips to have more meaningful names so the ability to audition clips using the PLAY CLIP function will be invaluable for you to check the sound prior to renaming.

**RENAMING CLIPS**

There will be occasions where the name of a clip may be meaningless. This may happen when recording to a library using the default record name TAKE *n*. After a busy recording session, you may have a list of takes called TAKE 1 to TAKE 56. This is a perfectly acceptable practice as it can save a lot of time when recording and it is possible to rename the clip within the library itself when you maybe have more time.

All you need to do to rename a clip is move the cursor to the clip you want to rename, press the NAME key and type in a ten character name using the track select keys. Press EXECUTE to end the name and EXECUTE again to rename the clip. Alternatively, if you are using a PC keyboard, simply start typing in a suitable name on the clip you want to rename and press RETURN to finish naming and RETURN again to rename the clip. Press ESC(ape) to abort the naming process on the computer keyboard (or EXIT on the DL's front panel).

### CLIP INFO PAGE

The INFO key takes you to a page where you may see information regarding the selected clip. The INFO page looks something like this:

<b>CLIP INFO</b>	Name: THUNDER 1	Disk: 0
	Clip length : 00:00:04:03.6	
	Number of tracks : 2	
This is a stereo thunder clap SFX.		
<input type="button" value="PLAY CLIP"/>		<input type="button" value="ADD COMMENT"/>

The name of the clip under scrutiny is displayed on the top line as is its disk number. The CLIP LENGTH field shows the total length of the clip from start to finish. The NUMBER OF TRACKS field shows the number of tracks the clip uses. In this case, you can see that the clip is stereo - when you come to insert this into a project, you would ideally need to enable two tracks to accommodate (although you could just insert one side of the stereo image onto one track if track space is at a premium).

Underneath this is a 'comments' box where you may enter a comment of up to 38 characters. To enter a comment, press the ADD COMMENT soft key and type in a suitable comment. The EXECUTE key will flash and you should press this to enter the comment.

The PLAY CLIP key allows you to audition the clip - you may find this useful if you are unsure what the clip is and you can audition it prior to giving it a suitable comment.



**COPYING CLIPS BETWEEN LIBRARIES**

You can copy clips to other libraries. This may be useful in the case where you use a library called, for example, MISC as a kind of dumping ground for clips that you copy from projects and then wish to organise later. To copy or move a clip, first select the clip you wish to copy using the cursor keys. When the cursor is highlighting the clip you wish to copy, press F5 - UTILS. You will receive this screen:



To copy a file, press F5. The EXECUTE key will start flashing and you will receive this screen:



Press the flashing EXECUTE key to copy the clip (or EXIT to abort the copy). You will be returned to the original library you were in and you will receive the following pop-up prompt to indicate the file has been successfully copied:



You may repeat the process. The way the copying works is that after you have copied a clip to another library once, when you use copy again, the DD1500 automatically selects that library next time you copy a clip and then returns you back to your original library after the copy has been done. In this way, you can copy clips from one library to another very quickly. For example, if you have some jingles in a library called MUSIC you wish to copy to another new library called JINGLES, first, create a new library and call it JINGLES in the main DIRECTORY page. Now open the MUSIC library, select the first clip you want to copy, F5 (UTILS) F5 (COPY) and select the JINGLES library followed by EXECUTE. You will be returned to the MUSIC library, select the next jingle, press UTILS, COPY, EXECUTE. Select the next jingle and press UTILS, COPY, EXECUTE. And so on...

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### MOVING CLIPS TO OTHER LIBRARIES

When you copy a clip across to another library using COPY, the original clip is still in the 'source' library. You may wish to move a clip from one library to another, removing it from the source library and placing it in the destination library. This is done using MOVE.

To move a clip, select the clip you want to move and press UTILS (F5):

```
Select      DELETE COPY MOVE
```

Press MOVE (F6). You will receive this screen display:

```
MOVE CLIP  List of libraries on Disk: 0
ANIMALS    || Assrtd FX      || Cars, etc.  ↑
Crashes    || Crashes 2       || Demo Lib 1
Demo Lib 2 || Demo Lib 3     || Ext Atmos
Foley 1    || Misc SFX       || Music cues  ↓
Select library to MOVE clip to...
```

You will be taken back to the main DIRECTORY list and you should select the library you wish to move the clip to and press the flashing EXECUTE key. This will move the clip to that library. You will be returned to the original library you moved the clip from and you will receive this screen:

```
CLIPS Library Name : Demo Lib 1 Disk: 0
THUNDER 1  THUNDER 2  Lightning  ↑
RAIN FX 1  is Thund
Rainloop   RINDROPS
RAIN+WIND  IND HOWL  ↓
INFO      PLAY CLIP UTILS CLOSE
```

This indicates that the clip has been successfully moved to the other library. As with copy, you can repeat the process and the 'source' and the 'destination' libraries remain selected so that you can move clips between the two very quickly.

### DELETING CLIPS

It is also possible to delete clips in the library. To do this, press UTILS (F5) to receive this display at the bottom of the LCD:

```
Select      DELETE COPY MOVE
```

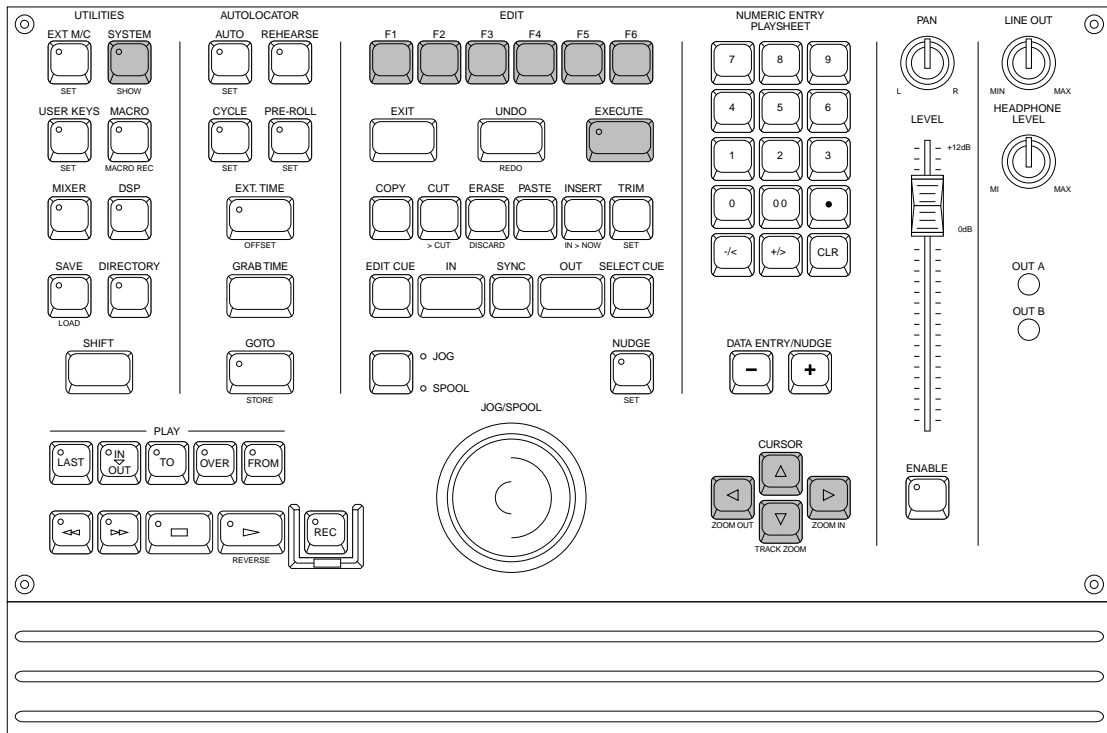
Select the clip you wish to delete and press DELETE (F4). You will receive this prompt:

```
Delete selected clip? NO UNDO!!
```

As the prompt informs you, there is no UNDO for this so proceed with caution. The EXECUTE key will be flashing and you should press this to delete the selected clip or EXIT to cancel the operation.

**NOTE:** When you delete a clip in the library page, the audio itself is not actually deleted and so no extra free disk space is created. The reason for this is that other clips may be referring to the same bit of audio and deleting it now would corrupt other clips. Another reason is that it would take some time to delete the audio and would slow your work down quite considerably. If you delete clips from the library and you wish to free up any disk space, it is probably best if you run the CLEANUP or MINIMISE routine in the SYSTEM - DISK pages at the end of your session.

## 22 - SYSTEM - TIMECODE GENERATOR



In this section, we will have a look at the SYSTEM functions we skipped earlier.

Pressing SYSTEM displays this screen:

```

SYSTEM      Rate : 44.1kHz
              Wordsync : INTERNAL CLOCK
EXT. TIME source : SMPTE 24fps
Time generator : SMPTE Regenerate
Generate : OFF
Time display : as EXT. TIME source
BIPHSE I/O | MIDI | DISK | O/S
    
```

Here, we see the main SYSTEM setup page where you may set certain parameters that affect the DD1500's performance. We have seen these previously in the section SYSTEM SETTINGS. We will now look at other SYSTEM functions.

### BI-PHASE SETUP

Pressing F1 displays this screen:



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

#### MAXIMUM SPEED

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.

#### TIME TO MAX SPEED

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.

When using bi-phase, it is necessary to set the relative start of the film against the audio on the DD1500. This is done by locating the film to the very first frame and then locating the DD1500 to the start of the audio and pressing either of the RESYNC softkeys.

When the DD1500 is acting as a bi-phase master, RESYNC GEN this will reset the DD1500's bi-phase generator to zero and from then on, the film player will count the bi-phase pulses and all sync will be relative to that start point.

When the DD1500 is acting as a bi-phase slave, pressing RESYNC RCV will set an offset and the DD1500 will count incoming bi-phase pulses and calculate its position accordingly.

To leave the BI-PHASE SETUP page, press EXIT. You will return to the main SYSTEM SETUP page.

### I/O PAGES

This key gives access to setting up the DD1500's various inputs and outputs. Pressing F2 (I/O) displays this screen:

I/O - GPI	Active	Function
GPI 1	OFF	PLAY
GPI 2	OFF	PLAY
GPI 3	OFF	PLAY
GPO AUDIO VIDEO		

### GPI

On the rear of the DD1500m is a 9-pin D-sub connector that offers three GPIs and five GPOs (General Purpose Outputs). These may be used for a variety of purposes. For example, the GPIs may be used with a very simple play only remote offering no more than PLAY, RECORD and STOP for use without a DL1500 and where the DD1500 is located using external timecode.

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

**GPI1/2/3**                      These select which GPI you will affect.

**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 TTL signal is received at the GPIinput. When set to LOW, the selected function will become active when a 0V TTL signal is received.

**FUNCTION**                      Here you may assign a range of DD1500 functions to the GPIs. These include:

**PLAY** - When a TTL pulse is received, the DD1500 will start playback.

**STOP** - When a TTL pulse is received, playback will stop.

**FAST FORWARD** - When a TTL pulse is received, the DD1500 will fast forward.

**REWIND** - When a TTL pulse is received, the DD1500 will rewind.

**RECORD** - When a TTL pulse is received, the DD1500 will start recording.

**PLAY TO** - When a TTL pulse is received, the DD1500 will play to the current NOW time.

**PLAY OVER** - When a TTL pulse is received, the DD1500 will play over the current NOW time.

**PLAY FROM** - When a TTL pulse is received, the DD1500 will play from the current NOW time.

**PLAY IN TO OUT** - When a TTL pulse is received, the DD1500 will play from the selected IN point to the selected OUT point.

**PLAY LAST** - When a TTL pulse is received, the DD1500 will play the last thing played.

PLAY BACKWARDS - When a TTL pulse is received, the DD1500 will play backwards.

GRAB IN MARK - When a TTL pulse is received, it will mark an IN point.

GRAB SYNC MARK - When a TTL pulse is received, it will mark a SYNC point.

GRAB OUT MARK - When a TTL pulse is received, it will mark an OUT point.

RESET BIPHASE - This will reset the biphaser receiver.

TOGGLE EXT.TIME - When a TTL pulse is received, it will switch on the EXT. TIME key.

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 DD1500 (for example, a dialogue recording looping recorder). Some mixing consoles have simple transport controls which could be wired for simple remote control of a DD1500. Many possibilities.

Press EXIT to leave this page. You will be returned to the main SYSTEM SETUP page.

**GPO**

Pressing F1 - GPO - gives this screen:

I/O - GPO	Active	Function
GPI 1	OFF	PLAYING
GPI 2	OFF	PLAYING
GPI 3	OFF	PLAYING
GPI 4	OFF	PLAYING
GPI AUDIO VIDEO		

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

- GPO1-4                      This selects which GPO you are setting.
  
- 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, will send out a +5V TTL signal. When set to LOW, the GPO is normally high +5V) and sends out a 0V TTL signal when the selected function is activated.
  
- FUNCTION                    A variety of functions may be applied to the GPOs. These are:
  - PLAYING - The DD1500 will send out a TTL pulse when PLAY is pressed.
  - STOPPED - The DD1500 will send out a TTL pulse when STOP is pressed.
  - LOCATING - The DD1500 will send out a TTL pulse when locating to a timecode position.
  - RECORDING - The DD1500 will send out a TTL pulse when RECORD is pressed.

EXT TIMECODE OK - The DD1500 will send out a TTL pulse when external timecode is being successfully received.

EXT WORDCLOCK OK - The DD1500 will send out a TTL signal when external wordclock is being successfully received.

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 to leave this page. You will be returned to the main SYSTEM SETUP page. You can go back to the GPI page by pressing F1 again.



**AUDIO**

The AUDIO soft key (F2) allows you to set certain parameters relating to the audio outputs. Press AUDIO will give you this screen:

```
DIGITAL OUTPUT FORMAT
Individual : PROFESSIONAL
Mix OUT A : PROFESSIONAL
Mix OUT B : PROFESSIONAL
DE-EMPHASIS
```

In this page, you may set the output format for the digital audio outputs. The INDIVIDUAL field allows you to set the format for the individual digital outputs 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 DD1500's digital audio receivers can automatically detect the format and adjust accordingly.*

The DE-EMPHASIS softkey (F1/F2) will display this screen:

```
OUTPUT DE-EMPHASIS
Individual : OFF
Mix OUT A : OFF
Mix OUT B : OFF
DIGITAL OUT
```

Here, you may switch de-emphasis on or off for the individual outputs or the MIX A/B outputs.

Some digital recordings have pre-emphasis applied to them. These recordings have a slight HF boost which needs to be cut (de-emphasised) during playback. This page allows you to switch de-emphasis on or off as appropriate.

**NOTE:** *If you are using a mixture of 'normal' digital recordings and pre-emphasised recordings, please note that if any of the outputs have de-emphasis applied, 'normal' recordings will sound a bit dull - this is because de-emphasis (i.e. HF cut) is being applied to all recordings. The pre-emphasised recording will playback correctly. If, however, you leave de-emphasis off, the 'normal' recording will playback properly but the pre-emphasised recordings will sound a bit bright.*

### VIDEO TEXT GENERATOR

The DD1500 has a video text generator which will show certain status conditions on an external video monitor and this is set in the VIDEO page. Pressing VIDEO will show this screen:

VIDEO TEXT	Type: PAL	Mode: Generate	
	Show?	X	Y
Transport	YES	0	0
Time	YES	0	0
Free on disk	YES	0	0

You may setup how information will be displayed on the video monitor. The parameters are:

TYPE	Allows you to select PAL or NTSC.
MODE	Allows you to select GENERATE or SUPERIMPOSE.
TRANSPORT	You may select whether the DD1500's transport status will be displayed on the monitor .
TIME	You may select whether the DD1500's now time will be displayed on the monitor .
FREE ON DISK	You may select whether the amount of free space for recording will be displayed on the monitor.

The SHOW? column sets the status for the TRANSPORT, TIME and FREE ON DISK fields and are switchable YES or NO.

The X and the Y columns allow you to plot the messages' co-ordinates on the monitor and you may lay them out as you like according to your requirements.

Sometimes, it is useful to have the DD1500's status displayed on a video monitor (especially when the DD1500 is being used as an RS422 slave without a DL1500 connected) and the video monitor can display the transport status (play, rewind, stop, record, etc.) as well as show the DD1500's timecode position and how much time is free on disk.

It is also possible to have the text superimposed onto the picture of the video you are working on. To do this, connect the output of your VTR to the VITC/SYNC (B) input and the video monitor to the SUPER video BNC. The video signal will pass through the DD1500 and text will be superimposed on the picture.

Once you have set the video text generator, you should save the system settings to FLASH ROM (i.e. press SAVE - SETTINGS - FLASH ROM - EXECUTE). Failure to save the setting will mean you must re-configure this page every time you want to use the DD1500's video text generator. If the DD1500m is being used as an RS422 slave, it is likely that a DL1500 will not be connected to allow for this and so the settings must be saved to FLASH ROM. For example, if a DD1500m is to be used as an RS422 Slave, set the parameters for the VIDEO TEXT generator with a DL1500 connected and save the System Settings to Flash ROM. The DL1500 may now be removed from the system and it will automatically boot up with these parameters set when you switch the system on as an RS422 Slave to be controlled by a video editor.

**MIDI FUNCTIONS - TEMPO MAPS**

The DD1500 allows you to create tempo maps for use when synchronising to MIDI sequencers. The function is accessed in SYSTEM via the MIDI key (F3). You will see this screen display:

TEMPO MAP		SONG 01		Start:00:00:00.00	
Step	Type	Value	Time		
1	T. Sig	4/4	001:01:00		
2	Tempo	120.0 BPM	001:01:00		

RESET START    ADD    LOCATE    DELETE

The DD1500 can act as a master to a sequencer synced to the DD1500 using MIDI Time Code (MTC) or MIDI clock with Song Position Pointer (SPP). Of these two options, MTC is recommended for more accurate synchronisation as this is timecode via MIDI although if your sequencer does not have MTC, MIDI clock with SPP is a perfectly good way to synchronise your sequencer to the DD1500.

The principle behind a TEMPO MAP on the DD1500 is that the DD1500 can issue tempo changes and changes in time signature to the sequencer as part of a project. Without this, any variation of tempo in the recorded material on disk would not be passed to the sequencer and the two machines would very quickly drift out of sync. By placing tempo changes and time signature changes at the appropriate point, the sequencer can follow the DD exactly. To achieve this, of course, your sequencer must be set to external sync so that the DD1500 is in control of its tempo and time signature. THE DD1500 MUST BE SET TO GENERATE MIDI SPP. This is done in the SYSTEM-TIME GENERATOR field.

<b>SYSTEM</b>	Rate :	44.1kHz
	Wordsync :	INTERNAL CLOCK
EXT. TIME source :	SMPTE 24fps	
Time generator :	MIDI SPP	
Generate :	ON	
Time display :	MIDI B/B/C	
<b>BIPHSE</b>	<b>I/O</b>	<b>MIDI</b>
	<b>DISK</b>	<b>O/S</b>

The timecode generator must be switched on in the GENERATE field to drive the sequencer (you could also use VIA EXT M/C KEY or VIA EXT TIME KEY so that you can disable the sequencer locally from the DD1500). Also when working with MIDI sync in this way, it is recommended you use the MIDI BBC (bars/beats/clocks) time display style set in the TIME DISPLAY field.

**NOTE:** When MIDI B/B/C is selected as the TIME DISPLAY style, this will have implications on functions elsewhere on the DD1500.

For example, if you use NUDGE, the DATA ENTRY +/- keys will nudge in beats and the numeric keypad +/- keys will nudge in clocks (if you need more accurate nudge amounts, select an H/M/S time display). The number of beats/bars you nudge by can be set in the NUDGE SET page.

GOTO also changes slightly when MIDI B/B/C is selected in that you may go to a specific bar/beat as well as to time and/or a locate memory.

You will also note that the PLAY TO, OVER and FROM work in bars and beats (the exact amount may be set by pressing SHIFT+PLAY TO, OVER or FROM)

PRE-ROLL and CYCLE PRE-ROLL are also expressed in bars when MIDI B/B/C is selected as the time display.

## 22 - SYSTEM - MIDI

---

The DD1500 can store up to 10 tempo maps in memory. These are associated with any given project and are saved to disk with the project (typically, you will probably only ever make use of SONG 01 as the tempo map for your project). A tempo map can have up to 200 tempo changes and up to 20 time signature changes.

Tempo maps may be named (up to 6 characters<sup>5</sup>) in the usual way.

---

5 This is to maintain compatibility with the Akai DR8 which can only use a 6 character name.

**CREATING A MIDI TEMPO MAP**

To create a tempo map, use SONG 01 as the starting point. You will see that there is a tempo and t.sig (time signature) entry at the start of the song. These determine the map's starting tempo and cannot be deleted. You may edit them, however, to something more suitable simply by moving the cursor to the VALUE field and entering the tempo and time signature as appropriate.

The first thing you should do when creating a tempo map is identify the start of the song and reset the start time so that the song starts at bar 1, beat 1, clock 1 (this may be before or after a count in as you wish). Locate to the start of the song and carefully jog over it until you have the exact start point. Now press RESET START in the TEMPO MAP page. You will see this prompt:

```
Press EXECUTE to Reset Song Start Time
```

Press EXECUTE to set the song start, EXIT to cancel. All tempo changes and/or time signature changes you enter into the map will now be referenced to that song start point. Failure to mark the song start correctly will mean that tempo changes and time signature changes will not appear at the right point and so may cause sync problems with your sequencer.

After that, to build more steps into the map, first play/spool/jog/whatever to the point where you want the first change to be and press the ADD key (F3) - this will show this prompt:

```
Add step to song map? TEMPO T.SIG
```

You should respond accordingly, press F5 to add a tempo change or F6 to add a time signature change. Pressing F5 will show this prompt:

```
Press EXECUTE to add new Tempo
```

You may abort this by pressing EXIT.

Pressing F6 will show this prompt:

```
Press EXECUTE to add T.Sig at Bar 3
```

Again, press EXIT to abort.

**NOTE:** Because time signature changes can only occur at the start of a bar, adding a t.sig step will place it at the nearest bar boundary.

The cursor will automatically be placed on the step you have just created and you may edit it's value (the default step value for tempo is 120.0 BPM and for t.sig it is 4/4 - these should be edited as appropriate).

When you add tempo changes and or time signature changes to your map, you will note that these are shown on the 'locate bar' of the GRID:

```
T B
```

A 'T' is shown to indicate the position of a tempo change and a 'B' (beat) is shown to indicate the position of a change in time signature.

**NOTE:** When you are zoomed in vertically on the GRID, when you add a t.sig step, you may not see the 'B' appear. This will be because the bar boundary is off the screen. When you zoom out, you will see it.

Continue adding tempo changes and new time signatures as you need through the project.

You will note that as you add steps to the tempo map, once you exceed four steps, two up and down arrows will appear to indicate that there are steps 'above' and 'below' the screen:

Step	Type	Value	Time	
↑	4	T. Sig	4/4	032:01:00
	5	Tempo	120.0 BPM	032:01:00
	6	Tempo	119.0 BPM	034:01:00
↓	7	Tempo	121.0 BPM	046:01:00

RESET START ADD LOCATE DELETE

Use the cursor UP/DOWN keys to scroll through your tempo map.

### DELETING TEMPO MAP STEPS

If you make a mistake or wish to delete any steps in the map, move the cursor to the step you wish to erase and press F6 - DELETE. As a precaution against accidentally deleting steps, you will receive this prompt:

```
Press EXECUTE to delete step
```

Press EXECUTE to delete the selected step or EXIT to abort.

### LOCATING TO STEPS

You may use LOCATE - F4 - to go directly to steps in the tempo map. Simply move the cursor to the step you wish to locate to and press LOCATE followed by EXECUTE (EXIT to abort, of course).

Once you have constructed a tempo map, save it by saving the project using the SAVE key in the usual way.

**MIDI MIXER FUNCTION**

MIDI controllers are now assigned to the DD1500's mixer channels. Remote control of the DD's mixer is therefore possible using dedicated MIDI controllers and/or the mixing functions found in many sequencers. In fact, by sending data from a sequencer, automated mixing is therefore possible on the DD1500.

The MIDI control of the DD1500's mixer is switched on by pressing SHIFT+MIDI (F3) in the SYSTEM page. You will see this temporary message:

MIDI control of mixer enabled

The mixer channels respond to controllers #7 (volume) and #10 (pan) with MIDI channels 1-16 corresponding to tracks 1-16 on the DD1500. If you are using a MIDI control surface, it should be programmed accordingly (please see the unit's operator's manual for details on this). The status of the mixer (i.e. enabled or not) is saved with the project.

***NOTE:*** *If you have the DD1500's MIX page open, the graphic depiction of the level and pan controls will move as the mixer is remotely controlled over MIDI.*

Please see the section UTILITIES - MIXER - 19 for details on automating the DD1500's mixer with an external MIDI sequencer.

### DISK MANAGEMENT

The SYSTEM - DISK pages are where you do your disk management routines such as deleting unwanted files and unused audio, renaming files, etc.. You may also format disks, copy files from one disk to another and back up disks to tape.

Pressing DISK will show something like this display:

```
DISK      File type : PROJECTS      Disk: 0
Project 1 || Project 2 || Project 3 ↑
Scene 5   || Scene 6   || Scene 7
Traffic  || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || U1 Proj  || U2 Proj 3 ↓
PRINT BACKUP UTILITIES COPY DELETE
```

You can see a list of the projects currently on disk 0. Only two fields exist on this page and are to be found on the very top line of the LCD. The fields are:

**FILE TYPE** Here you can select the type of file you wish to view, rename and/or delete. You may select PROJECTS, LIBRARIES and SETTINGS.

If there is a long filelist, arrows will appear to the right of the screen to indicate that there are files 'below' or 'above' the screen that you may access.

**DISK** Here you may select the disk drive you wish to look at and work on.

Files are selected by moving the cursor keys around the list and they are highlighted when selected.

The soft keys are in DISK are:

**PRINT** You may printout a list of files on disk. We shall look at the printing functions later.

**BACKUP** Allows you to backup disks to DAT or SCSI tape.

**UTILITIES** Offers a variety of disk utilities for disk management.

**COPY** Allows you to copy items from one disk to another

**DELETE** Allows you to delete items from the currently selected disk.

The first we shall examine are the disk copying functions:



**COPYING FILES/DISKS**

It is possible to copy data from one disk to another. You may copy individual projects and libraries or copy the whole disk. Pressing COPY FILE (F3/F4) will give you this screen:



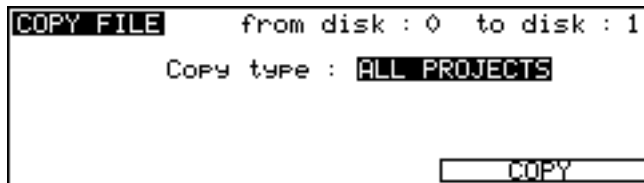
The parameters are:

- FROM DISK                      Here you may select the 'source' disk you are copying from.
- TO DISK                        Here you may select the 'destination' or 'target' disk you are copying to.
- COPY TYPE                      You may select the type of file you wish to copy in this field. You may select:
  - SINGLE FILE - this will copy a specific file as shown in the FILE TYPE and FILE NAME fields.
  - 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.**

- FILE TYPE                      When SINGLE FILE is selected, you may select the type of file you wish to copy (i.e. PROJECT, LIBRARY or SETTINGS) in this field.
- FILE NAME                      This parameter allows you to select the file you wish to copy.

**NOTE 1:** When ALL PROJECTS or ALL LIBRARIES is selected in the COPY TYPE field, the FILE TYPE and FILE NAME fields are not shown:



**NOTE 2:** You cannot copy single CLIPS. Clips are copied and moved around within the DIRECTORY and LIBRARY pages. If you are desperate to copy just one clip to another disk, first copy or move the clip to a new library and copy that library to the other disk.

**NOTE 3:** 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!

## 22 - SYSTEM - DISK

---

Pressing F5/F6 initiates the COPY process. You will receive this prompt:

```
Copy disk 0 to disk 1?
```

The selected source and the target disks are shown. The EXECUTE key's LED will flash and you should respond accordingly, pressing EXECUTE to confirm or EXIT to cancel. During the copying process, the bottom line of the LCD will show something like this display:

```
Copying PROJECT 1..(Press EXIT 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 but 48 x 15 second cues).

At any time, you may press the EXIT 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 EXIT. This may take a second or two.*

If you try to copy a project or library to another disk and a project or library of exactly the same name exists on the target disk, you will receive this prompt:

```
File exists on target disk!! Overwrite??
```

As this will erase the project and all its audio on the target disk, you are given a second level of prompting for safety's sake:

```
COPY FILE      from disk : 0  to disk : 1
*** WARNING ***
This will overwrite the project and its
audio! Be careful before proceeding!!
Are you sure? NO UNDO!
```

The EXECUTE key will flash and you should respond accordingly pressing EXECUTE to proceed and EXIT to cancel but please be careful because, as the prompt advises, it is not possible to undo this action.

The same process is used for disk duplication.

You may leave the COPY FILE page at any time by pressing EXIT.

**\*\*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 3 a 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.

The same is true when copying libraries.

### DELETE

In the main disk page, you can delete projects and/or libraries depending on the selection made in the FILE TYPE field. First select the type of file you wish to delete in the FILE TYPE field and then move the cursor to the file you wish to delete. Pressing DELETE will give you this prompt:

```
Delete selected file? NO UNDO!!
```

The EXECUTE key's LED will be flashing and you should press EXECUTE (YES) or EXIT (NO/CANCEL) accordingly. As the prompt tells you, there is no undo for this so please check carefully that the correct file is selected for deletion before proceeding. If in any doubt at all, press EXIT to abort.

If you press DELETE (F5/F6) and the cursor is not on a file (i.e. it is on the DISK or FILE TYPE fields), the screen will pop-up the prompt:

```
DISK File type : PROJECTS Disk: 0
Project ject 3 ↑
Scene 5 ne 7
Traffic PROJ 2
TV PROJ Proj 3 ↓
PRINT BACKUP UTILITIES COPY
```

This prompt will appear for a few seconds. You should move the cursor to the file you wish to delete and press F5/F6 (DELETE) again.

If you try to delete a project that is currently loaded into the DD1500, you will receive this prompt:

```
DISK File type : PROJECTS Disk: 0
Project ject 3 ↑
Scene 5 ne 7
Traffic PROJ 2
TV PROJ Proj 3 ↓
PRINT BACKUP UTILITIES COPY
```

You should either load another project or create a new one and then return to the DISK page to delete the project you originally wanted to delete.

If you have deleted any files, when you leave the DISK page, you will receive this prompt:

```
Files have been deleted. Cleanup disks?
```

When a project or library is deleted, the audio associated with it is not deleted at the point of deletion. This may seem a bit odd but the reason for this is that if audio was deleted when you pressed EXECUTE, every time you delete a file, the system would have to go through a lengthy search process to check if the audio associated with that file is referenced anywhere else (i.e. in other projects and/or libraries) and this could take some time.

As a result, to make the deletion process quick, only the file itself is deleted. Then, when you come to leave the DISK page, you are offered the choice of 'cleaning' up the disk. What this means is that the DD1500 will search any connected disks and look to see if the audio associated with the files you have deleted is used anywhere else. If any part of it is referenced by any other projects and/or libraries, the audio will not be deleted. If, however, the audio associated with the file(s) you have deleted is not used by any other project and/or library, the audio will be erased from disk, thus freeing up extra disk space.

To save yourself some time, if disk space is not a problem, you can choose to ignore this prompt by pressing EXIT and you can come back to this when it's more convenient. If you wish to proceed and erase any unreferenced audio, press the flashing EXECUTE key (see later - CLEANUP DISK).

**RENAMING FILES**

It is also possible to rename files in the main DISK page by pressing the NAME key. You will receive this prompt:

Enter name, then press EXECUTE

The NAME key will flash and you should enter a ten character name using the top panel TRACK SELECT keys. Press EXECUTE to complete the name and EXECUTE again to rename the file.

If you are using a computer keyboard, there is no need to press the NAME key. Simply move the cursor to the file you wish to rename and start typing to enter a name. Press RETURN to complete the name and RETURN again to enter the name. Press ESC(ape) to abort the naming process on the computer keyboard (or EXIT on the DL's front panel).

If you press the NAME or you start typing on the PC keyboard and the cursor is not on a file (i.e. it is on the DISK or FILE TYPE fields), the screen will pop-up the prompt:

```

DISK      File type : PROJECTS      Disk: 0
Project   ject 3      ↑
Scene 5   ne 7
Traffic   PROJ 2
TV PROJ   Proj 3      ↓
Please select a file
to rename
PRINT BACKUP UTILITIES COPY DELETE
```

This prompt will appear for a few seconds. You should move the cursor to the file you wish to delete and press NAME again or start typing the name on the external keyboard.

If you try to rename a project that is currently loaded into the DD1500, you will receive this prompt:

```

DISK      File type : PROJECTS      Disk: 0
Project   ject 3      ↑
Scene 5   ne 7
Traffic   PROJ 2
TV PROJ   Proj 3      ↓
File in use
PRINT BACKUP UTILITIES COPY DELETE
```

You should either load another project or create a new one and then return to the DISK page to rename the project you originally wanted to rename.

### BACKING UP YOUR WORK

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 DD1500 allows you to backup the contents of your disk(s) to SCSI tape drives via the SCSI connection or to an ordinary DAT machine via the digital i/o. These are accessed by pressing BACKUP (F2) in the DISK page.

When you press BACKUP, you will see this screen::

```
DISK      File type : PROJECTS   Disk: 0
Project 1 || Project 2 || Project 3 ↑
Scene 5   || Scene 6   || Scene 7
Traffic  || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || U1 Proj  || U2 Proj 3 ↓
Device:   AUDIO DAT  SCSI TAPE
```

You should select the device you wish to backup to - AUDIO DAT or SCSI TAPE.

### BACKING UP TO SCSI TAPE DRIVES

Assuming you press SCSI TAPE, you will be taken to this screen:

```
SCSI BACKUP
          Title : Backup
          From disk : 0
          To SCSI tape : 0
          Backup type : SELECTED FILES
FORMAT VERIFY | SELECT FILES | RESTORE
```

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 done using the FORMAT key.

To format the tape, select the appropriate SCSI ID for the tape drive in the TO SCSI TAPE field. As with disk drives, the tape drive must not share the same SCSI ID as any other SCSI device on the buss. Once selected, press the format key. 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 SHIFT+EXECUTE 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 DD1500 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 EXIT 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 you Akai 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 TO SCSI TAPE field. Please take the appropriate steps.*

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---

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 in the event of you archiving several different backups to tape. Naming is done in the usual manner either by pressing NAME and entering a ten character name using the track select keys or by typing on the external PC keyboard if connected. If you do not specifically give it a name, the default name BACKUP will be used.
FROM DISK	This selects the disk that will be backed up to the SCSI tape drive.
TO SCSI TAPE	This selects the SCSI ID of the tape drive.

**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 F3/F4, select specific files to backup. These may be projects or libraries.
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.

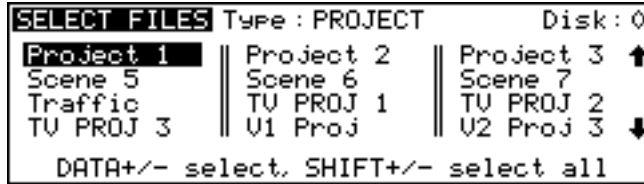


**BACKING UP SELECTED FILES**

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

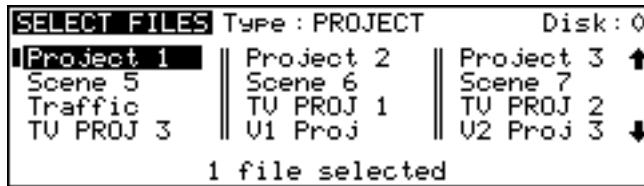


To actually select the files, press SELECT FILES (F3/4). You will see something like this screen:



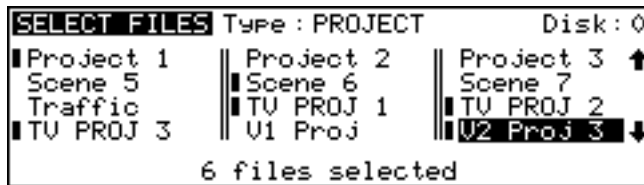
You can select PROJECT or LIBRARY in the TYPE field, You may select a disk to backup in the DISK field.

To select the file you wish to backup, move the cursor to the file name and press the DATA + key. 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 bottom 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. For example, by moving the cursor to different file names and pressing the DATA + key, you may end up with something like this:



In this example, PROJECT 1, TV PROJ 3, SCENE 6, TV PROJ 1, TV PROJ 2 and V2 PROJ 3 are all selected for backup. The bottom of the LCD shows how many files are selected.

As in other disk pages, arrows appear to indicate files that are 'off-screen'. Use the CURSOR UP/DOWN keys to scroll through the list.

You may also select ALL the files shown on this page simply by pressing SHIFT and the DATA + key.

**NOTE:** This is the same as selecting the ALL PROJECTS or ALL LIBRARIES or ALL PROJS&LIBS option in the SCSI BACKUP TYPE field. However, whilst this may seem like an unnecessary duplication of a function, it might be useful if you want to backup all projects except one or two - i.e. press SHIFT and DATA + and then use DATA - to de-select those few files which you do not wish to backup. On a busy disk with many projects/libraries to backup, this may be more convenient than individually 'marking' every file you want to backup.

Files selected by mistake can be de-selected using the DATA - key. For example, moving the cursor back to SCENE 6 on this example and pressing the DATA - key would de-select it:

```
SELECT FILES Type : PROJECT          Disk : 0
Project 1 || Project 2 || Project 3 ↑
Scene 5   || Scene 6   || Scene 7
Traffic  || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || U1 Proj  || U2 Proj 3 ↓
5 files selected
```

At the point you press DATA -, you will see the number of files selected decreases by one (in this case, only 5 files are now selected).

Once you have selected the file(s) you want to backup, press EXIT 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 flashing EXECUTE key. All the projects and/or libraries on the disk selected in the FROM DISK 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 flashing EXECUTE key. You will see this screen:

```

BACKUP IN PROGRESS
  Preparing tape
  Please wait!
  (EXIT to abort)
  
```

Here, the DD1500 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:

```

BACKUP IN PROGRESS
  A backup of the same name exists
  on this tape. Please insert a
  new tape or choose a different name.
Select  ABORT  CONTINUE
  
```

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

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

Assuming everything is ok, the DD1500 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 this something like this screen as the backup takes place:

```

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

The DD1500 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
  Title : Backup
  To Backup complete
  Ba      FILES
FORMAT VERIFY | SELECT FILES | RESTORE
```

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 followed by EXECUTE. You will see this screen:

```
SCSI BACKUP
          Press EXECUTE to verify
          the entire backup.
          ES
Verify backup?
```

You should press EXECUTE to continue, EXIT 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
          (EXIT to abort)
```

You may abort the process at any time by pressing the EXIT 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'.

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### RESTORING A BACKUP

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

```
DISK      File type : PROJECTS    Disk : 0
Project 1 || Project 2 || Project 3 ↑
Scene 5   || Scene 6   || Scene 7
Traffic   || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || V1 Proj   || V2 Proj 3 ↓
Device:   AUDIO DAT | SCSI TAPE
```

Select SCSI TAPE. You will see this screen:

```
SCSI BACKUP
Title : Backup
From disk : 0
To SCSI tape : 0
Backup type : SELECTED FILES
FORMAT|VERIFY|SELECT FILES|RESTORE
```

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

```
SCSI RESTORE
Title : Backup
To disk : 0
From SCSI tape : 0
Restore type : SELECTED FILES
SELECT TITLE|SELECT FILES|BACKUP
```

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

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

## PERFORMING A RESTORE

To perform the restore, select the disk you wish to restore to. Of course, make sure the correct SCSI ID is set for the tape drive in the RESTORE FROM field.

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 EXECUTE to start the restore. If a name other than the default was used, if you know the EXACT name (bearing in mind upper and lowercase characters and spaces, etc.), type the name in the TITLE field. If you are not sure what is on the tape, press SELECT TITLE (F1/F2) to see the names of the backups on the tape. Pressing SELECT TITLE will show this screen:

```
SCSI RESTORE
  Press EXECUTE to search
  the tape for backup titles.
  This may take several minutes.
Search tape for backup titles?
```

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 EXECUTE to continue. You will see this screen:

```
SEARCH IN PROGRESS
  Please wait!
  (EXIT to abort)
```

After a while, you will be taken to this screen:

```
SELECT FILES TO RESTORE
Animals Lb      5 files
Atmos  Lb      24 files
Final Mix      16 files
  EXIT to cancel/EXECUTE to select
```

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. Move the cursor to the one you want to restore and press EXECUTE. The backup will be selected and you will be taken back to the main SCSI RESTORE page:

```
SCSI RESTORE
  Title : Animals Lb
  To disk : 0
  From SCSI tape : 4
  Restore type : SELECTED FILES
SELECT TITLE | SELECT FILES | BACKUP
```

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 EXECUTE. 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 DD1500 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

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---

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.

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:

```
SCSI RESTORE
-----
Press EXECUTE to read the directory
for backup "Animals LB"
from the tape.
Read backup directory from tape?
```

The DD1500 needs to read the directory on the tape to know what files are contained in it. Press EXECUTE to proceed (or EXIT to cancel). You will see this screen:

```
SEARCH IN PROGRESS
-----
Reading directory from tape.
Please wait!
(EXIT to abort)
```

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

```
SELECT FILES Type : PROJECT
-----
Project 1 || Project 2 || Project 3 ↑
Scene 5 || Scene 6 || Scene 7
Traffic || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || U1 Proj || U2 Proj 3 ↓
DATA+/- select, SHIFT+/- select all
```

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 DATA + key. A small block will appear alongside the filename to indicate that it has been selected:

```
SELECT FILES Type : PROJECT
-----
|Project 1 || Project 2 || Project 3 ↑
Scene 5 || Scene 6 || Scene 7
Traffic || TV PROJ 1 || TV PROJ 2
TV PROJ 3 || U1 Proj || U2 Proj 3 ↓
1 file selected
```

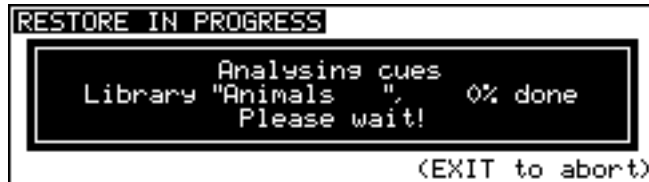
The number of files selected for restore will be shown. Continue to mark the files you wish to select in this way. Press EXIT to return to the main SCSI RESTORE page.



Regardless of the type of restore you have selected<sup>6</sup>, the process is initiated by pressing the EXECUTE key. You will see this screen display:



Followed by this screen:



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



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:



What the DD1500 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 DD1500 has to do (i.e. how many different places the audio you have restored is used).

Finally, you will see this screen display:



6 There is a difference when ENTIRE BACKUP is selected. This will be explained later.

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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:



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



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 or library \*\*  
There is no means to retrieve or salvage it once it has been overwritten.**

**RESTORING THE ENTIRE BACKUP**

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

```
SCSI RESTORE
      Title : Animals Lb
      To disk : 0
      From SCSI tape : 4
      Restore type : ENTIRE BACKUP
Erase disk 0 first?  NO  YES
```

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

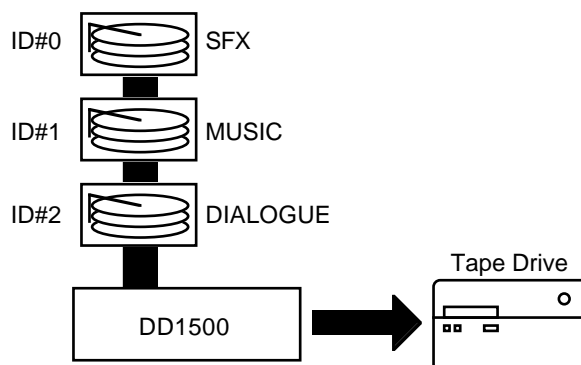
**\*\*\* BE VERY CAREFUL WITH YOUR SELECTION \*\*\***

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

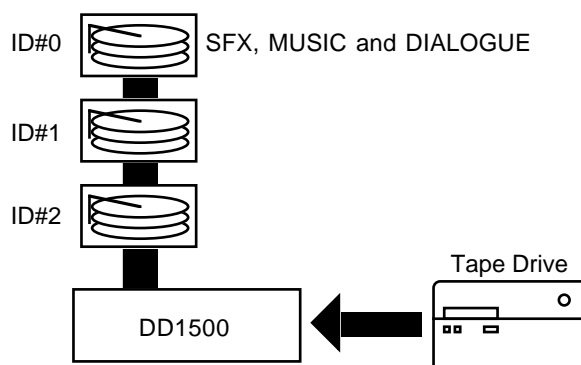
### NOTES ABOUT BACKUP/RESTORE

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 DD1500 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 DD1500 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.

**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..

**ARCHIVING DATA TO DAT**

Selecting AUDIO DAT in the BACKUP page takes you to this page:

```

ARCHIVE TO DAT
From disk : 0
Archive type : SINGLE FILE
File type : PROJECT
File name : PROJECT 1
DAT OPTIONS | RESTORE | ARCHIVE

```

Here you may backup the contents of your disk to a normal DAT machine via the digital audio I/O.

To connect your DAT machine, connect either the MIX A or MIX B digital outputs of the DD1500 (you can select which ones you will use in the DAT OPTIONS page) to the digital audio input of the DAT recorder.

The parameters in the ARCHIVE page are:

FROM DISK	This selects which disk you will archive.
ARCHIVE TYPE	Here you may select the type of item you wish to archive. The options are:
SINGLE FILE	This allows you to select a single file for archiving. When SINGLE FILE is selected, FILE TYPE and FILE NAME fields appear below the ARCHIVE TYPE field where you may select the type and the file for archiving.
	The SINGLE FILE option is very convenient for archiving single projects to DAT.
ALL PROJECTS	This will archive all projects and any audio associated with them.
ALL LIBRARIES	This will archive all libraries and any audio associated with them.
ALL FILES	This will archive all projects and libraries and any audio associated with them. It will not archive any unreferenced audio.
ALL LIBRARIES	This will archive all libraries and any audio associated with them.
DUPLICATE DISK	This makes a complete copy of everything on the disk to the DAT.

**NOTE:** When ALL PROJECTS, ALL LIBRARIES, ALL FILES and DUPLICATE DISK are selected, the FILE TYPE and FILE NAME fields are not shown.

Pressing DAT OPTIONS (F1/F2) gives this screen display:

```
ARCHIVE/RESTORE DAT OPTIONS
Restore digital input  : DIG A
Archive digital output : MIX A
Archive tape length   : DAT 30
```

Here you may select which of the digital I/Os you will use for the archive/restore. For restoring, you may choose between DIG A or B (or if optional digital I/Os are fitted, DIG C or D) and for archiving, you may select MIX A or MIX B outputs.

You may also set the tape length of the DAT you are restoring to and you may choose between DAT 30 (30 minute tapes) to DAT 180 (3 hour tapes). The archive process uses the stereo capacity of the DAT tape so a DAT 120 can hold 4 hours worth of material (you can do your own maths for the other tape lengths!).

To perform the archive, insert a blank DAT tape into the DAT recorder and make sure it is rewound to the start. Put the DAT recorder into 'record pause'. Get the DD1500 ready for archive, 'unpause' the DAT and then press ARCHIVE (F5/F6) on the DD1500. The archiving process will begin.

If the tape runs out during the archive, you will be prompted to insert another.

The time taken to archive is just a little longer than real-time (i.e. one hour of material will take just over one hour to archive). However, please note the capacity of DAT for archiving purposes. A DAT 60 can hold approximately 600Mb of data making it a bit too small to archive one side of a 1.3Gb MO disk (650Mb - approximately 2 hours of audio at 44.1kHz) but because a DAT 90 can hold approximately 900Mb you could easily archive one side of a 1.3Gb MO disk to such a tape. A DAT 120 could be used to archive a 1Gbyte hard disk. Larger hard disks will need to be archived over several tapes and you may prefer to archive your projects and/or libraries individually in this case as you can organise the order you want the items archived and decide which tapes you want them on. Furthermore, with single files archived in this way, when you come to restore, you don't have to do the full restore but you can selectively restore projects you are interested in.

**\*\* IMPORTANT NOTE ABOUT RESTORING SINGLE ITEMS \*\***

**YOU CANNOT RESTORE A SINGLE PROJECT/LIBRARY TO A DISK TO ADD TO OTHER PROJECTS/LIBRARIES ON THAT DISK!!!**

The restore process first erases the disk and then restores the audio onto the disk. In other words, you cannot make a compilation of projects and libraries from different archive tapes onto one disk because each time you restore an archive, the disk will be erased.

Please ensure that you use a blank disk (or one you are happy to erase) when restoring.

**AKAI ELECTRIC CANNOT BE HELD RESPONSIBLE FOR DATA LOST IN THIS WAY.**



**NOTES ABOUT ARCHIVING TO AUDIO DAT**

- *If your disk is quite large and has a lot of material on it, then larger tapes are recommended. You will note, however, that if the tape runs out during the archive process, you will be prompted to insert another tape. It is important, therefore, to set the tape length field to match that of the actual tape you are using otherwise the archive process will go wrong.*
- *When archiving across several tapes, you must use blank DAT tapes that are rewound to the very start of the tape when archiving. Failure to do so will cause problems. For example, if you are using a 120 tape and have selected DAT 120 in the ARCHIVE TAPE LENGTH field, but start it half way through the tape, the DD1500 will archive for a setting of DAT 120 (i.e. it is set to archive for two hours and then prompt you) but, of course, the tape will have run out after an hour, the DD1500 will not know this and will continue to archive as though a DAT 120 tape is being used.*
- *DAT180 tapes can be used but, because the tape is rather flimsy, please use with caution.*
- *Because DCC (digital compact cassette) and MiniDisk use data compression, although you can appear to be archiving successfully to either of these two mediums, the restore will fail. Akai Electric cannot be held responsible for the loss of data archived to DCC or MiniDisk.*
- *When data is archived, data files (i.e. projects, libraries, etc.) are written several times to the DAT tape to overcome the remote possibility of dropouts, tape damage, etc. (the audio is only written once to the tape, however). Whilst every effort has been made to ensure reliable archiving and restoring of data, copying to another disk is more reliable and is therefore recommended. Akai Electric cannot be held responsible for data lost when archiving to audio DAT.*
- *When data is archived to DAT, please ensure that the tape is stored carefully and in its proper case.*
- *When large amounts of data are archived across several DAT tapes, try to keep all the tapes together for a successful restore at a later date.*
- *Label the tapes carefully - it will make restoring them that much easier.*
- *It is a good idea to 'write protect' the DAT tape.*
- *Do not leave the tape anywhere where it may be ruined by accidental spillage of liquids.*
- *Do not leave the tape anywhere where it may be affected by dust.*
- *Do not leave the tape anywhere where it may be affected by adverse heat (i.e. in vehicles, near to radiators or other such heaters, etc.).*
- *Do not leave DAT archives close to strong magnetic fields (high powered speakers, TV/computer/video monitors, etc.).*

### RESTORING FROM DAT

Pressing RESTORE in the ARCHIVE page will show this screen display:

```
RESTORE FROM DAT
                To disk : 0
Restoring will totally wipe this disk!
DAT OPTIONS  RESTORE  ARCHIVE
```

Here you may restore the contents of a DAT back to the disk via the digital audio I/O.

To connect your DAT machine, connect the digital output of the DAT machine to one of the digital inputs of the DD1500 (you can set which one will be used in the DAT OPTIONS page).

The TO DISK parameter allows you to select which disk you will restore to.

DAT OPTIONS (F1/F2) has the same function in RESTORE as it does in ARCHIVE. Please refer to ARCHIVE for details on the DAT OPTION page.

To restore an archive, insert the appropriate tape into the DAT machine and rewind it so that it is at the start of the tape. Press RESTORE (F3/F4). You will receive this prompt:

```
Erase everything? SHIFT+EXEC to confirm
```

Because restoring will erase everything on the disk selected in the TO DISK field, this extra prompt is shown. Furthermore, to make accidental erasure even more difficult, you must press SHIFT+EXECUTE to proceed. If you have the slightest doubt about restoring at this point (proceeding will erase EVERYTHING off the selected disk!!!!) press EXIT to abort this prompt.

Assuming you wish to proceed, press SHIFT+EXECUTE. The DD1500 will wait and you should start the DAT machine. The restore will take place. Once you press SHIFT+EXECUTE, be warned - there is no going back! The disk will be erased and the restore will start.

**\*\* IMPORTANT NOTE ABOUT RESTORING \*\***

**THE RESTORE PROCESS FIRST ERASES THE DISK AND THEN RESTORES THE AUDIO ONTO THE DISK. PLEASE ENSURE THAT YOU USE A BLANK DISK (OR ONE YOU ARE HAPPY TO ERASE) WHEN RESTORING DATA FROM DAT.**

**AKAI ELECTRIC CANNOT BE HELD RESPONSIBLE FOR DATA LOST IN THIS WAY.**

As with archiving, the restore will take a little longer than real-time (i.e. an hour's worth of material will take just over an hour to restore. If the archive contains many very short clips, then archiving will take a bit longer).

**DISK UTILS**

Pressing UTILITIES will give this screen:

```

DISK UTILITIES                               Disk: 0
      Free on disk : 01:50:23:03.17
      Total capacity : 606Mb
      Disk used : 275Mb

INFO DD1000 CLEANUP DISK FORMAT DISK
    
```

The page shows information about the currently selected disk. You can see how much time is free on disk (this is also shown on the VGA in the OVERVIEW box at the bottom left). You can also see the size of the currently selected disk and how much is used (expressed in Megabytes). None of these fields is editable.

You may select other disks in the DISK field at the top right of the screen.

**DISK INFO**

Pressing INFO will display something like this screen:

```

DISK INFO Label: 00H4F21D Marks disk ID: 0
  total used available
MEDIA 622Mb 91Mb 530Mb
DATA 9Mb 0Mb 9Mb
AUDIO 612Mb 91Mb 521Mb
DD1500 SONY SMO-F521-00 1.04
    
```

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.

This screen shows the type of disk currently in the selected drive. The LABEL field shows a hexadecimal number that is a unique number given to the disk under scrutiny at the time you format it. This number is used internally by the DD1500's disk management system to make sure that there are never any conflicts of disks when using multiple disks and it allows any disk to be used in any drive at any time and you do not have to worry about which drive you put a disk into. The number is generated randomly when you format the disk. It is highly unlikely that two of your disks will share the same label but this field is shown just in case you do experience some problem and you can compare labels to see if there is a conflict. However, the chances of this happening are remote to say the least! Part of the label is the name you gave the disk when you formatted. This is shown after the hexadecimal number.

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

**DD1000 COMPATIBILITY**

The DD1000 soft key has certain functions related to the handling of disks made on an Akai DD1000. We will come back to these later in a section devoted to these functions.

### CLEANUP DISK

CLEANUP DISK allows you to clear out redundant recordings and so save valuable disk space. Pressing CLEANUP DISK shows this screen:



It is possible to have a disk full of unreferenced audio files. These are pieces of audio that have no association with any project or library. 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 a library or 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 or a clip from a library, you can end up with unreferenced audio. Another way audio can become 'unreferenced' is if you make a recording and then don't save the project. The functions in the CLEANUP page allow you to deal with this.

The CLEANUP functions are:

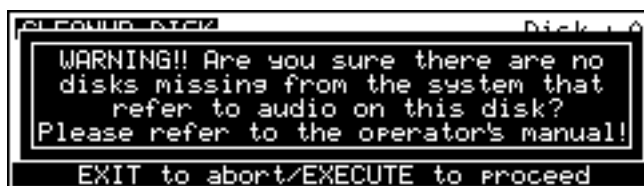
### CLEANUP DISK

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), it could be you will see no 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 DISK (F1/F2) will give this message:



Because audio may be being referenced by the EDIT CLIPBOARD, 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 accordingly using F5 or F6 as appropriate.

Pressing F5 or F6 will give this final safeguard prompt:



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 and libraries on all the disks currently attached to the system and it establishes what audio is being used by those projects and libraries and what is not. It then deletes any audio NOT being referenced by those projects and libraries 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

DD1500 will search through all the projects/libraries 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 can find 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 to abort or, if you are sure you can proceed safely and no disks are missing from the system, press EXECUTE but...

**BE VERY CAREFUL BEFORE PROCEEDING AS YOU MAY IRRETRIEVABLY DESTROY  
A PROJECT ON A REMOVABLE DISK MISSING FROM THE SYSTEM.  
THE SALVAGE FUNCTION WILL NOT ALLOW YOU TO RESCUE THE SITUATION.**

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 is 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 DD1500 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 DD1500 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 DD1500 OFF DURING THE MINIMISE PROCESS WILL CAUSE IRREPARABLE DAMAGE TO YOUR DATA!!**

Pressing EXECUTE will cause this prompt to be displayed:

```
CLEANUP MENU                               Disk 1 A
WARNING!! Are you sure there are no
disks missing from the system that
refer to audio on these disks?
Please refer to the operator's manual!
EXIT to abort/EXECUTE to proceed
```

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.

**SALVAGE**

This is the opposite of CLEANUP. If you have, as described above, been dropping in over recordings so that the audio file becomes 'detached' and unreferenced from any project and/or library but you need to get them back, SALVAGE will make new clips out of them and place them in a 'salvage' library.

An example of this may be that you have recorded some dialogue to PROJECT ONLY. However, for some reason or another (maybe you forgot to save the project at the end of the session), those recordings have become 'detached' from their original project cues. SALVAGE would allow you to retrieve the 'lost' recordings. Of course, you will need to rebuild your project manually (if you recorded to external timecode, however, you could use the ORIGINAL function to place the salvaged recordings at their original time positions).

Please note, however, that clips recorded in stereo will be retrieved as two mono clips and you must manually 'stereofy' them in a project. This may be awkward but it is better than losing everything forever!

**NOTES REGARDING UNREFERENCED AUDIO**

*You can overcome the problem of audio being unreferenced by selecting that all new recordings are automatically placed in a recordings library as well. In this way, you will always have the 'raw' recordings stored safely in a library should you need to come back to them. This is set in the RECORD pages by selecting PROJECT + LIBRARY in the RECORD MODE field.*

*Unreferenced audio can be created under the following circumstances:*

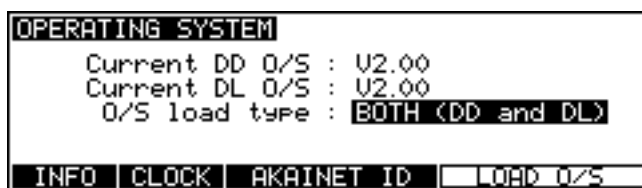
- 1. When recording, if the recording is not placed in a library at the same time (i.e. PROJECT ONLY is selected as the RECORD MODE in the RECORD page), if you subsequently drop in over that recording, you wipe out its cue reference in the project but the actual audio remains on disk.*
- 2. If you make a recording and then delete it from the project or close the project without saving it first, if the recording is not in a library as well, you can end up with 'orphaned' audio on disk.*
- 3. Even if the recording is placed in a library, if the project AND the library are deleted and the audio associated with them are not used by any other project or library, the audio associated with them can become 'orphaned'.*

*If you have just performed a CLEANUP or MINIMISE, SALVAGE will not be able to retrieve the deleted files.*

## 22 - SYSTEM - OPERATING SYSTEM

---

In the main SYSTEM SETUP page, pressing F6 - O/S - will take you to this screen:



Here, you can see the current versions of software loaded into the DD1500 and DL1500. These fields are for information only.

You have three choices for loading software. BOTH (DD and DL) will load both versions of software into both the DD1500 and the DL1500 in one pass. You may also select DD1500m ONLY or DL1500 ONLY (there may be software upgrades that only apply to one or other).

**NOTE:** Most software releases usually come as BOTH. This is the recommended selection. However, it may be that separate versions of software are available for the DD and DL and it is possible to load them separately by selecting DD1500m or DL1500 as appropriate.

### LOAD O/S

To load a new version of software, insert the floppy disk into the drive and press LOAD O/S.

You will receive the prompt:



The EXECUTE key's LED will flash and you must respond accordingly. If you press EXECUTE - YES - the system will load the operating system software into the selected machine(s). The bottom line of the LCD will keep you informed of progress.

**NOTE:** Once the software has loaded it is necessary to turn the whole system off and power it back on. It will re-boot with the version of software you just loaded.

If, when attempting to load a new operating system, a floppy is not inserted in the floppy disk drive, you will receive the prompt:



You should insert a floppy disk as appropriate. Likewise, if a floppy disk that does not contain a valid DD1500/DL1500 operating system is found in the drive, you will be prompted accordingly.



**AKNET ID**

It is also possible to view the AKAINET connection by pressing F3/4. This will display a screen something like this:

```
AKAINET NODE ID INFO
DL1500 Node ID : 020000C72000
DD1500 Node ID : 010000C72000
```

This page is for information only. You cannot change anything here.

Press EXIT to return to the LOAD O/S page.

## 22 - SYSTEM - OPERATING SYSTEM

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### REAL-TIME CLOCK FUNCTION IN SYSTEM

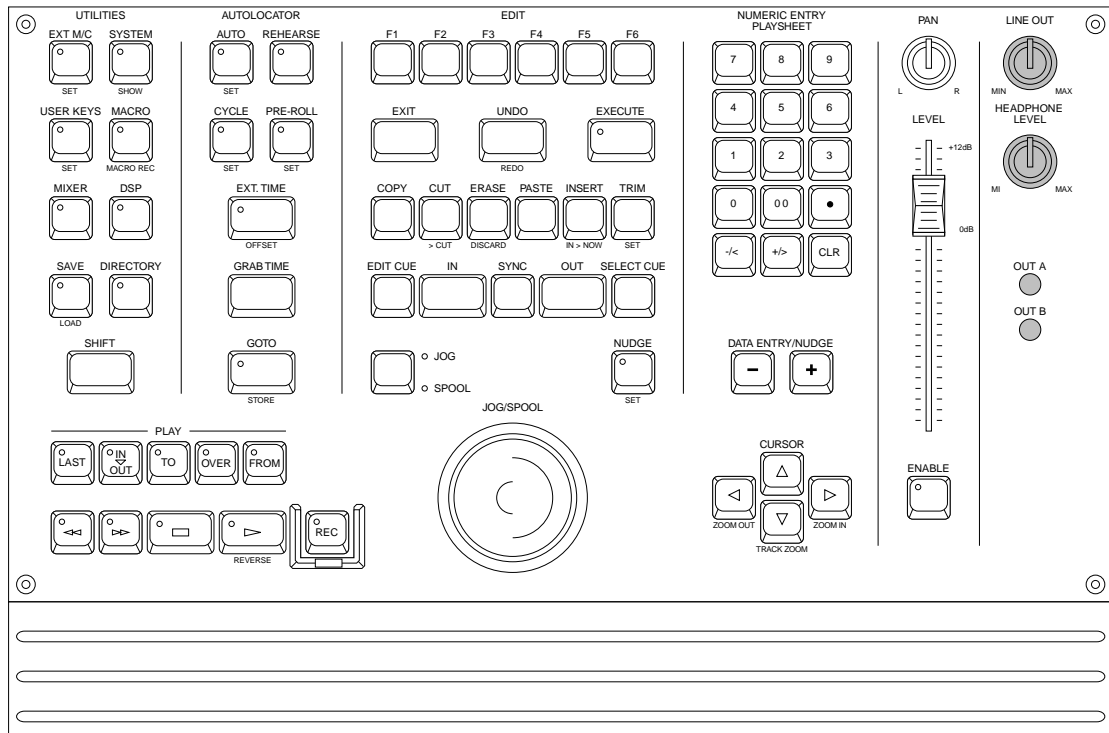
If you press CLOCK (F2), you will see this screen display:

```
SYSTEM CLOCK SETUP
Time : 15:58:23
Date : 21/09/95
Day : Thursday
Time display : AM/PM
Date display : DD/MM/YYYY
Display : 21/09/1995 03:58:23 PM
```

Here, you may set the DD1500's real-time clock. This will have implications in future software releases when files will be date stamped. However, in the meantime, you may, if you wish, use the DD1500 as a very expensive studio time keeper!

To set the parameters, simply move the cursor to the fields and use the DATA ENTRY +/- keys to set them. You may set the time, the day, the date, whether the clock display is 24 hour or am/pm and the format of your country's date display (day/month/year, month/day/year or year/month/day).

As mentioned, this feature is included here in readiness for file management functions in the future.



The DL1500 has its own internal monitoring system allowing you to have a convenient stereo monitor output or headphone monitor when the system is being used without an external mixer. In order to achieve this, the special DIGITAL AUDIO OUT must be connected from the DD1500m using the 9-pin D-sub cable provided. Inside the DL1500 are D-A converters that provide L/R MONITOR output and HEADPHONE output.

### LINE OUT

The L/R MONITOR outputs on the DL1500's rear panel should be connected to a stereo amplifier or powered speakers. The level of the output is set using the LINE OUT control. You may select to monitor MIX OUT A or MIX OUT B using the OUT A and OUT B switches. If no audio is heard when you use the system, check these switches as they may not be switched on.

### HEADPHONE

A normal pair of stereo headphones may be connected to the headphone socket on the upper rear panel and the level regulated using the HEADPHONE LEVEL control. Again, the OUT A and OUT B switches select which output you are listening to.

This monitoring is very convenient because it allows you to use the DD1500 with nothing other than an amp and speaker and/or headphones with tracks being mixed internally using the DD1500's mixer. An external mixer is not required making the system extremely portable and self contained. This makes it ideal for track laying, especially when using the removable MO disk as a basic editing system can be set up in a small editing room with nothing more than a DD1500 and a VTR (or film playback machine), a DAT and/or CD for sourcing audio and a simple stereo audio monitoring system. After the basic editing is done, the disk can be transferred to the mixing room where it can be put into a system where all the track outputs are installed for 'proper' mixdown using an external mixing console.

## 24 - PRINTER FUNCTIONS

---

### PRINT FUNCTIONS

It is possible to make hard copy of things like your disk directory, libraries and projects.

### PRINTING A PROJECT

PRINT is found on F1 of the main edit screen and this is used to print out the contents of a project. Pressing PRINT will show this screen:

```
PRINT PROJECT
          Style : QLIST
          Cue Detail : NONE
          Disk Detail : NONE
          Print tracks : ALL
PRINT SETUP          PRINT
```

The parameters are:

STYLE	Allows you to select that the project will be printed out as a Qlist or as an EDL.
CUE DETAIL	You may select whether the cues' level and/or fade information will be included in the printout.
DISK DETAIL	You may select whether the cues' disk SCSI ID, disk label or disk name will be included in the printout.
PRINT TRACKS	Here you may select which tracks will be included in the printout. The default is ALL TRACKS (all tracks will be included) but you may also select PLAY KEYS and you may select which tracks you want included using the track PLAY select keys.

Assuming everything is connected properly and the printer is switched on and on-line, you will see a highlighting progress display moving across the bottom of the LCD. If you wish to cancel printing, press EXIT.

**NOTE:** *The highlighting actually shows the printer data being spooled off to the printer's memory, not the actual printer progress. In other words, even though the highlighting has stopped, the printer will continue to print out the remaining contents of its memory. Also, please note that for very short printouts, the highlighting may be so fast, you won't notice it and then printer will start printing.*

If there is a problem, you will receive an error message (these are listed later).

**PRINTING OUT THE DISK DIRECTORY**

Pressing PRINT in DISK gives this screen display:



The parameters are:

- |                |  |
|----------------|--|
| PRINT          | Allows you to select what it is you want to printout. The options are:   |
| PROJECTS ONLY  | This will print only the projects on the selected disk.  |
| LIBRARIES ONLY | This will print only the libraries on the selected disk.   |
| PROJS+LIBS     | will print out a list of the projects and the libraries on the selected disk.  |
| DISK INFO      | You may select whether the information relating to the disk (i.e. that shown in the UTILS - INFO page) is shown in the printout. |

Assuming everything is connected properly and the printer is switched on and on-line, you will see a highlighting progress display as the disk directory is being printed. If you wish to cancel printing, press EXIT.

**NOTE:** *The highlighting actually shows the printer data being spooled off to the printer's memory, not the actual printer progress. In other words, even though the highlighting has stopped, the printer will continue to print out the remaining contents of its memory. Also, please note that for very short printouts, the highlighting may be so fast, you won't notice it and then printer will start printing.*

If there is a problem, you will receive an error message (these are listed later).

## 24 - PRINTER FUNCTIONS

---

### PRINTING LIBRARIES

In the DIRECTORY page, you may also printout libraries and their contents. Pressing F1 in the DIRECTORY page will show this display:

```
PRINT LIBRARY DIRECTORY
      Print : LIBRARY
      Clip comments : ON
PRINT SETUP          PRINT
```

The parameters are:

#### PRINT

You may select the following options for printout:

- |               |   |
|---------------|---|
| LIBRARY       | This will printout the currently selected library and a list of the clips it contains.                                |
| ALL LIBRARIES | This will print out all the libraries and the clips contained in each of them   |
| DIRECTORY     | This will print out only a list of the libraries but this will not contain a list of the clips contained within them. |

#### CLIP COMMENTS

You may select whether the printout will include each clip's comments. The default is ON but, to save printing time, you may prefer to switch this OFF.

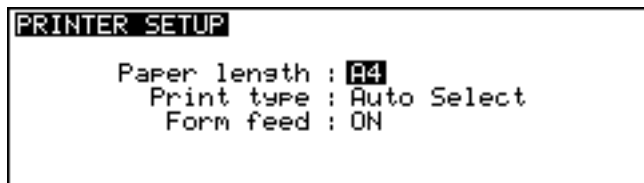
Assuming everything is connected properly and the printer is switched on and on-line, you will see a highlighting progress display as the library is being printed. If you wish to cancel printing, press EXIT.

**NOTE:** *The highlighting actually shows the printer data being spooled off to the printer's memory, not the actual printer progress. In other words, even though the highlighting has stopped, the printer will continue to print out the remaining contents of its memory. Also, please note that for very short printouts, the highlighting may be so fast, you won't notice it and then printer will start printing.*

If there is a problem, you will receive an error message (these are listed later).

**PRINTER SETUP**

In all of the PRINT pages, PRINTER SETUP (F1/F2) takes you to this page:



Here you may select the size of the paper you will print onto. You may select A4 or 11 INCHES. You may also select how the text will be printed. AUTO SELECT selects that if the printer sees that the text will exceed the line length, it will automatically condense the text so that it will fit (condensed print reduces the size of the characters by 60% of their normal width, allowing more characters to fit on a line). If you select NORMAL, the printer will print out in its normal font regardless of line length or you may select CONDENSED so that the printer always prints out text condensed (you will note that EPSON Roman T and EPSON Sans Serif H cannot be condensed). The FORM FEED parameter selected whether the printer will automatically go to the next page at the end of a page with a small header and footer area on each page or will print continuously across page breaks.

Different fonts cannot be selected on the DL1500 but must be set on the printer itself (assuming your printer offers such options - please refer to the printer's operator's manual for details on this).

**WHICH PRINTER?**

*Most printers should be able to be used providing they offer some form of Epson® LQ emulation (please refer to your printer's operator's manual for details on how to set this). If you have a printer you are unsure about, you may connect it and try it - no harm will come to it as it will either work or it won't!*

*Please consult your Akai dealer for information about which printer models are recommended.*

Connection to the printer is made using a standard 25-pin printer cable on the rear of the DL1500. Such a cable should be supplied with your printer but they are easily obtained from any decent computer store if you do not have one.

**\*\* PRINTER ERROR MESSAGES \*\***

In the event of a problem with the printer, you may get the following error messages:

NO PRINTER	Indicates that a printer is not connected or that the connection is faulty in some way.
PRINTER OFF LINE	Indicates the printer is connected and switched on but is not switched ON-LINE. Depending on your printer, you may also receive this message if the printer is switched off.
PRINTER ERROR	This may occur for a number of reasons (paper jams, no paper, etc.). Please check your printer.
PRINTER BUSY	If the printer's buffer memory is full (i.e. from a previous aborted printout), you may get this message.

### DD1000 DISK COMPATIBILITY

The DD1500 can read and use disks made on the Akai DD1000 and it is possible to play Qlists created on a DD1000 directly on the DD1500<sup>7</sup>.

### LOADING DD1000 QLISTS

The LOAD PROJECT page has a new field. When you select a drive that has a DD1000 disk in it or insert a DD1000 disk into the current drive, when you enter the LOAD PROJECT page a new field TYPE: DD1500 appears. To load a DD1000 Qlist, you should change this field to TYPE: DD1000 QLIST. I.e.:

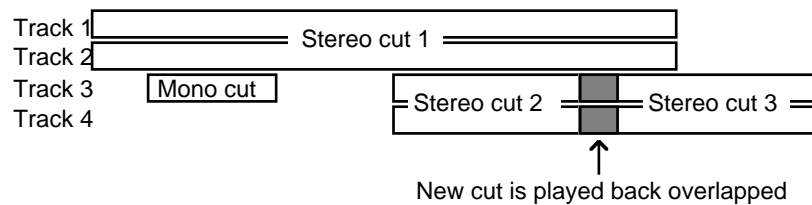


The screen will show a list of DD1000 Qlists which you may load as normal.

When the Qlist is loaded, the DD1500'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		DD1500
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 DD1500'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 DD1500, they will be placed on adjacent tracks so as to play correctly.

<sup>7</sup> Please note that it is not possible to play DD1000 'songs' on the DD1500 unless they have been converted into Qlists. Likewise, DD1000 playsheets cannot be used on the DD1500.

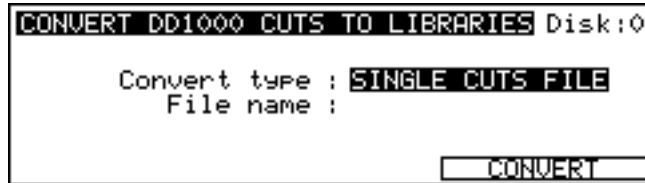


**DEALING WITH DD1000 ENVELOPES**

The envelope file (i.e. the waveform) for a DD1000 stereo recording (take) is created from the left channel only and when a DD1000 stereo recording is seen in a DD1500 project (i.e. spread across two tracks), the DD1500 will use only the left channel envelope information on both tracks (this should not be such a huge limitation as stereo recordings invariably show little difference between the two sides).

**CONVERTING DD1000 CUTS INTO DD1500 LIBRARY CLIPS**

The SYSTEM-DISK UTILS page now has an additional softkey - DD1000. This takes you to a special page for converting DD1000 cuts into DD1500 library clips:



Each DD1000 recording (take) has associated with it a 'cuts file' that contains all the cuts you may have made on the DD1000. When you convert DD1000 cuts into library clips, they may be used as normal library clips freely in any project. They can be pasted, edited, etc., as normal. A library will be created for each cuts file in the conversion process. For example, if you have a take called DIALOG with 12 cuts associated with it, a library called DIALOG will be created and there will be 12 clips in it.

The fields on this page are:

- |              |  |
|--------------|--|
| CONVERT TYPE | You may select to convert just a single cuts file (i.e. all the cuts associated with a DD1000 take) or all cuts files (i.e. all the cuts files associated with all the takes on the disk).   |
| FILE NAME    | When SINGLE CUTS FILE is selected, you may select the take for conversion in this field.<br><br>When ALL CUTS FILES is selected, this field is replaced with a prompting field. Because there is the possibility that there could be existing libraries with the same name, you may select whether the conversion process will prompt you before overwriting them. If you think there may be a duplication of existing library names, you should select ASK BEFORE OVERWRITING LIBRARIES or DO NOT OVERWRITE LIBRARIES. If you are sure there will be no problems (or you don't care!), select OVERWRITE EXISTING LIBRARIES. |

To convert the files, press F5/F6 - CONVERT.

## 25 - DD1000 DISK COMPATIBILITY

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### PLAYING DD1000 DISKS CREATED ON A DD1500 ON A DD1000

Some degree of backwards compatibility is also possible between the DD1500 and DD1000 and any DD1000 disks you have worked with on the DD1500 may still be used on a DD1000.

Recordings can be made on the DD1500 to a DD1000 disk in the usual manner (i.e. select a track for record, press PLAY+RECORD) but the DD1500 uses the following rules to decide whether a recording is mono or stereo when recorded on a DD1000 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
5	REC ENABLE tracks = 1+2+3+9+10	→	1 + 2 = STEREO, 3 + MONO, 9 + 10 = 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 DD1500 is finished, the DD1500 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 DD1500. 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

### FORMATTING A DD1000 DISK IN THE DD1500

The format page allows you to format disk in the DD1000 format. I.e.:



This allows you to generate work on the DD1500 and have it play back on a DD1000 (the DD1000 cannot read disks formatted to the DD1500 format).

Select DD1000 in the FORMAT TYPE field. Only 650Mb or 1.3Gb MO disks with 1024 bytes/sector may be formatted. When a 650Mb disk is formatted, the message DD1000A will appear on the screen; when a 1.3Gb disk is formatted, the message DD1000B will be shown. DISK COPY and other disk utilities may be performed with a DD1000 formatted disk but please note the following:

- CLEANUP cannot be used on a DD1000 disk.
- DD1000 disks hold fewer recordings than a DD1500 disk.

If DD1000 compatibility is not important, you should use a DD1500 formatted disk.

### SAVING A DD1500 PROJECT AS A DD1000 QLIST

When a DD1500 project is saved to a DD1000 disk, a DD1000 Qlist of the same name is also automatically created and saved to the disk. This allows you to play simple projects created on a DD1500 on a DD1000. The DD1500 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.

**WARNING:** *If you load a DD1000 Qlist into a DD1500, work on it and then save it again on the DD1500, you will lose any FADE and MIDI events that may have been on the original and you will lose all cut names.*

*It is best to save the project to the DD1000 disk with a different name to prevent this.*

This feature allows you to make simple 2- or 4-track projects on the DD1500 and play them on the DD1000.

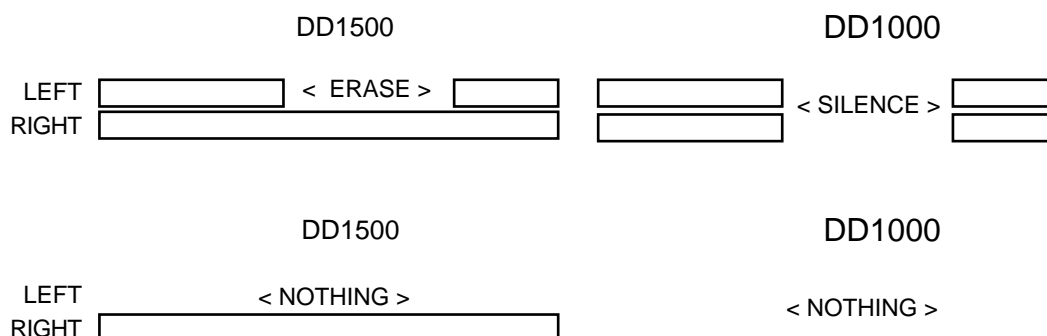
**NOTE:** *If you re-load a DD1000 Qlist originally created on a DD1500, it could be that the track assignments may be incorrect. This is because the DD1000 has no concept of tracks and so the DD1500 must make a 'best guess' attempt.*

## 25 - DD1000 DISK COMPATIBILITY

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### STEREO EDITS SAVED IN DD1000 FORMAT

Unlike the DD1000, the DD1500 allows you to edit the left and right channels of a stereo recording independently on separate tracks. Such edits made on the DD1500 cannot be played correctly on the DD1000 and edits made in this way will playback as follows on the DD1000:



Be aware of this when editing DD1000 material in this way on the DD1500 as you may experience problems when you come to transfer the disk back to the DD1000.

### DD1000 EDIT CUE PARAMETER COMPATIBILITY ON THE DD1500

LEVEL	Compatible except you will note that note that maximum level in a DD1500 cue is +6dB (as opposed to +12dB on the DD1000). DD1000 cues set to greater than +6dB will be limited to the DD1500's maximum cue level.
FADE	The DD1500 SINE fade will be used as an approximation of the DD1000's 'fast' curve and the DD1500's LINEAR fade will be used in place of the 'slow' DD1000 fade.
PAN	DD1500 has no cue pan and so this will be ignored.

### USING DD1000 DISKS ON V1.00 DD1500

Stereo recordings will show as yellow on a DD1500 with V1.00 installed. Mono recordings may be used however.

### MULTIPLE DISK DRIVE SYSTEMS

The DD1500 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 DD1500 uses a method based on each disk's unique label. This means that the DD1500 'learns' the actual SCSI ID when the project is loaded. Therefore, a disk can be placed in any drive and the project will still play back 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 DD1500, 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 DD1500 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 DD1500 is looking for the disk label, not the SCSI ID. It will find this and so it will play back 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 DD1500 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 DD1500 assumes that the audio is on the same disk as the Qlist and so it will also play back properly.

However, please note the following restrictions when taking a DD1000 disk from a DD1500 back to a DD1000:

- When a converted DD1000 Qlist is saved as a project on the DD1500, in the DD1000 Qlist that is also created, the DD1500 resets all the cues' SCSI IDs to be the same as the drive it was played from on the DD1500 (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 DD1500 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 play back 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 DD1500, 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 DD1500 system should you need to concern yourself with the above.

### NOTES ON CHOOSING A DISK DRIVE

You will probably have bought your system 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 DD1500 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 DD1500 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. The result may be that you might get 16 tracks when you start using the drive for the first time but, as you fill up your disk and start using material from further into the disk, you may only be able to achieve 10 tracks (or less!). Look out, therefore, for 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 sixteen disk tracks.

As a result of all of this, Akai cannot guarantee that you can just hook up any SCSI drive and expect it to work. It is impossible for Akai to test every drive in the world as there are so many to choose from. However, as more and more people use the DD1500 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 DD1500m 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, unscreened 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 DD1500 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 DD1500 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. In this case, when you load the project, the cues that refer to audio on the other disk (i.e. the foley cues) would be shown in a bright yellow indicating that the audio is missing. 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.

You will note, however, 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#ID1, the foley on Drive ID#2 and the dialogue on Drive#ID3, 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. For example, one way you may be working is that you regard the removable MO disk as your 'project' or 'work' disk (i.e. it is your reel of tape!). You may have on your system a fixed hard disk that contains a large library of sound effects (organised sensibly into categorised libraries of course!!). You may be pasting and inserting clips from that large sound effects library into the project on your MO disk. On your system, everything plays back perfectly but be careful when you transfer the MO elsewhere - because the actual audio does not exist on the MO, when you subsequently try to play that MO on another system, although the sound effects cues will be shown (in bright yellow), they will not sound. In this case, you should run the COMPILE function to create one master disk before transferring it. This will copy the relevant pieces of audio being used in the project on the MO from all connected disks to the MO disk.

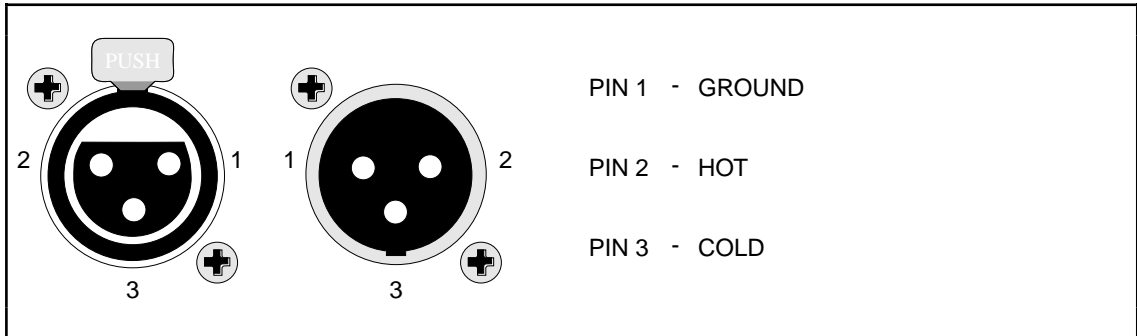
Basically, what you must remember is that when transferring MO disks from one system to another, try to ensure that the audio does not get 'detached' from the project. Of course, when you load the project up on another system, you will see immediately that some cues will not play as they will be shown in bright yellow but, of course, at that point, it may be too late (or at least inconvenient) to do much about it.

This is not a limitation of the DD1500 but a problem created by the concept of using removable disks and the same kind of problems exist with anything that uses a 'transportable' medium. Of course, it could be argued that when you paste in a clip from a library on an external disk, you the DD1500 should also copy the audio across with it to prevent this from happening but it would slow creating and editing a project down enormously if you had to wait a few minutes as the audio is copied. We think it's best that you can work fast, bear the above in mind and then use the COMPILE function to bring together all the required audio across in one operation. Every step has been taken to make moving media around as painless as possible but when moving projects created using multiple drives, please remember the above points.

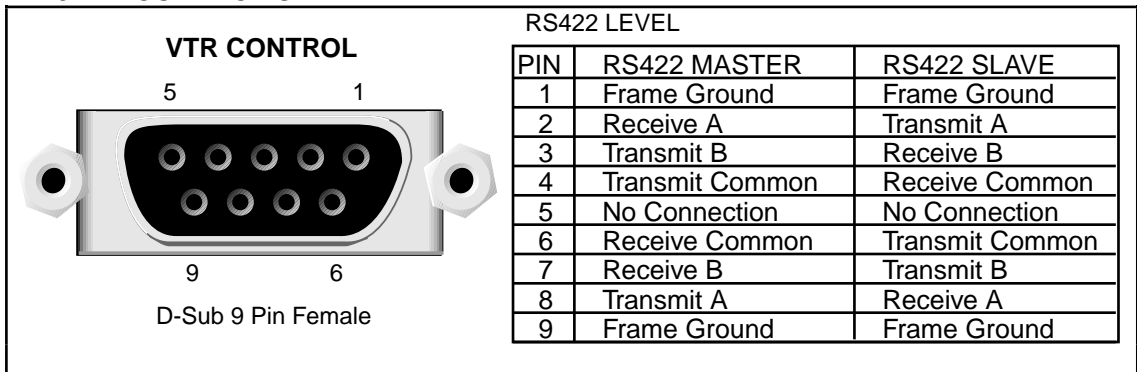
*Please refer to the section SAVING PROJECTS - COMPILE for details on copying files from one disk to another.*

PIN WIRING - DD1500

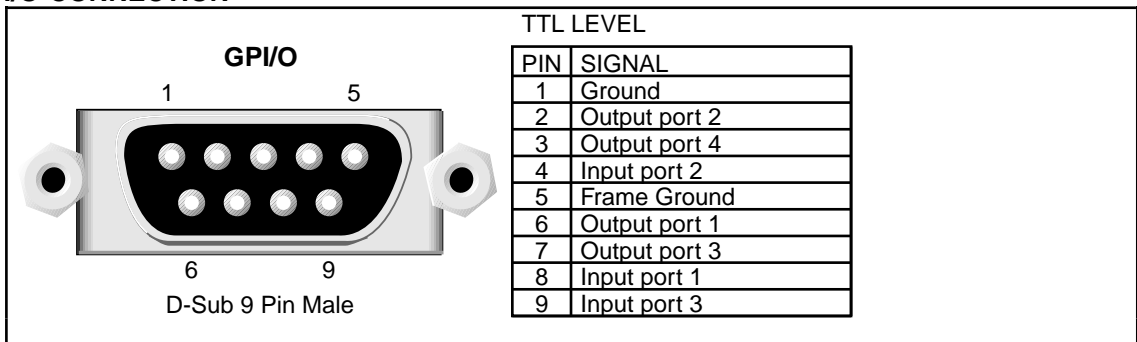
ANALOGUE XLR CONNECTIONS



RS422 9-PIN CONNECTION

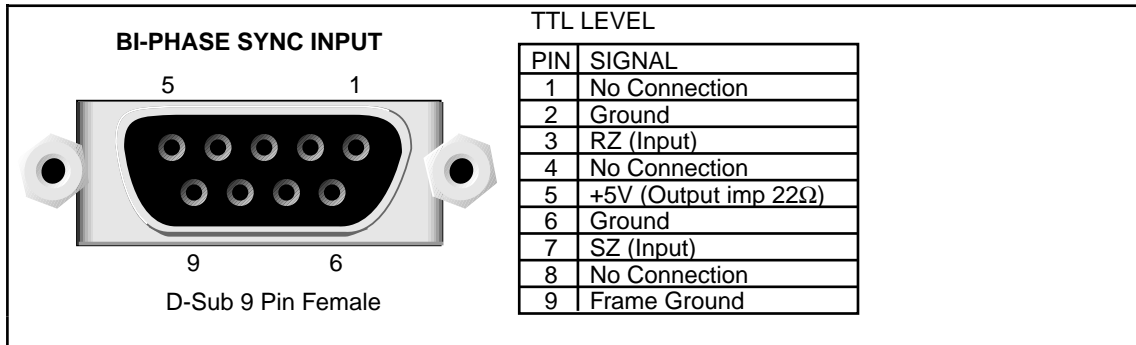


GPI/O CONNECTION

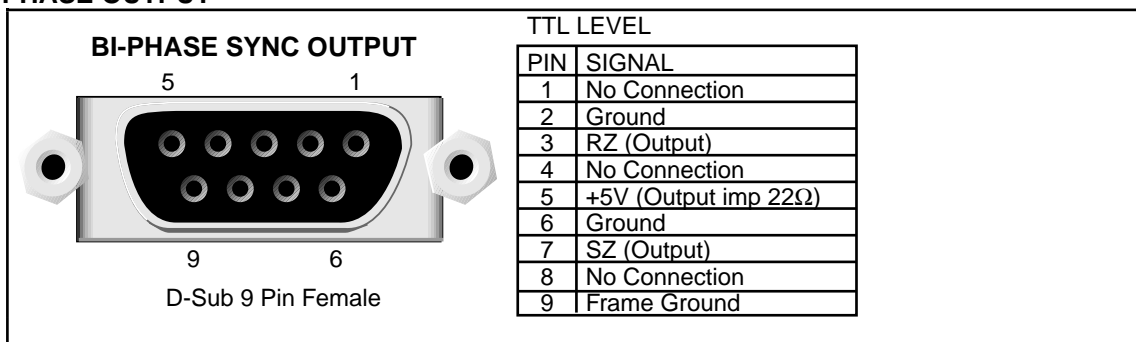




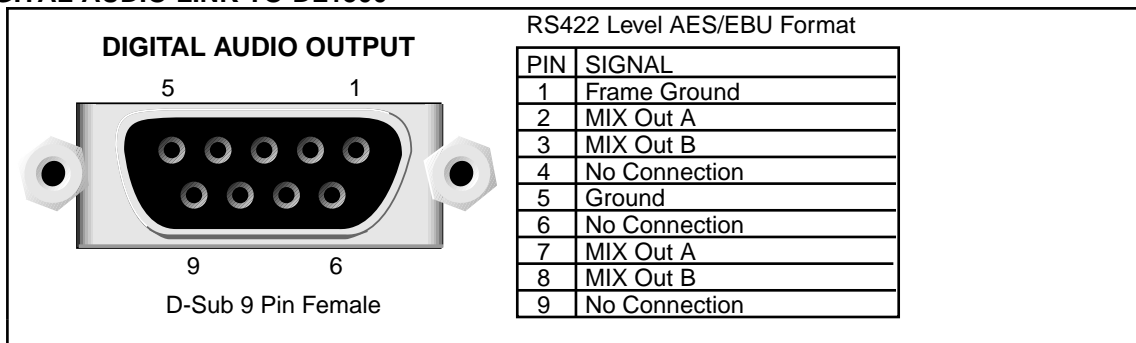
## BI-PHASE INPUT



## BI-PHASE OUTPUT



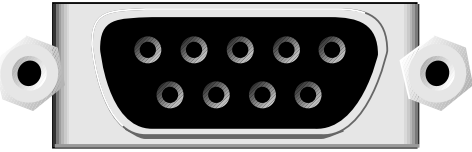
## DIGITAL AUDIO LINK TO DL1500



PIN WIRING - DL1500

DIGITAL AUDIO LINK FROM DD1500m

**DIGITAL AUDIO INPUT**



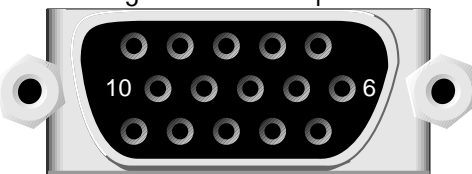
D-Sub 9 Pin Female

RS422 Level AES/EBU Format

PIN	SIGNAL
1	Frame Ground
2	MIX In A
3	MIX In B
4	No Connection
5	Ground
6	No Connection
7	MIX In A
8	MIX In B
9	No Connection

S-VGA MONITOR OUTPUT

**DISPLAY OUTPUT**



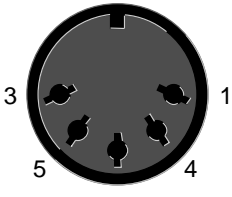
D-Sub 15 Pin Female

ANALOGUE LEVEL

PIN	SIGNAL
1	Red
2	Green
3	Blue
4	No Connection
5	Ground
6	Ground
7	Ground
8	Ground
9	No Connection
10	Ground
11	No Connection
12	No Connection
13	Horizontal Sync
14	Vertical Sync
15	No Connection

PC COMPUTER KEYBOARD INPUT

**KEYBOARD INPUT**



5 Pin DIN

FROM IBM XT KEYBOARD

PIN	SIGNAL
1	Keyboard Clock
2	Keyboard Data
3	No Connection
4	Frame Ground
5	+5V DC

**SETTING THE DD1500M REAR PANEL DIP SWITCHES**

The DIP switches on the rear panel set the system up for the type of disk drive you are using.



Use DIP switch #1 on the DD1500m's rear panel to set the track configuration according to the memory installed. This DIP switch is read once at power-up and selects the following configurations:

	Sw#1	Standard Memory	Memory Expansion	
Case A	OFF	4 Mword	None	8-track playback/4-track record with MO
Case B	ON	4 Mword	None	16-track playback/8-track record with fast hard disk
Case C	ON	4 Mword	4 Mword	More than 8-track playback from fast MO or 16-track playback from hard disk

**NOTE 1:** *In Case B, 8-track playback or 4-track record from an MO drive may cause problems (for example, some audio missing after recording).*

**NOTE 2:** *In 16-track playback (Case B or Case C), some playback tracks will be dropped when record inputs are selected. This is because of voice assignment limits. One playback track is dropped for each pair of record inputs that are enabled. The way this works is designed to be as transparent as possible. The priority is:*

*FIRST TRACK(S) TO BE DROPPED - Those with no audio on them.*

*NEXT TRACKS TO BE DROPPED - Any tracks not selected for playback.*

*NEXT TRACK(S) TO BE DROPPED - Those with the least audio on them (i.e. a track with one or two cues will be dropped before a very busy one).*

*In normal practice, you should find the process fairly transparent and it's only in very busy projects with a lot of cues across all 16 tracks that you will hear the track dropping take place.*



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