AKAI DIGITAL

DD8

DIGITAL DUBBER

Operator's Manual

WARNING

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

INTRODUCTION

The DD8 is a magneto/optical-based, random-access digital film dubber designed to replace the current generation of magnetic film dubbers and multitrack tape machines used in most film and video post production environments. It features virtually instant locating, convenient removable media, flexible I/O and remote control options together with full data compatibility and seamless integration with the Akai DD1500 Recorder/Editor. Being a dedicated system with no host computer required, its performance is optimised for ease of use and speed of operation with no prior knowledge of computers and/or hard disk digital recording required.

SPECIFICATIONS
General

- Digital audio format: 16-bit linear PCM
- Simultaneous recording: 8 tracks max.
- Recording time: 225 track-minutes, equivalent to 28 minutes/8 track with 2.6Gb MO
- Sampling rate: 48k, 44.1k, 32kHz
(with +0.1% Pull-up and -0.1% Pull-down at all sample rates)
- Recording media: Optional 2.6Gb MO disk / Removable Hard Disk Unit
- Internal drive: 5.25-inch half-height drive bay x 1 mountable
- Display: 248 x 60 dot LCD x 1 - Time, Parameters
8-segment LED x 8 - Peak Level Meter, Track Active, Track Slip
Warning LED x 3 - Disk Busy, T/C RCV, W/C RCV
- Memory: Flash ROM for OS and Settings and one EXM1508
memory board come as standard
EXM1508 x 2 for work memory expansion
72-pin SIMM x 1 for CPU memory expansion (2Mb or 4Mb)
- Expansion slot: General purpose slot x 4
Digital audio slot x 1 - TDIF, ADAT or AES/EBU
8-channel analog audio input slot x 1
8-channel analog audio output slot x 1
EQ8 slot (internal) x 1
- Dimensions: 482.6 (W) x 177 (179) (H) x 410 (441.2) (D)mm (max.), 4U
- Weight: 12.8 kg (no options)
- Power: 100-120 / 220-240 VAC, 50 / 60Hz, 90W

Connections

- Video Sync / Word Clock input: BNC x 1 with 75-ohms terminator switch
- Pre-Read output: 9-pin D-sub x 1, 14.5Vrms (max.), 560Ω
- Remote: 8-pin DIN x 2 for chaining multiple machines
- SCSI-A: 50-pin Amphenol x 1 for disk expansion
- Phones: 1/4-inch stereo phone x 1, 15mW 32Ω
- DIP switch x 1 for SCSI-B ID selection

Options

- IB-D8AD - 8-channel analog input board
Balanced inputs, input imp. 104kΩ; Max. input level +24dBu
25-pin D-sub (TASCAM DA-88 pin assignment)
A/D converter 24-bit, 128-times oversampling
Operating level selectable by software [-12, -16, -18 or -20dBu]

- IB-D8DA - 8-channel analog output board
Balanced outputs, output imp. 94Ω ; Max. output level +24dBu
25-pin D-sub (TASCAM DA-88 pin assignment)
D/A converter: 20-bit 8-times oversampling
Operating level selectable by software [-12, -16, -18 or -20dBu]

• IB-D8TIF - 8-channel TDIF digital input/output board
>   25-pin D-sub (TASCAM DA-88 pin assignment) with BNC connector for Word Clock
>   Out and 15-pin D-sub (TASCAM DA-88 pin assignment) for TASCAM MU-8824
>   Meter Bridge connection

• IB-D8MA - 8-channel AES/EBU digital input/output board
>   25-pin D-sub connector x 1

• IB-801S - SCSI-B interface board - occupies 2 expansion slot spaces
>   50-pin Amphenol connector x 2

• IB-802T - LTC interface board
>   1/4" phone connector x 2

• IB-803M - MIDI interface board
>   5-pin DIN connector x 3

• IB-804A - 8-channel ADAT optical digital input/output board

• IB-805R - RS422 interface board
>   9-pin D-sub connector x 1

• IB-806B - Biphase interface board
>   9-pin D-sub connector x 2

• IB-808G - GPIO parallel interface board
>   37-pin D-sub connector x 1

• IB-809E - AKNET (Ethernet) interface board
>   BNC connector x 1 with 50-ohms terminator switch

• EQ8 - 8-channel EQ board
>   For the interchangeability of DR8/DR16/DD1500 disks

• EXM1508 - Expansion 8Mb memory board

Standard accessory

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

*Restriction of board installation:
>   SCSI-B or AKNET Interface,
>   TDIF, ADAT or Multi-AES/EBU interface

(0dBu = 0.775Vrms)

ABOUT THIS MANUAL

This owner's manual has been written to provide you with the information to get the best from the DD8. Although it hoped that the DD8 is easy enough to use without constant reference to this manual, please take the time to read it in order to understand the machine fully. The manual takes you through the machine from scratch, assuming you have just installed it and you are using it for the first time.

This manual covers all basic functions and operation and, wherever possible, gives hints and tips and application notes. However, because of the diversity of applications in which the DD8 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 DD8 is being used in audio to picture, the main application for which it was designed, and it is assumed you have some experience of the techniques involved in this field.

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

PROJECT	This is where you do the bulk of your work on the DD8 and contains all your recordings, positioned at the required times. Think of it as a reel of multi-track tape if you like, although a project on the DD8 is actually nothing more than a Qlist or EDL linking cues to timecode.
	The SYSTEM settings, locator memories etc. are also saved with the project and when a project is subsequently loaded, the whole system is restored to exactly the status the project was saved in.
NOW TIME	The NOW TIME is the DD8's current internal time position. All work is done with referenced to this NOW time. The NOW time is displayed on many of the LCD pages.
CUE	This refers to a piece of audio from its start to its end.
EDIT REGION	This refers to the area selected between the IN and the OUT points.
IN TIME	This usually refers to the start of an edit (e.g. NUDGE). However, the IN TIME is also used to set cycle times.
OUT TIME	This usually refers to the end of an edit (e.g. NUDGE) although it is also used to set cycle times.
MARK POINT	This is a special marker intended for Biphase synchronisation. It can be set to define a sync point between audio and film (usually a cross before the first frame).
LIBRARY	A library is a file created on the DD1500 for convenient storage of groups of cues (refered to as 'clips'). For example, a library may contain sound effects, or music cues, etc.. The DD8 does not support this function so it is not possible to access the clips stored within a library created on the DD1500. However, during disk functions such as copy or backup, the DD8 will process the library file along with other files on the disk.

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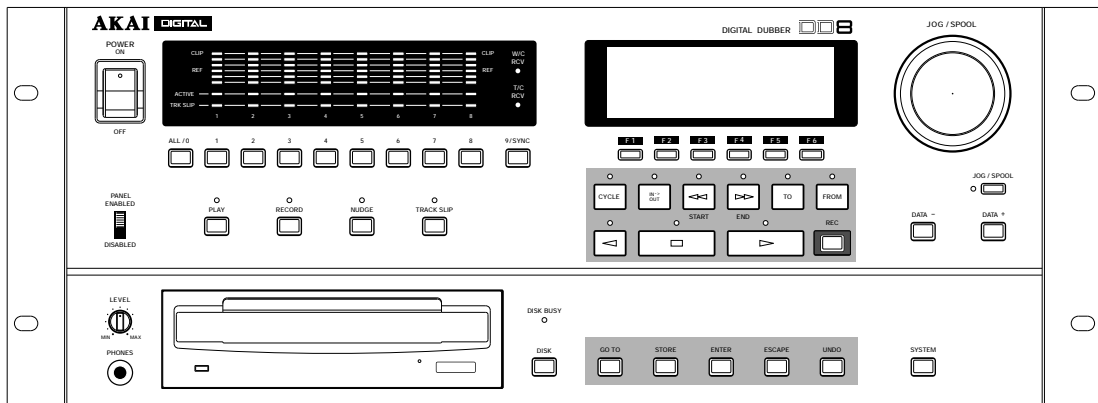
Next to the Power Switch, the 8 LED barmeter displays are used as peak level meters as well as indicating the track's status:

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

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

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

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

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

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

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

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

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

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

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

▷   This is the PLAY key.

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

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

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

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

◀◀   This is rewind. Pressing it once gives x 10 play speed; pressing it again gives x 100 play speed. Press it again to fast forward at x 10 play speed.

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

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

IN>OUT   This will play from the IN point to the OUT point. I.e.:
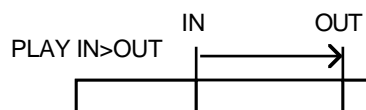
                         This is useful for checking edits but can also be used for checking the last recording you made. Because the DD8 automatically places the IN and OUT times at the start and end of a new recording, you may use PLAY IN>OUT to check it immediately after recording.

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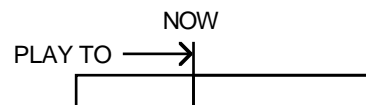
                         This is useful for checking things prior to editing (i.e. to find a good edit point) but may also be used for checking things on the NOW time generally.

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

NOW

PLAY FROM

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

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

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

The GOTO and STORE allow you to quickly locate the transport to the required position.

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

FRONT PANEL - INSERTING AN MO DISK

Assuming you have an MO drive installed, the disk is inserted thus:
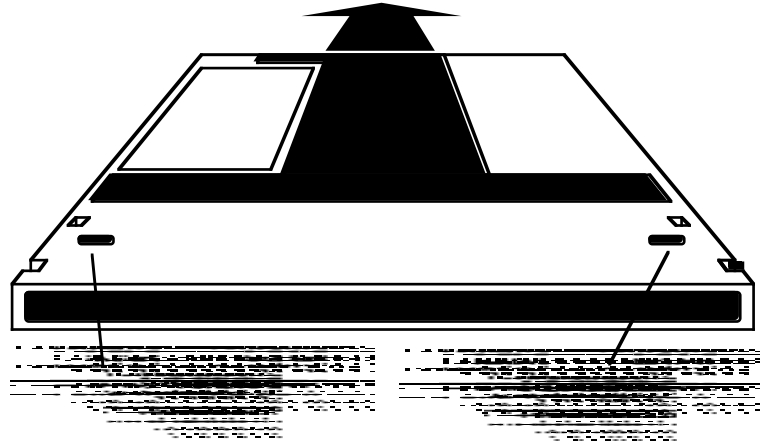
The side you wish to use is inserted face up. Power must be on for the disk to be accepted as the load mechanism is motorised.
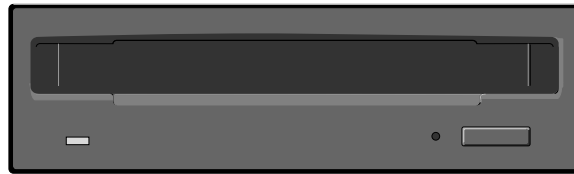
Disk Activity Led   Eject switch

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

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

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

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

REAR PANEL
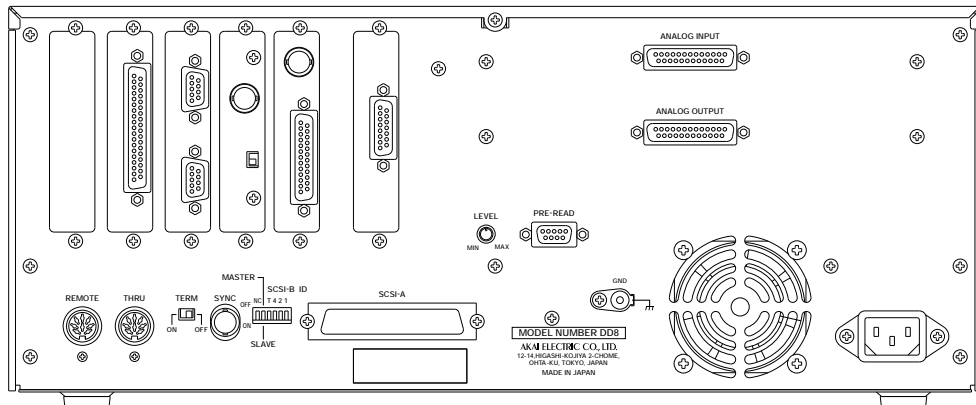
OPTION SLOTS

There are six slots on the rear panel for installing option cards. The first four slots from the left hand side are for general purpose interface cards such as the IB-805R (RS422 interface) or the IB-806B (Biphase interface). The fifth slot is for a digital audio interface card such as the IB-D8TIF (TDIF interface), IB-D8MA (AES/EBU interface) or IB-804A (ADAT interface). The final slot is for the connector to the Tascam MU-8824 Meter Bridge (this is part of the IB-D8TIF option card).

REMOTE/THRU CONNECTORS

These connections are used for sync signals when multiple DD8s are connected together.

TERMINATOR SWITCH

This switch selects 75Ω termination for the SYNC connector for use with video sync signals.

SYNC CONNECTOR

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

SCSI-B ID SWITCHES

These DIP switched are for use when the optional IB-801S SCSI-B interface board is installed in the DD8. They are used to set the DD8's SCSI ID and control termination for the SCSI-B bus. (Note that this switch has no effect on the SCSI-A bus).

SCSI-A CONNECTOR

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

GROUND TERMINAL

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

MAINS INPUT

Mains power is connected here.

PRE-READ LEVEL

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

PRE-READ CONNECTOR

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

POWERING UP THE DD8

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

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

```
        AKAI DIGITAL
           DD8
       Version 1.00
       DISK SETUP
```

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

```
PLAY          Project 1        25 fps

  ABS   00:00:00:00. ◇

  ABS/REL  | RESET |  OFFSET  |  VIEW
```

If no projects are found, the DD8 will enter the DISK pages to allow you to setup the disks attached to the system and create a new PROJECT:

```
LOAD PROJECT              Disk : ◇
                          Project 1
  Use DATA +/- to scroll  Scene 5
                          Effects

  DIRECTORY | UTILITIES |  NEW  | LOAD
```

PLAY MODE

The PLAY mode is the default mode when a Project is loaded. It can also be accessed at any time by pressing the PLAY key under the barmeters.

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

```
PLAY          Project  1          24 fps

           1,204:19.1

     RESYNC     RESET  MACHINE SLIP  VIEW
```

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

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

```
PLAY          Project  1          24 fps

         00:05:32:19.4

     RESYNC     RESET  MACHINE SLIP  VIEW
```

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

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

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

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

```
MACHINE SLIP

           +07.0

 Use DATA +/- to change selected digit
   ←        →              ZERO   EXIT
```

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

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

```
PLAY          Project 1           25 fps

   ABS   00:00:00:00.0

   ABS/REL    RESET     OFFSET     VIEW
```

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

```
PLAY            Project 1           25 fps

ABS    00:10:30:12. ◊    CHASE

     ABS/REL    RESET     OFFSET     VIEW
```

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

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

```
OVERVIEW     Project  1     00:05:32:19.4
1
2
3
4
5
6
7
8
```

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

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

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

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

ABS(solute)   0   8   23.59

REL(ative)   -8   0   15.59

ZERO IS AT : + 08:00:00:00.0
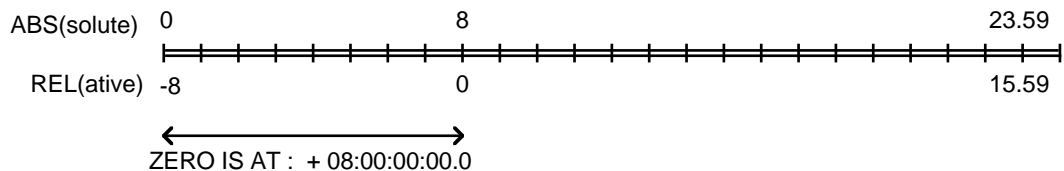
Pressing the RESET (F3) key resets the relative time to zero at the current position.

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

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

SETTING TIMECODE OFFSETS

```
┌─────────────────────────────────────────┐
│ OFFSET                                   │
│                                          │
│     + 00:01:05:07. ○                     │
│                                          │
│ ZERO ║ GRAB              ENTRY ║ EXIT    │
└─────────────────────────────────────────┘
```
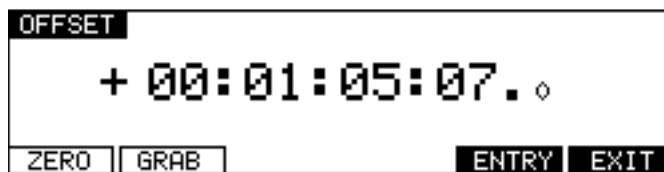
Pressing the ZERO (F1) key resets the offset to zero. When following timecode from an external machine, pressing the GRAB (F2) key grabs the offset between the current NOW time (internal) and the current External Time value.

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

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

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

```
┌─────────────────────────────────────────┐
│ OFFSET ENTRY                             │
│          00:01:05:07. ○                  │
│        Use Track keys to enter value     │
│  ←─ ║   ─→              00 ║ EXIT        │
└─────────────────────────────────────────┘
```
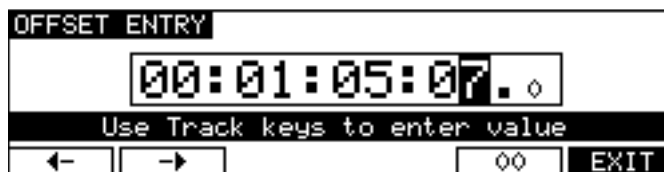
Soft keys F1 and F2 can be used to move the cursor to the sub-frame field, or any of the other fields. The offset time is then entered using the track keys as a numeric keypad or the current digit can be nudged using the DATA +/- keys.

RECORD MODE

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

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

When not recording, the following display is shown:

```
RECORD          Project 1         25 fps

  ABS   00:00:00:00. ◇
        Free on disk 0: 01:56:20:10
 RECORD DISK                        RUSHES
```

The top line of the screen shows the name of the current Project, as well as the current frame rate. Pressing RECORD DISK (F3/F4) takes you to the Record Disk page :

```
RECORD DISK

         Record Disk : 0
         Free on Disk : 00:39:22:21.1

                                    EXIT
```
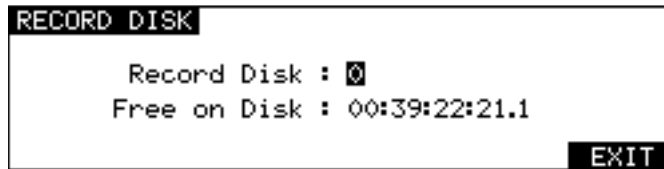
Here you may select the SCSI ID of the disk onto which new audio will be recorded.

During recording, the screen changes as follows :

```
RECORD          Project 1         25 fps

  ABS   00:00:00:00. ◇
        Free on disk 0: 01:56:20:10
 Recording . . .             RECORD ABORT
```

Pressing RECORD ABORT (F5/F6) aborts the recording process.

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

```
RECORD          Project  1        25 fps

    ┌─────────────────────────────────┐
    │ Cannot Record with VariSpeed ON ! │
    └─────────────────────────────────┘
```

RECORD RUSHES

When recording 'dailies' at a film or video shoot, recordings are made referenced to 'time of day' timecode on a portable recorder of some kind. However, due to the nature of dropping in and out of record, the timecode becomes discontinuous. For example, the first recording may start at 10am and finish a minute later. As the scene is reset, the next recording may start at 11am and last 2 minutes. However, on the recording device used at the shoot, the two recordings will be adjacent, separated by a gap of a few seconds and there will be a break in the recorded timecode.

While making 'normal' recordings, the DD8 will drop out of recording if it detects a dropout in the received timecode. Hence, it would be necessary to manually put the DD8 back into record to transfer the audio in the example above. The Record Rushes function overcomes this and allows continuous recording on the DD8 despite breaks in the source reel's timecode. When the transfer is made, the rushes will be placed at their actual (original) timecode positions. For example:
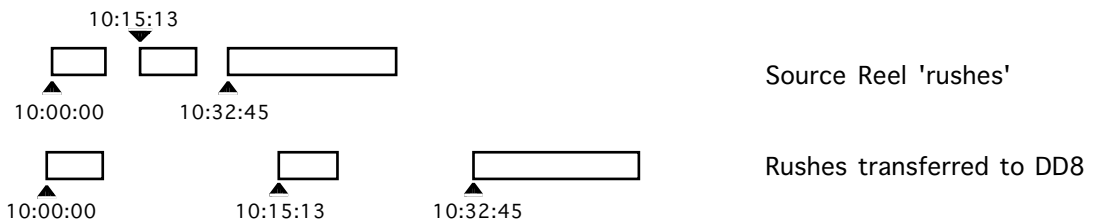
To use the rushes function, press RECORD RUSHES (F5/F6) on the main record page. You will see this screen:
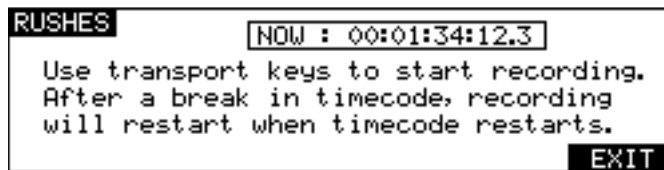
You should start the source machine playing and drop into record as normal on the DD8. When a recording is started from this page, the normal recording behaviour is modified so that recording will restart after a break in timecode.

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

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

If no tracks are selected, pressing the NUDGE key will show the following prompt:

```
NUDGE
            ┌─────────────────────────────┐
            │ Select Track(s) to be Nudged │
            └─────────────────────────────┘
```
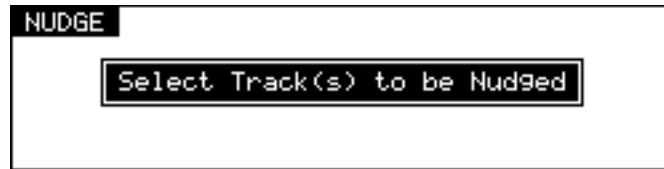
The NUDGE key LED will blink until tracks are selected and ENTER is pressed, then the following screen will appear and the LED will be steady lit.

```
NUDGE                 ┌─────────────────────┐
                      │ NOW : 00:01:34:12.3 │
                      └─────────────────────┘
           IN TIME : 00:01:00:08.2
          OUT TIME : 00:07:28:02.0
            AMOUNT : +0.0
  ┌──────┐ ┌──────┐ ┌───────────┐        ┌──────┐
  │  ←─  │ │  ─→  │ │ Select Cue │        │ SOLO │
  └──────┘ └──────┘ └───────────┘        └──────┘
```
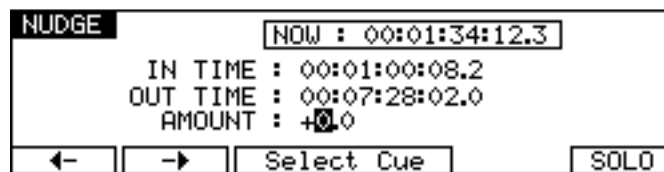
It is not possible to select different tracks once the Nudge mode has been entered. When entering the Nudge mode, the displayed amount is always zero. The final amount is committed when exiting the NUDGE mode.

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

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

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

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

Pressing the TRACK SLIP key will show the following screen :

```
TRACK SLIP      NOW : 00:01:34:12.3
   1     2     3     4     5     6     7     8
 -+01 — +02 — +00 — -02 — +01 — +00 — +00 — +00 —
   .0    .0    .0    .0    .0    .0    .0    .0
 COMMIT                    Frames Sub-F   SOLO
```
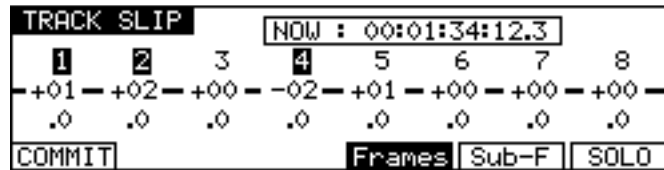
The Slip amount of each track is memorised, and displayed when entering the SLIP page. When the Slip amount of a track is different from zero, the according TRK SLIP LED (under the Meters) will be steadily lit, even when returning to another mode.

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

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

Pressing COMMIT (F1) commits the current slip operation and resets the display to zero.

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

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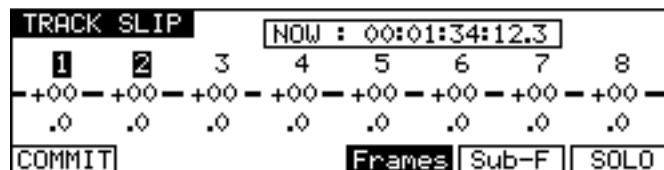
LOCATOR

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

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

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

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

STORE

Pressing the STORE key will show the following screen :

```
┌STORE┐   ┌NOW : 00:00:00:00.0┐
              IN : 00:00:00:00.0
             OUT : 00:00:00:00.0
            MARK : 00:00:00:00.0
┌──IN──┐┌─OUT─┐┌─MARK─┐          ┌MEMORY┐
```

- Pressing IN (F1) stores the current NOW time as the IN point.

- Pressing OUT (F2) stores the current NOW time as the OUT point.

- Pressing MARK (F3) stores the current NOW time as the MARK point.

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

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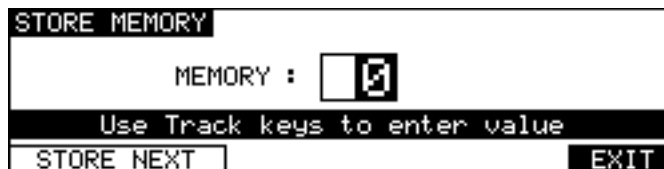
This page allows the current time to be stored in one of the locator memories (numbered 00 to 99). The memory number is entered via the Track keys (ALL/0, 1-8, SYNC/9). You can also store a series of locate points using the STORE NEXT key. Each time you press this key, the current time will be stored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

GOTO

Pressing the GOTO key will show the following screen :

```
┌GOTO┐    ┌NOW : 00:01:34:12.3┐
            IN TIME : 00:01:00:08.2
           OUT TIME : 00:07:28:02.0
          MARK TIME : 00:00:08:00.0
┌──IN──┐┌─OUT─┐┌─MARK─┐    ┌LOCATE┐┌EXIT┐
```
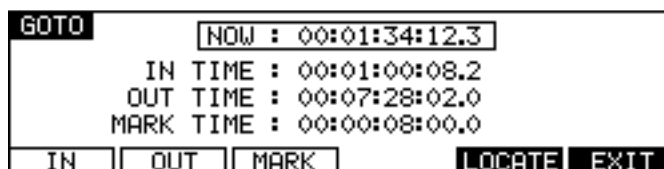
- Pressing IN (F1) locates to the previously stored IN point.

- Pressing OUT (F2) locates to the previously stored OUT point.

- Pressing MARK (F3) locates to the previously stored MARK point.

LOCATING TO TIMECODE POSITIONS

```
LOCATE                NOW : 00:01:34:12.3
              00:00:00:00. ◇
           Use Track keys to enter value
     ←─        ─→                  00    EXIT
```

You may locate to a timecode position by pressing GOTO followed by F5 (LOCATE). Use the track keys as a numeric keypad to enter the required time. For example, to locate to 01:12:13:23, press GOTO, 1,00,12,00,13,00,23,00, ENTER where 00 is the 'double zero' function on the F5 soft key. To locate to sub-frames, enter the timecode as above and then press the <- (F1) or -> (F2) keys to move the cursor to the sub-frame field.

LOCATING TO LOCATOR MEMORIES

```
GOTO MEMORY
              MEMORY :   5
           Use Track Keys to enter value
                                  EXIT
```
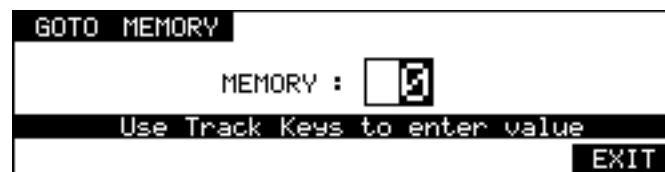
To locate to a previously stored locate memory, press GOTO, F6 (MEMORY) and enter the appropriate memory number 0-99 using the track keys (ALL/0, 1-8, SYNC/9) as a numeric keypad. Finally, press ENTER (see STORING LOCATE MEMORIES).

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

DISK PAGES

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

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

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

```
DISK SETUP
                Drives : - - F - - 1 0
          Project Disk : 0

 SCAN                                 SELECT
```

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

       0-6 ...   there is a formatted disk drive on this ID
       F   ...   there is an unformatted disk drive on this ID
       T   ...   there is a SCSI Tape drive on this ID
       -   ...   there is no drive recognised on this ID
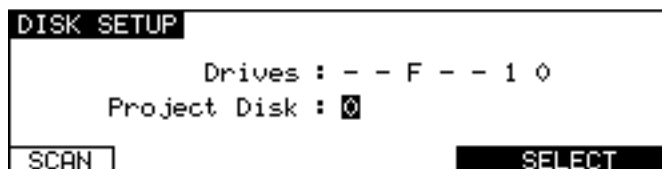
Pressing the SCAN key (F1) will re-scan the SCSI bus for drives. This can be used to allow the DD8 to detect an MO disk that is inserted into the drive after entering this page.

When a formatted project disk containing one or more projects is selected, pressing the SELECT key (F5/F6) will take you to the LOAD PROJECT page. If the disk is formatted but does not contain any projects, pressing this key will take you to the NEW PROJECT page allowing you to create one.

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

```
DISK SETUP
                Drives : - - F - - 1 0
          Project Disk : 4

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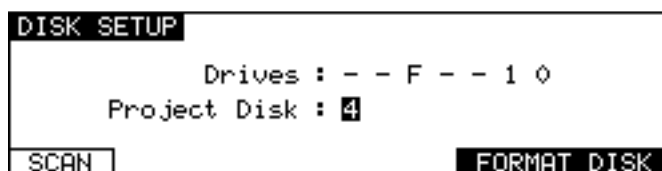
Pressing FORMAT DISK (F5/F6) will take you to the format page to initialise the disk.

NEW PROJECT PAGE

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

```
NEW PROJECT                      Disk : 0

          Project name : PROJECT  1

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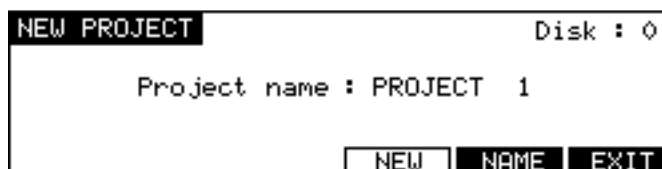
Pressing NEW (F4) will create a new Project (using Flash ROM settings), with the name shown in the Project Name field. After creating a new project, the DD8 will go to Record Mode ready to make new recordings.

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

```
┌─────────────────────────────────────────────┐
│NAME PROJECT                      Disk : 0     │
│                                               │
│           Project name :┌PROJECT   1┐         │
│                         └───────────┘         │
│      ENTER to confirm / ESCAPE to cancel      │
│  ┌────────┐┌────────┐            ┌──────────┐ │
│  │  ←─    ││  ─→    │            │   EXIT   │ │
│  └────────┘└────────┘            └──────────┘ │
└─────────────────────────────────────────────┘
```

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

LOAD PROJECT PAGE
This page is accessed either from the DISK SETUP page described previously.

```
┌─────────────────────────────────────────────┐
│LOAD PROJECT                      Disk : 0     │
│                               ║ Project 1     │
│    Use DATA +/- to scroll     ║ Scene 5       │
│                               ║ Effects       │
│  ┌──────────┐┌──────────┐┌──────┐┌────────┐  │
│  │DIRECTORY ││ UTILITIES ││ NEW  ││  LOAD  │  │
│  └──────────┘└──────────┘└──────┘└────────┘  │
└─────────────────────────────────────────────┘
```

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

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

Pressing DIRECTORY (F1/F2) goes to the Directory page (see below) where you can view all the files on the currently selected disk.

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

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

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

DIRECTORY PAGE

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

```
DIRECTORY  File Type: PROJECT    Disk : 0
                                    Project 1
     Use DATA +/- to scroll        Scene 5
                                    Effects

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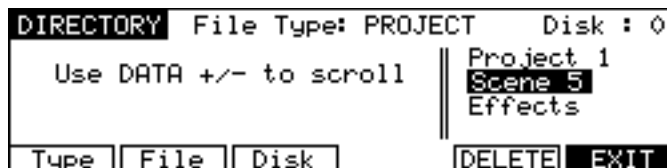
Pressing Type (F1) moves the cursor to the File Type field which allows you to select which type of file will be displayed.

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

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

Pressing DELETE (F6) deletes the selected Project highlighted by the cursor.

UTILITIES PAGE

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

```
UTILITIES                        Disk : 0
           Free on disk : 01:48:46:20.01
           Total capacity :    606Mb
                Disk used :     57Mb

     INFO |FORMAT| CLEAN |BACKUP| COPY | EXIT
```

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

DISK INFO

Pressing INFO (F1) will display the following screen:

```
DISK INFO                           ID:0
           total   used    available
  MEDIA    622Mb   91Mb      530Mb
  DATA       9Mb    0Mb        9Mb
  AUDIO    612Mb   91Mb      521Mb
  SONY    SMO-F521-00    1.04       EXIT
```

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

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

FORMATTING DISKS

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

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

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.

The FORMAT TYPE field is used to select the size of the directory that will be created on the disk when it is formatted. The NORMAL format allows 1000 files to be saved on each disk. The EXTENDED option allows 4000 files and is useful in situations where you want to make a large number of recordings onto a single disk.

NOTE 1: If the disk capacity is small (e.g. 1.3Gb) then there will not even be 4000 audio blocks on the disk so it is not possible to create 4000 files. The 'extended' format type may still be used on such disks, however.

NOTE 2: If you have several large EXTENDED format disks connected to the DD8 at the same time, you may receive an 'Out of memory' message when trying to access the disks. In this case, more CPU RAM should be installed in the DD8 to provide extra space for holding directories.

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

Once you have set everything as you want, pressing FORMAT will show the following prompt :

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

If you press ENTER, you will receive this screen:

```
FORMAT DISK Label :              Disk:0

                 Total  Certified  Bad
   Data blocks     0        0       0
   Audio blocks    0        0       0
 Formatting. ESCAPE to abort
```

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

---

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

```
FORMAT DISK                          Disk:0
           ┌─────────────────────────┐ied  Bad
     Data  │  DISK WRITE PROTECTED   │      0
     Audio └─────────────────────────┘      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 DD8 writes a new, empty directory to the disk after which, if FORMAT & CERTIFY is selected as the format operation, it goes through the disk searching for bad blocks and marking them so that they won't be used.

We recommend that you do a full format to prevent the possibility of disk errors later on. However, if you wish, you can either select FORMAT ONLY as the format operation or you can just let the format run for 30 seconds or so (enough time to write the directory) and press ESCAPE to abort. In most cases, FORMAT ONLY should be sufficient but please note that Akai 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.

CLEANUP DISK

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

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

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

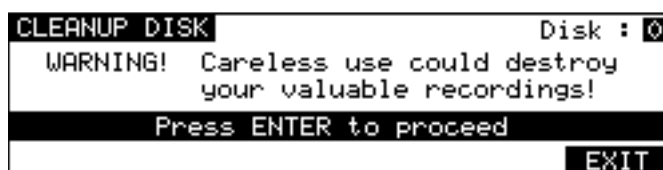The CLEANUP functions are:

CLEANUP

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

Pressing CLEANUP will give this message:

```
Delete clipboards?            NO  |  YES
```

Because audio may be being referenced by 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:

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

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

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

If the audio associated with a project on a removable disk is on another hard disk and the removable disk is not in the system when you run CLEANUP, what will happen is that the DD8 will search through all the projects it can find on the system in order to establish what audio should be kept and what should be deleted. Of course, it won't find the removable disk

because it is missing and so assumes that all the audio that it has found on the hard disk(s) related to the project on the removable (which is missing, of course) is unreferenced and will therefore delete it. When you come to insert the removable disk and try to play it, it will show that all the audio associated with it is missing and the project will be rendered unplayable.

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

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

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

```
Cleaning up disk. Please wait...
```

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

> **** IMPORTANT ****
>
> **The MINIMISE function cannot be aborted once you have started it.**
>
> *** DO NOT, UNDER ANY CIRCUMSTANCES, SWITCH THE DD8 OFF DURING MINIMISE ***
>
> **IN THE EVENT OF ACCIDENTALLY PROCEEDING WITH THE MINIMISE FUNCTION AND THEN CHANGING YOUR MIND, ONCE THE PROCESS HAS STARTED, IT WILL HAVE TO BE LEFT TO CONTINUE THROUGH TO THE END.**
>
> **SWITCHING THE DD8 OFF DURING THE MINIMISE PROCESS WILL CAUSE IRREPARABLE DAMAGE TO YOUR DATA!!**

Pressing ENTER will cause this prompt to be displayed:

```
┌─────────────┬──────────────────┐
│CLEANUP DISK │        Disk : 0  │
│   WARNING!  Careless use could destroy
│             your valuable recordings!
├─────────────────────────────────┤
│        Press ENTER to proceed    │
│                          ┌──────┐│
│                          │ EXIT ││
└──────────────────────────┴──────┘┘
```

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

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

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

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

```
SCSI BACKUP FUNCTIONS
                  Disk ID : 0
             SCSI Tape ID : 1

  Disk  || Tape ||BACKUP|   RESTORE   | EXIT
```

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

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

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

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

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

```
SCSI BACKUP
              Title : Backup
        Backup type : SELECTED FILES
      From disk : 0 to SCSI tape : 1
 Title || Type ||FORMAT|VERIFY|SELECT| EXIT
```

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

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

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

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

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

```
SCSI BACKUP
          The contents of the tape
        will be permanently destroyed!!!

 Format tape?                 YES  |  NO
```

> ** FORMATTING THE TAPE WILL PERMANENTLY DESTROY ITS CONTENTS
> **
>
> **PLEASE BE CAREFUL BEFORE PROCEEDING**

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

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

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

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

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

The fields on the SCSI BACKUP page are:

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

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

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

SELECTED FILES   You may, via F5 (SELECT), select specific files to backup.

ALL PROJECTS   You may backup all the projects on the selected disk.

ALL LIBRARIES   You may backup all the libraries on the selected disk.

ALL PROJS & LIBS   You may backup all the projects and all the libraries on the selected disk.

ENTIRE DISK   You may backup everything on the disk.

BACKING UP SELECTED FILES

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

```
SCSI BACKUP
            Title : Backup
       Backup type : SELECTED FILES
     From disk : 0 to SCSI tape : 1
 Title || Type ||FORMAT||VERIFY|SELECT| EXIT
```

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

```
SELECT FILES   Type: PROJECT     Disk : 0
                              ||Project 1
   Use DATA +/- to scroll     ||Scene 5
      (0 files selected)      ||Effects
 Type || File || Disk ||    SELECT  || EXIT
```

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

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

```
SELECT FILES   Type: PROJECT     Disk : 0
                              ||■Project 1
   Use DATA +/- to scroll     ||Scene 5
      (1 file selected)       ||Effects
 Type || File || Disk ||    SELECT  || EXIT
```

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

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

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

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

BACKING UP ALL PROJECTS AND/OR LIBRARIES

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

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

BACKING UP AN ENTIRE DISK

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

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

PERFORMING THE BACKUP

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

```
┌────────────────────────────────────────────┐
│ BACKUP IN PROGRESS          Disk : 0        │
│        ┌──────────────────────┐             │
│        │   Preparing tape     │             │
│        │   Please wait!       │             │
│        └──────────────────────┘             │
│                         (ESCAPE to abort)   │
└────────────────────────────────────────────┘
```

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

```
┌────────────────────────────────────────────┐
│ 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 ENTER) or insert a new tape and press CONTINUE.

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

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

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

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

```
BACKUP IN PROGRESS              Disk : 0
      Writing Audio
    TRK 1    23 from disk 0,  4% done

          5 of 10 files,  1% done
                         (ESCAPE to abort)
```

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

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

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

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

```
BACKUP IN PROGRESS

              Rewinding tape
              Please wait!

                         (ESCAPE to abort)
```

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

Finally, you will see this screen display:

```
SCSI BACKUP
      Back   Backup complete   ILES
      From                   : 1
   Disk  |  Tape  |FORMAT|VERIFY|SELECT| EXIT
```
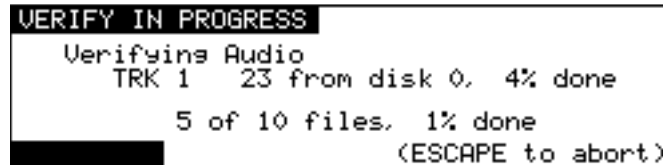
Press any key to continue.

VERIFYING A BACKUP

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

```
SCSI BACKUP
         ┌─────────────────────┐
         │  Press F5/YES to verify │ S
         │    the ENTIRE backup. │
     Fro └─────────────────────┘ i
 Verify backup?              │ YES │ NO │
```

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

```
VERIFY IN PROGRESS
  Verifying Audio
     TRK 1    23 from disk 0,  4% done

        5 of 10 files,  1% done
 ▆▆▆▆▆▆             (ESCAPE to abort)
```

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

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

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

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

```
SCSI BACKUP FUNCTIONS
                  Disk ID : 0
             SCSI Tape ID : 0

  Disk  |  Tape  |BACKUP|   RESTORE   |  EXIT
```

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

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

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

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

PERFORMING A RESTORE

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

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

```
SCSI RESTORE
         Press F5/YES to search
        the tape for backup titles.
       This may take several minutes.
 Search tape for titles?    YES    NO
```

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

```
SEARCH IN PROGRESS
            Please wait!

                    (ESCAPE TO abort)
```

After a while, you will see this screen:

```
SELECT FILES TO RESTORE
 Animals Lb     5 files
 Atmos   Lb    24 files
 Final Mix     16 files
    ESCAPE to cancel/ENTER 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. Use the DATA +/- keys to move the cursor to the one you want to restore and press ENTER. The backup will be selected and you will be taken back to the main SCSI RESTORE page:

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

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

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

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.
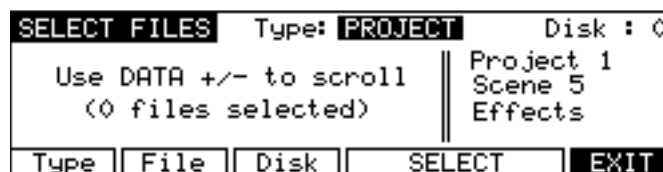
You may also specifically select the files you want to restore by selecting SELECTED FILES. To actually select the files for restore, press SELECT FILES (F3/4). First, you will see this screen:
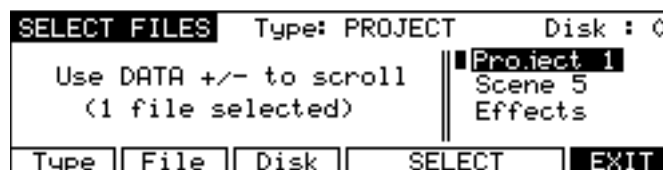
```
┌─────────────────────────────────────────┐
│SCSI RESTORE                               │
│  ┌─────────────────────────────────────┐ │
│  │ Press ENTER to read the directory   │ │
│  │    for backup "Animals   LB"        │ │
│  │         from the tape.              │ │
│  └─────────────────────────────────────┘ │
│ Read backup directory?      │ YES │ NO  │ │
└─────────────────────────────────────────┘
```

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

```
┌─────────────────────────────────────────┐
│SEARCH IN PROGRESS                         │
│  ┌─────────────────────────────────────┐ │
│  │ Reading directory from tape.        │ │
│  │          Please wait!               │ │
│  └─────────────────────────────────────┘ │
│                         (ESCAPE 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    Disk : 0  │
│                              ║ Project 1  │
│  Use DATA +/- to scroll      ║ Scene 5    │
│    (0 files selected)        ║ Effects    │
│ Type ││ File ││ Disk ││  SELECT  ││ EXIT  │
└─────────────────────────────────────────┘
```

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

```
┌─────────────────────────────────────────┐
│SELECT FILES   Type: PROJECT    Disk : 0  │
│                              ║■Project 1  │
│  Use DATA +/- to scroll      ║ Scene 5    │
│    (1 file selected)         ║ Effects    │
│ Type ││ File ││ Disk ││  SELECT  ││ EXIT  │
└─────────────────────────────────────────┘
```

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

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

```
┌─────────────────────────────────────┐
│RESTORE IN PROGRESS                   │
│    ┌───────────────────────────┐     │
│    │ Reading directory from tape.│    │
│    │      Please wait!          │     │
│    └───────────────────────────┘     │
│                    (ESCAPE to abort) │
└─────────────────────────────────────┘
```

Followed by this screen:

```
┌─────────────────────────────────────┐
│RESTORE IN PROGRESS                   │
│    ┌───────────────────────────┐     │
│    │       Analysing cues       │     │
│    │ Library "Animals    ",  0% done│  │
│    │       Please wait!         │     │
│    └───────────────────────────┘     │
│                    (ESCAPE to abort) │
└─────────────────────────────────────┘
```

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

```
┌─────────────────────────────────────┐
│RESTORE IN PROGRESS                   │
│   Restoring Audio                    │
│     TRK 1   23 from disk 0,  4% done │
│                                      │
│          5 of 10 files,  1% done     │
│                    (ESCAPE to abort) │
└─────────────────────────────────────┘
```

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

You will then see this display:

```
┌─────────────────────────────────────┐
│RESTORE IN PROGRESS                   │
│    ┌───────────────────────────┐     │
│    │  Resolving cue references  │     │
│    │         30% done           │     │
│    │       Please wait!         │     │
│    └───────────────────────────┘     │
│                    (ESCAPE to abort) │
└─────────────────────────────────────┘
```

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

Finally, you will see this screen display:

```
┌─────────────────────────────────────┐
│SCSI RESTORE                       b  │
│      Rest┌──────────────────┐FILES   │
│          │ Restore complete │        │
│      From└──────────────────┘k : 1   │
│ SELECT TITLE │ SELECT FILES │   EXIT │
└─────────────────────────────────────┘
```

---

1   There is a difference when ENTIRE BACKUP is selected. This will be explained later.

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:

```
RESTORE IN PROGRESS

        Overwrite file?
Library "Animals   "  Disk 0

              ABORT   NO      YES
```

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

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

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

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

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

```
SCSI RESTORE

       Rest  Restore failed!  FILES
             Operation aborted!
       From                  k : 1
  SELECT TITLE  SELECT FILES      EXIT
```

RESTORING THE ENTIRE BACKUP

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

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

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

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

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

NOTES ABOUT BACKUP/RESTORE

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

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

ID#0   SFX

ID#1   MUSIC

ID#2   DIALOGUE

Tape Drive

DD8

BACKUP

ID#0   SFX, MUSIC and DIALOGUE

ID#1

ID#2

Tape Drive

DD8
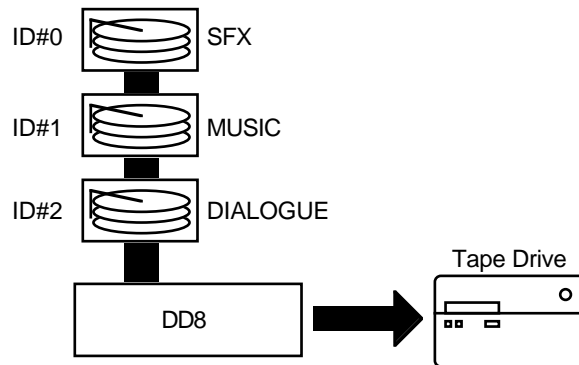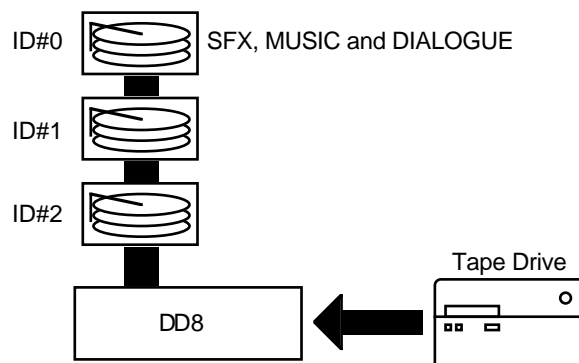
RESTORE

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

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

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

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

SUGGESTIONS FOR BACKUP/RESTORE

- Try not to re-use tapes. They are relatively inexpensive to buy and potentially carry very expensive data so it is not wise to economise.

- Do not use ordinary audio tapes unless you're really stuck as tapes made specifically for backup will be more reliable.

- Try to organise your backups sensibly to make restoring them easier.

- In much the same as in 'the old days' of 1/4 inch and multi-track tapes, try to ensure that the tape box is well labelled. Include any relevant information regarding the data stored on it. Include dates, client names and anything else you think appropriate that will make recognition of the material and the restore that much easier. Remember! It might not be you who restores it but somebody completely unfamiliar with the data.

- Store and treat the tapes carefully. Just because the media is small doesn't mean it doesn't deserve the same respect as a hefty 10" reel of master tape.

- Naturally, keep backup tapes away from magnetic sources such as monitor speakers, etc..

- If you have to send the backups anywhere, make a copy of them first.

- When sending tapes anywhere, package them well in a suitable padded envelope or box and wrap the tape in aluminium foil to help prevent damage from stray magnetic interference.

- Always write protect the tape. It may be a nuisance should you try to backup to it and get an error message but this is better than accidentally formatting it or overwriting existing backups.

- If you are travelling abroad with your backups, take them as hand luggage. Although the X-ray machines are supposed to be safe, you may be able to persuade airport security to have them manually inspected (normal luggage is often subjected to high power X-ray inspection that may not be too kind on the tape). Leave a copy at home just in case.

- Keep backups away from liquids, etc..

- Do not leave tapes lying around in vehicles, especially on hot days.

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

- As routine maintenance, the heads should be cleaned after every 25 hours or so of use. Basically, clean the heads regularly.

- To clean the heads of your drive, only use the head cleaner recommended in your drive's documentation.

- If your drive is a SCSI DAT drive, do not use standard audio DAT head cleaners.

- If you are using a SCSI DAT drive, avoid using audio DATs. Use only those tapes recommended by your drive's manufacturer.

- Keep the drive in a dust free environment. Dust on the heads could lead to a loss of data integrity and failed backups/restores.

- Don't smoke near the tape drive. This can really clog the heads!

- Do not try to use the tape drive if you move it from environments of differing temperatures and humidity. Moisture on the head as a result of condensation could damage the tape. If you must move the drive from one place to another, turn it on and leave it for a while before attempting to use it to give any condensation a chance to evaporate. Consult your drive's operator's manual for details on this.

- If you must manually eject the tape, there can be a few seconds delay before the tape is ejected. Do not power down the drive in this period as you may damage the heads and/or the tape.

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

- Make sure the total length of the buss doesn't exceed 6 metres.

- Make sure the correct devices are terminated (this should be the first and last in the chain with all other being unterminated).

- Make sure that no devices on the buss share the same SCSI ID.

Etc..

COPYING DISKS

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

```
COPY DISK

       From disk : 0 to disk : 1
       Copy type : ALL PROJECTS

  From || To || Type ||   COPY   || EXIT
```

The parameters are:

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

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

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

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

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

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

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

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

Pressing COPY (F4/F5) initiates the COPY process. You will receive this prompt:

```
Copy disk 0 to disk 1?
```

The selected source and the target disks are shown. Press ENTER to confirm or ESCAPE to cancel. During the copying process, the bottom line of the LCD will show something like this display:

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

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

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

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

The same process is used for disk duplication.

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

**IMPORTANT NOTES REGARDING COPY **

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

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

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

For example, imagine you have two projects PROJECT 1 and PROJECT 2 on DISK 0 and both projects use exactly the same audio (PROJECT 2 being just a slight variation on PROJECT 1). If you were to select SINGLE FILE as the file type and individually copy each project to DISK 1 separately, you will find that the audio is duplicated, using up disk space. In this case, you should use ALL PROJECTS - this would copy both projects but would only copy the audio once.
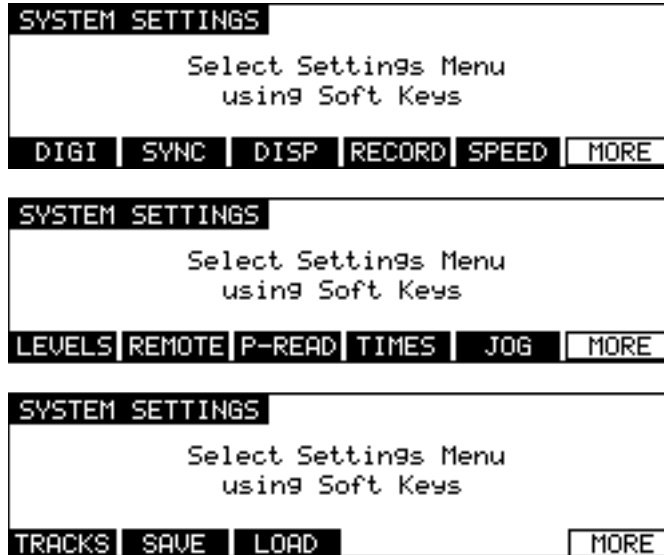
In the event of you having, say, five projects on DISK 0 all using the same audio but you only want to copy PROJECT 1, 2 and 5 to DISK 1, select ALL PROJECTS and copy all five projects across in one operation (and hence only one version of the audio) and then, on DISK 1, delete projects 3 and 4.

The same is true when copying libraries.

SYSTEM SETTINGS

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

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

```
SYSTEM SETTINGS
            Select Settings Menu
               using Soft Keys

 DIGI | SYNC | DISP |RECORD| SPEED | MORE
```

```
SYSTEM SETTINGS
            Select Settings Menu
               using Soft Keys

LEVELS|REMOTE|P-READ|TIMES | JOG  | MORE
```

```
SYSTEM SETTINGS
            Select Settings Menu
               using Soft Keys

TRACKS| SAVE | LOAD |               | MORE
```

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

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

```
SYSTEM SETTINGS
      Settings have been modified!
    Do you want to save these changes?

 FLASH ROM  | WITH PROJECT | DON'T SAVE
```

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

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

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

DIGITAL SETTINGS

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

```
DIGITAL SETTINGS
          Sample Rate : 44.1 kHz
          Digital Sync : PAL VideoSync
 Auto Digital Input : ON
             Emphasis : OFF
 Rate | Sync | Auto | Emph |        | EXIT
```
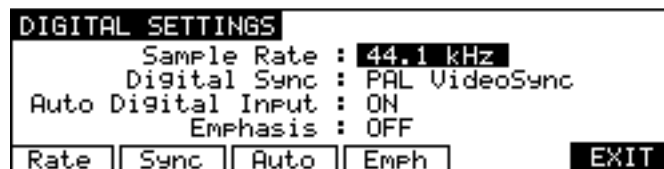
SAMPLE RATE   Pressing Rate (F1) moves the cursor to the Sample Rate field.

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

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.

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

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

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

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

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

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

SYNC

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

```
┌─────────────────────────────────────────┐
│ SYNC                                     │
│     Ext. Time Source : SMPTE 30 nd       │
│       Time Generator : NONE              │
│            Generate : ON                 │
│                                          │
│ Source│ T.Gen │ Gen │          │ EXIT    │
└─────────────────────────────────────────┘
```
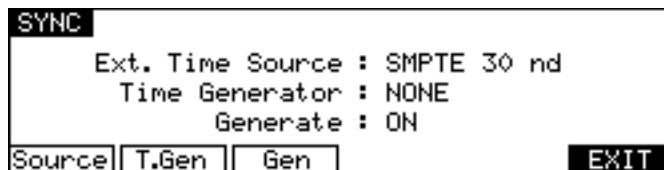
Pressing Source (F1) moves the cursor to the External Time Source field.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

This selection should be used when working with material that has been transferred from film in this way. Whilst working with the video, the audio will play back slightly faster and may sound unnatural but this is not a problem as, ultimately, the audio will be played back 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 DD8 is acting as an RS422 master controller (i.e. when all playback, locating, jogging, etc., of both the DD8 and VTR are controlled from the DD8). SMPTE/EBU from the VTR is still connected as usual via the EXT. TIME input and the SYNC key must be switched on. The DD8 will receive timecode information in playback from the LTC connection but, when working in slow motion, it receives timecode over RS422 making locking of the two machines tighter.

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

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

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

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

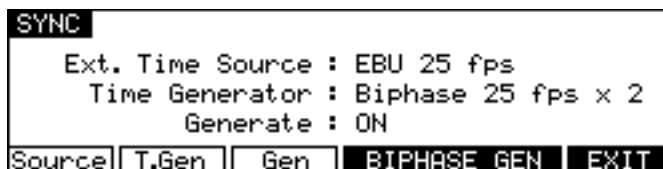NONE - This will stop the DD8 generating timecode.

SMPTE/EBU selection - These will generate timecode at the selected frame rate when the SYNC key is switched on.

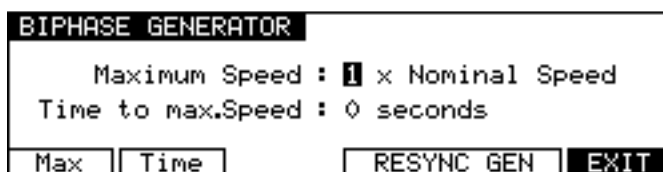**NOTE:** The DD8 cannot generate and receive LTC at the same time.

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

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

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

```
SYNC
     Ext. Time Source : EBU 25 fps
        Time Generator : Biphase 25 fps x 2
               Generate : ON
Source  T.Gen   Gen    BIPHASE GEN   EXIT
```

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

```
BIPHASE GENERATOR
        Maximum Speed : 1 x Nominal Speed
   Time to max.Speed : 0 seconds

  Max    Time           RESYNC GEN   EXIT
```

In this page, you can set certain parameters that affect the biphase 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. Pressing Max (F1) moves the cursor to this field.
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. Pressing Time (F2) moves the cursor to this field.

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

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

DISPLAY

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

```
DISPLAY
                   Style : EBU 25 fps
            Sub-Frames : OFF
            Meters Mode : HOLD
            LCD Contrast : 7
   Style  Sub-F  Meters   LCD           EXIT
```
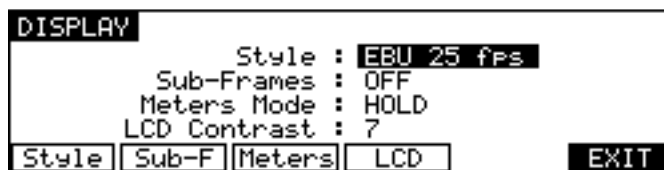
Pressing Style (F1) moves the cursor to the Style field.

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

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

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

24 fps - 24 frames per second.

25 fps - 25 frames per second.

29.97 fps - non-drop 29.97 frames per second.

29.97 fps drop - drop frame 29.97 frames per second.

30 fps - non-drop 30 frames per second.

30 fps drop - drop frame 30 frames per second.

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.

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

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

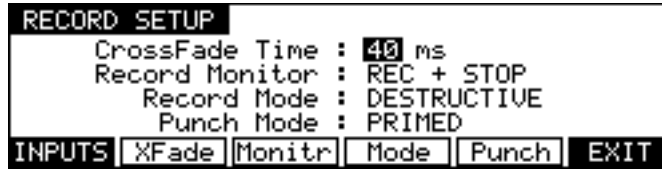|	
OFF	The sub-frame display is switched off
10th Frames	Normal display with 10 sub-frames per frame
Film Perfs	This counts film perforations at 4 perforations per frame.
Video Fields	This counts video fields at 2 fields per frame.

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

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

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

RECORD SETUP

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

```
RECORD SETUP
   CrossFade Time : 40 ms
   Record Monitor : REC + STOP
      Record Mode : DESTRUCTIVE
       Punch Mode : PRIMED
INPUTS  XFade Monitr  Mode   Punch  EXIT
```

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

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

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

	STOP	RECORD	PLAYBACK
HEAR INPUT?	YES	YES	NO

RECORD TRACK'S PLAY SELECT KEY ON

	STOP	RECORD	PLAYBACK
HEAR INPUT?	YES	YES	YES

RECORD TRACK'S PLAY SELECT KEY OFF

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

	STOP	RECORD	PLAYBACK
HEAR INPUT?	NO	YES	NO

RECORD TRACK'S PLAY SELECT KEY ON OR OFF

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

<div style="border:1px solid">

** IMPORTANT NOTES REGARDING TRACK MONITORING DURING RECORDING **

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

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

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

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

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

</div>

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

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

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

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

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

DROP IN   DROP OUT

Will not erase original recording

DROP IN   DROP OUT

Will not erase original recording

DROP IN   DROP OUT

Will not erase original recording

DROP IN   DROP OUT

Will erase original recording

DROP IN   DROP OUT

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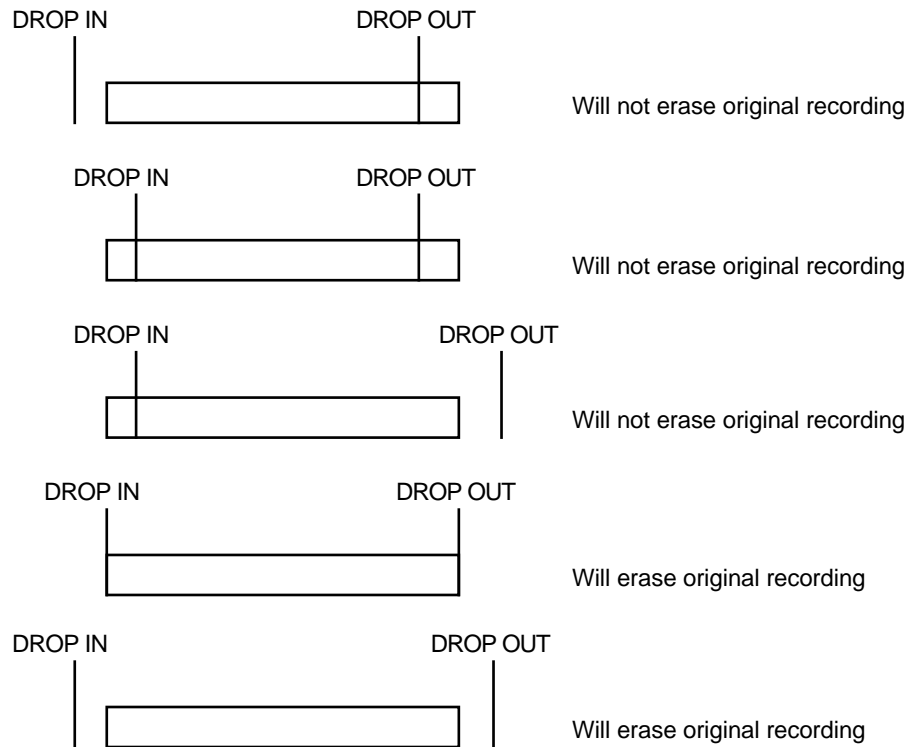
NOTE: There are certain considerations regarding destructive recording that you should be aware of.

• THERE IS NO UNDO FOR RECORDINGS WHEN DESTRUCTIVE MODE IS USED.

• After you have just loaded a new project, as a safety factor, recording over cues in that project will not delete their audio from disk and the original project cannot be damaged. If, however, you record over cues recorded since the project was loaded, newly recorded cues' audio will be deleted from disk.

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

```
** WARNING **

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

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

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

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

Available selections are :

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

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

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

ROUTING INPUTS

Pressing INPUTS (F1) accesses the Input Routing page :

```
┌─────────────────────────────────────────────┐
│INPUT ROUTING          Input Type:█ANALOG█│
│ INPUT :   1   2   3   4   5   6   7   8     │
│           ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓     │
│ TRACK :   1   2   3   4   5   6   7   8     │
│        Use Track keys to select Track       │
│ Type       │ MONO ││STEREO│ RESET │ EXIT   │
└─────────────────────────────────────────────┘
```

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

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

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

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

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

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

S P E E D

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

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

```
VARISPEED
              Speed : +█0.00 %
          VariSpeed : ON
       Internal Time Source only !
 ┌─────┬─────┬──────┐          ┌──────┐
 │  <  │  >  │ Vari ?│          │ EXIT │
 └─────┴─────┴──────┘          └──────┘
```

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

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

```
EXTERNAL SOURCE SPEED
      External Source Type : LTC
      External Time Format : 25 fps
     External Source Speed : +1.0000
   External Source Stability : 0.00
                              ┌──────┐
                              │ EXIT │
                              └──────┘
```

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

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

```
SYSTEM SETTINGS
             Select Settings Menu
                using Soft Keys

 LEVELS REMOTE P-READ TIMES   JOG    MORE
```

The functions are:

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

```
OPERATING LEVEL

      Reference Level : -18 dB

                                    EXIT
```
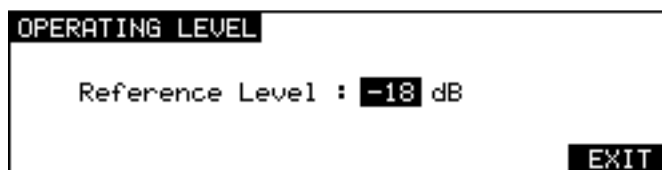
The Reference Level : is used to set the 0 VU of the A/D and D/A converters.

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

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

```
PRE-READ        Pre-Read : OFF
                Pre-Delay : 0.0 sec.
    Track 1  Threshold : +0 dB
        Use Track keys to select Track
 PRead || ◀ Pre-Delay ▶||   Threshold  || EXIT
```
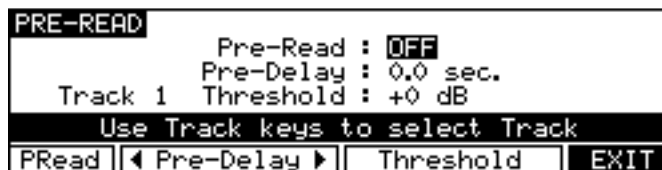
PRead (F1)   Moves the cursor to the Pre-Read On/OFF field. This enables the Pre-Read function and causes the DD8 to load pre-read data into memory.

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

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

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

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

```
┌──────────────────────────────────────────────┐
│ TIMES                                          │
│                                                │
│           Play To : 1 second(s)                │
│           Play From : 1 second(s)              │
│                                                │
│                                                │
│ ┌────┐┌──────┐                      ┌──────┐   │
│ │ To ││ From │                      │ EXIT │   │
└──────────────────────────────────────────────┘
```
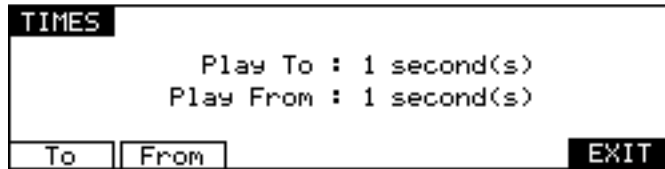
To (F1)   Moves the cursor to the Play To field. This sets the amount of audio (before the NOW time) that will be played when the TO key is pressed.

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

JOG

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

```
┌──────────────────────────────────────────────┐
│ JOG / SPOOL                                    │
│             JOG Resolution : FINE              │
│       Maximum JOG Speed : ▮ x nominal          │
│      Maximum Spool Speed : 2 x nominal         │
│ ┌──────┐┌─────┐┌───────┐            ┌──────┐   │
│ │Reso ?││ JOG ││ SPOOL │            │ EXIT │   │
└──────────────────────────────────────────────┘
```
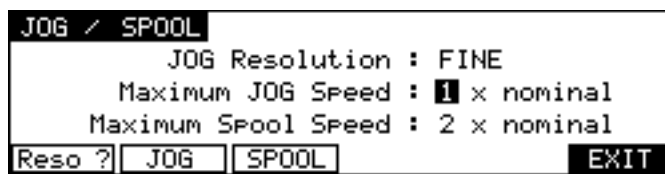
Pressing Reso (F1) move the cursor to the JOG Resolution field.

Available values are :
        NORMAL   Normal Jog wheel response
        FINE   Fine jog wheel response

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

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

REMOTE

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

```
┌──────────────────────────────────────────────┐
│ REMOTE                                         │
│              Select Remote Menu                │
│                using Soft Keys                 │
│                                                │
│ ┌──────┐┌──────┐┌──────┐┌──────┐    ┌──────┐   │
│ │AKNET ││ GPIO ││ RS422││ MIDI │    │ EXIT │   │
└──────────────────────────────────────────────┘
```

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

Pressing the AKNET key takes you to a page which shows the Ethernet ID number assigned to the Ethernet option board. This number is programmed during production so there are no user editable parameters on this page.

```
┌──────────────────────────────────────────────┐
│ AKNET                                          │
│                                                │
│         Ethernet ID : 0020C71D0081             │
│                                                │
│                                     ┌──────┐   │
│                                     │ EXIT │   │
└──────────────────────────────────────────────┘
```
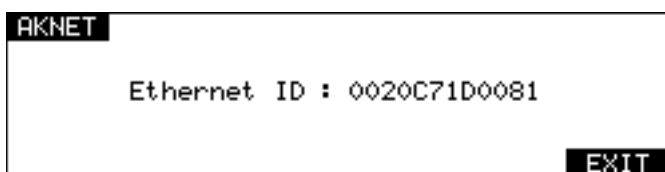
The pages available from the GPIO and RS422 keys are described later in the sections on GPIO and RS422.

Pressing the MIDI key takes you to the following page:

```
┌────────────────────────────────────────────────┐
│ MIDI                                             │
│                                                  │
│                   Device ID : 0                  │
│           MIDI Machine Control : SLAVE           │
│                                                  │
│ Dev ID  MMC                               EXIT   │
└────────────────────────────────────────────────┘
```

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

THIRD SYSTEM SETTING PAGE

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

```
┌─────────────────────────────────────────────┐
│ SYSTEM SETTINGS                               │
│            Select Settings Menu               │
│              using Soft Keys                  │
│                                               │
│ TRACKS │ SAVE │ LOAD            │   MORE   │  │
└─────────────────────────────────────────────┘
```

The functions are:

TRACK MAPPING

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

```
┌─────────────────────────────────────────────┐
│ TRACK MAPPING                                 │
│ SOURCE:  1   2   3   4   5   6   7   8         │
│          ↓   ↓   ↓   ↓   ↓   ↓   ↓   ↓         │
│ TRACK:   1   2   3   4   5   6   7   8         │
│      Use Track keys to select Source          │
│  1-8  │ 9-16 │                    EXIT        │
└─────────────────────────────────────────────┘
```
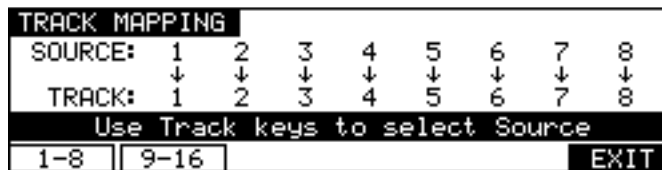
This page is used to assign 'virtual' tracks from the current project to the 8 playback tracks. For example, if you are using a project created on the DD1500 or DR16 with 16 tracks, you can choose which 8 of these tracks you want to play on the DD8. The soft keys '1-8' (F1) and '9-16' (F2) can be used to quickly select tracks 1-8 or 9-16 for playback. You can also select individual tracks by using the track keys (1-8) to select a playback track and using the DATA +/- keys to select the required source.

SAVE SETTINGS

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

```
┌─────────────────────────────────────────────┐
│ SYSTEM SETTINGS                               │
│                                               │
│   This will save the current parameters.      │
│                                               │
│                                               │
│  FLASH ROM  │ WITH PROJECT │        EXIT      │
└─────────────────────────────────────────────┘
```
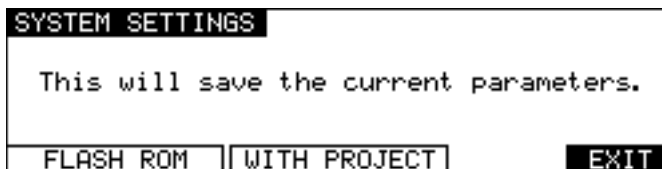
If you want to save the settings to disk with the current project, select WITH PROJECT (F3/F4).

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

LOAD SETTINGS

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

```
┌─────────────────────────────────────────────┐
│ SYSTEM SETTINGS                               │
│   This will reset the current parameters      │
│         to the power-up settings.             │
│                                               │
│ ROM DEFAULT │                      EXIT       │
└─────────────────────────────────────────────┘
```
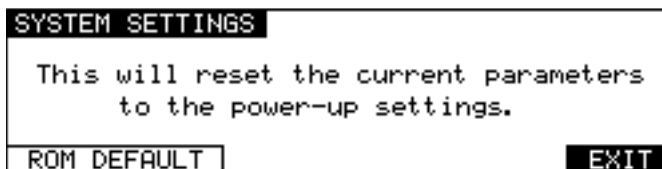
Pressing ROM DEFAULT (F1/F2) will replace the current system settings with those stored in Flash-ROM.

DD8 AS AN RS422 MASTER

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

RS422 equipped VTR   DD8 (with RS422 and LTC option boards)
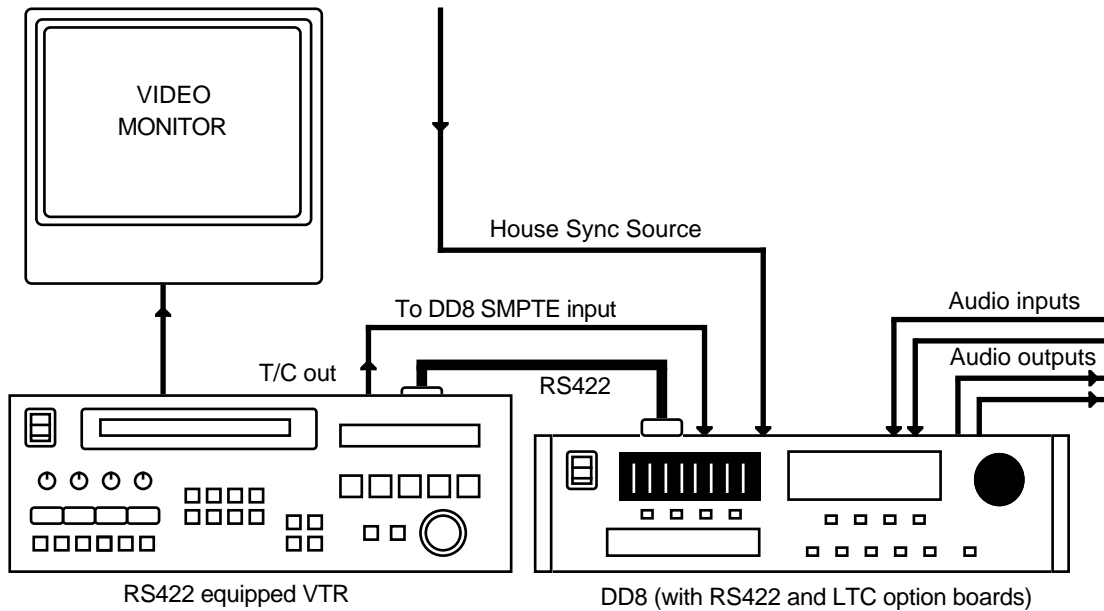
RS422 SETUP PAGE

Pressing the SYSTEM key followed by REMOTE and RS422 takes you to the RS422 SETUP page where you can setup functions to cater for the VTR's transport mechanism.
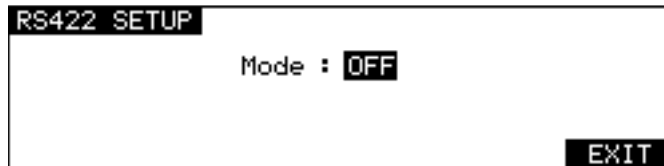
If RS422 MASTER is selected in the RS422 MODE field. You will see this screen:

The parameters are:

VTR PRE-ROLL   Most VTRs require a certain amount of 'run up' time when 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 DD8 will actually locate to 55 seconds.

> **NOTE:** YOU MUST SELECT ONE OF THE SMPTE/EBU+RS422 OPTIONS AT A FRAME RATE APPLICABLE TO YOUR AREA WHEN USING RS422 MASTER.
>
> These options are available at all frame rates. SMPTE/EBU from the VTR is still connected as usual to the LTC option board's input and the SYNC key must be switched on. The DD8 will receive timecode information in playback from the LTC connection but, when working in slow motion, it receives timecode over RS422 making locking of the two machines tighter.

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

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

LAYBACK FUNCTION IN RS422 MASTER

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

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

```
┌─────────────────────────────────────────────┐
│ RS422 LAYBACK                                 │
│       Layback to tracks : [1]                 │
│         Tracks enabled : ANALOGUE             │
│                                               │
│ Tracks Enable    LAYBACK     PVIEW   EXIT     │
└─────────────────────────────────────────────┘
```
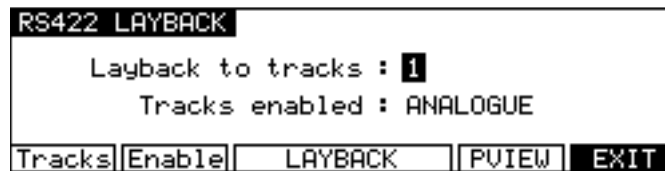
The parameters are:

LAYBACK TO TRACKS   Here you may select which of the VTR's tracks the material will be recorded to. You may select VTR tracks 1, 2, 3, 4, 5, 6, 7, 8 (mono) or 1+2, 3+4, 5+6, 7+8 (stereo) or 1-4, 5-8 or 1-8.

TRACKS ENABLED   Here you may select whether the layback (i.e. the mixdown) will be to the VTR's analogue tracks or its digital tracks. You may also select ANALOG+DIGITAL which will cause the layback to be recorded to both the analogue and the digital audio tracks of the VTR.

The soft key functions are:

PVIEW   This allows you to 'rehearse' (preview) the layback (i.e. it will go into E-E mode at the IN point and will then stop at the OUT point). This function allows you to check whether the edit will be successful or not.

LAYBACK   Pressing this will initiate the layback process (i.e. the VTR will play to the IN point and will drop into record on the VTR. When the OUT point is reached, it will stop).

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

USING THE LAYBACK FUNCTION

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

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

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

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

RS422 MASTER CONTROL OF NON-LINEAR VIDEO RECORDERS

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

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

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

RS422 SLAVE FUNCTIONS

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

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

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

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

RS422 SLAVE - EAVESDROPPING MODE

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

```
RS422 SETUP
              Mode : EAVESDROP SLAVE
          RS422 ID : BVW75
        Edit Delay : 2 frames
  Mode     ID    Delay  TRACK ASSIGN   EXIT
```

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

```
RS422 TRACK ASSIGNMENT

VTR Track  A1     A2     A3     A4   D1-D16
 DD Track  OFF    OFF    OFF    OFF    OFF
```

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

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

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

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

RS422 SLAVE - FULL SLAVE MODE

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

```
RS422 SETUP
              Mode : FULL SLAVE
         RS422 ID : BVW75
       Edit Delay : 2 frames

 Mode     ID    Delay   TRACK ASSIGN   EXIT
```

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

```
RS422 TRACK ASSIGNMENT

VTR Track  A1     A2     A3     A4   D1-D16
 DD Track  OFF    OFF    OFF    OFF    OFF
```

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

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

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

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

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

GPI/O

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

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

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

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

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

```
┌─────┐
│GPIO │
└─────┴──────────────────────────────────┐
│                                         │
│            Mode : MUTITRACK             │
│         Punch in : REC + PLAY           │
│                                         │
│ ┌──────┐┌───────┐      ┌──────┐┌──────┐ │
│ │ Mode ││ Punch │      │ASSIGN││ EXIT │ │
│ └──────┘└───────┘      └──────┘└──────┘ │
└─────────────────────────────────────────┘
```
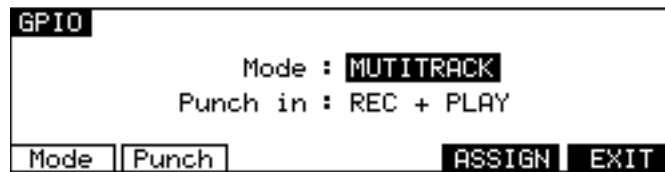
This screen allows you to configure the GPIO board in MAG or MULTITRACK modes.

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

Also in MULTITRACK mode, you can select if the DD8 will start recording when a GPI 'RECORD' command is received on its own or if GPI 'RECORD and PLAY' are needed at the same time. This is selected on the 'Punch in' field.

The GPIs and GPOs have default assignments as follows:

GPI Default Assignments:

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

GPO Default Assignments:

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

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

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

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

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

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

PLAY - When a pulse is received, the DD8 will start playback.

STOP - When a pulse is received, playback will stop.

FAST FORWARD - When a pulse is received, the DD8 will fast forward.

REWIND - When a pulse is received, the DD8 will rewind.

RECORD - When a pulse is received, the DD8 will start recording.

PLAY TO - When a pulse is received, the DD8 will play to the current NOW time.

PLAY OVER - When a pulse is received, the DD8 will play over the current NOW time.

PLAY FROM - When a pulse is received, the DD8 will play from the current NOW time.

PLAY IN TO OUT - When a pulse is received, the DD8 will play from the selected IN point to the selected OUT point.

PLAY LAST - When a pulse is received, the DD8 will play the last thing played.

PLAY BACKWARDS - When a pulse is received, the DD8 will play backwards.

GRAB IN MARK - When a pulse is received, it will mark an IN point.

GRAB SYNC MARK - When a pulse is received, it will mark a SYNC point.

GRAB OUT MARK - When a pulse is received, it will mark an OUT point.

RESET BIPHASE - This will reset the biphase receiver.

TOGGLE EXT.TIME - When a pulse is received, it will switch on/off the external time source.

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

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

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

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

Press EXIT (F6) to leave this page.

G P O

Pressing F5 - GPO - gives this screen:

```
┌─────────────┬──────────┬──────────────────┐
│GPO SETUP    │ Active   │    Function      │
│     GPI  1  │   LOW    │ RECORD  TRACK  1 │
│     GPI  2  │ ▐LOW▌    │ RECORD  TRACK  2 │
│     GPI  3  │   LOW    │ RECORD  TRACK  3 │
│     GPI  4  │   LOW    │ RECORD  TRACK  4 ↓│
├───────┬─────┴──┬───────┴──┬───────┬──────┤
│  ←    │   →    │  Prev │ Next │  GPI │ EXIT │
└───────┴────────┴──────────┴───────┴──────┘
```

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

ACTIVE

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

FUNCTION

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

PLAYING - The DD8 will send out a pulse when PLAY is activated.

STOPPED - The DD8 will send out a pulse when STOP is activated.

LOCATING - The DD8 will send out a pulse when locating to a timecode position.

RECORDING - The DD8 will send out a pulse when RECORD is activated.

EXT TIMECODE OK - The DD8 will send out a pulse when external timecode is being successfully received.

EXT WORDCLOCK OK - The DD8 will send out a signal when external wordclock is being successfully received.

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

PLAY TRACK - These options allow a tally to be sent when any of the playback tracks are switched on/off

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

Applications for the GPOs are varied and one that immediately springs to mind is that of using one of the GPO outputs set to RECORDING to turn on a red light every time you drop into record.

Press EXIT (F6) to leave this page.

NOTES ON CHOOSING A DISK DRIVE

You will probably have bought your DD8 with a disk drive installed. If, however, you are supplying your own disk drive, please bear the following in mind.

Theoretically, any disk drive that conforms to the SCSI implementation may be used with the DD8 and you will get more or less tracks and time depending on the speed and size of the disk. Basically, any modern disk drive should work - in fact, with the speed of current hard disks, it would be difficult to find a drive that didn't give a fairly healthy number of tracks! It is only with older drives you may experience performance problems but, even then, the DD8 will try the best it can to get as many tracks off disk as possible. You should be able, therefore, to connect any SCSI drive and it should work.

However, please be wary of a few things. For a start, don't take for granted the specifications given in brochures for disk drives. They may quote quite fast access speeds but they may not be strictly accurate and many of them quote 'best case' figures. Also, buying a disk drive with a fast access speed is not a guarantee of achieving lots of tracks as data bandwidth (i.e. the data transfer rate - usually expressed in Megabytes Per Second) is also crucially important and a slow drive with a high bandwidth may give better results than a disk whose access speed is quoted as being extremely fast. One other point to bear in mind is that some disks do not maintain a constant bandwidth across the disk and you will find that some drives are very fast at one end of the disk but extremely slow at the other. The same may be true of disk access speed. Beware of specifications that quote "average" figures for disk speed as they may not give you a true indication of what the disk is capable of across the whole disk. Furthermore, different drives' SCSI implementation can vary quite dramatically. In our tests, a drive with an access speed of around 10 milliseconds and a transfer rate of around 3Megabytes per second should be able to give eight disk tracks.

As a result of all of this, Akai 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 DD8 and try out different drives, we will gradually find out which drives give the best performance, which drives are not really suitable and which drives just cannot be used. As this will vary from country to country, you should speak to your local distributor about which drives are recommended.

NOTES REGARDING SCSI

The DD8 communicates with disk drives using SCSI so, as mentioned elsewhere in this manual, you must be aware of some restrictions imposed by SCSI.

1   Every device (i.e. every disk drive) on the SCSI chain MUST have unique SCSI IDs. Failure to observe this will cause problems and unreliability. The maximum numbers of disks you can have on-line at any one time is seven (SCSI ID#0-6).

2   The recommended TOTAL LENGTH of the SCSI chain must not exceed 6 metres.

3   It is important to install the correct termination. Usually, the rule is that the first and last devices in the chain must be terminated and all devices in between should not be terminated.

4   Always use high quality SCSI cables. Cheap ones may seem an attractive proposition but can cause unreliability. Cheap, 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 DD8 can have several disk drives on line at any one time and these may be a combination of fixed hard disk drives or removable disk drives. The DD8 can play audio from any disk at any time. Furthermore, a single project can access audio from any disks that are on-line. For example, a project could be playing music from one disk, sound effects from another, foley from another and dialogue from another. However, please note that when using removable disks (i.e. MO disks), it is vital that the correct disks accompany the project if it is transferred elsewhere. In the above example, if the disk containing the foley did not accompany the project when it is transferred to the mix down room, the foley would not play. However, you will note that the rest of the project will play correctly - you simply won't hear the foley cues until that disk is put on-line.

Note that there is no restriction into which drive a removable disk can be placed. If, on System A, the music disk was on Drive ID#0, the sound effects on Drive#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. Basically, what you must remember is that when transferring MO disks from one system to another, try to ensure that the audio does not get 'detached' from the project.

OPTION BOARD INSTALLATION

> **CAUTION - These instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the Operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.**

The DD8 can accommodate several options. Some of these are installed from underneath and the others from the top. The options installed on the top side are the IB-D8AD 8-channel Analog Input Board, the IB-D8DA 8-channel Analog Output Board, IB-D8TIF TASCAM Digital Interface Board, IB-D8MA Multi-channel AES/EBU Digital Interface Board, IB-801S SCSI-B Interface Board, IB-802T SMPTE/EBU Interface Board, IB-803M MIDI Interface Board, IB-804A ADAT Interface Board, IB-805R RS422 Interface Board, IB-806B Biphase Interface Board, IB-808G GPI/O Interface Board, and IB-809E Ethernet Interface Board.

The options installed from underneath include the EXM1508 8Mb Memory Expansion Board, SIMMs board (not made by AKAI) for CPU RAM expansion, the EQ8 Equaliser Board, and the internally mounted Disk Drive.

To install any of these options, you must first remove the top and/or bottom cover(s) of the case.

> **** IMPORTANT NOTE ****
> **Consult your AKAI Professional dealer for installation of any options (including memory) to the DD8. Self-servicing may cause malfunction of components or the unit itself. Akai does not guarantee against the unit's malfunction, damage or any loss caused by self-servicing or improper operation.**

Remove the top cover by undoing the two large screws on either side of the case and the smaller screw in the centre of the top of the rear panel. Remove the bottom cover by loosening the ten screws on the bottom cover.

Looking inside the DD8, you will see something like this:

TOP VIEW

BOTTOM VIEW

INSTALLING IB-D8DA 8-CHANNEL ANALOG OUTPUT BOARD

The IB-D8DA 8-channel analog output board needs to be installed in the DD8 to allow use of analog outputs.

Remove the connector cover for the analog output terminal (25-pin D-sub connector) by loosening the two screws on the rear panel. Place the IB-D8DA board in place (remove the two hex screws on the D-sub connector first) and fix it with the two screws in the IB-D8DA package and two hex screws on the connector. Connect the P5 (4-pin) cable from the Power Supply P.C. Board to P3 (4-pin) and P2 (3-pin) cable on the IB-D8DA board to P6 (7-pin) on the Power P.C. Board. Then securely connect the far end of the 60-pin AD/DA cable (included with the DD8 in a separate package) between P1 on the IB-D8DA board and P103 on the CPU P.C. Board (located underneath the unit). Tie the cable with the tie-band (included with the DD8 in a separate package) to the chassis.

If the IB-D8AD 8-channel analog input board is installed at the same time, use the second connector instead of the first one of the 60-pin AD/DA cable. The same 60-pin cable is used for both the IB-D8AD and IB-D8DA boards.

INSTALLING IB-D8AD 8-CHANNEL ANALOG INPUT BOARD

The IB-D8AD8-channel analog input board needs to be installed on the DD8 to input analog signals.

Remove the connector cover for analog input terminal (25-pin D-sub connector) by loosening the two screws on the rear panel. Place the IB-D8AD board in place (remove the two hex screws on the D-sub connector first) and fix it with the two screws in the IB-D8AD package and two hex screws on the connector. Connect the P2 (7-pin) cable on the IB-D8AD board to P7 (7-pin) on the Power Supply P.C. Board. Then securely connect the far end of the 60-pin AD/DA cable (included with the DD8 in a separate package) between P1 on the IB-D8AD board and P103 on the CPU P.C. Board (located underneath the unit). Tie the cable with the tie-band (included with the DD8 in a separate package) to the chassis.

If the IB-D8DA 8-channel analog output board is installed at the same time, use the second connector for the IB-D8DA board. The same 60-pin cable is used for both the IB-D8AD and IB-D8DA boards.

INSTALLING DIGITAL INTERFACE BOARD

The IB-D8TIF TASCAM digital interface board needs to be installed in the DD8 to transmit or receive digital audio in TASCAM format (8-channel). It also provides the interface to connect with the TASCAM's MU-8824 Meter Bridge on a separate board.

The IB-D8MA multi-channel AES/EBU digital interface board needs to be installed in the DD8 to transmit or receive digital audio in AES/EBU format (8 channel).

The IB-804A ADAT interface board needs to be installed in the DD8 to transmit or receive digital audio in 8-channel ADAT format.

Remove the connector cover (5th slot from the left on the rear panel) for the digital interface board by loosening the two screws on the rear panel. Place the digital interface board in place and connect its connector to P209 on the Mother P.C. Board. Fix the board with the two screws on the rear panel that have been removed previously. Then replace the holder and tighten it with the two screws.

When the IB-D8TIF is installed, remove the 6th cover from the left on the rear panel for the Meter Bridge interface board. Place and secure the interface board into the slot as done for the main interface board.

Note: Only one digital interface board can be installed on the DD8 at a time.

INSTALLING GENERAL PURPOSE INTERFACE BOARDS
The DD8 has four slots for the following General Purpose Interface Boards that may be installed in any one of the slots (apart from the one reserved for the digital option board).

The IB-801S SCSI-B interface board, when installed, allows the DD8 to be controlled from a computer, etc. via the SCSI port.

The IB-802T SMPTE/EBU interface board, when installed, allows the DD8 to receive and generate SMPTE/EBU time code.

The IB-803M MIDI interface board, when installed, allows the DD8 to accept MMC controls and generate MTC.

The IB-805R RS422 interface board, when installed, allows the DD8 to be controlled using Sony™ P2 protocol via the RS422 port.

The IB-806B Biphase interface board, when installed, allows the DD8 to be synchronised via biphase pulses.

The IB-808G GPI/O interface board, when installed, allows the DD8 to accept controls via GPI/O port.

The IB-809E Ethernet interface board, when installed, allows the DD8 to be controlled via the ethernet port.

Remove the two screws from the interface board. Then remove the connector cover (1st to 4th slot from the left on the rear panel) for general purpose interface board by loosening the two screws on the rear panel. Place the interface board in place and connect its connector to the appropriate connector (P205 to P208) on the Mother P.C. Board. Fix the board with the two screws on the rear panel that have been removed previously. Replace the board holder with two screws.

NOTE: There are certain restrictions apply for the combination use of interface boards. The following interface boards cannot be used at the same time;

IB-801S SCSI-B and IB-809E Ethernet Interface Boards

INSTALLING CPU RAM EXPANSION
The DD8's internal CPU RAM memory can be expanded to either 4Mb or 6Mb. The DD8 comes with 2M bytes of memory 'hardwired' and there is one slot (J4) in which you can install one SIMMs board. Installation is fairly simple. The SIMMs board is inserted to the slot at a slight angle and then pushed back where it clips into place. Because SIMMs boards can differ, it is not possible to say "Install them with the components facing the front of the DD8" or anything like that because some SIMMs boards have the memory chips mounted on both sides sometimes. However, the boards can only be inserted one way so you shouldn't have any problems but be careful not to force them into place otherwise they may snap.

SIMMs operate at different speeds. SIMMs that operate at 60nS (nanoseconds) are recommended.

INSTALLING EXM1508 MEMORY EXPANSION
The DD8 comes with one EXM1508 memory expansion board installed and there are two slots (J7 and J8) in which you can install extra EXM1508 memory expansion boards. The expansion board is inserted to the slot at a slight angle and then pushed back where it clips into place. Install them with the components facing the rear of the DD8. The boards can only be inserted one way.

INSTALLING EQ8 EQUALISER BOARD

The DD8 can support the EQ8 equaliser board to maintain data compatibility with disks which have been created by the DR8, DR16 or DD1500 with an EQ board.

Remove the four screws on the CPU P.C. Board and replace them with the four mounting posts provided with the EQ8 package. Place the EQ8 board and connect its connector to the connector (J3) on the CPU P.C. Board. Then fix it with the four screws removed previously.

Please note that it is not possible to adjust the EQ parameters from the DD8 itself. This board is just to maintain data compatibility.

INSTALLING INTERNAL DISK DRIVE

A Disk Drive can be mounted inside the DD8. The SCSI disk drives that can be mounted internally are 5.25-inch half height MO Drives, 5.25-inch half height Removable HD Cart Bays or any other removable media drives with an adapter to cover the 5.25-inch half height opening.
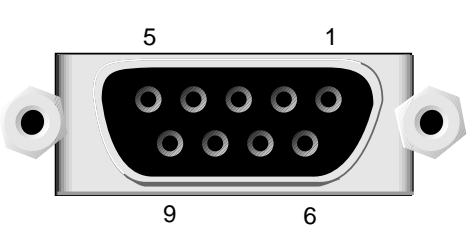
Remove the Front Panel by loosening the six screws on its top and bottom (3 screws each) then take the mask cover off for the drive bay opening by pressing it from the front. Then place the Front Panel back on and tighten the screws. (Please make sure that there's no dust in between the screen or meters and the windows.)

Insert (slide in) the drive bay from the front and fix it with the four screws provided from the bottom (The different screws are required depending on the drive, one is mm-threaded and the other is inch-threaded. Use the appropriate screws.). Then connect the 50-pin SCSI cable between the SCSI connector on the drive unit and the P202 connector on the CPU P.C. Board. Also, connect the 4-pin power cable between the Power Connector on the drive and P2 on the Control P.C. Board (located on the top side). The necessary screws and cables are packaged separately in the DD8 box.

PIN WIRING - DD8 (and option boards)

PRE-READ OUTPUT

PRE-READ OUTPUT

5   1

9   6
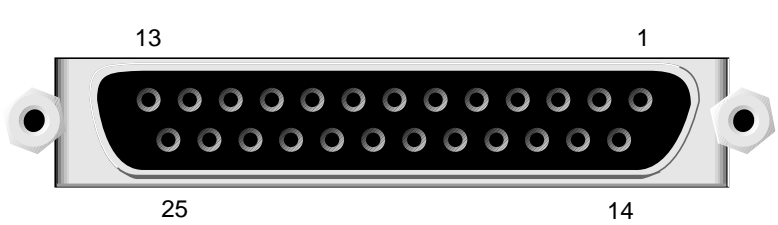
D-Sub 9 Pin Female

PIN	SIGNAL
1	Ground
2	Track 2
3	Track 4
4	Track 6
5	Track 8
6	Track 1
7	Track 3
8	Track 5
9	Track 7

ANALOG INPUT/OUTPUT CONNECTIONS

ANALOG INPUT/OUTPUT

13   1

25   14
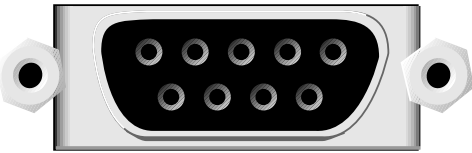
D-Sub 25 Pin Female

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	Track 8 (Hot)	10	Track 2 (Hot)	19	Track 5 (Ground)
2	Track 8 (Ground)	11	Track 2 (Ground)	20	Track 4 (Cold)
3	Track 7 (Cold)	12	Track 1 (Cold)	21	Track 3 (Hot)
4	Track 6 (Hot)	13	No Connection	22	Track 3 (Ground)
5	Track 6 (Ground)	14	Track 8 (Cold)	23	Track 2 (Cold)
6	Track 5 (Cold)	15	Track 7 (Hot)	24	Track 1 (Hot)
7	Track 4 (Hot)	16	Track 7 (Ground)	25	Track 1 (Ground)
8	Track 4 (Ground)	17	Track 6 (Cold)		
9	Track 3 (Cold)	18	Track 5 (Hot)		
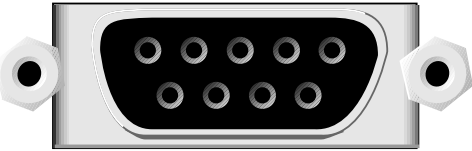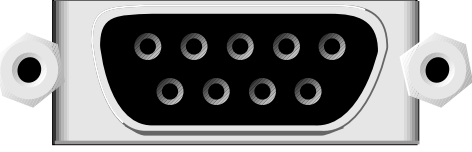
RS422 9-PIN CONNECTION

VTR CONTROL

5   1

9   6

D-Sub 9 Pin Female

RS422 LEVEL

PIN	RS422 MASTER	RS422 SLAVE
1	Frame Ground	Frame Ground
2	Receive A	Transmit A
3	Transmit B	Receive B
4	Transmit Common	Receive Common
5	No Connection	No Connection
6	Receive Common	Transmit Common
7	Receive B	Transmit B
8	Transmit A	Receive A
9	Frame Ground	Frame Ground

BI-PHASE   INPUT

BI-PHASE SYNC INPUT

5   1

9   6

D-Sub 9 Pin Female

TTL LEVEL

PIN	SIGNAL
1	No Connection
2	Ground
3	RZ (Input)
4	No Connection
5	+5V (Output imp 22Ω)
6	Ground
7	SZ (Input)
8	No Connection
9	Frame Ground

BI-PHASE   OUTPUT

BI-PHASE SYNC OUTPUT

5   1

9   6

D-Sub 9 Pin Female

TTL LEVEL

PIN	SIGNAL
1	No Connection
2	Ground
3	RZ (Output)
4	No Connection
5	+5V (Output imp 22Ω)
6	Ground
7	SZ (Output)
8	No Connection
9	Frame Ground

PARALLEL (GPIO) CONNECTIONS

PARALLEL (GPIO) CONNECTIONS

19   1

37   20

D-Sub 37 Pin Female

Pin Connections

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	GPI 1 (In)	14	GPO 11 (Out)	27	GPO 8 (Out)
2	GPI 2 (In)	15	GPO 12 (Out)	28	GPO Common
3	GPI 3 (In)	16	GPO Common	29	GPI 13 (In)
4	GPI 4 (In)	17	GPO 9 (Out)	30	No Connection
5	GPI 5 (In)	18	GPO 10 (Out)	31	Ext. Sw 0
6	GPI 6 (In)	19	GPO Common	32	Ext. Sw 1
7	GPI 7 (In)	20	GPO 1 (Out)	33	Isolated +5v
8	GPI 8 (In)	21	GPO 2 (Out)	34	GPO Pullup
9	GPI 9 (In)	22	GPO 3 (Out)	35	GPI 14 (In)
10	GPI 10 (In)	23	GPO 4 (Out)	36	GPI 15 (In)
11	GPI 11 (In)	24	GPO 5 (Out)	37	GPI 16 (In)
12	GPI 12 (In)	25	GPO 6 (Out)		
13	GPI Common	26	GPO 7 (Out)		

Pin Connections (Default GPIO assignments)

PIN	SIGNAL	PIN	SIGNAL	PIN	SIGNAL
1	Rec Cmd Track 1 (In)	14	Rehearse Tally (Out)	27	Rec Tally Track 8 (Out)
2	Rec Cmd Track 2 (In)	15	Mag/Multi Tally (Out)	28	Tally Common
3	Rec Cmd Track 3 (In)	16	Tally Common (Out)	29	Spare Command (In)
4	Rec Cmd Track 4 (In)	17	Record Tally (Out)	30	No Connection
5	Rec Cmd Track 5 (In)	18	Play Tally (Out)	31	Ext. Switch 0
6	Rec Cmd Track 6 (In)	19	Tally Common	32	Ext. Switch 1
7	Rec Cmd Track 7 (In)	20	Rec Tally Track 1 (Out)	33	Isolated +5v
8	Rec Cmd Track 8 (In)	21	Rec Tally Track 2 (Out)	34	Tally Pullup
9	Play Command (In)	22	Rec Tally Track 3 (Out)	35	All Track Play Cmd (In)
10	Record Command (In)	23	Rec Tally Track 4 (Out)	36	All Rec Ready Cmd (In)
11	Stop Command (In)	24	Rec Tally Track 5 (Out)	37	All Mute Cmd (In)
12	Rehearse Cmd (In)	25	Rec Tally Track 6 (Out)		
13	Command Common	26	Rec Tally Track 7 (Out)		

PARALLEL (GPIO) INTERFACE (Electrical Specifications)

Inputs

The inputs may be driven by passive contact closures as from mechanical switches, or from open collector NPN transistors, or from active CMOS or TTL circuits. In all cases, the driver must be able to sink adequate current to operate the optocoupler receivers on the GPIO option board. All inputs share the same common electrical return path, GPI COMMON. The inputs are electrically isolated from the DD8.

Number of Inputs	....	12
Input LOW voltage:	....	0 -> +1V
Input HIGH voltage:	....	+3.3V -> +50V
Max input current (input shorted to GPI COMMON):		-5.2mA
Max allowable leakage current for input HIGH:		-200μA

Outputs

The outputs are optically isolated solid-state relays. These are capable of driving LED or incandescant indicators or mechanical relays or logic circuits. In all cases, power for the indicators etc must be supplied externally. When the relays are open, the outputs may optionally be pulled up to the internally isolated +5V supply or to an external supply depending by the linking the relevant pins on the connector. The outputs can switch DC or AC and share the same common electrical return path, GPO COMMON. The outputs are electrically isolated from the DD8.

Number of Outputs	....	16
Max current per output:	....	+/- 350mA
Max ON resistance:	....	2.5 Ω
Max OFF state voltage:	....	+/- 100V
Max OFF state leakage current:	....	1μA

Additionally, one of the GPO also controls a relay on the option board that can be used to switch the operating mode of external equipment.

Relay contact rating:	....	0.5A @ 125V
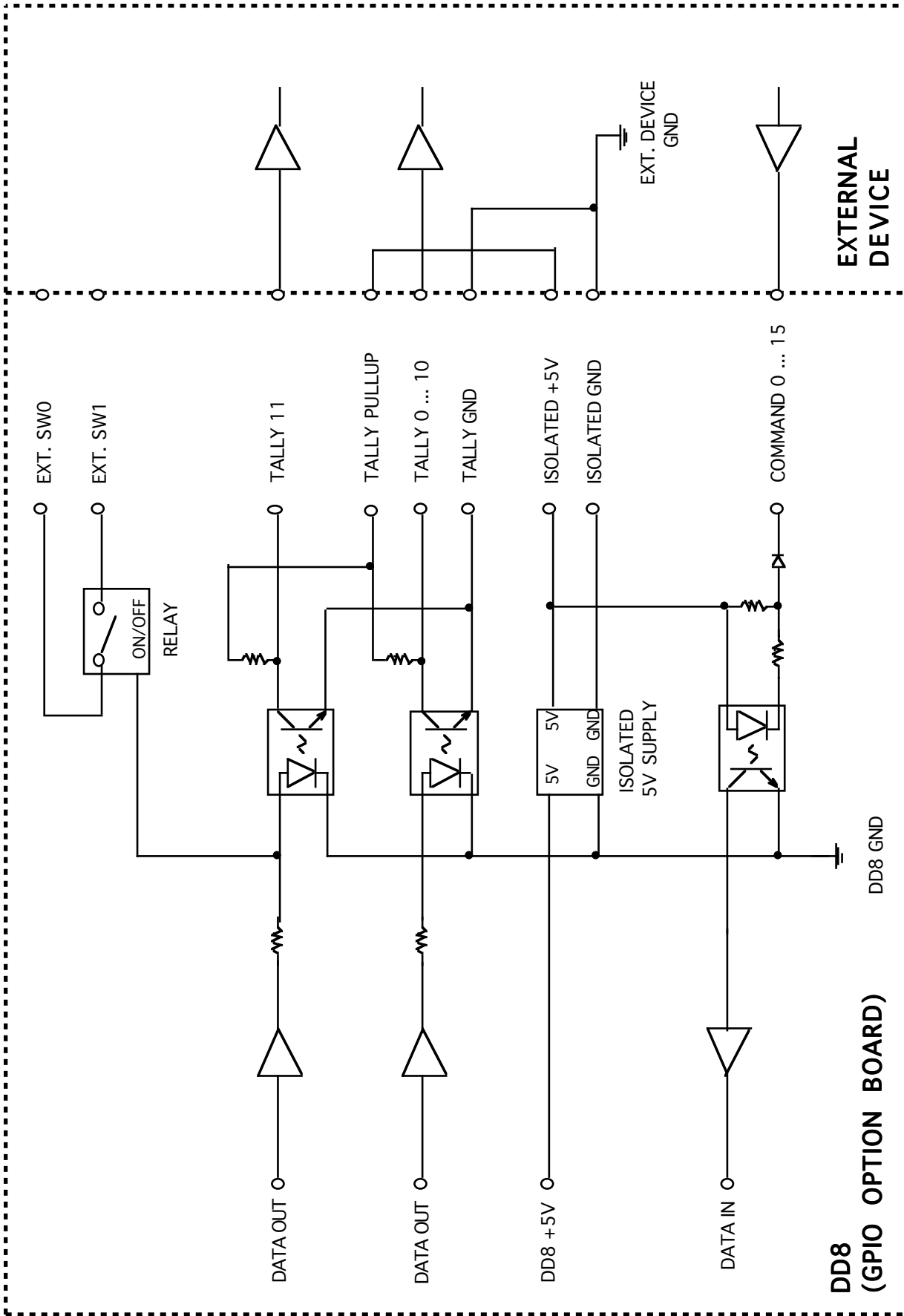
GPIO OPTION BOARD BLOCK DIAGRAM

DD8
(GPIO OPTION BOARD)