

DREAM Satellite

Installation and User Manual

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NOTES:

Chapter 1 - Introduction

INTRODUCTION

The Satellite is part of a new family of products from Fairlight which marries together QDC processing with an ergonomic physical control surface in a combination that has a significant impact on productivity and efficiency.

The Satellite interface incorporates a dedicated editing console, a unique graphical user interface and powerful database capabilities. These tools allow the operator to work quickly and efficiently without impeding the creativity of the recording and editing process. The Satellite offers a number of unique benefits, through its adaptation of DSP and proprietary technology, to the audio environment.

ABOUT THIS MANUAL

The DREAM Satellite Installation and User Manual provides all the information necessary to rapidly become proficient at operating the system in a professional audio environment.

This manual is designed to familiarize sound editors and engineers with the facilities provided by the Satellite. The terminology and concepts used in this manual assume a reasonable knowledge regarding audio principles and studio procedures.

Chapters 2 to 24 describe the procedures used to manage workflow and perform recording, editing, signal processing and playback operations.

Chapters 27 to 29 provide a complete reference for installation of the system.

Chapter 30 includes complete specifications and connector details for the DREAM Satellite System.

Read through the chapters in the order presented to learn all the features of the system or use the Table of Contents or Index to find the specific information you require.

NOTES:

Chapter 2 - Satellite Operation

INTRODUCTION

Satellite is the latest generation digital audio workstation from Fairlight, offering exceptional power and speed for recording and editing audio.

Satellite is made up of five interconnected hardware devices:

1. QDC Engine
2. Satellite Console
3. Keyboard
4. Mouse
5. SVGA Graphics Monitor

USER INTERFACE

Improved ease of use and operator efficiency is achieved through advanced ergonomic design of the user interface.



Figure 1: Satellite User Interface

Satellite Console Features

The console control surface incorporates the various hardware user interface features indicated below:

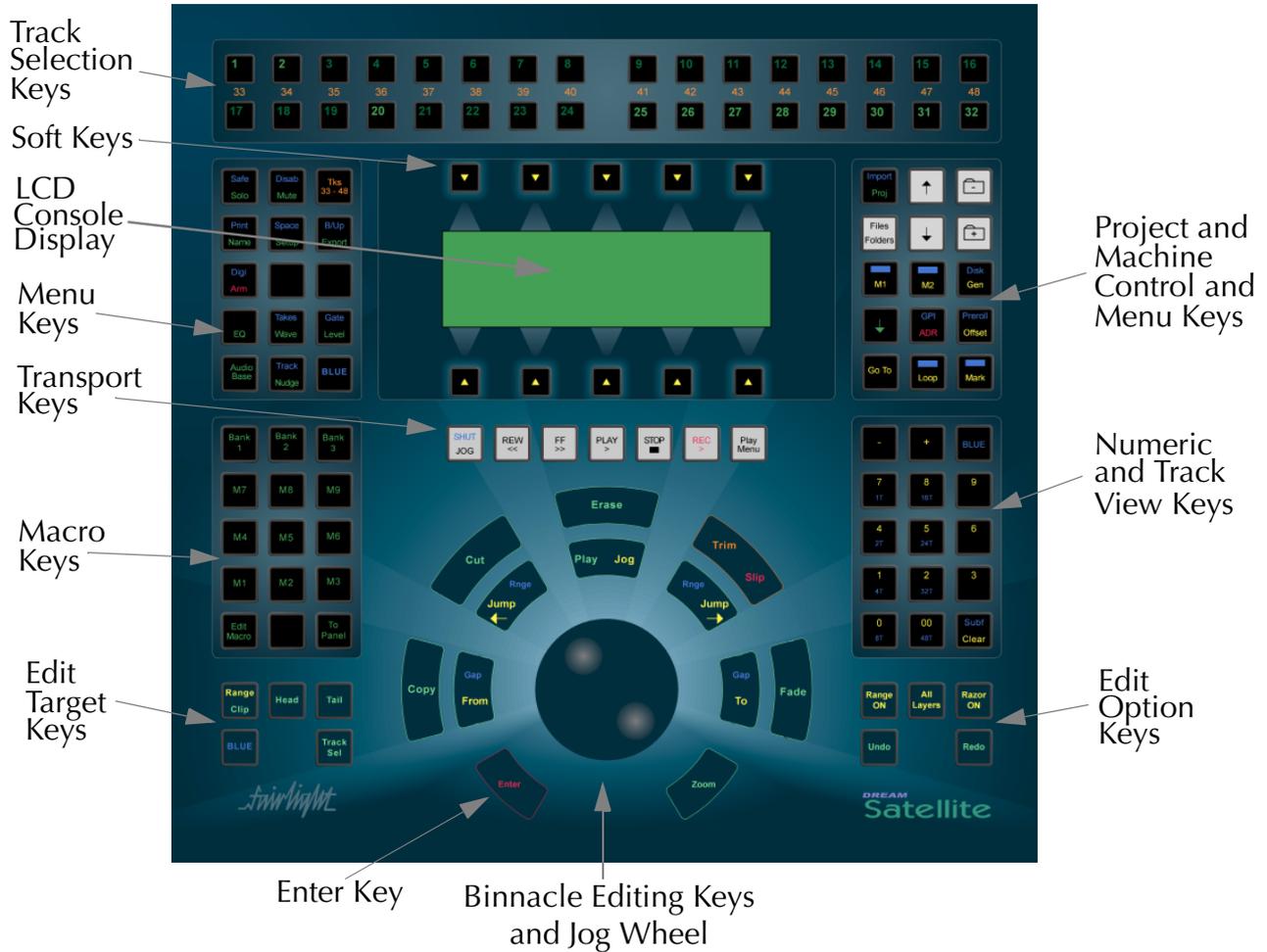


Figure 2: Satellite Console Features

Track Selection Keys

The Track Selection Keys are used for selecting tracks and clips for editing and for arming tracks. Press a track key to add a track to the current selection. Double press a key to select that track only. To select a range, hold down the first key and double press the last track in the range.

Soft Keys

Soft keys provide access to the menu options displayed on the LCD console display. There are two rows of soft keys, upper and lower.

LCD Console Display

The LCD display provides status information and displays the menu options associated with the Menu Keys. Menu options are displayed immediately above or below the Soft used to select the option.

Menu Keys

The Menu Keys to the left and right of the LCD display provide access to a range of system and signal processing functions. Most keys have two functions the names of which are displayed in colour on the button cap. To activate the function displayed in blue, press and hold one of the three **BLUE** keys while pressing the menu key.

Transport Keys

The transport keys provide standard tape transport functions plus Jog/Shuttle selection and a range of play options under the **Play Menu**. To enter Record press the **Play** and **Record** keys together. Hold down the **Jog/Shuttle** key for a menu of Jog/Shuttle settings. Hold down the **Record** key for a menu of record options.

Macro Keys

Macro keys can be programmed to play back sequences of keystrokes. There are three banks of nine macro keys.

Edit Target Keys

These keys modify the effect of each edit. For instance a **Cut** may be performed on a **Range**, a **Clip**, the **Head** of a clip or the **Tail** of a clip.

Enter Key

The enter key function is associated with both completing some edits, and with confirming some menu selections.

Binnacle Editing Keys and Jog Wheel

The Binnacle is at the heart of the Satellite's advanced editing interface. Dedicated edit functions are associated with these keys. In addition to normal Jog/Shuttle transport operations, the jog wheel is used for zooming and parameter selection in soft menus.

Edit Option Keys

The edit option keys modify the effect of each edit. An edit can be performed on **All Layers**, on a time **Range**, and can insert or delete time via **Razor** mode.

Numeric and Track View Keys

The Numeric Keys are provided for entering timecode locations or parameter values. By pressing and holding one of the three **BLUE** keys, the Track View Keys select the number of tracks visible on the monitor track display.

Project and Machine Control Menu Keys

The **Project** menu Key and the directory navigation keys provide access to the Satellite's file system. Machine control keys lock the transports of external VTRs. Other menu and transport location functions are provided by the menu keys in this section.

Monitor Display Features

The graphical display provides status information, clip and waveform display and visual feedback for editing functions.

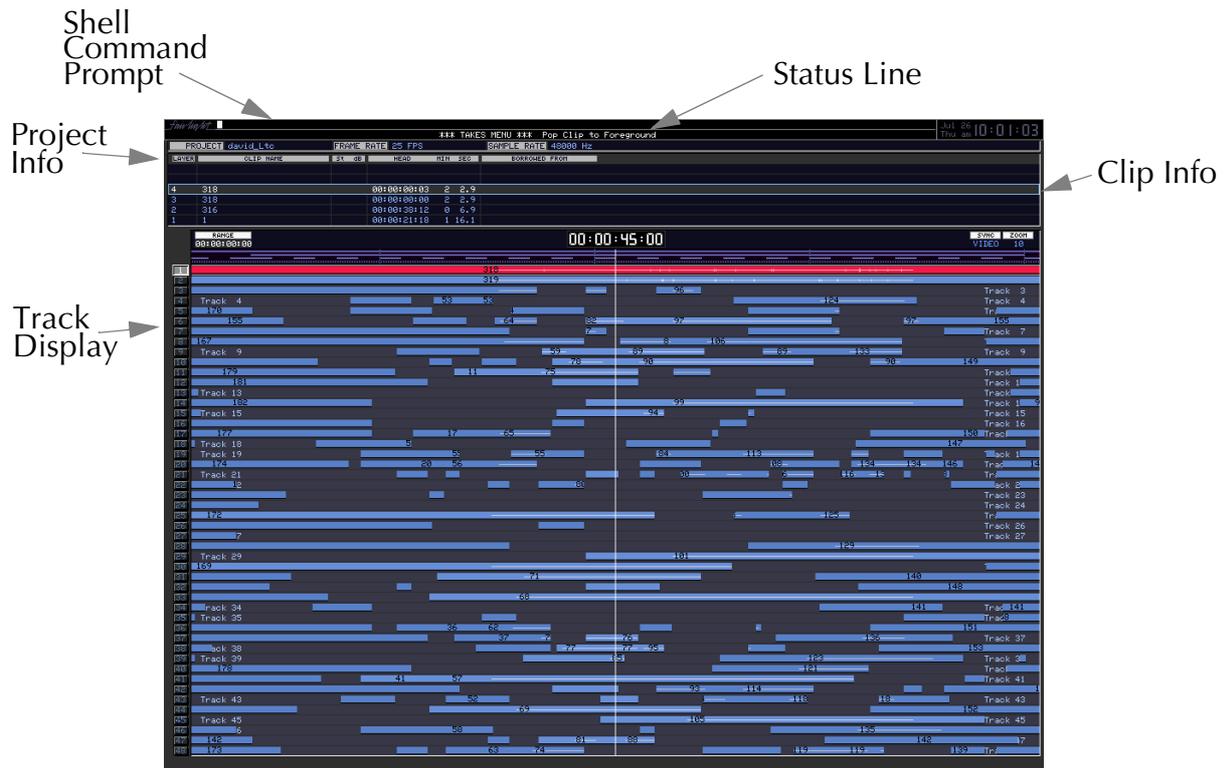


Figure 3: Monitor Graphical Display

Shell Command Prompt

This is the command line interface for typing system commands from the PC Keyboard.

Project Information

The Project Information Display shows the name of the current project, the frame rate and sample rate.

Track Display

The track display shows the 24 hour time-line on which audio clips can be placed. The amount of time displayed can be adjusted by pressing the Zoom key and turning the Jog wheel. The number of tracks visible can be selected using the blue track view keys to the right of the Binnacle.

Status Line

The Status Line displays messages and prompts associated with current edit mode or menu selected.

Clip Information

In normal play mode, clip information is displayed including layer, name, location and source of the clips. In arm mode, this area of the display contains input/track level meters.

STARTING THE SYSTEM

- Step 1 Power on the QDC Engine, first press the switch on the rear of the Engine to the right, a red light will appear. Next press and hold the button on the front of the Engine for 5 seconds, a beep will be heard and the system will start to power on. Satellite Console and video monitor. Comprehensive startup diagnostics are displayed on the video monitor.
- Step 2 Power on the Console by pressing the switch on the rear of the unit downwards. The bottom left Blue key will flash if the unit has been switched on. After 45 seconds the name of the software build will appear on the LCD screen and the unit will be ready for use.
- Step 3 Log on by typing `mfx` and then press **Enter**.
- Step 4 At the prompt type
`sat`
 on the keyboard and then press **Enter**.
- Step 5 The system should now launch the main disk recorder application.

It is possible to have the Satellite automatically launch the main editing application every time the QDC Engine is powered on.

- Step 1 Power on the QDC Engine, Satellite and SVGA monitor.
- Step 2 Log in by typing `mfx` and then press **Enter**.
- Step 3 At the prompt type
`be sat` **Enter**.
- Step 4 Now each time the Engine is powered on the main application will start automatically.
- Step 5 To revert to the original state, where a user has to login and manually launch the application, repeat steps 1 and 2, and at step 3 type:
`be login` **Enter**.
- Step 6 Now each time the Engine is powered on, the user will be asked to log in.

Follow the instructions in the following chapters to quickly learn all the operating procedures necessary for completing audio production tasks with the DREAM Satellite.

NOTES:

Chapter 3 - Projects

INTRODUCTION

Satellite uses the concept of Projects to store work performed on the disk recorder. All audio recordings, editing and file imports are done within Projects. A project contains all the audio data and edit information. Edits performed on the audio data are non-destructive and are represented by clips which refer to pieces of audio data within the project. Projects are continually updated and written to disk while recording and editing is being performed therefore there is no need to save a project.

The Project Display is the first screen displayed when the system is started, or when the Project Menu is selected by pressing the **Proj** key.

Project Menu Display

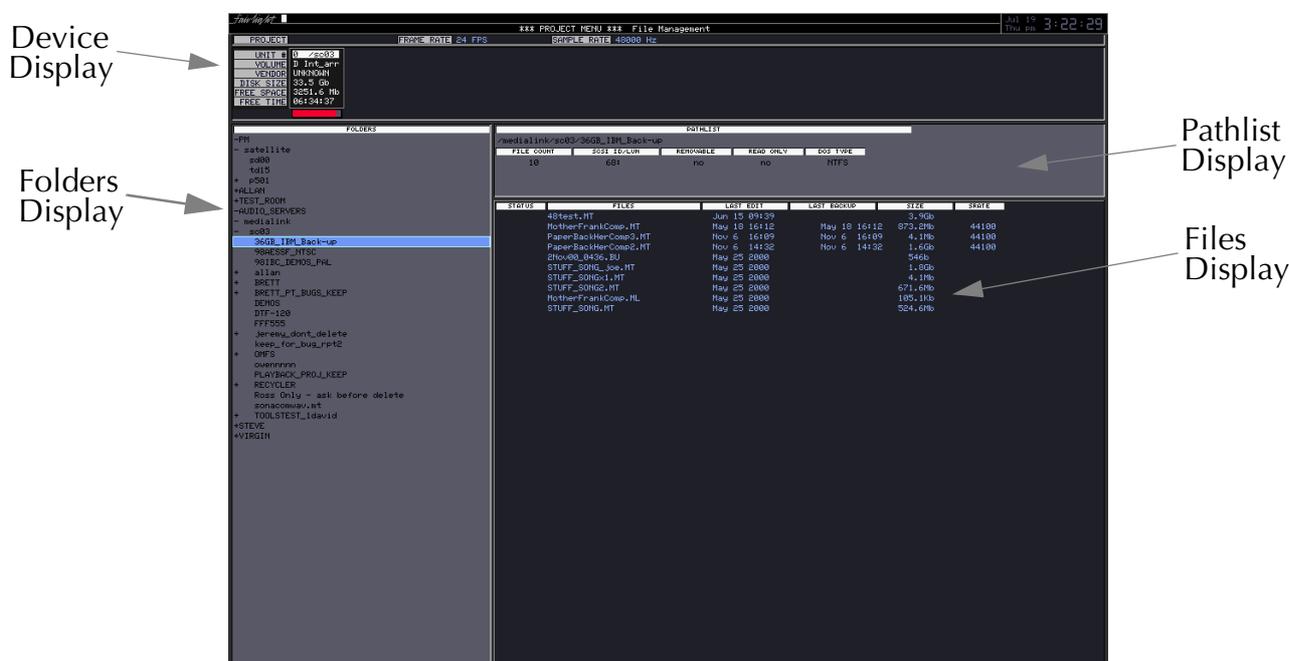


Figure 4: Project Menu Display

Device Display

The device display shows the storage device currently available on the system, with the selected device highlighted.

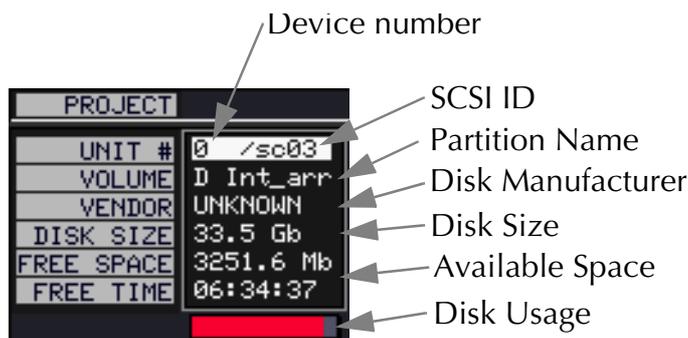


Figure 5: Device Display

UNIT #	Device display shows the devices currently available on the system, with the selected device highlighted.
0	Device number is used to reference the device on the Project and Backup Menu.
/SC03	SCSI ID shows a devices SCSI ID and the SCSI bus to which it is connected. In this case it is ID 3 on SCSI bus 0, the internal bus.
VOLUME	This is the partition name.
VENDOR	Disk manufacturer.
DISK SIZE	Disk size in megabytes.
FREE SPACE	Available space in megabytes.
FREE TIME	Available space in mono track time at the current sample rate.
BAR GRAPH	Disk usage indicator.

Folders

On the left of the screen is the Folders display. This shows the Fairlight workstations, domains, drives and folders available to the Satellite.

Pathlist

The pathlist displays details of the currently selected path.

Files

On the right of the screen is the Files display. This shows the files stored on the selected device along with information regarding the size of the file, dates they were last modified, their sample rates etc. The selected file is always highlighted.

NAVIGATING THE PROJECT MENU

To open the Project menu press the **Proj** (Project) key. This is already selected when the machine is powered up.

To move up the selection bar and up and down the Project Menu, use the **Up** and **Down Arrow** keys on the console or alternatively, use the jogger wheel.

To select a file or folder, press the **Files Folders** key on the Satellite console.

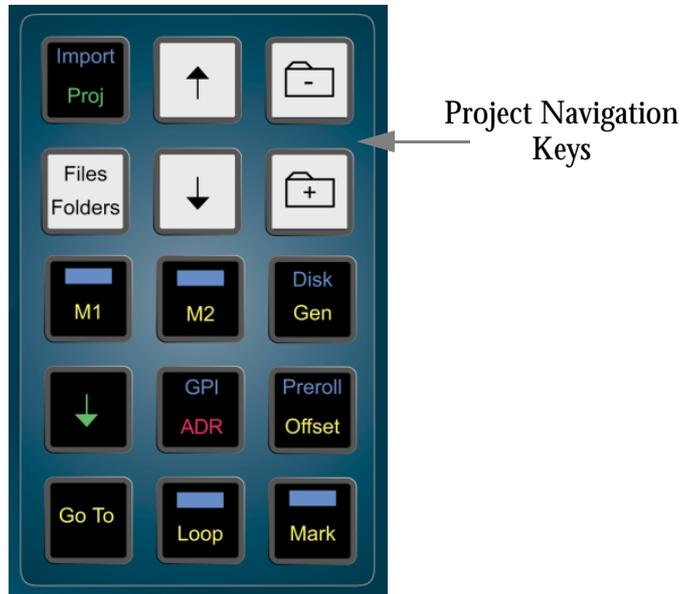


Figure 6: Project Navigation Keys

Opening and Closing a Domain or Device

- Step 1 Use the **Files/Folders** and **arrow** keys to select the desired domain or device so that it is highlighted.
- Step 2 Press the **Folder +** or **Folder -** icon key on the console depending whether you want to open or close the domain, device or folder.

Creating a New Project

- Step 1 Press the **Proj** (Project) key. This is already selected when the machine is powered up. Close any previously opened Project.
- Step 2 Select the domain, device and folder where you would like the new Project to be created.
- Step 3 Press the **NEW** soft key on the console.
- Step 4 Type the name you wish to give the new Project. The name appears in the console's LCD display as you type.
- Step 5 Press the **Enter** key.

The top section of the video screen display shows information about the currently open Project.

Project Name of current Project.

Frame Rate	The frame rate currently set for the Project.
Sample Rate	The sample rate currently set for the Project.
Date and Time	Current date and time.

Closing a Project

- Step 1 Press the **Proj** key on the console.
- Step 2 Press the `CLOSE` soft key.

Opening an Existing Project

- Step 1 Press the **Proj** key on the console.
 - Step 2 Highlight the desired Project.
 - Step 3 Press the **Enter** key.
- Opening a Project will close any currently open Project

FOLDERS

Folders are a useful way to group Projects together. Folders can also be created within other folders

Creating a New Folder

- Step 1 Press the **Proj** key.
 - Step 2 Press the `NEXT` soft key.
 - Step 3: Select the domain, device and folder where you would like the new folder to be created.
 - Step 4 Press the `NEW FOLDER` soft key.
 - Step 5 Type the name you wish to give the folder.
- NOTE: The name appears in the console's LCD display as you type.
- Step 6 Press the **Enter** key, and the new folder will be created.

Copying Files Or Folders

- Step 1 Press the **Proj** key.
- Step 2 Press the `NEXT` soft key.
- Step 3 Select the source file or folder.

- Step 4 Press the **COPY** soft key.
- Step 5: Select the destination.
- Step 6 Press the **OKAY** soft key.
- Step 7 Edit the name for the new file or folder.
- Step 8 Press **Enter**.
The copy will begin.

Moving Files or Folders

- Step 1 Press the **Proj** key.
- Step 2 Press the **NEXT** soft key.
- Step 3 Select the source Project.
- Step 4 Press the **MOVE** soft key.
- Step 5 Select the destination
- Step 6 Press the **OKAY** soft key.

You will be prompted to confirm the move process if it is across different devices. In this case, the move process may take a few minutes depending on the size of the Project.

Renaming Projects and Folders

- Step 1 Press the **Proj** key.
- Step 2 Press the **NEXT** soft key.
- Step 3 Select the Project or folder you wish to rename.
- Step 4: Press the **RENAME** soft key.
- Step 5 Type the new name.
- Step 6 Press **Enter**.

Deleting Projects or Folders

- Step 1 Press the **Proj** key.
- Step 2: Select the Project or folder you wish to delete.
- Step 3 Press the **DELETE** soft key.
- Step 4: Press the **Y** key to confirm the delete when prompted.

Other feature of the Project Menu are described in “Project Management” on page 18-2.

**NOTES:**

A folder containing other folders is shown with a + sign.

Locked files have an L indication. This usually means that another user has the file open.

There is no way to open a file other than by pressing the **Enter** key.

Names for Folders and Projects should contain no more than 18 characters, only the following characters: A - Z, a - z, 0 -9, _ (underscore) can be used.

Although Satellite will allow entry of some other characters, you are advised **NOT** to use them, as they may cause problems in exchange with other audio workstations.

NOTES:

Chapter 4 - Tracks & Transport

INTRODUCTION

Satellite can support up to 48 tracks internally and 48 analog and digital inputs and outputs. Each track is hard wired to a corresponding output. If no output hardware is fitted for a channel, the track can contain clips although no waveform will appear.

A stereo output mode can be used to sum together all tracks as a stereo signal and appear on all output pairs. See “Stereo Mix Mode” on page 12-4 for more information on how to use this feature.

DISPLAYING TRACKS

Tracks are displayed on the video screen. Select the number of tracks to display by holding down the **BLUE** key, and pressing one of the numeric keys labelled **1T**, **2T**, **4T**, **8T**, **16T**, **24T**, **32T** and **48T**.

- Step 1 Hold down the **BLUE** key
- Step 2 Press the desired **Track Display** key



Figure 7: Track Display Keys

Track numbers correspond to the track output out of the Satellite.



Figure 8: 48 Track Display

Clips show the amplitude of the waveform.



Figure 9: 1 Track Display

The Clip

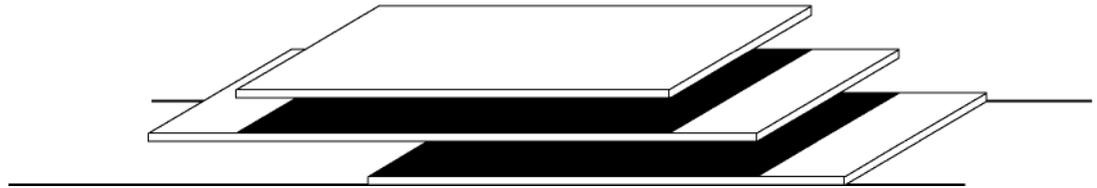
When audio is recorded or imported into the Satellite it is displayed as a clip. The clip is a reference to the audio data stored on disk. Clips can be cut, copied or moved without affecting the original audio data.

When new clips are recorded or pasted above existing clips, the clips become layered one above the other. Only the top clip is heard during play-back.

The left most end of the clip is known as the head. The right end is the tail.

Clips also contain information about the original timecode location of the audio data when recorded, and the current timecode location of the displayed clip.

If a clip shows only a portion of the associated audio data on disk, it may be trimmed to show more.



Layered clips, only exposed portions are heard.

Figure 10: Layered Clips

Mono and Stereo Clips

Mono clips are output only on the track upon which they appear. Stereo clips are displayed on a single track, but are output with the left channel on the track where the clip is displayed, and the right on the next track.

For example, a stereo clip on track 3 will have its left output on track 3, and its right output on track 4. Stereo clips can be identified by the black line along the centre of the clip. This line separates the left waveform on the top, and the right on the bottom.

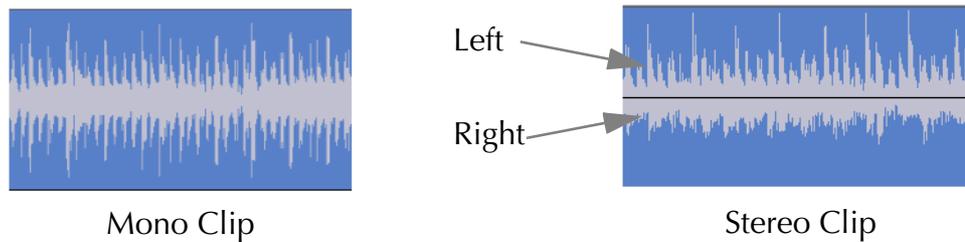


Figure 11: Mono and Stereo Clips

SELECTING TRACKS

Tracks may be selected for editing or armed for recording. The Satellite has dedicated keys for track selection. 1 - 32 are selected by simply pressing the desired track key. For track selection from 33 - 48, first press the **Tks 33-48** key and then use the second row of track selection keys numbered 33 - 48.

Selected tracks are highlighted on the video screen and the track keys are illuminated.

To add a track to the current selection, press the desired track selection key.

To select a range of tracks, press and hold down the first track select key and double click the last track selection key you wish to be active. All other selections will be deselected.

To select a single track, double click on the desired track selection key. All other selections will be deselected.

The track selection may also be changed by holding the **Track Sel** key, to the left of the jog wheel, and turning the jog wheel or pressing the **+** or **-** keys. This is useful for moving selections from one track to another.

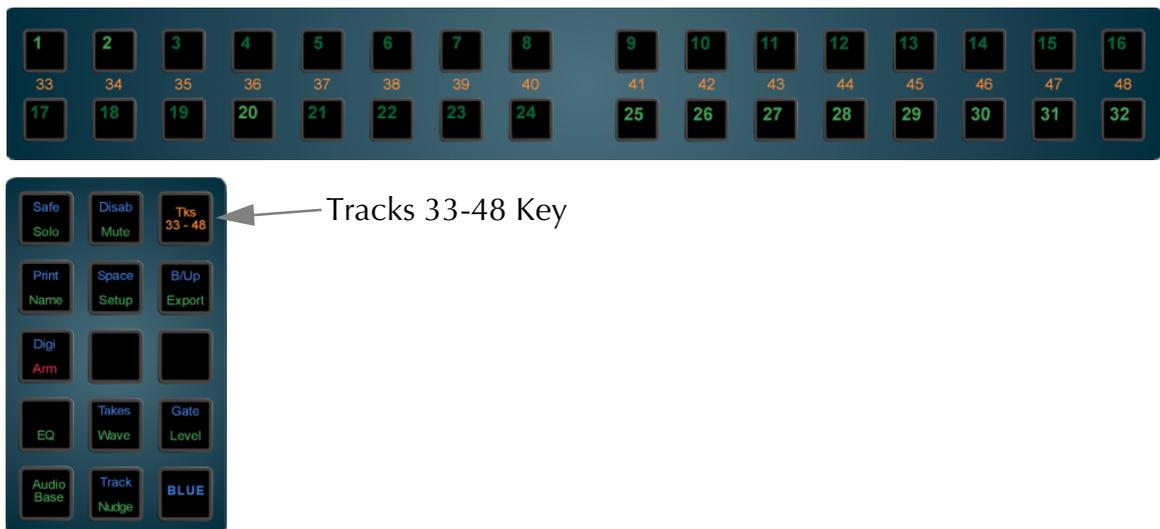


Figure 12: Track Selection Keys

TIME SCALE AND DISPLAY ZOOMING

The track display represents 24 hours. The timescale can be zoomed from a six frame display to an eight hour display. The blue time scale graduations above the tracks give a reference in hours, minutes, seconds, frames.

At all times, the cursor position indicates the current play point.



Figure 13: Time Scale Display

- Step 1 Hold down the **Zoom** key
- Step 2 Turn the jogger wheel to zoom in and out

Sub-frames can be toggled on or off by holding down the **BLUE** key and pressing the **SUBF** key on the numeric keypad.

Track display selection and zooming is possible while playing and recording.

The zoom factor can also be entered by holding down the **Zoom** key and typing the desired zoom factor on the numeric keypad. This is useful for making macros. For information on Macros refer to “Macros” on page 23-2. There are 16 scales with larger numbers indicating more detail (less time).

Zoom can be increased or decreased by holding the **Zoom** key and pressing **+** or **-** on the numeric keypad.

Alternate Zoom Factors

It is possible to set two different Zoom factors to allow for alternate views of the track display.

- Step 1 Select a Zoom factor by holding down the **Zoom** key
- Step 2 Select a different Zoom factor, by again holding down the **Zoom** key and turning the jogger wheel.
- Step 3 Press the **Zoom** key, the previous Zoom will be shown on the Track display. Press the **Zoom** key again and the alternate Zoom factor will be displayed.

It is also possible to move the horizontal position of the cursor by holding down the **BLUE** and **Zoom** keys and turning the jogger wheel.

TRANSPORT CONTROLS

The **PLAY**, **STOP**, **FF** and **REW** controls work in a similar manner to a tape machine. An additional feature is increasing the fast-forward and rewind speeds by pressing the respective keys multiple times, starting from 16 times play speed. To enter record press the **REC** and **PLAY** keys together.



Figure 14: Transport Control Keys

The play command can be accessed also by pressing the **PLAY** key on the Binnacle. See “Binnacle Editing” on page 6-2 for more details.

LOOP JOG AND LINEAR JOG

Pressing the **JOG** key when stopped enters the Jog mode.

Holding down the **JOG** key brings up a menu on the lower console display. The value for each parameter can be changed by pressing its soft key and turning the jogger wheel or typing a value on the numeric keypad. The menus function as follows:

LOOP / LINEAR	<p>Loop Jog repeats a section of audio before and up to the cursor at play speed.</p> <p>Linear Jog behaves like a tape machine when scrubbing audio.</p>
WIDTH	The width of the loop when in Loop Jog. Usually set to 1 frame. Range 1 - 50 frames.
FACTOR	<p>The gearing between the jogger wheel and the track display. A high value will give a lively feel, while a low value will be slower. Range 1 - 16.</p> <p>This is also linked to the zoom factor. Pressing Zoom and Jog together at the same time sets the Factor number equal to the Zoom number.</p>
DIMMER	The attenuation applied when in Loop Jog (Loop Jog can be irritating at high levels). This is usually set at around -10dB. Range 0 - -99dB

To activate the jog function at any time, just press the **JOG** key. The system will remain in jog until another transport key is pressed. Use **STOP** to mute the machine in Loop Jog.

Jog mode can also be accessed by pressing the **Play/Jog** key on the Binnacle.

Holding the **BLUE** key while jogging increases the jog speed by four times.

SHUTTLE

To shuttle the transport, hold down the **BLUE** key and press **JOG**. The jogger wheel will then increase and decrease the transport velocity in forward and reverse.

The **PLAY** key will illuminate in a steady state when play speed is reached.

JUMP

The **Jump** keys provide a fast method of locating forwards and backwards through a Project.

The **Jump** keys are located on the Binnacle, left and right of the **Play/Jog** key.



Figure 15: Binnacle Transport and Editing Keys

Jump Methods

Holding down one of the **Jump** keys displays the Jump menu in the lower Console display.

Selecting one of these menu items will take effect when the **Jump** key is released, and will remain as the jump method until a different method is selected.

The methods are as follows:

VARIABLE	This enables you to use the jogger wheel or numeric keypad to enter the number of frames the transport will be moved each time a Jump key is pressed. Range 0 - 999 frames.
CLIP NAME	This enables the entry of search criteria in the same manner as for the GO TO CLIP NAME function. The same search text is used as the default setting for both the GO TO CLIP NAME and JUMP TO CLIP name functions. Changing the search text in one function will also cause the text to change in the other. JUMP TO CLIP NAME will locate the transport to the next clip with a matching name on any track.
POINT or FADE	The transport will locate to the head, tail or sync point (see below) of a clip, or the start or end of a fade (described later), on the selected track or tracks.
POINT	The transport will locate to the head, tail or sync point of a clip on the selected track or tracks.
MARK	The transport will locate to the next mark.



NOTES:

A sync point of a clip defaults to the head of a clip unless changed with the Trim/Slip menu, see “Trim Edit Mode” on page 6-13.

JUMP TO POINT and JUMP TO POINT OR FADE will only work on selected tracks.

Holding down the **Shift** key and pressing a **Jump** key will override the Jump Menu and JUMP TO POINT. Holding down the **Ctrl** key and pressing a **Jump** key will override the Jump Menu and JUMP TO MARK.

Holding down the **BLUE** key and pressing either **Jump** key will locate the transport to the start or end of the Range.

LOCATOR FUNCTIONS

Rapid navigation through the project is achieved by using the GO TO menu functions and by making MARKS on the time-line. For more information see “GoTo” on page 10-2 and “Marks” on page 11-2.

SELECTING A RANGE

A Range allows a group of clips across one (or multiple tracks) to be selected. Many functions provided by Satellite require the use of a Range. Use the **From** and **To** keys on either side of the Jog wheel to set ranges. Range mode may be turned on or off by pressing the **Range ON** key, to the right of the Binnacle or by double pressing a Binnacle edit key.

Selecting a Range using Cursor Position

- Step 1 Locate to the time at which you wish to start the range.
- Step 2 Press the **From** key. (Some functions start with FROM automatically).
- Step 3 Locate to the time at which you wish to end the range.
- Step 4 Press the **To** key.

The duration of the range is indicated on the screen time display above the track display, and the range is high-lighted on the track display.

Many functions start making a range as soon as you enter the function. To change the FROM point, just press the **From** key at any time.

Range Menu

To access the Range menu options, press and hold either the **From** or **To** key and select the desired menu option by pressing the associated soft key.

The following functions operate the same for both **From** and **To**:

TIME	Entry a timecode value using the numeric keypad and press Enter .
MARK	Select a mark by turning the Jog wheel and press Enter .
LAST	The last FROM or TO point is used.
NEXT GAP	Sets the FROM or TO points to the next points of silence before and after the cursor respectively.
PROJECT HEAD/TAIL	Sets the FROM or TO points to the Project Head or Project Tail marks.

Setting Range Modes

There are two options for range behaviour as described below:

- Step1 Press the **Set Up** key
 - Step 2 Press the **Range** soft key to toggle between the functions listed below.
- Range
AUTO
- Ranges are automatically cleared when an editing mode key is selected unless the function must have a range to operate.
- Pressing the **Range On** key turns the last Range on or off.

Range Ranges are retained when selecting edit mode keys unless the function cannot use a Range. Pressing the key again will toggle the Range on or off. Double-clicking the key will select the menu without a Range.

MANUAL

Jumping to To and From Points

Holding down the **BLUE** key and pressing either **Jump** key will locate the transport to the start or end of the Range.

PLAY MENU

The Play Menu enables soft key selection of various transport selections.

Step 1 Press the **Play Menu** transport key.

Step 2 Press the desired soft key function.

All the Play Menu functions preroll the transport:

HEAD Plays the head of the clip under the cursor. If there is no clip under the cursor, the next clip is played.

TAIL Plays the tail of the clip under the cursor. If there is no clip under the cursor, the next clip is played.

EDIT Plays the last edit.

FADE Plays the fade out.

AGAIN Plays from the same place the transport last went into play.

RECORD MENU

All the Record Menu functions preroll the transport.

Step 1 Press the **REC** Key

Step 2 Press the desired soft key function

HEAD Records from the head of the clip under the cursor and continues until stopped.

CLIP Records from the head of the clip under the cursor and stops at the tail.

HERE Records at the current cursor location. If a Preroll is active, the transport will locate to and play from the Preroll point, then drop into record at the point which the **HERE** soft key was pressed.

AGAIN Records the same as the last record command.

For details on setting pre-roll and post-roll see “Setting Preroll and Postroll” on page 16-3.

NOTES:

Chapter 5 - Recording

INTRODUCTION

Satellite can record up to 48 simultaneous tracks to disk. The following chapter describes how to configure and then record audio into the system.



Figure 16: Digi and Proj Menu Keys

PROJECT SET UP

- Step 1 Start a new Project by selecting the **Proj** key and then the **NEW** soft key.
- Step 2 Use the keyboard to type a name for the Project and press **Enter**.

Project Sample Rate

The sample rate for a Project is fixed after the first recording is made. It is therefore very important to check this before recording.

- Step 1 Hold down the **BLUE** key and press the **Digi** key.
- Step 2 Press the **RATE** soft key.
- Step 3 Turn the jogger wheel to select the desired sample rate.
- Step 4 Press **Enter**.

Recording Bit Depth

The bit depth for each recording is selected using the following steps. Unlike the Project rate, the bit depth can be made changed every time a recording is made into a Project. The available bit depth rates are 16, 20 and 24.

- Step 1 Press the **Digi** key.
- Step 2 Press the **DEPTH** soft key.
- Step 3 Turn the jogger wheel to select the desired bit depth.
- Step 4 Press **Enter**.

Selecting A Sync Source

The Satellites sample rate clock can be referenced to one of several sync sources:

- Step 1 Hold down the **BLUE** key and press **Digi**.
- Step 2 Press the **SYNC** soft key.
- Step 3 Use the jogger wheel to select the desired sync source.
- Step 4 Press **Enter**.

The sync sources are as follows:

- INT** Internal sync uses crystals to generate the clocks.
- AES** The sync is taken from the AES sync input on the back of the QDC Engine.
- WCLK** The sync is taken from the **WORD CLOCK** input on the back of the QDC Engine.
- VIDEO** The sync is taken from the **VIDEO** input on the back of the QDC Engine.
- INPUT** The sync is taken from the **DIGITAL INPUT** of the selected track key.

Input Sync Or House Sync

The **INP SYNC** soft key in the Digi Menu is used to sync the system to the lowest numbered armed digital input. The **AUTO** mode is used when a digital audio source is not referenced to the same sync source as the Satellite.

Project Frame Rate

The frame rate (timecode format) can be changed at any time, but should be set to the local standard.

- Step 1 Press the **Setup** key.
- Step 2 Press the **TC FORMAT** soft key.
- Step 3 Turn the jogger wheel to select the desired timecode format.
- Step 4 Press **Enter**.
- Step 5: Select Non-Drop or Drop-Frame (if applicable).



NOTE:

- 3. The sample rate is also fixed if an import from another Project is performed (Refer to the Import Export Chapter later in this manual).
- 4. The sample rate and frame rate jogger wheel selection can also be performed using the **+** and **-** keys on the numeric keypad or the numeric keys **0** to **4**.

PATCHING INPUTS TO TRACKS

Satellite can be configured with up to 48 input channels in blocks of eight. The Patch Menu allows these inputs to be patched to different tracks.

Patch Menu

- Step 1 Press the **Arm** key.
- Step 2 Select the **INPUT** soft key.

Patching A Single Mono Track

- Step 1 Select destination track(s).
- Step 2 Press **PATCH**.
- Step 3 Select input on track keys.

Patching A Stereo Track

- Step 1 Select destination track(s).
- Step 2 Press **PATCH**.
- Step 3 Hold down the track key for the **LEFT** input and press the track key for the **RIGHT** input.

Patching A Mono Group

- Step 1: Select the Range of destination tracks.
- Step 2 Press **GROUP**.
- Step 3 Select the Range of inputs.

Selecting Input Type

Each input can be configured to analog +4, analog -10, AES/EBU or SPDIF.

- Step 1 Select a track patched to the input.
- Step 2 Press **TYPE**.
- Step 3 Select input type with jogger wheel.
- Step 4 Press **Enter**.

Selecting Input Gain

Each input can have up to 16dB gain or up to 99dB attenuation applied.

- Step 1 Select a track patched to the input.
- Step 2 Press **GAIN**.
- Step 3 Select input gain with the jogger wheel.
- Step 4 Press **Enter**.

Observe input levels on level meters when setting gain.

The selections made with the jogger wheel can also be made with the **+** and **-** keys, or the numeric keypad.

ARMING TRACKS

An input can only be recorded on one track at a time. If an input is patched to more than one track, arming one of these tracks will disarm any other track patched to this input.

The transport must be in **STOP** to monitor the inputs. To arm a track:

- Step 1 Press **Arm**.
- Step 2 Select track(s) to be armed.

Any number of tracks can be armed at the same time, as long as your system contains enough channels to play them. You may patch one input to as many tracks as you like, but only one track at a time can record it. The system will prevent you arming two tracks if they have the same input.

Arm on the Fly

Normally tracks are armed before you put the system into record, but it is possible to arm them while the system is in record and the track goes into record immediately. If the input patching for the track is not unique (i.e. it tries to record an input that is already being recorded on another track) the first track disarms.

Metering Input Levels

The input levels to the armed tracks are shown as vertical bargraphs at the top of the screen. These are seen on the video screen as soon as you enter the Arm Menu. For tracks that are not armed for record, meters show the playback levels.

The behaviour of the meters can be changed so that the background colour changes to warn you when a certain input level has been reached. This is done by setting the **METER RED LEVEL** field on the System Page.

Press the **BLUE** key and the **S** key, then use the mouse to change the value of **RED**, or type **RED level ENTER**, where level is the desired audio level, with or without a minus sign.)

The meter scaling can also be changed. This is done by setting the Meter Law, which affects the Range of the meter and its linearity. Meter Law can be changed on the System Page, or by typing **LAW n ENTER**, where n is a number from 1 to 6.

RECORDING

- | | |
|--------|--|
| Step 1 | Locate the transport to where you want to start recording, then press PLAY and RECORD together. |
| Step 2 | Press STOP or PLAY to end the recording. It is also possible to drop tracks in and out of record using the track keys in the Arm Menu. |

Recording Types

Recordings can be made using the following different recording modes:

- | | |
|-------------|--|
| NEW | <p>A new clip is created for each recording. This will result in new layers on top of previous recordings. This is the default and is the safest way to record when learning to use a Satellite.</p> <p>The HANDLE parameter available when this type of recording is selected allows the specified number of frames to be exposed at the head of the recorded clip using TRIM HEAD (please read the “Trim Edit Mode” on page 6-13 for further details).</p> |
| OVER | <p>Recording replaces audio that is already on the disk. This is destructive and cannot be undone. Clips lying under the cursor, or the next ones along, are replaced on armed tracks.</p> <p>The recording continues past the end of the original clip unless the tail of the clip does not show all the waveform due to the clip being subject to functions such as CUT TAIL or TRIM TAIL. In this case, the recording will stop.</p> |

TAPE If recording is commenced where there are no clips lying under the cursor on an armed track, a new clip is created. If recording commences where there is an existing clip, the clip is over written using the same method as for **OVER**.

The **WINDOW** parameter available when this type of recording is selected allows a gap of up to 999 frames to occur between when the track went into record and the next clip. If recording is commenced within this gap, the recording will start at the head of the next clip.

ARM Mode

The fifth soft key in the Arm Menu enables tracks to be set to **READY** or **THRU**. In **THRU** mode, tracks can be set to monitor their input at all times.

- Armed tracks show the input highlighted in red on the meters display on the video screen.
- Through tracks show the input highlighted in green on the meters display on the video screen.

Auto Extend

It is possible, while recording, to reach the limit of Project size, which is 4 Gigabytes (approximately 12 hours of 16 bit audio).

If this happens while the transport is actually in record, the Satellite will try to automatically create a new Project and continue recording. This can only happen if there is additional free space on the **SAME DISK DRIVE** on which the system is currently recording.

At the point where the Project is extended there will be a split in the clips that were currently recording.

The new Project borrows audio from the earlier Project in a read-only operation, which means that Tape Mode and Overwrite mode cannot replace that audio by recording. Also, no operation in the Space Menu (which is used to free disk space) will operate on the borrowed audio. For more information about borrowing, please see the Import menu.

AutoExtend may be turned off using the mouse on the System Page (**BLUE-S**).

Punch In / Punch Out

It is possible to record to disk while playing back from disk on the Satellite.

While playing, start recording by pressing the **RECORD** and **PLAY** buttons together. To drop out of Record, press the **PLAY**, **STOP**, **JOG**, **REW** or **FF** buttons.

Each time you enter Record you will create a new clip on each armed track. These clips are placed over any other clips that they encounter on the same tracks. The monitoring switches from recorded material to live as you enter Record, exactly as though you were erasing the existing audio.

You are preserving all that has been recorded, and may bring any of it back later on.

Automatic Drop-in

Pre-determined drop in and drop out points may be activated using the Machine Control section of the console. See ADR Chapter later in this manual for further details.

Output Submenu

The Output Submenu is used to select what type of digital outputs come from the system.

- Step 1 Hold down the **BLUE key** and press **Digi.**
- Step 2 Select **PAD** to change the audio level of all outputs to be reduced or increased in the digital domain.

NOTES:

Chapter 6 - Binnacle Editing

INTRODUCTION

Binnacle Editing introduces a new and more ergonomic editing control panel for increased efficiency and ease of use. It is common to all of Fairlight's DREAM family of products.

It is designed to achieve the following:

- Universal availability - no matter where the you navigate to in the system, the basic editing functions are always available on dedicated keys. This allows a user to learn the keystrokes like a musical instrument and achieve phenomenal speed.
- Two-handed operation - Allows the user to employ both hands, thus increasing efficiency and speed.

The term Binnacle is a reference to the compass housing on the bridge of a ship. On a Satellite console it refers to the area which includes the Jog wheel and the surrounding keys as illustrated below:

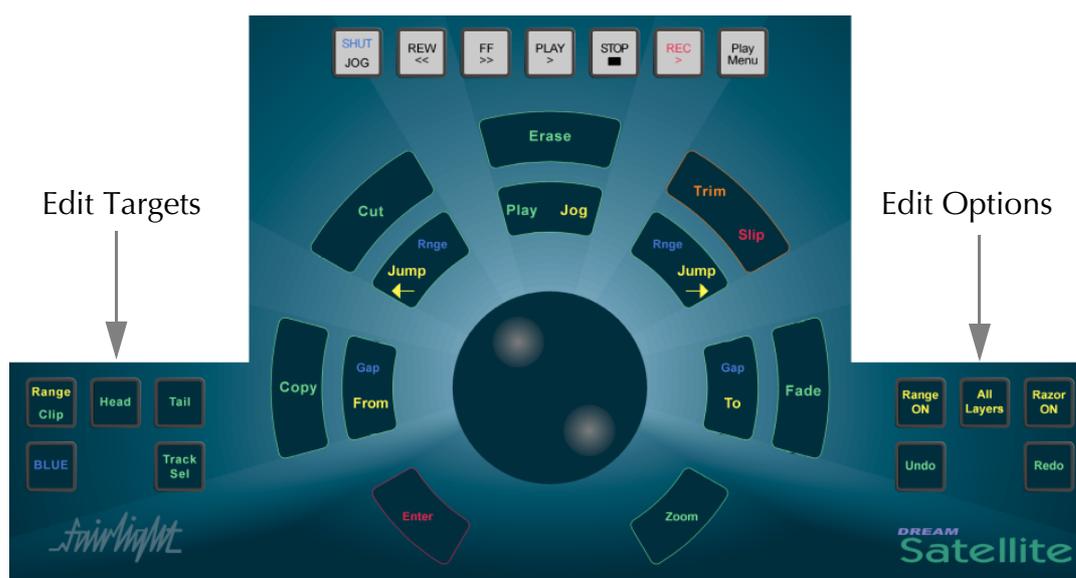


Figure 17: The Binnacle

The Binnacle is designed so that a user can have one hand operating the Jog wheel and the surrounding keys, while the other hand can roam the console.

EDITING

There are three basic steps to a Binnacle edit sequence:

Step 1. Select an Edit Mode from the six Edit Modes available.

These are **Copy**, **Cut**, **Erase**, **Trim & Slip** (on one key) and **Fade**.

Step 2. Set the options on the Option keys on the right hand side of the Binnacle.

These are **Range On**, **All Layers** and **Razor On**.

Step 3. Execute the edit using the Target keys on the left hand side of the Binnacle.

These are **Clip/Range**, **Head** and **Tail**.

In Copy, Cut, Trim and Slip modes there are two stages to this step (e.g. Cut and Paste).

Erase and Fade mode edits are finished with just one key-stroke.

Edit Modes

The six Binnacle edit modes are selected on the outer ring of keys:

- Copy - copies the selection to the clipboard.
- Cut - cuts the selection to the clipboard.
- Erase - erases the selection.
- Trim & Slip (on one key) - trims or slips the selection.
- Fade - fades or cross-fades the selection.

Once an edit mode is selected, it remains current until another edit mode or system mode is selected. The most recently pressed edit mode key is illuminated in amber (**red** for **slip** mode).

The selection of a Binnacle edit mode causes the LCD to switch to a display containing soft key functions relevant to that mode.

Pressing an edit mode key twice, will toggle between Range on and off, if it is relevant to that mode

Edit Options

The Binnacle options are **Range ON**, **All Layers** and **Razor ON**. The options have an influence on what happens when a Binnacle command is issued. This varies according to the edit mode and target of the command. Refer to “Selecting a Range” on page 4-10 for information on setting ranges.

Edit Targets

The target for a Binnacle command is the set of audio clips or parts of clips that are going to be affected by the command. Pressing the target key executes the edit command. The possible targets are:

- **Clip** - when RANGE is off, the target consists of all clips on selected tracks under the cursor. The current clips that will be affected are highlighted in RED on the video screen.
- **Range** - when RANGE is on, the target consists of all clips and parts of clips on selected tracks lying inside the Range. The current clips and parts of clips that will be affected are highlighted in RED on the video screen.
- **Head** - if RANGE is off, the target consists of the parts of the clips on the selected tracks touching the cursor and lying to its left.

If RANGE is on, the target consists of the clips and parts of clips on the selected tracks, lying between the Range start and the cursor. In both cases, the pieces that will be affected by the command are the RED parts lying to the LEFT of the cursor.

- **Tail** - if RANGE is off, the target consists of the parts of the clips on the selected tracks touching the cursor and lying to its right.

If RANGE is on, the target consists of the clips and parts of clips on the selected tracks, lying between the cursor and the Range end. In both cases, the pieces that will be affected by the command are the RED parts lying to the RIGHT of the cursor.

One and Two-handed Editing

The Binnacle allows Cut, Copy and Trim operations to be performed with one hand or two, depending on the operators preferred style and the details of the particular edit. Each edit is described in both modes below.

A copy edit is a two-handed edit when the target key is pressed and held with the left hand to start the edit, the right hand is used to change the track selection or transport position, then the target key is released to paste and finish the edit.

A one handed edit is performed by pressing and releasing the target key to copy then pressing the **Enter** key to paste.

Undo and Redo

Satellite provides 64 levels of undo and redo.

Pressing the **Undo** key once will undo the last edit. Pressing the key multiple times will allow you to progressively step backwards through previous edits.

Use the **Redo** key to reinstate edits that you have undone.

Redo is only available immediately after an Undo.

Undo is not possible after any SPACE MENU functions, the NUMBERS function in the Track Menu, or the KEEP function in the Import Menu.

Single Track or Multitrack Editing

Editing may be performed on single or multiple tracks. Multitrack edits are performed on all selected tracks. When pasting from the clipboard the number and order of tracks is retained. Selecting a different destination track moves the entire selection.

Clip Layers

When clips are recorded or pasted on top of each other they become layered one above the other. Only the top clip is heard. To move a clip from a lower layer to the top, use the POP TAKES function by pressing the **Takes** key. See “Takes Menu” on page 9-3 for more details.

Transport and Selection Keys

The Binnacle includes several keys located within easy reach of one hand, designed for fast transport control and Range selection. For more information on transport and track selection see “Tracks & Transport” on page 4-2. The transport and range features include:

- **Jogger Wheel** - this is used for many functions, including moving the transport and scrubbing the audio.
- **To** and **From** - these keys are used to set the beginning (From) and end (To) of the Range. Pressing and releasing one of these keys sets the Range to start or finish at exactly that point. Holding down one of the keys allows various menu options and other keys to be used for setting the Range extremities.
- **Play/Jog** - if the transport is not in Jog, this key will put it into Jog. If it is in Jog, this key will put the transport in Play. This is designed to allow the most common transport commands used during editing to be accessible without moving the hand.
- **Jump Left** and **Jump Right** - these keys allow location of the transport to important features in the Project, such as the next clip, next mark, start or end of the Project, and many more. Holding down a **Jump** key causes display of a menu on the LCD that selects and locks in one of the Jump choices.
- **Zoom** - the **Zoom** key is used to change the horizontal time scale of the video display. To use it, hold it down while rotating the Jog wheel.
- **Enter** - the **Enter** key is used to complete many editing and menu selection operations.
- **BLUE** - the **BLUE** key modifies the function of any key with blue text. To select a blue function hold the **BLUE** key while pressing any other key.
- **Track Sel** - Holding the Track Sel key and turning the Jog wheel will change the selected track.

CUT AND COPY EDIT MODES

Cut and copy commands can operate on either selected clips, or a Range of clips or a Range within clips.

In CUT mode, the selected clips are removed from a track and held on the clipboard.

In COPY mode, the clips are left unchanged, but copies of the clips are passed to the clipboard.

The resulting content of the clipboard is the same for both CUT and COPY modes.

The Clipboard

When clips or sections of clips are cut or copied, they are placed on the clipboard. When the **Enter** key is pressed or when the target key is released whilst in the EDIT mode, the contents of the clipboard are pasted on to the currently selected tracks.

Clips can be pasted multiple times by pressing the **Enter** key repeatedly. If other clips are cut or copied to the clipboard, the previous contents of the clipboard are lost, regardless of whether they were used or not.

Ghost

A Ghost is a representation of the clipboard's top layer. A ghost is shown as a floating white image at the cursor position. The ghost display is automatically removed after pasting or when a new Mode is selected.

Whenever the CUT, COPY or ERASE modes are current, the **Ghost** soft key can be used to toggle the ghost clip display on or off.

Using Cut or Copy

Follow these steps to perform a CUT or COPY edit:

- | | |
|--------|--|
| Step 1 | Press either the Cut or Copy key to select the edit mode. |
| Step 2 | Select the desired track(s).

If only one track is to be edited, double press its track key to ensure no other tracks are selected |
| Step 3 | Locate the transport so the cursor lies over the desired edit point. Clips that will be edited are highlighted in red. |
| Step 4 | Hold down the required edit target key (Range/Clip , Head or Tail), on the left hand side of the Binnacle. |
| Step 5 | Locate the transport so the cursor lies over the destination edit point. Select an alternative destination track if desired. |
| Step 6 | Let go of the edit target key to paste the clip(s). |

Binnacle editing allows CUT and COPY to be achieved as a one-handed or two-handed edit.

To perform a one-handed edit hit the edit target key (**Range/Clip**, **Head** or **Tail**) to COPY or CUT, then hit enter to paste.

To perform a two-handed edit hold down the edit target key (**Range/Clip**, **Head** or **Tail**) to COPY or CUT, then release it to paste, as described in the steps above.

Cut Edit Targets

The result of a CUT edit is determined by the target key pressed. The following examples illustrate how Cut works using a single clip with one-handed editing:

Range/Clip	The entire clip is removed from the track and placed on the clipboard. When Enter is pressed, the clip is placed on the currently selected track.
Head	The section of the clip from the head to the cursor is cut and placed on the clipboard. When Enter is pressed, the clip is pasted with the cursor positioned at the cut point.
Tail	CUT TAIL functions in the same manner as CUT HEAD, except that it works from the cursor to the tail. The section of the clip from the cursor to the tail is cut and placed on the clipboard. When Enter is pressed, the clip is pasted with the cursor positioned at the cut point. CUT TAIL can be used to shorten a clip by pasting the tail over the original closer to the head.

If all you wish to do is remove the tail permanently, don't paste the waveform.

Copy Edit Targets

The result of a COPY edit is determined by the target key pressed. In COPY mode, the original clip is not altered, but the contents of the clipboard are the same as for CUT.

Range/Clip	A copy of the clip is placed on the clipboard. When Enter is pressed, the clip is placed on the currently selected track.
Head	The section of the clip from the head to the cursor is cut and placed on the clipboard. When Enter is pressed, the clip is pasted with the cursor positioned at the copy point.
Tail	COPY TAIL functions in the same manner as COPY HEAD, except that it works from the cursor to the tail. The section of the clip from the cursor to the tail is placed on the clipboard. When Enter is pressed, the clip is pasted with the cursor positioned at the copy point.

Cut/Copy Soft Key Functions

When the **Cut**, **Copy** or **Erase** keys are selected on the Binnacle, the following LCD soft key options are available:

Split Clip	Splits the clip at the current cursor position into two clips.
Reverse	Reverses the clip.
Ghost	On or Off, displays or hides the last clipboard item

Cut and Copy Edit Options

The Binnacle edit options for Cut and Copy are, RANGE ON, ALL LAYERS, RAZOR ON.

Cut/Copy with Range On

The CUT and COPY commands offer additional functions when a Range is selected.

In CUT mode, the selected range is removed from a track and held on the clipboard.

In COPY mode, the range is left unchanged, but a copy of the range is passed to the clipboard.

The resulting content of the clipboard is the same for both CUT and COPY modes.

For details on selecting ranges see “Selecting a Range” on page 4-10

To perform a CUT or COPY with RANGE ON follow these steps:

- | | |
|--------|---|
| Step 1 | Press either the Cut or Copy key. |
| Step 2 | Select the desired track(s). |
| | If only one track is to be edited, double click its tracks key to ensure no other tracks are selected. |
| Step 3 | Define a Range using the From and To keys or press Range On to recall the last range set. |
| Step 4 | Hold down the required edit target key (Range/Clip , Head or Tail), on the left hand side of the Binnacle. |
| Step 5 | Locate the transport so the cursor lies over the destination edit point. Select an alternative destination track if desired. |
| Step 6 | Let go of the selected edit function to paste the Range |

To do a one-handed edit hit the edit target key to copy or cut, then hit enter to perform the paste.

To do a two-handed edit hold down the edit target key to copy or cut, then release it to perform the paste, as described in the steps above.

Cut/Copy with Range On Targets

- | | |
|-------------------|---|
| Range/Clip | Copies all clips or parts of clips within the Range into the clipboard. When Enter is pressed, the range is pasted with the cursor positioned at the copy point. |
| Head | Copies all clips or parts of clips from the beginning of the Range to the current cursor position into the clipboard. When Enter is pressed, the range is pasted with the cursor positioned at the end of the range. |
| Tail | Copies all clips or parts of clips from the current cursor position to the end of the Range into the clipboard. When Enter is pressed, the range is pasted with the cursor positioned at the beginning of the range. |

Range Soft Key Functions

When the **Cut**, **Copy** or **Erase** keys are selected on the Binnacle, and a **RANGE** is selected, the following additional LCD soft key options are available:

Split Range	Splits clips at the beginning and the end of the Range. If no clips lies at a Range end, then no split is performed at that point.
Fill	Uses the current contents of the clipboard to fill the current Range.
B/FWD Fill	A Backward Forward Fill is performed using the contents of the clipboard to fill the current Range.
Overlap	Defines the amount of Overlap to be used to auto fade the loops in a Fill operation.
Bounce	Bounce mixes audio from all clips in a Range and creates a new clip on a destination track, which you are prompted to enter. Bounce includes EQs, levels and fades. To interrupt a bounce once started press CTRL Q .

Fill

The **FILL** function is used to automatically repeat a section of audio to fill a Range on a track to create background fills or buzz tracks. The audio used for the fill is the clip currently on the clipboard from the last **CUT** or **COPY** function. The **OVERLAP** parameter can be set to cross-fade the clips:

- | | |
|--------|---|
| Step 1 | COPY (or CUT) the desired audio to the clipboard. The cursor's sync point will be maintained |
| Step 2 | Create a RANGE encompassing the area to be filled. |
| Step 3 | Press the OVERLAP soft key and enter a value in frames. |
| Step 4 | Press the FILL soft key. |

B/F (Backwards Forwards) FILL

Pressing the **B/F FILL** soft key will fill the Range as per the normal **FILL** function, except every second clip will be reversed.

Cut/Copy with All Layers

Overlapping clips are arranged in layers. When the **All Layers** key is selected after pressing either the **Cut** or **Copy** keys, the target will consist of all clips on all layers.

When range is off and you press **All Layers** or **Razor**, a range is created that encloses the selected clips, if any. This range is bounded by the head and tail of the top clip under the cursor. If there is no clip on the selected track, the Range will be set to zero width, and an error will result if you try and execute a cut or copy command.

Range/Clip	Copies all layers from the beginning of the Range to the end of the Range into the clipboard. A ghost of the uppermost clips is presented. The cursor may be moved, and completing the edit causes the contents of the clipboard with all its layers to be pasted at the new location.
Head	Copies all layers from the beginning of the Range to the current cursor position into the clipboard. A ghost of the uppermost clips is presented. The cursor may be moved, and completing the edit causes the contents of the clipboard with all its layers to be pasted at the new location.
Tail	Copies all layers from the current cursor position to the end of the Range into the clipboard. A ghost of the uppermost clips is presented. The cursor may be moved, and completing the edit causes the contents of the clipboard with all its layers to be pasted at the new location.

Cut/Copy with Razor On

Edits performed with Razor On insert or remove time from the selected tracks, emulating a tape edit performed with a razor blade.

When the **Razor On** key is selected after pressing either the **Cut** or **Copy** keys, the following will occur:

Cut With Razor On

Audio is removed from the selected tracks and inserted at the cursor. Audio after the Range is then moved in time to the start of the Range.

Paste With Razor On

The contents of the clipboard are inserted at the cursor. Audio to the right of the cursor is moved along to the right.

Using Razor On Mid-Edit

RAZOR mode can be turned on in between the CUT and PASTE stages of an edit. For example, you may perform a cut with RAZOR off leaving the time-line intact, then press RAZOR ON to insert time when pasting.

Razor Soft Key Functions

When **Razor On** is selected an additional soft key Menu is available on the LCD:

Insert Space	Silence will be inserted from the start of a Range for the duration of the Range.
-----------------	---

ERASE EDIT MODE

The ERASE mode commands remove clips (and parts of clips) from the Project.

To enter ERASE mode, press the **Erase** key. The Binnacle will remain in ERASE mode until another edit mode key is pressed. Unlike COPY and CUT, the ERASE edit is completed at the moment of striking the target key.

Using Erase

- | | |
|--------|--|
| Step 1 | Press the Erase key. |
| Step 2 | Select the desired track(s).

If only one track is to be edited, double click its track key to ensure no other tracks are selected |
| Step 3 | Locate the transport so the cursor lies over the desired edit point, clips that will be edited are highlighted in red. |
| Step 4 | Press the required edit target key (Range/Clip , Head or Tail), on the left hand side of the Binnacle. |

Erase Edit Targets

The result of an ERASE edit is determined by the target key pressed.

- | | |
|---------------------|---|
| Range / Clip | Erases all clips on the top layer which touch the cursor on selected tracks. |
| Head | Erases the heads of all clips which touch the cursor on selected tracks. |
| Tail | Erases the tails of all clips on the top layer which touch the cursor on selected tracks. |

Erase Edit Options

The Binnacle options for ERASE are, RANGE ON, ALL LAYERS, RAZOR ON.

Erase with Range On

To perform an ERASE with RANGE on, follow these steps:

- | | |
|--------|--|
| Step 1 | Press either the Erase key. |
| Step 2 | Select the desired track(s).

If only one track is to be edited, double click its tracks key to ensure no other tracks are selected. |
| Step 3 | Define a Range using the From and To keys, or press Range On to recall the last range set. |
| Step 4 | Press the required edit function key (Range/Clip , Head or Tail), on the left hand side of the Binnacle.

The selection should now be erased. |

Erase Range Targets

Range / Clip	Erases all clips on the top layer from the beginning of the Range to the end of the Range.
Head	Erases all clips on the top layer from the beginning of the Range to the current cursor position.
Tail	Erases all clips on the top layer from the current cursor position to the end of the Range.

Erase with All Layers On

Overlapping clips are arranged in layers. When the **All Layers** key is selected after pressing either the **Erase** key, the target will consist of all clips on all layers.

When range is off and you press **All Layers** or **Razor**, a range is created that encloses the selected clips, if any. This range is bounded by the head and tail of the top clip under the cursor. If there is no clip on the selected track, the Range will be set to zero width, and an error will result if you try and execute a cut or copy command.

Range / Clip	Erases all layers from the beginning of the Range to the end of the Range.
Head	Erases all layers from the beginning of the Range to the current cursor position.
Tail	Erases all layers from the current cursor position to the end of the Range.

Erase with Razor On

Edits performed with Razor On insert or remove time from the selected tracks, emulating a tape edit performed with a razor blade.

Range / Clip	Erases all layers from the beginning of the Range to the end of the Range, together with the associated track time.
Head	Erases all layers from the beginning of the Range to the current cursor position, together with the associated track time.
Tail	Erases all layers from the current cursor position to the end of the Range, together with the associated track time.

TRIM EDIT MODE

Trimming allows clips to be resized. Trim commands are used to set the head and tail of clips, to determine how much of the original recording is played by the clip.

Trimming may shorten a clip, or extend a clip if the original recording is longer than the displayed clip. This will be the case if the clip was imported with handles or if the original clip has been edited.

Using Trim

- | | |
|--------|--|
| Step 1 | Press the Trim key. |
| Step 2 | Select the desired track(s). |
| | If only one track is to be edited, double click its track key to ensure no other tracks are selected. |
| Step 3 | Locate the transport so the cursor lies over the desired edit point, clips that will be edited are highlighted in red. |
| Step 4 | Hold down the required edit target key (Range/Clip, Head or Tail), on the left hand side of the Binnacle. |
| Step 5 | Locate the transport so the cursor lies over the destination edit point. |
| Step 6 | Let go of the selected edit function to trim the clip(s). |

Binnacle editing allows TRIM to be achieved as a one-handed or two-handed edit.

To perform a one-handed edit hit the edit target key to TRIM, move the cursor if necessary, then hit **Enter** to trim the clip. Hitting **Enter** again will trim the clip again.

To perform a two-handed edit hold down the edit target key to Trim, move the cursor then release the target key to trim the clip.

When trimming the head or tail of a clip pressing the target key once executes the TRIM. Move the cursor and hit **Enter** to TRIM the head or tail again, if required.

Trim Edit Targets

The result of a TRIM edit is determined by the target key pressed.

Range/Clip Moves the head and tail of the selected clip(s) while maintaining the position of the waveform.

The clip moves in sync with the cursor while the waveform remains fixed. This exposes a different section of the waveform without changing the length of the clip. The clip can be trimmed as long as the original recording extends beyond the desired head or tail locations.

Head Trims the head of the selected clip(s) to the cursor while maintaining the position of the tail of the waveform.

Tail Trims the tail of the selected clip(s) to the cursor while maintaining the position of the head of the waveform.

Trim Soft Key Functions

When the **Trim** key is selected on the Binnacle, the following LCD soft key options are available:

Trim Selects TRIM mode when the **Trim/Slip** key is pressed. Hold down the **BLUE** key and press the **Trim** soft key to set TRIM as the default mode.

Slip Selects SLIP mode when the **Trim/Slip** key is pressed. Hold down the **BLUE** key and press the **Slip** soft key to set SLIP as the default mode.

Sync Pressing the **Trim Sync** soft key creates a sync marker within the selected clip(s) at the cursor position. The JUMP TO POINT or JUMP TO POINT OR FADE functions will then land on this point. It can be used to quickly jump to a frequently used sync point within a clip. It also determines where a clip is referenced when using AudioBase.

To change the sync point, select **TRIM SYNC** at the new location. There is only one sync point per clip. This sync marker should not be confused with the term 'sync point' used throughout this manual except in the section on JUMP.

Trim Edit Options

Trim is usually applied to a single clip or selections across tracks therefore, no options are available.

Range On

RANGE ON is not supported in Trim Mode.

Layers On

ALL LAYERS ON is not supported in Trim Mode.

Razor On

RAZOR ON is not supported in Trim Mode.

SLIP EDIT MODE

SLIP mode moves clips to a new time location. Slipping the head moves the head of a clip to the cursor while maintaining the position of the tail. Slipping the tail moves the tail of a clip to the cursor while maintaining the position of the head. These commands alter the length of the clip

Using Slip

- Step 1 Press the **Trim/Slip** key (and then the `SLIP` soft key if not in SLIP mode).
- Step 2 Select the desired track(s).

If only one track is to be edited, double click its tracks key to ensure no other tracks are selected.
- Step 3 Locate the transport so the cursor lies over the desired edit point, clips that will be edited are highlighted in red.
- Step 4 Hold down the required edit target key (**Range/Clip**, **Head** or **Tail**), on the left hand side of the Binnacle.
- Step 5 Locate the transport so the cursor lies over the destination edit point.
- Step 6 Let go of the selected edit function to trim the clip(s).

Binnacle editing allows SLIP to be achieved as a one-handed or two-handed edit.

To perform a one-handed edit hit the edit target key to SLIP, move the cursor if necessary, then hit **Enter** to slip the clip. Hitting **Enter** again will trim the clip again.

To perform a two-handed edit hold down the edit target key to Slip, move the cursor then release the target key to slip the clip.

When slipping the head or tail of a clip pressing the target key once executes the SLIP. Move the cursor and hit **Enter** to SLIP the head or tail again, if required.

Slip Edit Targets

The result of a SLIP edit is determined by the target key pressed.

- Range / Clip** The entire clip is slipped from its current position by an offset defined by the difference between the cursor position when the key was pressed and the cursor position when the edit was completed.
- Head** The head of the clip is slipped to the position that the cursor is at when the edit is completed. The tail remains stationary, with audio being moved out from the tail or pushed under it as required.
- Tail** The tail of the clip is slipped to the position that the cursor is at when the edit is completed. The head remains stationary, with audio being moved out from the head or pushed under it as required.

Locating the cursor over the clip and typing **RTB Enter**, will slip the clip to its original recording time. RTB stands for Return To Birthday.

Slip Edit Options

Slip is usually applied to a single clip or selections across tracks therefore, no options are available.

Range On

RANGE ON is not supported in Slip Mode.

Layers On

ALL LAYERS ON is not supported in Slip Mode.

Razor On

RAZOR ON is not supported in Slip Mode.

NUDGE

Although not a Binnacle editing function, the NUDGE function is closely related to SLIP. The NUDGE function slips clips by a predetermined amount of time. NUDGE can operate on one or many tracks affecting clips that lie under the cursor, or within a Range. NUDGE can operate in fixed steps of plus or minus one frame, or in variable steps from 1 to 99 sub-frames (a sub-frame is 1/80th of a frame). The Nudge key is located to the left of the LCD display.

Using Nudge

- | | |
|--------|---|
| Step 1 | Press the Nudge key, to the left of the LCD. |
| Step 2 | Locate the cursor over the clips and select the appropriate track(s). |
| Step 3 | Press the <i>Variable</i> or <i>One Frame</i> nudge soft keys to slip the clip(s) by the selected amount. |
- When there is no Range selected, only the top layer of clips highlighted under the cursor is nudged.

Nudge with A Range

Follow these steps to perform a NUDGE with a range selected:

- | | |
|--------|---|
| Step 1 | Press the Nudge key, to the left of the LCD. |
| Step 2 | Use the From and To keys to select a Range that includes all clips to be nudged. |
| Step 3 | Press the <i>Variable</i> or <i>One Frame</i> nudge soft keys to slip the clip(s) by the selected amount. |
- When a Range is selected, all layers of clips within the Range are nudged, including those which are completely buried.

**NOTES:**

Nudging is possible while the transport is in play.

It is possible to nudge the sync of clips by holding down the **Shift** key and pressing the **Nudge** key. The Nudge Menu will then nudge the waveform within clips without affecting heads and tails. Hold down the **Shift** key and press the **Nudge** key to return to normal operation.

When nudging a Range, clips not wholly within the Range are not affected. However, since the Range itself is also nudged, it is possible for the Range to move so as to wholly enclose a clip, in which case the clip will then be nudged with the rest of the Range.

FADES EDIT MODE

The **Fade** key on the Binnacle allows fades to be applied to the heads and tails of clips. The fades are performed by the system in real time as the audio is output from the machine. Applying a fade to a clip does not affect the waveform on disk.

Fades are applied from the cursor position to the head or tail of clips on selected tracks. If a level has been applied to a clip, the fade will start or finish at this level.

All clips have small default fades to prevent clicks. These can be seen at the heads and tails of clips at Zoom 16.

Fades are shown as shaded ramps on the clips.

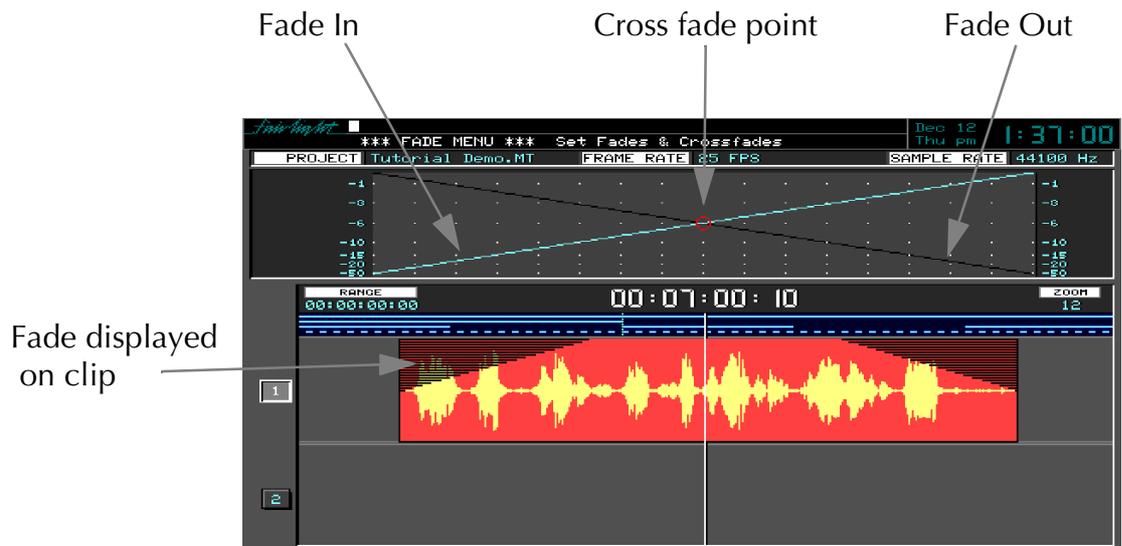


Figure 18: Fade Display

Using Fade

- Step 1 Press the **Fade** key.
- Step 2 Locate the transport to the fade point and select the desired tracks.
- Step 3 Use the soft keys and jog wheel to set the fade parameters, if required.
- Step 4 Press the required edit target key (**Range/Clip, Head or Tail**), on the left hand side of the Binnacle.

Cross-Fades

If a fade is placed on a clip and there is another clip layered underneath, a cross-fade between the two will automatically be invoked. Cross-fade parameters can be modified with the soft key menu functions.

Fade Targets

The result of a FADE is determined by the target key pressed.

Range / Clip	Applies an AUTO IN and AUTO OUT Fade to the head and tail of all selected clips. See below for details on Auto In and Out
Head	Fades from the head of the currently selected clip(s) to the current cursor position.
Tail	Fades from the current cursor position to the tail of the currently selected clip(s).

Fade Soft Key Functions

Auto In	Sets a value in frames for an Automatic Fade at the head of a clip, or clips within a Range. Pressing any other key accepts the entered value immediately. Pressing Auto In followed by Enter executes an Auto In fade to the head(s) of any clips touched by the cursor on selected tracks.
Auto Out	Same as for Auto In, but executed for tails of clips.
X-Level X-Point	These soft keys allows level and time characteristics for fades to be adjusted. This enables you to set sudden or gradual fades. The fade curve is shown on the upper graphics display
Capture Head	Captures the fade parameters from the head of the current clip (NOT available when RANGE activated)
Capture Tail	Captures the fade parameters from the tail of the current clip (NOT available when RANGE activated)

Capturing Fade Parameters

It is possible to copy the fade parameters from a clip so they can be reapplied to other clips, or adjusted and reapplied to the same or other clips.

Step 1	Press the Fade key
Step 2	Select the clip from which you want to copy the parameters.
Step 3	Press the HEAD or TAIL soft keys to capture the parameters from the corresponding fade.

Fade Options

Range On

Follow these steps to perform a fade on a range:

Step 1	Press the Fade key.
Step 2	Use the From and To keys to select a Range, or press RANGE ON to recall the last range set.

- Step 3 Press the required edit target key (**Range/Clip, Head** or **Tail**), on the left hand side of the Binnacle.

Range Fade Targets

The result of a RANGE FADE is determined by the target key pressed.

- | | |
|---------------------|---|
| Range / Clip | Applies an Auto In and Auto Out fade to all the clips wholly contained within the Range. |
| Head | Creates a new Master Recording (bounce) over the Range and sets a fade up from its beginning to its end. Also splits the clips underneath so that no unexpected crossfades occur. |
| Tail | Creates a new Master Recording (bounce) over the Range and sets a fade down from its beginning to its end. Also splits the clips underneath so that no unexpected crossfades occur. |

Layers On

ALL LAYERS ON is not supported in Fade Mode.

Razor On

RAZOR ON is not supported in Fade Mode.

Fade Defaults

Every clip has a small fade at the head or tail to make it sound smoother. This is called the default fade, and you can control its length.

One way is to type `FDEF n` **RETURN** on the PC keyboard, where `n` is the length you want in sub-frames. This method lasts only during the current session and is not remembered by the Project or the machine.

Creating Level Changes

By pasting a copy of a section of a clip onto itself, you are able to change the level of the copy to create a level change. If the copy is cross-faded with the original, a smooth level transition results. When using the COPY and PASTE functions, be sure to be in STOP otherwise a slight movement of the jogger wheel may result in phasing during the fades.

NOTES:

Chapter 7 - Name

INTRODUCTION

The Name Menu allows you to rename Projects, tracks and clips, and to setup seed names using the alphanumeric keys. When a name function is selected, the original name appears in the upper console display. You can then use the **BACKSPACE** key to edit the original name.

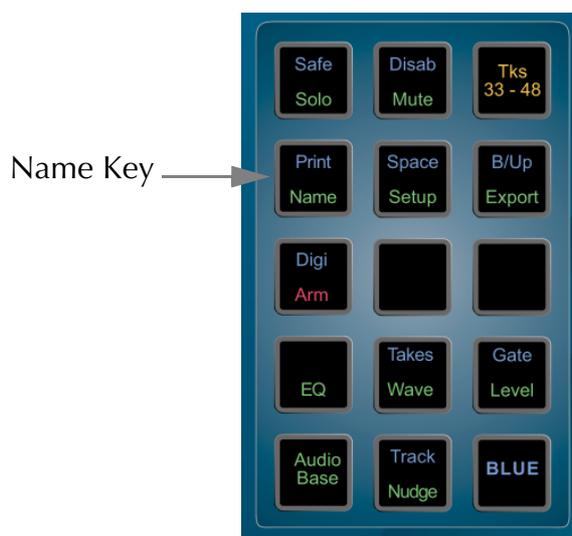


Figure 19: Name Key

- | | |
|--------|--|
| Step 1 | Press the NAME key. |
| Step 2 | Select the required name function by pressing a soft key. |
| Step 3 | Edit the name in the upper console display with the PC keyboard. |
| Step 4 | Press Enter . |

RENAMING A PROJECT

To rename a Project whilst it is open, select the **PROJECT** soft key in the Name Menu, then enter the new name.

NAMING TRACKS

The track names of a Project can be changed to help organise Projects. Select the required track and press the **TRACK** soft key in the Name Menu. Enter the new name.

NAMING CLIPS

All clips in a Project can be given an individual name. A clip can be copied and given a different name to the original. Different clips can also be given the same name. To name a clip, locate the transport so the cursor lies over the clip, selecting the appro-

appropriate track if necessary, then press the `CLIP` soft key in the Name Menu. Enter the new name on the PC keyboard.

SEED NAMES

Seed names are given to all new recordings in a Project. You will notice that recordings are given an incremental number for each new clip. Seed names allow you to enter a name that will be given to each new recording which will include an incremental numeric suffix.

In the Name Menu, the last soft key allows you to toggle between `GLOBAL` and `TRACK` seed modes. To enter a seed name, first select `GLOBAL` or `TRACK`, then select the `SEED` soft key and enter the name. The descriptions for these modes are as follows:

- | | |
|---------------------|--|
| <code>GLOBAL</code> | The global seed name is given to every new recording in the Project followed by an incremental number. For example, if a global seed name "Voice Over " is entered, the first recording will be named "Voice Over 1". The numeric suffix will increment automatically for each recording i.e. the next recording will have the name "Voice Over 2". If more than one track is recorded at the same time, the recordings on each track will have an incremental number. |
| <code>TRACK</code> | In the track mode, each track can be given an individual seed name. This is done by selecting a track key before entering the name. When in the track mode, recordings on tracks with seed names will be given the track seed name followed by an incremental number. If a track has no seed name, it will be given the global seed name. |



NOTES:

5. The system defaults to a null `GLOBAL` seed name. This results in recordings being given names with numbers only.
6. To clear seed names, select the desired name function, then type a new seed number and press **Enter**.
7. To start recording at a specific number, edit the seed name's numeric suffix.
8. Use only the following characters in names: A - Z, a - z, 0 - 9, _ (underscore)
9. If a Range has been created, all clips that are wholly inside it can be named with one command.

NOTES:

Chapter 8 - Solo and Mute

INTRODUCTION

The SOLO and MUTE functions operate in a similar manner to those on a mixing console. SOLO mutes all tracks except for soloed tracks, MUTE silences only the muted tracks. Both the SOLO and MUTE functions can be activated by pressing the **Solo** or **Mute** key then selecting the desired tracks.

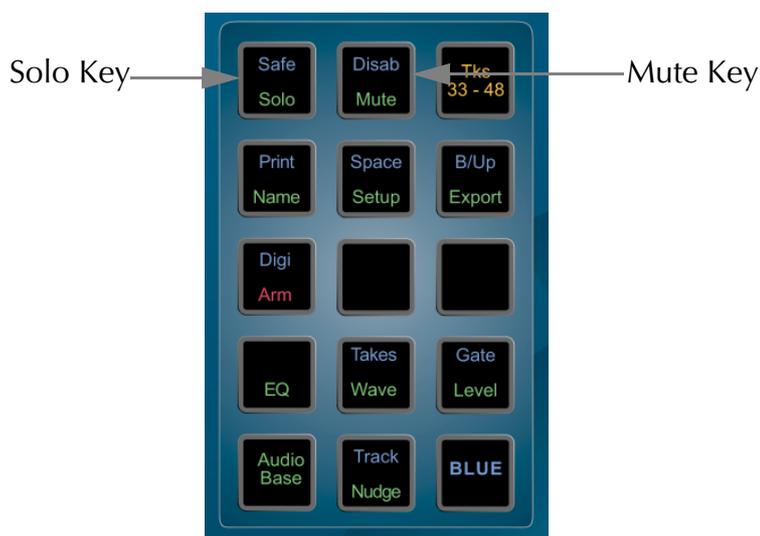


Figure 20: Solo and Mute Keys

There is also a useful feature where you can hold down the **Solo** or **Mute** key while selecting the tracks to automatically bring you back to the previous menu when you release the keys.

SOLOING TRACKS

- Step 1 Press or hold the **Solo** key.
- Step 2 Select tracks to SOLO. The SOLO function can be toggled on or off with the first soft key. This will switch between soloing the selected tracks and monitoring all tracks.

Indicators next to the track numbers show orange for soloed tracks and blue for remaining silent tracks.

SOLO FOLLOWS EDIT

The SOLO FOLLOWS EDIT function automatically puts selected tracks into SOLO as you edit.

- Step 1 Toggle the FOLLOW function on or off with the second soft key.
- Step 2 Press the **Solo** key.

MUTING TRACKS

- Step 1 Press or hold the **Mute** key.
- Step 2 Select tracks to mute. The MUTE function can be toggled on or off with the first soft key. This will switch between muting the selected tracks and monitoring all tracks.
- Indicators next to the track numbers show blue for muted tracks.

SAFE

Tracks can be put into SAFE mode to prevent accidental editing or recording.

- Step 1 Hold down the **BLUE** key and press the **Safe** key.
- Step 2 Select tracks to be in SAFE mode. The SAFE function can be toggled on or off with the first soft key. This will switch between having the selected tracks safe and no tracks safe.
- Indicators next to the track numbers show green for safe tracks.

DISABLE

Tracks can be disabled for playback, waveform display and editing.

- Step 1 Hold down the **BLUE** key and press the **Disab** key.
- Step 2 Select tracks to be in DISABLE mode. The DISABLE function can be toggled on or off with the first soft key. This will switch between having the selected tracks disabled and no tracks disabled.

NOTES:

Chapter 9 - Track & Takes

INTRODUCTION

The Track Menu is used to copy and move clips to other tracks without affecting their position in time. Tracks may also be re-numbered. All Track functions, except NUMBERS, use a Range, and affect all layers of clips.

The Takes Menu provides the POP function which moves clips on lower layers to the top. Clips that lie beneath the cursor are listed in the upper display.

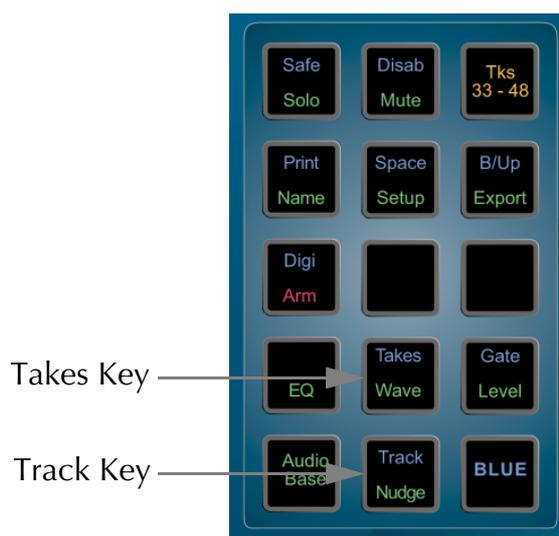


Figure 21: Takes and Track Keys

TRACK MENU

- | | |
|--------|---|
| Step 1 | Hold down the BLUE key and press the Track key. |
| Step 2 | Define a Range (not applicable to the NUMBERS function). |
| Step 3 | Select the source track. |
| Step 4 | Select the desired function. |
| Step 5 | Select the destination track. |

Swap

After SWAP has been selected, the defined Range will be swapped on the source and destination tracks.

Numbers

The NUMBERS function swaps the entire track, including the track name. It does not use a Range and is not reversible using the **UNDO** key.

Move

MOVE removes the clips in the Range on the source track and places them on the destination track. Any clips on the destination track will be buried.

Copy

COPY places a copy of the clips in the Range onto the destination track. Any clips on the destination track will be buried. The source track is not changed.

Shadow

The audio on the destination track is erased where there are clips on the source track. This is useful for splitting audio to different tracks, for example, telephone and perspective splits. The source track is not changed.

TAKES MENU

When new clips are recorded or copied above existing clips in a track, only the top clip can be heard. The Takes Menu allows you to select a clip from several clips that have been layered and bring it to the top. Clips that lie beneath the cursor are listed in the upper display

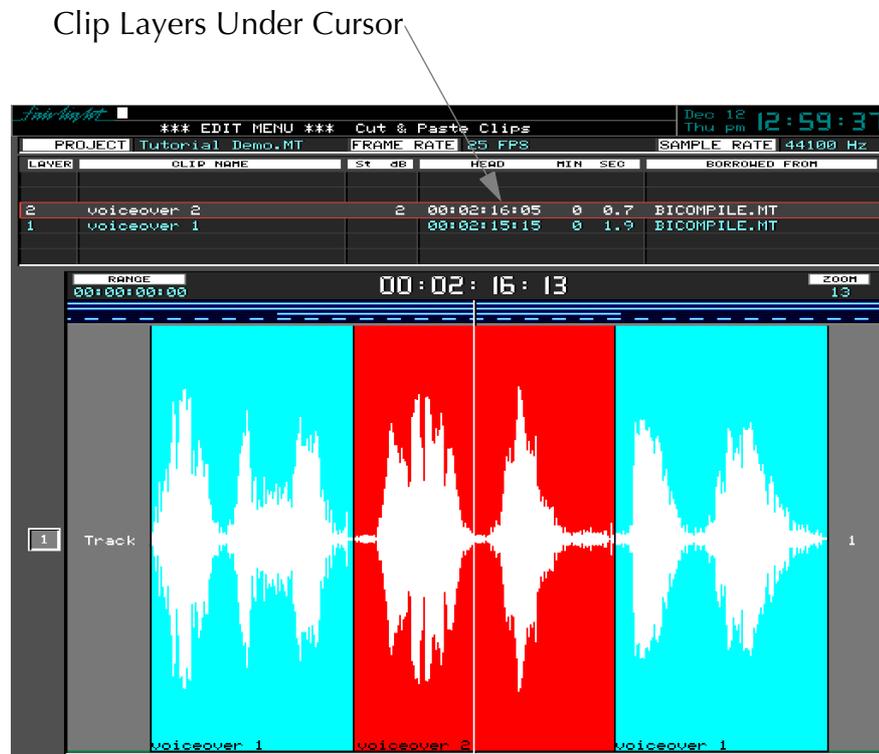


Figure 22: Takes Display

- Step 1 Locate the transport so the cursor lies over the clip.
- Step 2 Hold down the **BLUE** key and press **Takes**.
- Step 3 Use the Jogger wheel or **+** and **-** keys to select desired clip.
- Step 4: Press the **POP** soft key.

NOTES:

Chapter 10 - GoTo

INTRODUCTION

The Go To Menu is used to locate to SMPTE times, marks (stored timecode points), or named clips. After the transport has located to the target, you will be returned to the mode you were in before the GO TO command.

GO TO commands are terminated with the **Enter** key if you want to locate, or with the **Play** key to preroll the selected point and go into play immediately (see “Setting Preroll and Postroll” on page 16-3).

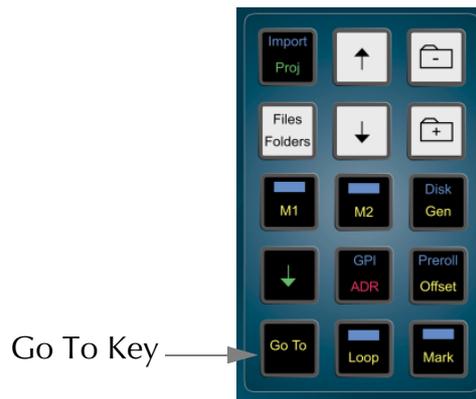


Figure 23: The Go To Key

GO TO A TIMECODE LOCATION

- Step 1 Press the **GO TO** key. The timecode location is displayed in the lower half of the upper console display.
- Step 2 Edit the timecode location if necessary using numeric keypad. Use **CLEAR** to set this value to 00:00:00:00.
- Step 3 Press **Enter**. The **TIME** soft key is the default mode for the **GO TO** function. The **GO TO TIME** function locates the transport at a specific timecode point. The output of each track is displayed on the level meters.

GO TO A MARK

The **GO TO MARK** function locates the transport at a mark. For details on entering and editing marks see “Marks” on page 11-2.

- Step 1 Press the **GO TO** key.
- Step 2 Press the **MARK** soft key.
- Step 3 Stored marks are listed on the video display. Select the desired mark using the jogger wheel, + and - keys or type the mark number on the numeric keypad.
- Step 4 Press **Enter**.

FAST MARK LOCATION

- Step 1 Press the **GO TO** key.
 - Step 2 Press one of the track keys.
- It is possible to quickly locate to the first 24 marks using the track keys.

GO TO LAST

Locates the transport to last place you located to using the Go To Menu.

GO TO CLIP NAME

The **GO TO CLIP NAME** function locates the transport to the head of the desired clip. It also incorporates an alphanumeric search function to help sort through clips by name.

- Step 1 Select **GO TO**
- Step 2: Select **CLIP NAME**.
- Step 3: Clips are listed on the video display. Select the desired clip using the jogger wheel or by typing the name of the clip using the alphanumeric sort facility described below.
- Step 4 Press **Enter**.

ALPHANUMERIC SORTING

When the GO TO CLIP NAME soft key is pressed, the display lists all clips in the Project. If you start typing letters on the alphanumeric keyboard, the list is shortened to show only clips starting with matching letters. The name you type appears in the upper console display.

Additional logical sorting criteria are provided by the soft keys.

These are as follows:

- | | |
|-----------|---|
| ANY | This places an asterix (*) in the search text. The asterix can be replaced by any number of characters. For example, typing *squeak would enable the listing of mouse squeak and door-squeak. |
| ANY 1 | This places an equals sign (=) in the search text to replace any one character. |
| 1 OR NONE | This places a question mark (?) in the search text to replace any one character or no character. |
| OR | A bar () is placed in the search text to add another name. Clips with names containing either search string will be listed. For example, typing *door *slam will list clips with names containing door as well as clips with names containing slam. This will list “door squeak” and “door slam” but not “mouse squeak”. |
| AND | An ampersand (&) is placed in the search text to add another name. Only clips with names containing both search names will be listed. For example, typing *door&*squeak would list only the clips with names including both door and squeak. This will list “door squeak” but not “mouse squeak” or “door slam”. |

NOTES:

Chapter 11 - Marks

INTRODUCTION

A mark is a stored time location in a Project, indicated by a yellow pointer on the timescale. The Satellite can store 1000 marks with each Project including 0 and 999 which automatically indicate the area you have worked in (i.e. the head and tail of the Project).

Marks can be given names and can be used as location points for scenes and sync points or beats and bars.

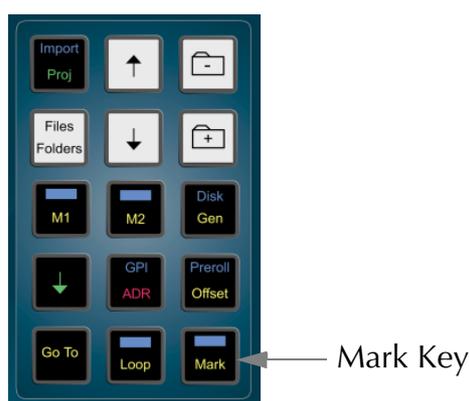


Figure 24: Mark Key

CREATING A MARK

To create a mark, locate the transport to the desired point and press the **Mark** button. Marks are shown as yellow indicators on the timescale.

EDITING MARKS

To edit a mark, hold down the **BLUE** key and press the **Mark** button.

The selected mark is highlighted in the upper video display showing mark information.

- Mark number
- Mark name
- Timecode

When in the EDIT MARK mode, the console soft keys perform the following functions:

NUMBER	Press this key and use the jogger wheel or + and - keys to select a mark. The last mark you created or selected will be the default when you enter this menu.
TIME	Enables entry of a new timecode value with the numeric keypad.
NAME	Allows you to enter a name for the mark using the alphanumeric keyboard.
DELETE	Deletes the mark from the Project.



NOTES:

10. Making and naming marks can be done during recording (no other form of editing is allowed at that time.) You can enter the Edit Marks Menu, press the **Mark** key to create a mark, then immediately press the **Name** soft key, type a name and press **Enter**, because the newly created mark is always the current one for naming.
11. You can create special Beat Marks for musical uses by typing the following:
`IBM number beats tempo <RETURN>`, where
`IBM` = Insert Beat Marks
`number` = number of bars required
`beats` = number of beats per bar
`tempo` = beats per minute
`<RETURN>` = **Enter** key in the alphanumeric keyboard.
 Beat marks are placed at the beginnings of all bars starting from the current timecode, and are named bar1, bar2 etc. They can all be deleted by typing `DBM<RETURN>` (delete beat marks).
12. Whenever Mark is selected on a soft Menu, or the Edit Marks Menu is entered, the Marks display is shown on the video screen. You can also display it at other times by typing `BLUE-9` or `<esc>M`. When the transport is in motion, the marks display automatically scrolls to show the last mark reached.
13. Marks are not the best way to create edit points on the fly, if the edit is to be done immediately. The best way is to use the **From** and **To** keys (see Editing).
14. Marks 0 (Project head) and 999 (Project tail) cannot be deleted.

NOTES:

Chapter 12 - Level

INTRODUCTION

The LEVEL Menu allows clips to be amplified and attenuated by up to 99dB. The gain changes are performed by the system in real time as the audio is output from the machine. Applying a level to a clip does not affect the waveform on disk. The level function can operate on multiple tracks, on clips that lie beneath the cursor and also within a Range. The gain shown for a clip is relative to the original waveform.



Figure 25: Level Key

Applying a Level Change

- | | |
|--------|---|
| Step 1 | Press the Level key. |
| Step 2 | Locate the cursor over the clip(s) or define a Range that wholly contains the clips. The level of a clip is shown in the edit display. |
| Step 3 | Select SET or TRIM and use the jogger wheel, numeric keypad or the + and - keys to set the desired level (to enter a negative value type Clear -). The output level changes in real-time. |
| Step 4 | Press Enter to make the change permanent. |

The output of each track is displayed on the level meters. Press **BLUE** "a" on the PC keyboard to display the meters.

LEVEL SOFT KEY FUNCTIONS

Set

The **SET** soft key sets the level of all selected clips to the value that was entered. For example, if three clips were already set to levels of -6, 0 and +4dB, Using the **SET** function at +2dB would change the levels of all three clips to +2dB.

Trim

The `TRIM` soft key adds the entered value to the existing level of all selected clips. For example, if three clips were already set to levels of -6, 0 and +4dB, using the `TRIM` function at +2dB would change the levels of the clips to -4, +2 and +6dB respectively.

Mode

The `MODE` soft key switches the Level Menu between `CLIP` level and `DISPLAY` level. If the system is in `STEREO MIX` mode, it will also allow switching to `TRACK` mode - see the section on Stereo Mix on the following page for more details.

When in `DISPLAY` mode, the waveforms displayed in clips can be scaled for easier viewing whilst editing. This does not change the level of the clip - only the displayed waveform.

Clip

Press the `clip` soft key to select the clip as the target for the level change.

Display

Press the `display` soft key to alter the amplitude scale of the display. When in `DISPLAY` mode, the waveforms displayed in clips are be scaled for easier viewing whilst editing. This does not change the level of the clip - only the displayed waveform.

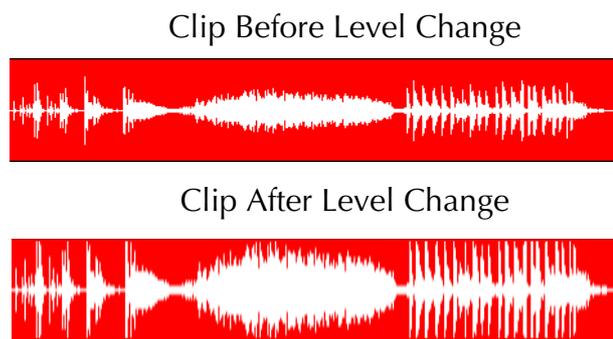


Figure 26: Display Level Change

- | | |
|--------|--|
| Step 1 | Press the Level key. |
| Step 2 | Locate the cursor over the clip(s) or define a Range that wholly contains the clips |
| Step 3 | Press the <code>MODE</code> soft key to change to <code>DISPLAY</code> mode. |
| Step 4 | Select <code>SET</code> or <code>TRIM</code> and use the jogger wheel, numeric keypad or the <code>+</code> and <code>-</code> keys to set the desired display. The clip display changes in real time. |
| Step 5 | Press Enter to make the change permanent |

Info

Additional information can be displayed in clips on the track display. When `Info` is `ON` the clip display includes the status of the `LEVEL`, `PAN`, `EQ`, and `BIT DEPTH` if greater than 16, associated with each clip.

Press the `Info` soft key to toggle between `ON` and `OFF`.

STEREO MIX MODE

Additional Level Menu features are available when the system is used in `STEREO` mode. When `STEREO` is turned `ON`, all tracks are summed together as a stereo signal and appear on all output pairs. This is useful where no mixer is present for monitoring. By default, mono clips are panned centre and stereo clips are output as normal pairs. `STEREO` mode is selected in the **Digi** menu.



Figure 27: Digi Key

- Step 1 Hold down the **BLUE** key and press the **Digi** key.
- Step 2: Select the Output Menu with the first soft key.
- When in `STEREO MIX` mode, track and clip based panning and level become available in the Level menu. To prevent clipping, it may be necessary to apply an output pad using the `PAD` soft key in the **Digi** Menu.
- Step 3: Press the `STEREO` soft key to toggle between `MIX ON` or `OFF`.

Stereo Mode Level Soft Key Functions

Pan

With `STEREO ON`, the `pan` soft key in the Level Menu is available for panning `TRACKS` or `CLIPS`. The behavior of the `PAN` depends on the target as follows:

Clip

The selected clips are panned. If a clip is panned, this overrides any `TRACK` panning. `CLIP PAN` can be turned `ON` or `OFF` using **BLUE +** and **BLUE -**.

Track

All clips on the track that have `CLIP PAN` turned `OFF` are panned.

Track Level

Track level may also be trimmed or set in STEREO mode. The track gain is added to the clip gain of clips on that track.

The following procedure can be performed with STEREO MIX turned ON:

- Step 1 Press the **Level** key.
- Step 2 Press the **Pan** soft key.
- Step 3 Use the jogger wheel or **+** and **-** keys to adjust the pan.
When in **CLIP** mode, use **BLUE -** to turn **PAN OFF**.
- Step 4 Press **Enter** to make the change permanent.

Range

A number of clips can be altered at the same time using a Range and track selection. A range is created using the **From** and **To** keys, as described in “Selecting a Range” on page 4-10.

When using a Range, only clips that are entirely within the Range are affected.



NOTES:

It is possible, when using the Level Menu, to push the level of a clip over digital maximum. Check the meters, to set the level for just part of a clip, then use the **SPLIT** command to break it into the right sized pieces, then set the appropriate levels.

To create a ramp between different levels in one clip, first copy the section whose level is to be changed (using the Edit Menu), then paste it back on top of its source. Change its level as desired, then use the Fade Menu to create fades at either end of the clip. This will cause it to crossfade with the source clip underneath, which will be playing at the original level.

NOTES:

Chapter 13 - Equalisation

INTRODUCTION

Satellite provides four band parametric Equalisation (with shelving) which can be applied to a single or range of clips within a Project. EQ is performed by the system in real time as the audio is output from the Satellite, therefore applying an EQ change does not affect the audio data on disk.



Figure 28: EQ Key

Applying EQ

- | | |
|--------|--|
| Step 1 | Press the EQ key. |
| Step 2 | Locate the cursor over the clip or define a Range of clips. |
| Step 3 | Press the EDIT soft key. |
| Step 4 | Use the numeric keypad to select the appropriate EQ parameter. |
| Step 5 | Adjust the parameter using the jogger wheel. |
| Step 6 | Press Enter . |

Each equalisation band has three parameters you can change. They are: centre frequency of the band, gain (cut or boost) at that frequency, and Q-factor (sharpness of the band) or whether it is a high or low shelf.

EQ DISPLAY

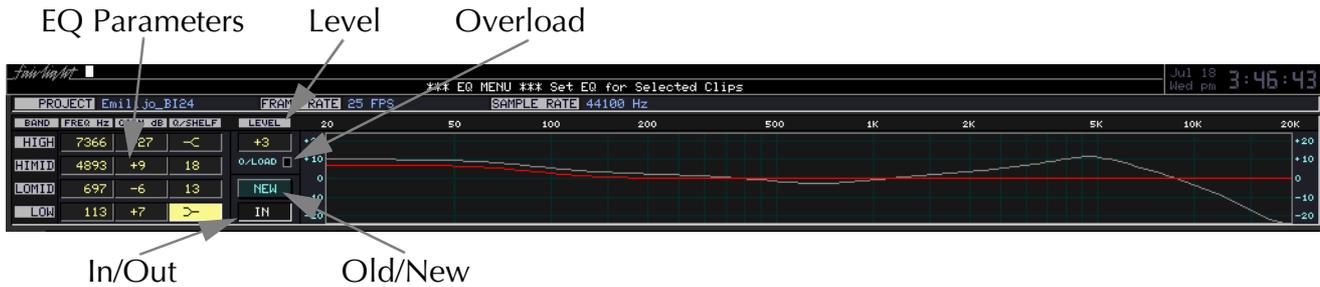


Figure 29: EQ Display

Frequency	The centre frequency of each band.
Q or Shelf	This displays the Q of the band or indicates the type of shelf. Range 0-99.
Gain	The gain of the band. Range -99 to +20dB.
Old or New	Shows if the EQ is the old or new setting.
Overload	This shows red when digital clipping is occurring.
Level	The gain adjustment applied to the EQ. Range -20 to +20dB.
In or Out	Shows if EQ is switched in or out.

Selecting Shelf

To change a Q parameter to a shelf, hold down the **BLUE** key and press the + or - keys on the numeric keypad.

Numeric Entry

To enter the values for the EQ parameters as numbers, press the **NUMBER** soft key and use the numeric keypad. Otherwise, the twelve numeric keys map to the twelve EQ parameters.

New or Old

Whilst adjusting an EQ parameter it is possible to toggle between the new and old settings using the **NEW/OLD** soft key until you press **<Enter>**.

In or Out

Toggle the EQ on and off with the **IN/OUT** soft key.

Copying an EQ

The EQ parameters of a clip can be copied to another clip or Range of clips.

- Step 1 Press the **EQ** key.
- Step 2 Locate the cursor over the source clip.
- Step 3 Press the **COPY** soft key.
- Step 4: The five soft keys enable deselection of bands if required
- Step 5 Locate the cursor over the destination clip or define a Range of clips.
- Step 6 Press **<Enter>**.



Notes:

Parameter Display

Current EQ parameters are always shown at the top of the screen when the EQ menu is active, helping to see what is active and what values are current. The layout of the parameter values is exactly the same as the layout on the numeric keypad. A graph helps you to see what is going on.

EQ In/Out

Use the EQ **In/Out** Soft key to toggle the EQ on or off at any time. This action will affect the clip under the cursor, or all clips in the Range, if any. The on/off position of this switch is stored in the clip along with the settings of the EQ parameters.

- 15. While you are changing parameter values with the jogger wheel, the actual sound is updated every .25 sec.
- 16. Turning the wheel faster increases the steps between values.
- 17. There is no limit to the frequency Range for each band, so you can have your low frequency higher than your high frequency if you want.
- 18. When you are using a Range, it is possible to change one or more bands for the entire Range, while leaving other bands as they were. So, for example, the clips might have different settings for LOW EQ but the same setting for HIGH EQ.

NOTES:

Chapter 14 - Time Compression & Expansion

INTRODUCTION

The Satellite provides powerful DSP functions which can be found within the Wave Menu. All of the WAVE functions create a new waveform on disk. A new clip is created and the original is not altered or erased.



Figure 30: Wave Key

PERFORMING TIME COMPRESSION/EXPANSION

- Step 1 To enter the Wave Menu, press the **WAVE** key. Press the **MODE** soft key.
- Step 2 Use the jogger wheel or **+** and **-** keys to select the desired function.
- Step 3 Press **Enter**.

The functions available are **STRETCH**, **VARI** and **PITCH** as described above.

- STRETCH** Stretching and compressing clips in time while maintaining pitch.
- VARI** Stretching and compressing clips by varying the pitch.
- PITCH** Changing the pitch without changing the duration.

STRETCH AND VARI

Selecting an Algorithm

The **STRETCH** and **PITCH** functions use algorithms which must be selected and optimized depending on signal content for the best results.

- Step 1 Press the **Algorithm** soft key.
- Step 2 Use the jogger wheel or **+** and **-** keys to select the desired algorithm.
- Step 3 Press **Enter**.

The algorithms are as follows:

- VOICE 1** Deep male voice.
- VOICE 2** Female voice or high male voice.
- POP 1** Percussive Pop music.
- POP 2** Pop music.
- CLASSIC 1** Percussive Classical music.
- CLASSIC 2** Classical music.

There are optional third-party plug-in algorithms available. Contact your distributor for more details.

Selecting the Scale

The **STRETCH** and **PITCH** algorithms have a **Scale** parameter which must be optimized for the best results. Start adjusting around 50 and increase the value to reduce frequency wobble, or decrease to reduce flanging and phasing.

- Step 1 Press the **SCALE** soft key.
- Step 2 Use the jogger wheel or numeric keys to enter the desired scale.
- Step 3 Press **Enter**.

Percent

The **STRETCH** and **VARI** functions can be activated by entering a value from 25% to 400% (100% is no change). The function is performed as soon as this value is entered.

The location of the cursor on the selected clip will be maintained with the new clip.

- Step 1 Locate the cursor over the source clip.
- Step 2 Press the **PERCENTAGE** soft key.
- Step 3 Enter a percentage value using the jogger wheel or numeric keypad.
- Step 4 Press **Enter**.

Target Time

The **STRETCH** and **VARI** functions can be activated by entering a target length for the clip. The function is performed as soon as the time is entered.

- Step 1 Locate the cursor over the source clip.
- Step 2 Press the **TARGET** soft key.
- Step 3 Enter a target time using the jogger wheel or numeric keypad.
The target time appears in the upper console display.
- Step 4 Press **Enter**.

Pressing the **TARGET** soft key repeatedly brings up target durations corresponding with some useful ratios, such as 24 to 25 and 44.1K to 48K, and these can be further edited.

Pitch using Varispeed

The **VARI** function can be activated by entering the pitch shift in semitones and cents (hundredths of a semitone). The function is performed as soon as the pitch is entered.

- Step 1 Locate the cursor over the source clip.
- Step 2 Press the **MEASURE** soft key to toggle between `time` and `pitch`.
- Step 3 Press the **SEMITONES** soft key.
- Step 4 Enter the pitch using the jogger wheel or numeric keypad.

Note: Holding down the **BLUE** key and pressing the **+** and **-** keys will increment in whole semitones.
- Step 5 Press **Enter**.

Range

The **STRETCH** and **VARI** functions can be activated by defining a target Range for the clip. The function is performed as soon as **FIT RANGE** is selected. (The **FIT RANGE** soft key appears when a Range is defined.)

- Step 1 Define a Range for the destination clip with the **From** and **To** keys.
- Step 2 Locate the cursor over the source clip (this does not have to be in the Range).
- Step 3 Press the **FIT RANGE** soft key.

PITCH

The PITCH function can be activated by entering the pitch shift in semitones and cents (hundredths of a semitone). The function is performed as soon as the pitch is entered

Adjust the `Algorithm` and `Scale` as described above.

Step 1 Locate the cursor over the source clip.

Step 2 Press the `SEMITONES` soft key

Step 3 Enter the pitch using the jogger wheel or numeric keypad.

Note: Holding down the **BLUE** key and pressing the **+** and **-** keys will increment in whole semitones.

Step 4 Press **Enter**.



NOTES:

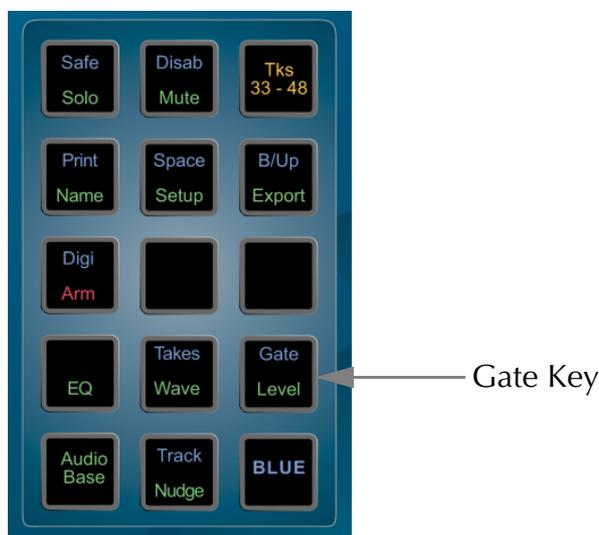
The audio format for the new Master Recordings created by the Wave Menu may be chosen on the System Page. The options include processing in the clips original bit depth or in the current Project bit depth.

NOTES:

Chapter 15 - Gate Menu

INTRODUCTION

The Gate Menu automatically edits clips to remove sections that fall below a given level. Gating can be set to occur during recording and playback of audio.



GATING CLIPS

- Step 1 Hold down the **BLUE** key and the **GATE** key.
- Step 2 Locate the cursor over a clip or define a Range of clips.
- Step 3 Enter the parameters (described below).
- Step 4 Press the **GATE** soft key.

The Gating soft key parameters are as follows:

GATE	Executes the gating function.
THRESHOLD	This is the level the signal has to fall below for gating to occur. Range -99 to -1dB. Use the Jog wheel or numeric keypad to enter the value.
HOLD	The duration in frames that a signal must remain below the threshold before gating will occur. Range 0 to 999 frames. Use the Jog wheel or numeric keypad to enter the value.
HANDLE	The length in frames the clip will be extended at the head and the tail to allow for slow attack and decay. Range 0 to 99 frames. Use the Jog wheel or numeric keypad to enter the value.

COMMIT Turning **COMMIT** on will give you the option of permanently removing the gated audio from your Project. This process is described later in the Space Menu. The **COMMIT** process can be performed at any time later, so leave this turned off for now.

Once a Gate has occurred the clips can be trimmed using the **TRIM** command to adjust the hands and tails.

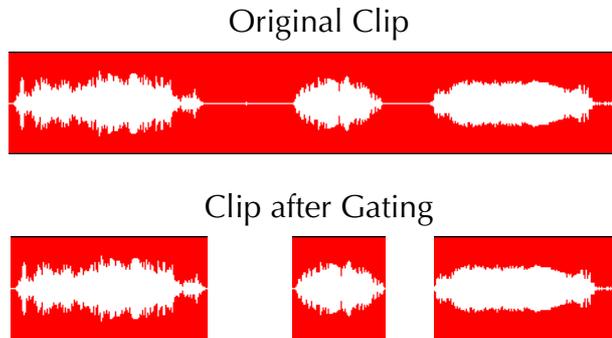


Figure 31: Gating

GATING DURING RECORD

Using the **GATE** function described above will take time to scan the clip(s). It is possible to set the gate parameters prior to making a recording so the gate is instantaneous if used after the recording is complete.

The threshold and gate indicators are displayed on the level meters. These can be turned off by setting the **THRESHOLD** to -99dB.

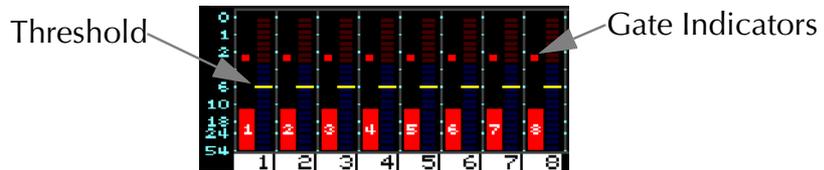


Figure 32: Gate Meter Display

The indicators are coloured as follows:

- Green The signal level is above the threshold.
- Yellow The signal level has fallen below the threshold.
- Red The signal level has stayed below the threshold for longer than the **HOLD** time. This means that the recording will be gated.

**NOTE:**

19. The gating information gained during recording is based on the threshold and hold values set at the time of the recording. If you change those values and then issue the gate command, the audio will be re-scanned.
20. When you have armed tracks for recording and the meters are displayed, a traffic light display shows you the gating activity.
21. When COMMIT is toggled ON, the system will ask you to confirm by pressing the **Enter** key before anything destructive happens. While the computer is waiting for confirmation you may play the audio to check whether it is okay before pressing **Enter**. To escape at this point, press any soft key or mode key.

NOTES:

Chapter 16 - ADR, GPI & Loop

INTRODUCTION

Satellite provides the ability to automate recording using In and Out points with a simple interface. The ADR menu includes functions for setting pre and post-roll and features for automatic dialogue replacement.

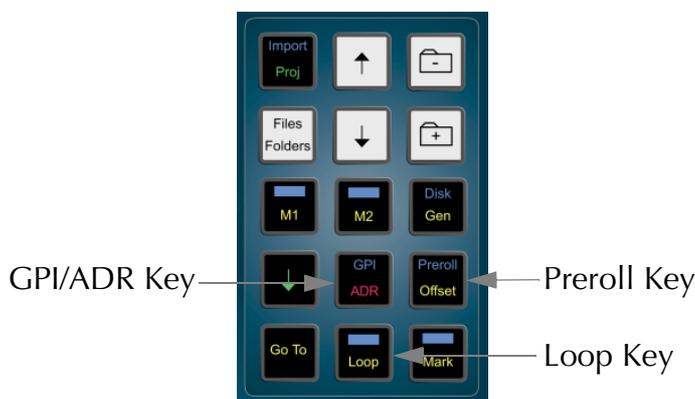


Figure 33: GPI/ADR and Preroll Keys

USING THE ADR MENU

- Step 1 Arm the desired tracks.
- Step 2: Press the **ADR** key.
- Step 3 Set the IN and OUT points using the **From** and **To** keys.
- Step 4 Select the desired mode.
- Step 5 Press the **CYCLE** soft key.

The soft keys function as follows:

REHEARSE Selects REHEARSE mode. When **CYCLE** is pressed, the transport loops continuously between the Preroll and Postroll points. Armed tracks will switch to input between the IN and OUT points.

RECORD / PLAYBACK toggles between the following modes:

RECORD When **CYCLE** is pressed, the transport locates to the preroll point and does one pass to the postroll point with the transport dropping in and out of record at the IN and OUT points.

PLAYBACK When **CYCLE** is pressed, the transport locates to the preroll point and plays to the postroll point.

Both of the above modes return the transport to the Preroll point on completion.

CYCLE	Starts the transport in one of the above modes.
PREROLL	Locates the transport to the preroll position.
MORE	Toggles to a second soft key Menu.

The second soft key Menu functions as follows:

EARLY IN	The transport drops into record as soon as this key is pressed. This enables dropping in during the Preroll period.
REC OUT	Selects between one of the following modes: PROG - The transport drops out of record at the OUT time. OPEN - Recordings continue until stopped by the operator.
KEEP PLAYING	The transport drops out of record at the OUT time, but continues playing without stopping at the Postroll point.
BACK	Returns to the first soft key Menu.



NOTES:

- 22. The Auto Record functions also control the armed tracks on a 9 pin machine if it is online.
- 23. Countdown beeps and relay closures for ADR can be set up using the GPI Menu.

SETTING PREROLL AND POSTROLL

The highest value preroll and postroll of the machines currently online will be used for RECORD and PLAY functions. This includes M1, M2, DISK and LTC Generator.

- Step 1 To enter the Preroll Menu, hold down the **BLUE** key and press the **Preroll** key. Then press the **POSTROLL** soft key if you are setting the **POSTROLL**.
- Step 2 Select the soft key for the desired machine. Available machines are:
 - M1 - external machine 1
 - M2 - external machine 2
 - Disk - internal disk recorder
 - Gen - LTC generator output
- Step 3 Use the jogger wheel or numeric keypad to enter the preroll. Range 1 to 99 seconds.
- Step 4 Press **Enter**.

GPI MENU

GPI means General Purpose Interface (sometimes known as GPO - General Purpose Output). It refers to eight logic interface outputs in the GPI connector at the rear of the QDC Engine which can be used to trigger events external to the Satellite. The GPI is used for tally lights and other studio automation tasks.

GPOs switch at specific timecodes or upon certain events. Each GPO is given a type, which determines what type of event triggers it.

The first eight track keys (on the console) represent the eight GPOs when the GPI Menu is active. Only one can be selected at a time.

- Step 1 Press the **BLUE** key and then the **GPI** key on the console to access the GPI Menu.
- Step 2 Select which of the eight available outputs you wish to use via the track keys.
- Step 3 Press the first soft key, turn the Jog wheel and press **Enter** to select one of the 12 possible GPO types. Depending on which is chosen, additional soft key settings will be displayed.

Type - OFF

Description GPO is inactive.

Type - ON

Description GPO is always ON.

Examples Example - Recording session in progress tally light.

Type - Simple

Description GPO fires at a given timecode.

Examples Starting a device.

Time Timecode when the GPI fires.

Pulse Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.

Copy Copies the value in the TIME field to the numeric Register, where it may be used for another operation.

Fire Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - Record

Description	GPO remains on while the transport is in Record.
Examples	Warning lights, tallies, indicator lights for artists.
Timecode	GPO remains ON whenever the transport is inside the ADR Menu Record Range. If Command is chosen, the GPO turns on only when the transport is in Record.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - PREROLL

Description	GPO remains on while the transport is Prerolling.
Examples	Indicator lights for artists.
Timecode	GPO remains ON whenever the transport is inside the ADR Menu Record Range. If Command is chosen, the GPO turns on only when the transport is in Record.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - POSTROLL

Description	GPO remains on while the transport is Postrolling.
Examples	Indicator lights for artists.
Timecode	GPO remains ON whenever the transport is inside the ADR Menu Record Range. If Command is chosen, the GPO turns on only when the transport is in Record.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - ADR REH

Description	GPO remains on while the ADR Menu is in Rehearse mode.
Examples	Indicator lights for artists.
Timecode	GPO remains ON whenever the transport is inside the ADR Menu Record Range. If Command is chosen, the GPO turns on only when the transport is in Record.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - ADR PLAY

Description	GPO remains on while the ADR Menu is in Play mode.
Examples	Indicator lights for artists.
Timecode	GPO remains ON whenever the transport is inside the ADR Menu Record Range. If Command is chosen, the GPO turns on only when the transport is in Record.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - BEEPS

Description	GPO fires three times leading up to a programmed recording.
Examples	Cueing for artists.
Spacing	Time between beeps.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - PREREC

Description	GPO fires once at a given time leading up to a programmed recording.
Examples	Streaming lights.
Pre Time	Set a time in frames by which the GPI precedes the recording.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - MARKS

Description	GPO fires when the transport reaches each MARK (in play and record).
Examples	Track starts for CD recorders.
Pulse	Only available if Timecode is set. Sets the length of time the GPO remains ON. May be set to a number of milliseconds, or set to HELD where the GPO stays on until the transport stops.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.

Type - CUE MUTE

Description	Can be set ON or OFF independently for the PREROLL and POSTROLL periods of the ADR Menu.
Examples	Controls whether the original track is heard during each stage of the ADR recording.
Ahead	If toggled ON, GPI is ON during the Preroll section.
IN	If toggled ON, GPI is ON during the record section.
Fire	Fires a GPO immediately, for testing purposes. If pulse is set to held, the GPO switches on and off as the key is pressed and released.



NOTE:

When a GPO is set to the BEEPS type, Satellite can also output audio beeps from one of its channels. This is controlled from a configuration file called `mdr_cfg`, which is discussed in the configuration chapter within this manual.

SETTING LOOP MODE

The Loop Menu places the transport in a continuous loop.

The transport will repeat the loop until **Stop** or another transport key is pressed.

Step 1	Press the Loop key.
Step 2	Set the loop start and end points using the From and To keys on the Binnacle.
Step 3	Press the Enter key. The Loop should now begin.
Step 4	To end the Loop, press the Stop key.

NOTES:

Chapter 17 - Import / Export

INTRODUCTION

Satellite has a number of features to allow the import and export of audio clips and Projects.

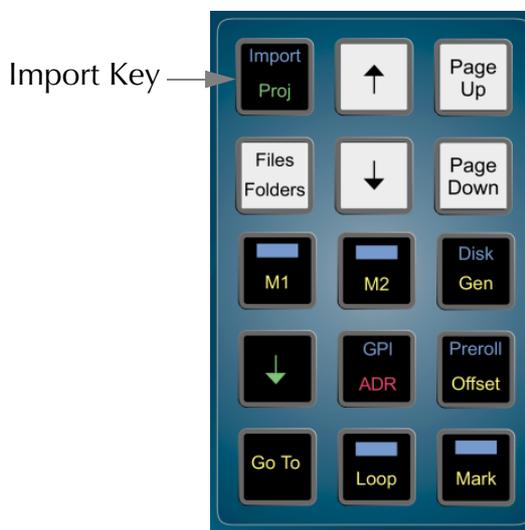


Figure 34: Import Key

IMPORTING CLIPS

It is possible to import clips from other Projects on the system (with the same sample rate as the main Project).

Opening a Project as a Library

- Step 1 Hold down the **BLUE** key and press **Import**.
- Step 2 Press the **BROWSE** soft key.
- Step 3 Select the desired library Project using the file navigation keys and Jog wheel.
- Step 4: Press **Enter**.

Once opened, the Project will stay open as a library until another library is opened. Pressing any editing key will return you to the main Project, but returning to the Import Menu will display the last library from which a clip was imported.

The import menu gives you the option of **KEEP** or **BORROW** when importing clips. Importing clips does not affect the library Project in any way.

- BORROW** **BORROW** places a clip in the Project that references the waveform from the library. When the clip plays, it actually plays from the library Project. For your Project to play correctly, the library Project must be present.

KEEP **KEEP** copies the waveform from the library into the Project. This makes it a permanent part of the Project as if it was recorded in, using disk space in the process.

It is possible to keep clips that have previously been borrowed by using the Space Menu described in “Managing Disk Space” on page 18-4.

Importing a Single Clip

- Step 1 Locate the transport so the cursor lies at the point you want the clip to go (this can be done with M1 online).
- Step 2 Hold down the **BLUE** key and press **Import**.
(Open a library if one is not already open).
- Step 3 Locate the transport so the cursor lies on the sync point of the clip. Also check that only one track is selected.
- Step 4 Select **KEEP** or **BORROW**.
- Step 5 Select the desired target track (it is a good idea to make a note of the destination track before using the import menu).

The clip will be placed on the destination track with the sync-point under the cursor.

Importing a Range of Clips

- Step 1 Locate the transport so the cursor lies at the point you want the Range of clips to go.
- Step 2 Hold down the **BLUE** key and press **Import**. (Open a library if one is not already open).
- Step 3 Define a Range of clips and tracks.
- Step 4 Align the cursor position in the library to the required sync point in the Project.
- Step 5 Select **KEEP** or **BORROW**.

The clips will be imported to the Project on their original tracks.

LOCKING A LIBRARY TO PICTURE

When the Import Menu is selected, M1 will automatically go offline. It is possible to put M1online with an offset to the current library position by using the LOCK function.

This enables you to audition a sound to picture before importing.

- Step 1 Press the LOCK soft key to audition to picture
- Step2 Pressing the LOCK key again will turn off the lock function. This enables you to locate to a different sound for auditioning.

IMPORTING WAVE FILES

WAVE Files can be imported into a current open Project either by borrowing or keeping them.

Importing a Single WAV File

- Step 1 Position the cursor at the point at which the clip needs to be placed.
- Step 2 Hold down the **BLUE** key and press the **Import** key.
- Step 3 Browse to the WAV file you wish to import.
- Step 4 Press Borrow or Keep.
- Step 5 Select which track to place the clip onto. The clip will now be imported at the cursor position.

If a WAVE clip needs to be kept at a later time after a BORROW, use the KEEP BORROWED soft key within the Space Menu.

Importing Multiple WAV Files



Figure 35: Importing Wave Files

- Step 1 Hold down the **BLUE** key and press the **Import** key.
- Step 2 Press the **WAV Files** soft key.
- Step 3 A database form will appear on the video display. This is used to enter search criteria for importing multiple WAV files.

Use the Up arrow and Down arrow keys on the console to move the cursor up and down the list.

Use the + and - keys on the console or arrow keys on the PC keyboard to select items on the form.
- Step 4 Select the path for where the WAV files are located.
- Step 5 Select a sub folder (if required).
- Step 6 Select a filename.
- Step 7 Select a sample rate.
- Step 8 Select a form and then press **Enter** to begin the search.
- Step 9 A list will appear of all the WAV files found by the search. Select either **Borrow** or **Keep** and the clips will be imported into the current open Project.



NOTES:

When importing multiple WAVE files, a clip is created for each file. These clips are arrayed down the selected tracks, and if there are more clips after that, they are placed at the tails of the already placed clips.

No more than 249 borrowings can occur for any Project.

Search Options

SEARCH IN	<p>Determines which disk drive and optional subdirectory is the place to begin the search.</p> <p>Use the Up and Down arrow keys to switch between the drives in the QDC system. If you want to add a subdirectory to the search criteria, type a forward slash (/) after the disk drive name, and then the name of the subdirectory.</p>
INCLUDE	<p>Determines whether subdirectories of the search start point will be searched or not. Move to this field and use the Up and Down arrow keys to toggle the switch on and off. If you choose to search subdirectories, the search may take much longer.</p>
FILENAME	<p>You may narrow the search by specifying a match string that ends a restricted set of files. All the AudioBase search characters may be used, see “Searching for Sounds” on page 22-3.</p>
SAMPLE RATE	<p>Allows you to search for files with only one sample rate. This field is automatically set to your current Project sample rate. To change it, use the Left and Right arrow keys.</p> <p>Moving past the left of all sample rate buttons turns them all off, meaning there is no limitation and files of all sample rates will be found.</p>
FORMAT	<p>Allows you to limit the search to only mono or only stereo files. Use the Left and Right arrow keys to change the settings.</p> <p>Moving past the left of all buttons turns them all off, meaning that both mono and stereo files will be found.</p>

Broadcast WAVE

Broadcast Wave files include a timecode location contained within the file. Imported BWFs can be placed at their sync time on the timeline.

Importing a Single Broadcast WAV File

If the imported file is detected as a BWF file, the user can select to either import it to its sync position (as defined in the BWF's timecode reference) or to the current cursor position.

When the software determines that a file selected for import is a BWF, a dialog pops up:

Place broadcast wave at sync time?

Press **Y** or **N**.

The name of the resultant imported clip is derived from the BWF's description field, truncated to 24 characters if necessary.

If the imported file is a normal WAV file, it will be placed on the track selected with the head of the clip at the cursor position.

Importing Multiple Broadcast WAV Files

When the first BWF is encountered, the following popup box will appear on the video screen:

Place broadcast waves at sync times?

- | | |
|--------|---|
| Yes | BWF only to be placed at its sync time - subsequent BWFs will repeat the dialogue. |
| Cursor | Places the BWF at the current cursor position - subsequent BWFs will repeat the dialogue. |
| All | Places all imported BWFs at their sync times. |
| Never | Places all imported BWFs at the current cursor location. |

Importing Other File Formats

If the optional connectivity software has been purchased the Satellite can support a range of third party file formats.

For further information regarding file importation please read the latest version of the Fairlight File Exchange Manual.

EXPORT

The Export Menu is used to allow audio to be exported from a Project in the following formats:

- WAV
- Broadcast WAV
- Fairlight ML
- Fairlight DL
- ProTools

Exporting Other File Formats

If the optional connectivity software has been purchased the Satellite can support a range of third party file formats.

For further information regarding file export please read the latest version of the Fairlight File Exchange Manual.

To access the File Exchange Menu press the **Export** key on the console.



Figure 36: Export Key

Export Menu Soft Key Options

- | | |
|---------------|--|
| Dubber Export | Exports a file to the root of the current disk drive, which can be read by Fairlight's DaD Dubber product. The file will be named XXX.DL where XXX.MT is the name of the currently open Project. |
| File Exchange | Exports a file to the root of the current disk drive, which can be read by Fairlight's File Exchange partners. The file will be named XXX.ML where XXX.MT is the name of the currently open Project. |
| WAV Export | Opens the WAV Export submenu, used for turning Satellite audio into WAV files. |

Pro Tools

Initiates export to a ProTools file. First you must choose a destination on the network or on a local drive, then press **Enter** to begin. All recorded media are copied to the file.

For more information regarding exporting Pro Tools files read the Fairlight File Exchange Manual V3 or above.

WAVE Export

The WAV Export function may use either the red clips under the cursor, or, if a Range is present, clips that are wholly included.

Real time audio features such as EQ, level and fades are ignored - only the raw waveform data is exported.

All exports from the WAV Export Menu are in BWF format.



Figure 37: Wave Export

To export clips to a Broadcast WAV File:

- Step 1** Select the clip or clips to be exported. Ranges of clips can also be selected - with each clip entirely within the Range being exported to a Broadcast Wav file.
- Step 2** Press the **Export** key on the console and select **WAV EXPORT** soft key.
- Step 3** A menu will appear in the top of the video screen prompting for the destination and name of the Broadcast WAV file that will be created.
- Use the Up arrow and Down arrow keys on the console to move the cursor up and down the list.
- Use the + and - keys on the console or arrow keys on the PC keyboard to select items on the form.
- Selecting the Publish to AudioBase box will publish all the created WAV files into AudioBase.
- Step 4** Press **Enter** to perform the export. All the clips selected will now appear as separate Broadcast WAV files in the folder specified.

File Export Options

- UNIT** Sets the destination drive. Use the **Up** and **Down** arrow keys to move between the available drives on your system.
- FOLDER** If desired, you can add a directory name where you would like these WAVE files to be placed. The WAVE Import page can search for them and find them in this directory, but they cannot be borrowed successfully from it, only kept (see Import Menu for details).
- FILE NAME** Determines how the WAVE files will be named. Use the **Left** and **Right** arrow keys to move between choices. If Other... is chosen, another field appears, allowing you to enter a new file name of up to 8 characters.
- PUBLISH TO AUDIOBASE** Allows WAVE files to be published to AudioBase at the same time as creating them. This is a very useful way of publishing a single sound or group of sounds to AudioBase without publishing the whole Project.



NOTES:

The BWF format is 100% compliant with normal .WAV players, which simply play the files as normal WAV files, without recognizing the extra data chunks in the BWF format.

BWF compatible WAV players however, are able to make use of the extra data incorporated in the exported file. This data incorporates the following:

- Description = <clipname> from <track no> in <Project name>.
- Origination Date and OriginationTime = The time and date of export.
- Originator = "Fairlight" <Name of the machine performing the Export>.
- Originator Reference = The name of the current open Project from which the Export was made.

Time reference of the exported BWF is derived from the current timecode of the head of the original clip.

NOTES:

Chapter 18 - Project Management

INTRODUCTION

To further enhance Project Management within the Satellite, the following features within the Project Menu are available.

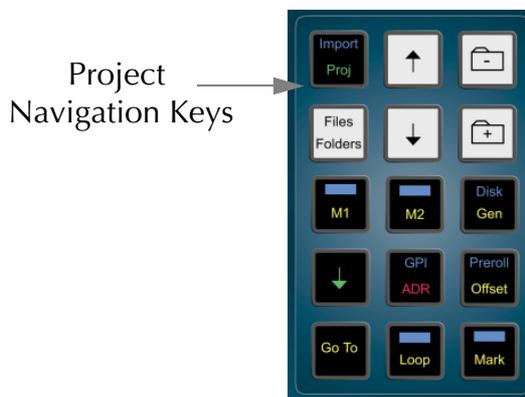


Figure 38: Project Keys

ADDITIONAL PROJECT MENU ITEMS

Press the **Proj** key then press the **more** key to reveal the extra menu items.

Password Protection

Any Satellite Project may have a password which restricts access to the material.

When there is no password, one can be applied by anyone who opens the file. There are three levels of access available to a file with a password, one of which must be chosen when the password is created. These are:

Public	Any user can open the file and change any part of it. A password is not requested upon opening the file.
Play Only	Any user can open the file and play the audio, but cannot change anything. A password is requested when first opening the file and, if none is supplied, read-only permission is granted.
	Extending the file will then create a new unpassworded file extension, which can be edited as required without changing the original file. If the correct password is supplied when opening the file, then full write, delete, rename and move permission is granted.
Private	No user can open the file at all, without supplying the correct password

Even a file which has Public Write access cannot be deleted, renamed, or moved. Any attempt to perform these operations will result in the system requesting a password.

Once you have opened a file using its password, all other Projects with the same password will be opened without the machine requesting you supply the password again. This may apply to several passwords that have been used in a single session on the machine, and the only way to make the machine forget these passwords is to restart it.

Extend

Extending a Project creates a new Project with all the clips borrowed from the original. The extended Project also inherits all the track names and marks. Projects can be extended for several reasons:

1. The current drive is full. Extending the Project to another drive will enable more recordings.
2. The current Project is full. Projects have a 4 Gig limit, extending the Project will enable more recordings.
3. The original Project is a pre-edited and labelled bed. This allows Projects to be used as a templates.
4. To create new versions. This will allow further recording and editing without affecting the original Project.

When working on an extension, the original Project can be regarded the same as a library Project, i.e. all the clips are borrowed. It is not possible to perform an Over-write record on borrowed clips.

When using libraries and extensions, be very careful with what you do to the original Projects and libraries. Erasing clips or Projects that are used by other Projects will result in missing audio.

Extending A Project

- | | |
|--------|-----------------------------------|
| Step 1 | Press the Proj key. |
| Step 2 | Press the EXTEND soft key. |
| Step 3 | Select the desired destination. |
| Step 4 | Type the new name. |
| Step 5 | Press Enter . |

Refresh

Pressing the Refresh soft key will updated the directory view for the current folder, drive or domain.

MANAGING DISK SPACE

After recording and editing has taken place within a Project, unwanted audio clips can start to take up valuable disk drive space. Unwanted audio can be:

- audio that has been erased from clips
- audio that has been trimmed from clips
- audio that is covered over by another clip.

The **Space** Menu is used to remove and delete unwanted audio clips from the Project. Hold the **BLUE** key and press the **Space** key to access the SPACE menu.

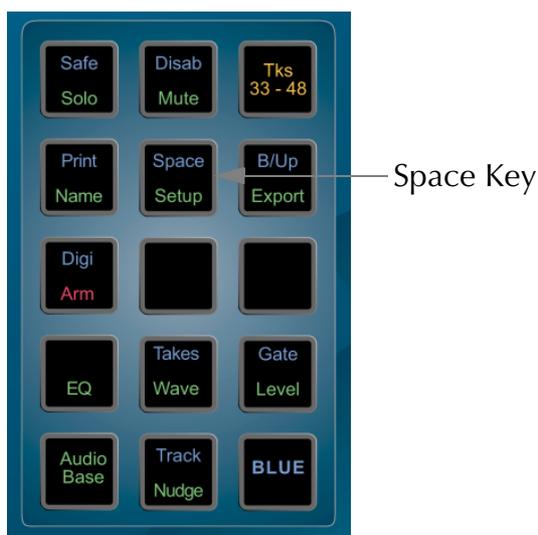


Figure 39: Space Key

Dispose

DISPOSE removes waveforms that have no clips in the Project.

If any part of a waveform is used by a clip, the waveform will not be affected. Waveforms will have no clips if they have all been erased, or if the **UNDO** key was pressed after a recording. If DISPOSE is used immediately after a recording has been undone, the next recording will use this free space.



NOTE:

After DISPOSE, you will not be able to recover the waveform with the RW (Recover Waveform) command. (See later in this chapter).

- | | |
|--------|---|
| Step 1 | Hold down the BLUE key and press the Space key. |
| Step 3 | Press the DISPOSE soft key. |
| Step 3 | Press the Enter key. |

Commit

COMMIT removes sections of waveforms that are not heard and clips that are buried. Only clips under the cursor (or highlighted in a Range on selected tracks) are committed.

Underlying clips, except for sections used in crossfades, are removed. A waveform may be broken up into smaller waveforms if sections of it are unused.

- Step 1 Hold down the **BLUE** key and press the **Space** key.
- Step 2 Define a Range and select tracks.
- Step 3 Press the `COMMIT` soft key.
- Step 4 Press the **Enter** key.

After `COMMIT`, you will not be able to trim the heads or tails of the affected clips.

When commit doesn't commit:

- 1) If only a small section of a waveform is unused, it may be left whole as breaking it up will actually use more disk space.
- 2) If the waveform is used by another clip that was not selected.

Pack

The `PACK` function shuffles the data in a Project to flush out the empty spaces resulting from the `DISPOSE` and `COMMIT` functions. The free space generated is available for use by any Project.

Use `PACK` at any time after `DISPOSE` and `COMMIT`. Be sure not to inadvertently switch the machine off during `PACK`, as this will destroy your Project.

- Step 1 Hold down the **BLUE** key and press the **Space** key.
- Step 2 Press the `PACK` soft key.
- Step 3: Press the **Enter** key.

The Project is packed into the smallest possible area of disk, releasing the remainder for general use. This may take some time, because the audio on the hard disks will be moved around.

Keep Borrowed Clips

The `KEEP BORROWED` function copies borrowed clips permanently into the Project. After `KEEP BORROWED`, the Project will no longer need to access the library Projects or Projects from which it was extended.

The `HANDLES` parameter determines how much extra of the original waveform (if available) is copied from libraries. This will determine how much a clip can be trimmed later.

The `HANDLES` parameter can be set to 0 to 99 seconds, or to `ALL`, which will copy the entire waveform.



NOTE:

To keep just one clip, use the Edit Menu to cut the clip, then hold down the **BLUE** key and press **Enter**. This will copy the waveform shown in the clip with no handles.

- Step 1 Hold down the **BLUE** key and press the **Space** key.
- Step 2 Enter a **HANDLES** value if required (then press **Enter**).
- Step 3 Press the **KEEP ALL BORROWED** soft key.
- Step 4 Press the **Enter** key.

Once a **KEEP BORROWED** has been performed on a Project, back ups can be made with the knowledge that all originally borrowed audio clips are now stored in one place.

More About Committing

Examples of committing to clarify its operation are:

A 30 second recording has just been made, and then the first ten seconds are trimmed off. Go to the Space Menu and press **COMMIT** while the cursor is touching this clip, with **Handles** set to zero. The effect will be to remove the first ten seconds of audio data, with that disk space becoming free. Attempting to enlarge the clip using the **TRIM** command will fail, because there is no more data in the Master Recording. If **Handles** are set to 2 seconds, only the first 8 seconds of data would be removed.

A 30 second recording has been made, and this time the last 15 seconds of the resulting clip (Clip A) are covered by pasting another clip (Clip B) on top. Go to the Space Menu, move the transport so that Clip A is touching the cursor, and press **COMMIT**. Now erase Clip B, and it can be seen that the part of Clip A that was underneath Clip B has been removed. This part of the data on disk has now been removed, minus the Handle.

This time do the same thing, but make a copy of Clip A on another track. After committing the original Clip A and erasing Clip B, Clip A has now been trimmed as before, but can still be extended using the **TRIM** command. This is because, whenever there is a clip anywhere in the Project that references the same Master Recording, even partially, the Master Recording will not be touched, allowing the uncommitted clips to be trimmed out to their fullest possible extent.



NOTES:

Disposing and Committing create blocks of free space that can be used by the Project. They cannot, however, be used by any other Project or file, because the blocks are inaccessible little “islands” in the middle of the Project. Packing shoves all the data down towards the beginning of the file so that it occupies a continuous block, and then gives back the empty piece at the end.

To regain the maximum possible disk space, highlight the whole Project (from Mark zero to Mark 999), then DISPOSE, COMMIT and PACK. The first two operations are virtually instantaneous.

All Space Menu operations are permanent. No UNDO!

When Committing, nothing will happen to the Master Recording that a clip is referencing unless the selected Range contains all clips that reference it.

It is a very good idea to dispose often during recording sessions. Each time a useless recording is made, UNDO it to remove it from sight, then dispose. The next recording will immediately occupy the freed disk space.

Committing with Handles set to ALL is a way of removing the parts of the clips that are not heard, but preserving the Master Recordings entirely. This can be used, for example when a stack of clips have been placed on top of each other, to simplify the edit structure down to one layer effectively, without losing any recorded audio data.

NOTES:

Chapter 19 - Backup and Restore

INTRODUCTION

The Backup Menu allows multiple Projects and macro files to be transferred to an Exabyte tape or another disk. The backup device can be any hard disk, optical disk and Exabyte connected to the system either directly or via a network.

To enter the Backup Menu, hold down the **BLUE** key and press the **B/Up** key.



Figure 40: Backup Key

The functions provided in the Backup menu are as follows:

BACKUP	This is the same as copy, but a BU (backup) file is also created. The BU file lists the files backed up and the locations they came from. This is stored in the destination where all the marked files have been copied to.
RESTORE	This opens a BU file and uses it to mark the files for restoring.
COPY	Copies all the marked files from their current locations to the destination.
MOVE	Moves all the marked files from their current locations to the destination.
EJECT	Ejects removeable media such as exabyte tape.

Backups are performed as a background task. This enables the Satellite to continue working as normal, with the backup process being suspended when the open Project needs to play or record.

When backing up or restoring to and from tape drives, files cannot be added to the end of existing tapes. Backing up to a tape will always erase the previous contents of the tape.

BACKING UP

The following procedure is run from the Backup Menu:

- Step 1 Press the `BACKUP` soft key.
- Step 2 Select the destination device and folder. It is possible to create a folder using the `NEW FOLDER` soft key.
- Step 3 Press **Enter**.
- Step 4 Type the Backup (BU) filename when prompted. The default for this name is the current date and time.
- Step 5 Press **Enter**.
- Step 6 Use the jogger wheel and the `MARK` soft key to select the files for backup
- Step 7 Press the `START BACKUP` soft key.
- Step 8 A window will appear prompting:
 Do you wish to verify your backup?
 If **Y** (Yes) is selected, the backup files will be verified against the original files.
 This will take longer, but will ensure that valuable files are safely stored.

Projects can be unmarked by pressing the `UNMARK` soft key. If you mark a Project that has borrowed clips, you will be prompted to select the libraries if required.

RESTORING

The following procedure is run from the Backup Menu:

- Step 1 Select the required backup (BU) file.
- Step 2 Press the `RESTORE` soft key.
- Step 3 Use the jogger wheel and the `MARK` soft key to select files for restore. You will be prompted to confirm the destination or select new ones.
- Step 4 Press the `START RESTORE` soft key.

Projects can be unmarked by pressing the `UNMARK` soft key. When restoring from Exabyte, it is possible to mark individual files. It is not necessary to restore the whole tape.

COPYING AND MOVING

The following procedure is run from the Backup Menu:

- Step 1 Press the COPY or MOVE soft keys.
- Step 2 Select the destination device and folder.
- Step 3 Press **Enter**.
- Step 4: Use the jogger wheel and the MARK soft key to select the files to be copied or moved
- Step 5 Press the START COPY or START MOVE soft key. It is possible to create a folder using the NEW FOLDER soft key.

NOTES:

Chapter 20 - Timecode Setup

INTRODUCTION

The Setup Menu is used to configure the Project's timecode format.

The frame rate (timecode format) can be changed at any time, but should be set to the local standard.



Figure 41: Setup Key

Follow these steps to change the frame rate:

- Step 1 Press the **Setup** key.
- Step 2 Press the TC FORMAT soft key
- Step 3 Turn the jogger wheel to select the desired timecode format.
- Step 4 Press **Enter**.
- Step 5 Select Non-Drop or Drop-Frame (if applicable)

Setup Menu Options

Display timecode	Choose units for displaying time: timecode (TC), Feet and Frames in 16mm format (F/F16), Feet and Frames in 35mm format (F/F35), or Hours, Feet and Frames at either film format (H/F/F 16 and H/ F/F/ 35). Use + and - or jog. Press Enter to confirm selection. All feet and frames measurements are based on a 24 frame per second film speed, regardless of the timecode format you have actually set.
TC Format	Sets the frame format for video sync or chasing timecode. Use the + and - keys or jogger to choose: 24 fps, 25 fps, NTSC DropFrame (DF) or NTSC Non-Drop Frame (ND). Press Enter to confirm your selection.
NTSC	<p>When ND or DF is selected for the previous soft choice, this allows you to determine whether the correct frame rate is 29.97 or 30 frames per second.</p> <p>This field determines at which frame rate your selected sample rate will be accurately reproduced.</p> <p>For example, if you choose a sample rate of 44100 Hz and you set this field to 30, the system will run at precisely 44100 Hz when 30 frame timecode is used for synchronization. But if you use standard NTSC video (at 29.97 fps) as a sync source, the system will run down to 44056 Hz. This may be desirable if you plan to return the audio to a 30 fps environment later.</p> <p>Often, Projects that are finished on film or for CD mastering require a setting of 30, but Projects finished on video normally use 29.97.</p>
Range	Determines what happens to Ranges when changing menus (Modes). In Auto Mode, Ranges are always switched off when entering a new mode, unless the new mode must have a Range. In Manual Mode, Ranges are always preserved, unless the new mode cannot have a Range. Also in Manual Mode, pressing the current Mode key again toggles the Range on and off, keeping the last timecode values that it had.



NOTE:

Always set the correct sample rate and frame rate before making your first recording - this will avoid problems later.

SYNCHRONIZATION

Satellite can track the position and motion of external transports such as a video tape recorder, timecode-striped audio tape or a timecode generator. The disk recorder will play in time with the Master Timecode source so that sound and picture coincide.

Position

This is an absolute location reference to a sequence of pictures or audio. It is used to determine whether the disk recorder is playing the right part of its Project. For video, position reference is usually provided by 9 pin (Sony protocol from an RS-422 port). For audio tapes LTC is normally used (though 9 pin is also a possibility).

Motion

The motion of an external machine is a measure of its speed, and the disk recorder must move at the same speed to remain in sync. This translates into producing the correct number of samples every second, which is called the Master Clock rate. This can be locked to a Digital Word Clock, a video signal, an AES/EBU signal, by the internal crystal, a timecode source, or a digital audio source which is being recorded.

If the Position Reference and Motion References are not the same, it is possible that they will drift apart over time. This will be shown by a warning at the top of the Satellite's video screen which indicates when an inconsistent timecode frame was encountered.

How Satellite Synchronizes

Satellite goes through a number of steps in achieving synchronization in play mode:

5. Read the position reference and start loading up the corresponding audio on all active tracks.
6. When ready, start playing, but with the outputs muted. Use variable speed to reduce the error between the Satellite position and the Position Reference until it is very small.
7. Switch to the Motion Reference for continued playback. The system is said to be locked once this switch is made, and the audio is unmuted.
8. Warn of error status if the sync error increases, if a reference signal is lost etc.

Digital Synchronization Conflicts

When you are recording a digital source, it must be synchronized to the same Master Clock Reference as the Satellite, or an overflow (too many samples) or underflow (too few samples) may occur at the input. This causes a characteristic, periodic form of digital distortion called a whisper. A whisper sounds like a brief, glassy or metallic buzz, and occurs about once every few seconds, depending how fast the samples are overflowing or underflowing.

One way to guarantee digital synchronization is to choose the digital input signal itself as the Master Clock Reference for the Satellite. This is done in the Digi Menu by selecting `INPUT` under the `Sync` soft key or `AUTO` under the `Inp Sync` soft key.

This latter source of timing will only be used when a digital input is armed, with the normal `HOUSE` sync used at other times.

A side effect is that the word clock rate of all digital outputs will also sync to the digital input, which may cause digital synchronization conflicts downstream from the Satellite. For example, trouble may occur if, at the same time as recording your digital input, your outputs are feeding the inputs of a digital console. If you choose INPUT, the digital console will be required to sample rate convert all of Satellite's outputs, or synchronize with its Master Clock.

The best solution to digital sync conflicts is to drive all digital devices from a single, studio-wide word clock signal. Then all devices will have identical word rates, so whispers never occur and digital interconnections may be made with ease. In this instance, the sync HOUSE option is always used.

Pull-up and Pull-down

The normal sample rates used by the digital audio industry are 32,000, 44,056, 44,100, 48,000 and 96,000 samples per second. The normal frame rates are 24, 25, 29.97 and 30. These last two may cause confusion when used together.

Satellite can alter its sample rates far enough to accommodate the small speed change caused by going from 30 to 29.97 frames per second and back again.

In other words, if you slow down the frame rate from 30 to 29.97, the Satellite can slow its internal sample rate to match. This is called Pull-up or Pull-down, depending in which direction you are taking the speed.

When you choose a frame rate you are telling Satellite what frame rate to expect. To put it more accurately, you are telling it the frame rate at which the chosen sample rate will be accurately reproduced. For example, if you tell the Satellite that the NTSC frame rate is 30 (in the Setup Menu) and the sample rate is 44,100, it will automatically pull down the sample rate to 44,056 if you feed in timecode at 29.97.

If, however, you change the NTSC field to 29.97, the Satellite will play at 44,100 at 29.97 frames per second, and will pull up to a sample rate of 44,144 when timecode runs at 30 frames per second.

It is advisable to choose a sample rate at which you want to make the final transfer of the Project. Then record your material at whichever frame rate is going to be used during that final transfer. The importance of this choice is that you do not want to compromise the quality of your final product by using sample rate conversion at the moment it leaves Satellite for the last time.

You should make these choices at the very beginning of the Project, and then you may use any other combination that suits your purposes temporarily during the recording and editing process.

Control of Sony Machines

Sony machines are those conforming to the Sony 9 pin transport protocol. Satellite can control one of these machines, which should be connected to 9 pin Port A or B.

It is best if that machine is being referenced by the same house sync signal as the Satellite (normally video). If this is not possible, the Satellite and the Sony machine are essentially free-wheeling, and the Satellite will relocate if a relative drift of more than one frame occurs.

This will cause a dropout in the audio.

Conflict of Sync

If Satellite is being told to synchronize to one of its digital inputs (see “Selecting A Sync Source” on page 5-3), and is also being told to chase LTC, there is a natural conflict. If ever this condition arises, the Satellite will issue an error message.

COMPATIBILITY WITH MFX2 AND MFX3

Any Project created under MFX2, MFX3, MFX3plus, MFX3.48 can be loaded into the Satellite, where it will be converted to a Project with full facilities.

Backwards Compatibility

MFX3plus systems can load 24 track projects via file exchange export.

Other systems are not back compatible.

NOTES:

Chapter 21 - Machine Control

INTRODUCTION

Satellite can communicate with industry standard Sony 9 pin serial controlled machines (with a timecode reader installed) providing control over external video (or audio) machines, directly from the console.

Satellite can control two machines M1 and M2 plus the disk recorder, and generates timecodes at all frame rates.

The following menus on the console are used to configure and control external devices.

Setup	Used to set systems frame rate, time display format and NTSC rundown.
PreRoll	Used to set preroll times for automatic recording and playback.
Offset	Used to set offsets for M1, M2, Disk and Gen.
M1 Button	Takes first external machine on and off line. When used with the BLUE key, it opens a menu for setting parameters for Machine 1.
M2 Button	Takes second external machine on and off line. When used with the BLUE key, it opens a menu for setting parameters for Machine 2.
Disk Button	Takes the disk recorder on and offline. When it is offline, it does not locate, nor is any sound heard from it.
Gen Button	Switches the timecode generator on and off. When used with the BLUE key, it opens a menu used to choose outputs for the generator.

M1 AND M2 SETUP

The master machines M1 and M2 can be configured to select 9 pin port A, 9 pin port B, 9 pin slave, LTC input A or LTC input B. Only one master can be selected at any one time.

- Step 1 Hold down the **BLUE** key and press **M1** or **M2**.
- Step 2 Select the desired soft key parameter as detailed below.

Lace / Unlace

This determines if video machines will remain in shuttle or unlaced wind when a FASTWIND (FFwd / Rew) command is issued.

When Lace is ON, the REW and FF commands send shuttle at maximum speed. This keeps the picture on the heads during rewind or fast forward for some machines

which would otherwise unlace (e.g. Sony 9800). When Lace is OFF, the machine is given a REW or FF command, which will cause the tape to unlace in some machines. In other machines, however (e.g. BetaCam SP) these commands do not unlace the tape, but give a very fast shuttle in the desired direction.

When issuing a GO TO command to the machine, if the distance over which it is to be shuttled is greater than this time, the machine is given a REW or FF command, regardless of whether Lace is ON or OFF. Setting this time to zero guarantees that the slave will be given a goto.

Lace Time

If a JUMP or GO TO command is issued that requires the transport to locate further than the time shown, video machines will unlace the tape from the heads and go into fast wind.

Lock

LOCK offers two modes:

CHASE	The Satellite continuously tracks the timecode from the 9 pin machine.
RUN	The Satellite gets the location from the 9 pin machine and then runs from the selected sync source. Changes in timecode are then ignored.

Arm Tk 1-4

This allows you to arm tracks on the 9 pin machine using the track keys. The menu can scroll to arm digital tracks 1-24 and 25-48. The 9 pin machine will go into record when the Satellite transport is placed in record. It is not necessary to have any disk recorder tracks armed.

Note: Be careful not to inadvertently leave the 9 pin machine armed as this can result in accidental erasure of tapes. When a track on a 9 pin machine is armed, a red box with a V is displayed above the Track 1 label on the track display.

Master

When M1 or M2 are selected to chase timecode, MASTER is used to generate the sample clock from the incoming code. This should be ON if the timecode source is not referenced to the same sync source as the Satellite. See Synchronization chapter for further details.

LTC A

Option appears only when M1/M2 is an LTC machine. If switched on, the system Master Clock will be driven by the incoming timecode when M1/ M2 is on line.

Generally it is better to use video or AES/EBU as a Master Reference.

Select the type of machine that will come on line when M1 or M2 is pressed. Choices are:

- | | |
|---------------------|--|
| Sony A or
Sony B | Gives you control over any Sony 9 pin transport. It is always the timecode Master (see options below). |
| LTC A or
LTC B | Causes Satellite to chase the timecode coming in either port A or B. |
| 9 pin Rem | Satellite emulates a Sony 9 pin machine and can be controlled from the Sony B port (this port is common to both sex connectors). |

LTC Synchronization

Locking to LTC

To lock to LTC (Longitudinal timecode), either M1 or M2 (usually M2) must be configured to read one of the LTC input ports.

- Step 1 Press **M2** (or **M1** depending on configuration).
- Step 2: Press **Play**.

If the LTC source is not locked to the same sync source as the Satellite, set **LOCK TO MASTER ON** in the Digi Menu.

Enabling the LTC Generator

The LTC generator will output the current timecode when in **PLAY**, and output a short burst of timecode when locating the transport.

Press **GEN** to toggle the generator on or off.

EDITING WITH MACHINE CONTROL

All the transport controls and locating methods operate with a 9 pin remote machine online. The following procedure is used to place new recordings or previously used clips to picture.

Press the M1 key to toggle the 9 pin machine on or off. The Satellites transport will locate to the timecode from the 9 pin machine. The system defaults to M1 controlling 9 pin Port A.

Placing Sound to Picture

- Step 1 With M1 online, locate the video at the desired frame.
- Step 2 Take M1 offline.
- Step 3 Locate the transport so the cursor lies on the sync point of the clip.
- Step 4 **CUT** or **COPY** the clip to the clipboard.
- Step 5 Place M1 online, the transport will relocate to the video at the desired frame.
- Step 6 Press **<Enter>** to paste the clip.

It is also possible to CUT or COPY the clip before locating to the desired frame.

THE OFFSET MENU

Each machine on the system can be given an Offset.

This is the amount by which its timecode position exceeds the Satellite console's displayed time.

When the disk recorder is offset, its position, which is shown on the video screen, will differ from the Console position, which is normally shown in the upper right of the LCD.

There are two ways of entering offsets. One is to specify a machine's offset, and the other is to specify its desired position. A toggle in the menu allows you to choose which you prefer.

In this menu the upper portion of the LCD shows the current position or offset of all the machines in the system.

Restore Restores the machine's offset to the value it had before it was selected for changing (effectively UNDOing an offset change).

Capture Makes the offset equal to the current position relative to the Master time display. The device being offset must be offline during this process, or it would always locate to its existing offset.

Step 1 Press the **OFFSET** key.

Step 2 Select the soft key for the desired machine.

Step 3 Enter the offset value or press the **CAPTURE** soft key.

POSITION The fifth soft key toggles between offset and position modes. The position mode displays the actual position of each machine. This allows you to enter known timecode references rather than calculating offsets.

**NOTES:**

9. The position of any machine when online is defined as Satellite's position plus offset. So if, for example, you give a machine a 30-second offset, it will immediately locate forward 30 seconds (unless it is the Master, in which case all the other machines will locate backwards by 30 seconds).
10. The Satellite will display the time Master minus Master Offset, when the Master is online.
11. Only positive offsets are allowed, so if you want a minus one hour offset, put in a 23 hour one. Or, CLEAR the Numeric Register, type the number, press the - (minus) key and then **<Enter>**.
12. To capture an offset between a Sony machine and the disk recorder, first move the Sony machine to a timecode and take the disk Offline by Disk. Now move the Sony machine to another timecode. Select the Offset Menu, then Disk and press the **Capture** soft key to produce a new offset for the disk which keeps it in sync with the Sony machine's current position.

NOTES:

Chapter 22 - AudioBase

INTRODUCTION

AudioBase is a clip database which allows you to search for sounds across all devices in a Satellite system. Once a sound / clip has been found, it may be auditioned, and then imported into the current open Project.

AudioBase2 allows searches to be made in a network environment, using a MediaLink server.

AudioBase creates and maintains a central database of clips from many Projects.



Figure 42: AudioBase Key

CREATING A DATABASE

Before a clip or Wav file can be used in AudioBase, it must be published. Publishing a Project adds the details of all its clips to the database which is stored on the system. It is possible to publish individual files, or all the Projects and Wav files contained within a directory.

- Step 1 Press the **AudioBase** key.
- Step 2 Press the **FILE** soft key.
- Step 3 Press the **PUBLISH** soft key.
- Step 4 Use the jogger wheel or **+** and **-** keys to select a Project, Wav file or directory.
- Step 5 Press **Enter**.

The top of the video screen displays the various fields stored in the database.

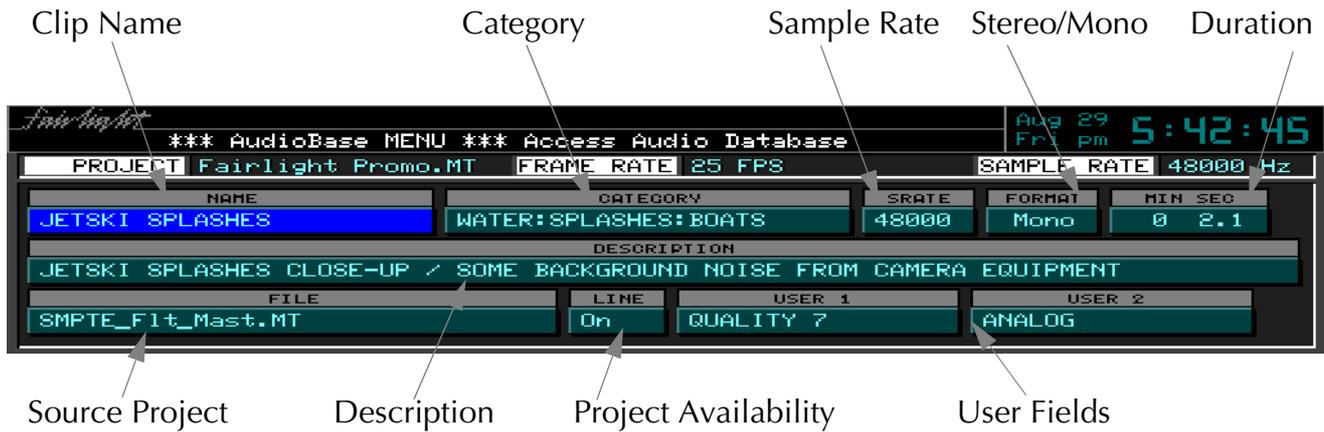


Figure 43: AudioBase Clip Data

All the clips will be added to the database but no waveforms are copied. For the clip to be used, the Project containing that clip must be present on the system. The additional description and user field can be added later as described below in “Maintaining a Database” on page 22-7.

SEARCHING FOR SOUNDS

AudioBase can use various search criteria to filter the fields of the database to find clips. The Search Options determine how the database will be searched:

- Step 1 Press the **AudioBase** key.
- Step 2 Press the **SEARCH** soft key.
- Step 4 Press the **MATCH** and **FIELDS** soft keys repetitively to scroll through the options described below.

MATCH: This specifies how your search text is matched to the fields in the database. This parameter affects all the fields being searched:

- WHOLE** Your search text must match all the text in a database field.
- PART** Your search text only has to match any part of a database field.
- START** Your search text only has to match the start of a database field.

FIELDS: This specifies if all the fields you search have to match, or if only one or more fields have to match.

- ALL** All the selected fields must match.
- ANY** Clips are returned if any of the fields match.

To start using AudioBase, set the MATCH parameter to PART, and the FIELDS parameter to ALL.

- Step 1 Press the **AudioBase** key.
- Step 2 Press the SEARCH soft key.
- Step 3 Press the **Prev** (F8 on the keyboard) and **Next** (F9 on the keyboard) to highlight a field you wish to search. (9 to 15 provide AudioBase functions).
- Selected fields are highlighted in blue.
- Step 4 Enter your search text. Press the CLEAR key to clear text from the field. If the field is left cleared, it will not be included in the search.
- Step 5 To add more fields to your search, repeat steps 3 and 4. Otherwise, press **Enter** to start the search.
- Additional search conditions can be added to the text.
- These are described on the following page.

Additional Search Conditions

Additional search parameters can be added to field searches in a similar manner to the GO TO CLIP NAME function.

Additional sorting criteria are provided by pressing the relevant key on the keyboard. These are as follows:

- ANY * This places an asterix (*) in the search text. The asterix can be replaced by any number of characters. For example, typing *squeak would enable the listing of mouse squeak and door squeak.
- ANY ONE = This places an equals sign (=) in the search text to replace any one character.
- ONE OR NONE? This places a question mark (?) in the search text to replace any one character or no character.
- AND & An ampersand (&) is placed in the search text to add another name. Only clips with names containing both search names will be listed. For example, typing *door&*squeak would list only the clips with names including both door and squeak. This will list door squeak but not mouse squeak or door slam.
- OR A bar (|) is placed in the search text to add another name. Clips with names containing either search string will be listed. For example, typing *door|*slam will list clips with names containing door as well as clips with names containing slam. This will list door squeak and door slam but not mouse squeak.

NOT ~ A tilde (~) is placed in the search text to add another name. This will exclude the specified text. For example, typing *door&~squeak would list the clips with names including door except those also containing squeak. This will list door slam but not door squeak.

Searching the Current Project

AudioBase can be switched to search the currently open Project instead of the clip database. It does not matter whether it has been published or not.

To enter Project mode, hold down the **Shift** key (on the keyboard) and press the **SEARCH** soft key.

Once in Project mode, AudioBase will stay there until you repeat <**Shift** + **SEARCH** soft key>.

The AudioBase Menu and the Search submenu change to show the new status.

While in Project mode, none of the editable fields are shown. This is because the screen is displaying clips in the Project, and they contain none of the Category, Description or User Fields. For the same reason, it is not possible to enter the Edit Submenu while in Project mode.

At the end of the Found Records list, you will find a list of Master Recordings that are not being accessed by any clips. This can happen, for example, when you erase a clip, but do not dispose of the Master Recording (see Space Menu for details of disposing).

PLACING SOUNDS IN A PROJECT

Before using AudioBase to import a clip, park the transport at the sync point in your Project. This can be done with a 9 pin machine online:

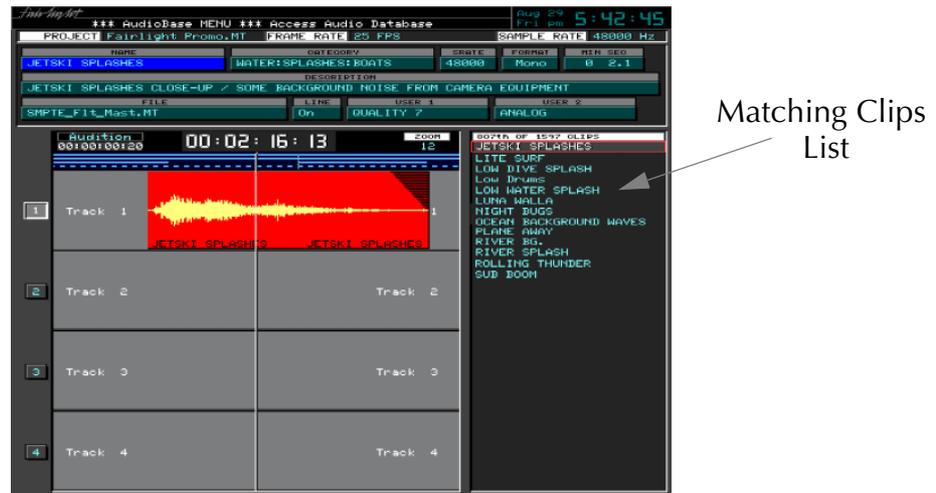


Figure 44: Placing Clips

- Step 1 After searching the database, a list of matching clips is displayed. Ensure the transport is in STOP, then use the jogger wheel or + and - keys to highlight the clip you want.
- Step 2 Press the AUDITION soft key. This will play the clip using the currently selected track. When auditioning, the Project remains stationary.
- Step 3 If necessary, use the transport keys (including **Jog** and **Jump**) to locate the clip to the correct location.
- Step 4 Press the PASTE soft key to place the clip in the Project.

NOTES:

It is also possible to PASTE the highlighted clip immediately without auditioning. This will place the sync point of the clip at the cursor. This will be the head of the clip unless a sync point has been set using the TRIM function on the Binnacle.

All clips imported using AudioBase are borrowed. To keep the clips, use the KEEP ALL BORROWED function in the Space Menu.



MAINTAINING A DATABASE

The Name, Category, Description and User fields can be edited to add additional clip information.

The following fields can be edited:

- Step 1 Use the AudioBase search functions to highlight the required clip record.
- Step 2 Press the `EDIT` soft key.
- Step 3 Press the **Prev** and **Next** keys to highlight a field you wish to edit.
- Step 4 Type the text you wish to enter.
- Step 5: Press `<Enter>`.



NOTES:

It is also possible to simultaneously change the selected field for all the clips listed from a search. To do this, edit the desired field as described above except hold down the **BLUE** key when you press `<Enter>`.

The `SWAP` soft key toggles the contents of the selected field between what you have just typed and the previous contents.

It is possible to import and export AudioBase data with a PC database. See later in this Chapter for details.

Deleting Records

To delete records from the database follow the steps below:

- Step 1 Use the AudioBase search functions to display the required clip record(s).
- Step 2 Press the `EDIT` soft key.
- Step 3 Press the `DELETE` soft key.
- Step 4 Type the first letter of one of the options displayed on the screen as detailed below.

- [O] OKAY Deletes the record highlighted at the top of the list from the database.
- [L] LIST Deletes the record from the displayed list but not from the database.
- [A] ALL Deletes all the displayed records from the database.
- [C] CANCEL Aborts the `DELETE` operation.

To deleting all the records from a particular Project follow the steps below:

- | | |
|--------|---|
| Step 1 | Press the AudioBase key. |
| Step 2 | Press the <code>FILE</code> soft key. |
| Step 3 | Press the <code>PURGE</code> soft key. |
| Step 4 | Use the jogger wheel or <code>+</code> and <code>-</code> keys to select the desired Project. |
| Step 5 | Press Enter . |

GUIDE TO AUDIOBASE2

AudioBase2 is the networked version of AudioBase. In most ways its operation is exactly the same as AudioBase, but its installation is very different.

This is beyond the scope of this manual, but is covered in the AudioBase2 Installation Manual. While AudioBase runs inside the Satellite computer, AudioBase2 runs on a MediaLink server using a commercial database called Microsoft SQL Server.

The AudioBase2 SQL database can be accessed directly from an HTML browser running on the MediaLink Server or any PC connected to the network. Several HTML pages provide functions to search and edit clips and files.

Several clips may be amended or deleted at the same time. These functions eliminate the need to export the database as a text file, modify it with Excel, and re-import it as with AudioBase 1.

To export an existing AudioBase 1 database into AudioBase2, type `exportabl` at the command line.

AudioBase2 is designed to service a whole network of DREAM and MFX workstations, and is therefore capable of handling very large sound libraries.

When a search yields a large number of results, it produces very significant network traffic to download all the information to the MFX workstation that initiated the search. To prevent this happening, only the first group of 100 found records are downloaded, but as the list is scrolled, more records are found inside the database and downloaded automatically, keeping the flow of information coming smoothly.

Alphabetic Sort

AudioBase2 sorts all records alphabetically by name before downloading them from the server to the Satellite workstation, while AudioBase does not.

No Export

Because AudioBase2 works in the PC environment, no export procedure is provided. The SQL database can be interrogated and edited directly on the PC where it is running, using tools supplied with the AudioBase2 package.

The Line Field

AudioBase2 allows the Line field to have the value Any, which means records are found whether they are online or offline. The reason for this is that, with the very large number of records that could be present in AudioBase2, it could take a long time to find out if each of them has audio on a disk somewhere on the network.

This is particularly true if you are searching for individual WAVE files, because each one's presence on the network must be verified each time you search for it (otherwise someone else might have deleted it since the last time).

If the value Any is entered in the Line field before the search, the verification time will be saved, and the search results will arrive quickly. When the records are auditioned, any that are offline will not play, and an error message will be displayed.

NOTES:



13. With AudioBase2 running, the Import and Export soft key Menus have been removed from the AudioBase Menu. These functions are performed using a separate HTML browser, such as Internet Explorer using an MediaLink Server.

14. In AudioBase 1 the colour of an active field (when you put search criteria into) is either grey or blue. In AudioBase2 they are always blue.

15. A new value ANY has been added to the criterion LINE. When selected, the search routine does not check whether the files containing the clips matching all other criteria are On Line, (i.e. on machines which are on line at the time of the search) or Off Line. It is recommended to use this option if you know that the files containing the clips returned by the search are on line as a search may take tens of seconds just to check the file On Line status. This option is also available in AudioBase 1.

PUBLISHING WITH TEXT FILES

AudioBase can work with text files in two ways:

16. During publication it can take data from a text file and place it into editable fields in the database. The fields into which data can be placed are Name, Category, Description and User fields.

17. It can output, as part of the publication process, a text file containing all the editable information about the clips from the Project that was just published. This file can be written to your MFX3.48 hard disk, or can be exported to another computer using FTP.

The Text File Format

When AudioBase outputs a file as part of the publication, the format of the first line is as follows:

```
Project: Project Name Project Identification Number
```

Between each entry there is a tab, and at the end of the line there is a carriage return. This line is used during subsequent republication to identify the Project to which the text file refers.

Each subsequent line represents one clip in the Project. It is set out as follows:

```
~AudioBase Number Clip Name Category Description
```

```
User 1...User 4
```

Between each entry there is a tab, and at the end of the line there is a carriage return. The AudioBase Number is written with a tilde (~) at the beginning to distinguish it from other text. It is used to identify a clip in the Project.

When you make your own text files, you can omit the first line, or just the Project identification number, and still publish using this file.

The AudioBase number at the beginning of each line (and the tab separating it from the next part) is also optional, you can still use the data without this identification.

How AudioBase Recognises Text

When you tell AudioBase to publish a text file, it must match up the file and its contents correctly with a Project.

It will do this automatically if the information is correct.

The File

For AudioBase to recognise a text file, it must have a name of the format XXX.txt where XXX is any string of up to 15 characters, not including illegal ones (space = & | ? / \ ^ ~ [N.B. an underscore is shown as a space on the video screen]).

The system recognises no difference between upper and lower case.

AudioBase has three ways to associate a particular text file with a particular Project. Here they are, in order of priority:

- Project Identification number matches the one in the Project.
- Project Name on the first line matches the Project Name (this is unreliable if there is more than one Project in your system with that name - AudioBase will choose the first one it finds).

The name of the text file is the same as that of the Project, not counting the suffixes (ditto).

If none of these conditions is true, AudioBase will ask you to choose which Project goes with this text file at the time you start publication.

Clips

AudioBase has two ways to associate the text describing a particular clip with the same clip in the Project. Here they are in order of priority.

The AudioBase number in the text file matches one in the Project file.

The Clip Name in the text file matches one in the Project file (this is unreliable if there is more than one clip in the Project with that name - AudioBase will choose the first one it finds).

Commands Using Text Files

Publish a Text File

After pressing the `Publish` soft key, you are invited to browse and select a file. If you select a text file, it is incorporated into the publication process. First AudioBase will look at the text file and see if it matches a Project file on one of your hard disks. If it does, the publication proceeds automatically. If a match cannot be made, AudioBase will ask you to select the Project (which you do by browsing and then pressing `<Enter>`).

During publication, AudioBase tries to match text entries with clips in the Project. Wherever a match is made, a Clip Record is made from the clip, and the data from the text file is inserted into the appropriate fields. If there are clips in the Project that are not matched by anything in the text file, they are inserted into the database with

no editable data except their names. If there are lines in the text file that are not matched by clips in the Project, they are ignored.

Export

The difference between EXPORT and PUBLISH is that Export also outputs a text file after publication. You may choose a Project or a text file as the target of the command, and the first part will go exactly the same as Publish. The text file is created during publication, and can be directed to a choice of destinations.

Before starting the process, AudioBase will ask you for the destination. You have four choices:

- File
- Macintosh
- PC
- Unix

These are chosen by typing the first letter of the choice. If you choose File, the text file will be saved to the same hard disk where the Project is located. Its name will be the same as that of the Project, except for its .txt suffix.

If you choose any of the computer types, the text file will be sent out of the modem port, using Z-Modem protocol, to any computer that is connected. To make this happen, you must have your computer connected via a serial cable between one of its communications ports and the QDC Engine modem port. The computer must be running a terminal program and be ready to receive data. You will be asked to confirm that this is the case before the command starts.

Import

Importing is similar to publishing a text file, except that first the file is brought in from another computer. After issuing the command you will be asked to identify which Project will be published with this text file.

You may choose either Browse, to find the file in the usual way, Auto, to tell Satellite that the required identification data can be found in the text file you are sending in, or C to Cancel. Once this situation has been clarified, you will be asked to choose the type of computer that will be sending the data, and to confirm that your computer is ready to transmit data. After confirming you should start the transmission from your computer. After the transfer is complete AudioBase will attempt to match it to the appropriate Project, and if successful the publication will proceed as usual. Afterwards, the imported text file is removed from your hard disk.

Using Text Files

Example 1

Sometimes you might want to put a CD Library or other stored sounds into MFX, and there may be some database information supplied already. In this situation you will need a computer running some kind of software that handles databases or tables. For the sake of this description we will describe the use of Microsoft Excel on a PC.

1. Record the sound into the Satellite.
2. Using the GATE function, or by editing, divide the recording into individual sounds.
3. Name the clips exactly as on the supplied database.

4. Load the information from your supplied database into an Excel file.
5. Make sure that the data is are Ranged in successive cells in the order Name, Category, Description, User 1,....User 4 (the user fields may contain any kind of information you like, but they cannot contain more than 24 characters).
6. Load a terminal program on the PC, and get it ready to send the file you just saved. Go to the AudioBase Menu and press the `File` soft key. Now press `Import`, and when the Satellite is ready, send the text file from the PC.
7. After the Satellite has received the file it will ask you to find the Project with which to publish the text file. Select the Project where you recorded the CD and press `Enter`.

Example 2

The task here is exactly the same, but this time we will allow Satellite to create a text file which is then merged with the supplied database information.

1. Record sound into Satellite.
2. Using the `GATE` function, or by editing, divide the recording into individual sounds.
3. If you want the clips named in the Project, name them exactly as on the supplied database. If you will only ever access the sounds through AudioBase, there is no need to name the clips, as long as they have been recorded or edited into the same order as they appear in the supplied database.
4. Go to the AudioBase Menu, press `File`, then `Export`. Choose PC as the export type, making sure the PC is running its terminal program and is ready to receive. The Project will be published, and the text file will be transferred to the PC.
5. Once the file is on your PC, load it into Excel as a text-only file with tab delimiters. You will now be able to edit the Clip Record information.
6. Load the information from your supplied database into the same Excel file. To do this will require first loading it into a different Excel file then copying the information across to the first file.
7. Arrange the information so that the data from the received database lines up with the data from AudioBase. This would mean that each line, other than the first, contains two clip names, which must be the same. The latter half of the line should contain category and description information from the received database.
8. Remove one set of clip names, and all other fields such as duration etc. supplied in the received database, so that you have, on each line after the first, the fields listed above under Text File Format, in the same order.
9. Repeat step 6 from Example 1. This time AudioBase will not ask you to find the Project file, because the ID and Name are written into the first line of the text file.

Editing the Form

The AudioBase Form can be changed from its default setup by editing a file which defines its layout. Type:

```
$<Enter> This brings up an OS9 shell or text interface.
```

```
chd /dd/usr/mfx<Enter>
```

```
ed abase.form<Enter>
```

Now you will see a screen layout depicting the fields, their names and sizes. The first part lists the fields provided by the Satellite. You cannot change their names or sizes, and should not interfere with this part of the file.

The second part shows user definable fields. By default, the first two are activated, and you can change their names from USER 1 and USER 2 to anything you like. To edit their names, use the arrow keys to move the cursor to the correct place, use the **BACK** or **DEL** key to remove characters, and use the alphanumeric keyboard to insert characters.

You can also determine how many characters will be shown on the screen (the actual fields can take up to 24 characters).

The lines listing USER 3 and USER 4 have asterisks in front which deactivate the fields. Removing these will activate them (but not put them on the screen). There is also an area for the titles of these user fields which you may edit.

The last section contains the screen layout. Each line lists the fields that will be displayed. A field beginning with F is from the first section, while one beginning with U is a user field. You may change what is displayed on each line, but please remember that only 80 characters will fit on to the screen. If you ask for more, the extra ones will simply not appear.

To save the file and return to work press the **BLUE** key and then **Z** (on the keyboard (or **Esc Z**)).

NOTES:

Chapter 23 - Macros

INTRODUCTION

Macros are used to replay sequences of key strokes on the console. Macros can record any keys, but not the jogger wheel. Macros can be used to automate often repeated command sequences for common studio tasks. A total of 27 Macros can be recorded across three banks containing nine Macro keys each.



Figure 45: Macro Keys

DEFINING (LEARNING) A MACRO

- | | |
|---------|---|
| Step 1 | Press the Edit Macro key. |
| Step 2: | Select the function key you wish to define.

Note: Holding down Shift or Ctrl will access banks 2 and 3 respectively. |
| Step 3 | Press the LEARN soft key. |
| Step 4 | Press Enter . |
| Step 5 | Perform the functions to be recorded (any keys except the jogger wheel). The console beeps as each key is recorded into the macro. |
| Step 6 | Hold down the BLUE key and press the Edit Macro key to stop recording the macro. |

NAMING A MACRO

Macros can be given names to allow identification when in the Edit Macro Menu. If not already in the Edit Macro Menu, press the **Edit Macro** key.

- Step 1 Select the desired macro key.
- Step 2 Press the `NAME` soft key.
- Step 3 Type the name.
- Step 4 Press **Enter**.

RUNNING A MACRO

Macros can be run in two ways.

1) Pressing one of the macro keys from within any menu except the Edit Macro Menu will run the macro.

2) From the Edit Macro Menu as follows:

- Step 1: Select the desired macro key.
- Step 2: Press the `RUN` soft key.

ERASING A MACRO

Learning a macro will erase any previous macro for that key. It is sometimes desirable to erase a macro and leave it vacant to prevent it from being accidentally pressed.

- Step 1 Select the desired macro key.
- Step 2: Press the `ERASE` soft key.
- Step 3 Press the **Enter** key.

If a macro key is pressed while learning a macro, the contents of that key will be recorded by the new macro. Changing either macro will not affect the other.

All numeric values and menu selections must be entered with the numeric keypad.

When entering numbers, press the **Clear** key then type the number and **Enter**. Soft key menu parameters that are normally scrolled with the jogger wheel can be selected with the 0 to 9 keys.

To invoke a delay in a macro, hold down the **Ctrl** key and press one of the numeric keys. The delay will be the approximate value of the key in frames (e.g: 5 will be 5 frames) with 0 being 10 frames.

MACRO FILES

Macros can be saved to and loaded from disk. A macro file is a snapshot of all the function keys. Macros are saved to .MK file. The following procedure is performed in the Edit Macro Menu.

- Step 1 Press the `File` soft key.
- Step 2: Select one of the macro file functions as listed below.

The File Menu performs similar functions to a PC or Macintosh file menu.

- LOAD Load allows you to select a macro file from one of the drives and load it into the system. This will erase the previous set of macro keys.
- SAVE Save will update the currently loaded file to include changes.
- SAVE AS This will save the current set of macro keys as a new file. The system will prompt you for a destination and name.
- UNLOAD Unload will clear all macro keys.

DISPLAYING MACROS

The contents of a Macro can be displayed on the LCD by pressing the **To Panel** key.

NOTES:

Chapter 24 - Drive Formatting

INTRODUCTION

Satellite supports two different disk file systems:

- RBF (Random Block File) is the native file system of OS9, the operating system used by Fairlight.
- FLFS (Fairlight File System), and was invented by Fairlight to handle devices larger than 4 Gigabytes. It must be used for these large devices.

Only a Fairlight approved disk drive should be used with Satellite. A list of suitable drives can be downloaded from <http://www.fairlight.net>.

FORMATTING A DRIVE

Step 1 Attach the new disk drive to the system, with the power OFF. Its SCSI address must be different from that of any other disk or tape drive already attached. Note its SCSI address.

Step 2 Power on the QDC Engine and console

Step 3 Check that the disk is seen when the SCSI bus is scanned
If necessary type `quit` to return to the hash prompt.

Step 4 To initialise a disk in RBF format type at the prompt:

```
diskinit /tdXY -v=1024 -c=128 -z RETURN
```

(Y is the SCSI address of the drive, X is the PCI bus 0=internal, 1=external)

OR To initialise a disk in FLFS format, necessary if the drive is larger than 4 GBytes, type:

```
diskinit /tdXY -w RETURN
```

(Y is the SCSI address of the drive, X is the PCI bus 0=internal, 1=external)

OR To initialise a disk in FAT32 format, for compatibility with Microsoft operating systems:

```
diskinit /tdXY -f RETURN
```

(Y is the SCSI address of the drive, X is the PCI bus 0=internal, 1=external)

Step 5 You will be asked to verify that you wish to go ahead with this operation. If you confirm, the initialisation takes only a few seconds. A reboot is necessary after initialisation.

FORMATTING OPTICAL DISKS

Formatting optical platters is exactly the same as formatting hard disks.

MAKING A NEW SYSTEM DISK

A new system disk may be setup using the `upgrade` command. Quit to the hash prompt. Type `upgrade` at the hash prompt. Follow the on-screen prompts to select a target device and initialize if necessary.

BOOTING FROM EXTERNAL DISK DRIVES

It is possible to boot the QDC engine from an external bootable system disk. To enable this, the NVRAM settings must be modified. Follow this procedure:

Step 1 Restart the QDC, and at the autoboot countdown, press any key.

Step 2 Type `rc` **RETURN**

Step 3 You will be asked 'Do you want to use the recommended NVRAM configuration? (Y/N/Q)'. Type `n` **RETURN**

Step 4 You will be presented with 4 options.

- A) Reconfigure All of NVRAM?
- B) Reconfigure Booting Preferences?
- C) Reconfigure System Setup?
- D) Quit this menu and reboot?

 Type `c` **RETURN**

Step 5 Press **RETURN** until you see the option:

```
SCSI Controller Slot for Boot ..
(0=On Board SCSI) ..... (000 .. 003) [000]
```

Once you see this option, you then have to type in the 'PCI SLOT NUMBER' that you want to boot from. You must have a SCSI card in this SLOT.

PCI slot zero is the onboard SCSI, and as a general rule, if you have an extra PCI SCSI card, it should be in PCI slot 1.

Network interface cards should be in slot 2, or if you have TWO external PCI SCSI cards, put the NIC in slot 3.

Step 6 Enter the PCI slot number you want boot from, and press **RETURN**

Step 7 Respond by pressing **RETURN** until you get the 4 options: A), B), C), and D), as above. Choose D.

Step 8 Type **RETURN** to restart the QDC engine, and it should now boot from the external PCI card.

To return to booting the internal boot disk, follow the procedure above and select the appropriate disk.

NOTES:

Chapter 25 - Printing

INTRODUCTION

The Print Menu allows a track sheet or dubbing chart to be printed, based on the layout of the clips in a current open Project. The Satellite supports serial or parallel printers.

A printout shows the selected tracks and the start and end times for each clip.

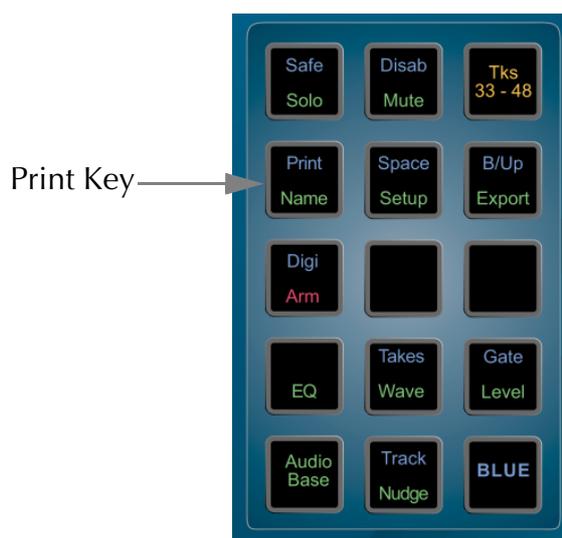


Figure 46: Print Key

- Step 1 Hold down the **BLUE** key and press **Print**.
- Step 2 Define a Range and select the desired tracks.
- Step 3 Press the **PRINT CHART** soft key.

The other soft keys operate as follows:

PAGE	Determines how page numbers are shown. X or X of Y
BAUD	Selects the baud rate for the printer. 9600 or 38400
PORT	Selects port used for the printer. MODEM or PRINTER
STOP CHART	Stops printing.

SETTING PRINTER CHARACTERISTICS

To change printer characteristics, display the System Page (type **BLUE S**). You may now use the mouse to choose 9, 24 or 48 pin printers. You may also set the size of your paper (if you want to print two pages of tractor feed paper with no header at the top of the second page, set the page length to double.) Use the mouse to click on individual fields, thus changing the displayed value. These are explained below.

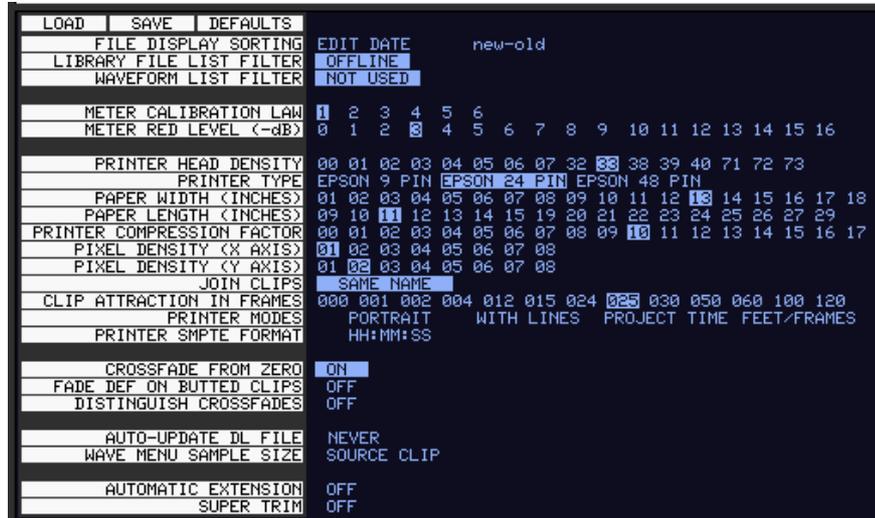


Figure 47: System Page Print Options

Printer Compression

Removes vertical space where nothing is happening: i.e. no clip is starting, ending or being labelled. The lower this number, the more space is removed, therefore the more Project time will appear on each page. When compression is set to zero, the maximum space is removed.

PRINTER HEAD DENSITY: Sets more or fewer dots per inch. More dots per inch will give you a smaller picture.

PIXEL DENSITY (X-Axis): Controls the number of dots used. (More dots will give a wider picture).

PIXEL DENSITY (Y-Axis): Similar to X-Axis.

JOIN CLIPS This feature is designed to prevent the printing of large numbers of small clips that have been edited together to make a composite sound. It works together with the Minimum Gap parameter to print a single shape for many clips.

When set to ALWAYS, it treats clips that are butted together (or overlapping) as just one clip. The name of the earliest clip is used.

SAME NAME joins butted clips together, only if they have the same name.

CLIP ATTRACTION IN
FRAMES

The Join Clips software will treat clips as though they are butted together as long as they are closer than this minimum gap. It also has the effect of quantising the print output, so that events starting within a window of this gap will appear to start at the same time.

TIMECODE FORMAT

Click on this field to choose which timecode fields will be printed.

Printer Types

Parallel Printers

The Satellite printer output is a standard PC compatible parallel printer port. The system will support most Epson compatible parallel printers.

Serial Printers

The Modem output supports serially connected Epson compatible machines of the 9 pin or 24-pin protocol. Example: EPSON LQ1170 with IF C82305 or C82307 serial interface card.

Baud rate = 9600 or 38400

8 bits, 1 stop bit, no parity, DTR handshake

Pin Connections		Switch Settings	
Fairlight 9 pin	Printer 25 pin	C 82305	C 82307
Pin 2	Pin 2	SW 1-1 on	SW 1-1 on
Pin 3	Pin 3	SW 1-2 on	SW 1-2 on
Pin 4	Pin 5	SW 1-3 off	SW 1-3 off
Pin 5	Pin 7	SW 1-4 off	SW 1-4 off
Pin 8	Pin 20	SW 1-5 off	SW 1-5 off
		SW 1-6 off	SW 1-6 off
		SW 2-1 on	SW 2-1 on
		SW 2-2 on	SW 2-2 on
		SW 2-3 off	SW 2-3 off
		SW 2-4 on	SW 2-4 on
		SW 2-5 off	
		SW 2-5 off	

When Satellite prints a dubbing chart, the length of each clip is not necessarily shown in proportion to its duration. Instead, it depends on the space needed to display all the clip information (start timecode, name and end timecode), plus the space needed to show other clips that start or end while the first one is playing.

If many clips start or end during a clip's playback, that clip will be very long in the printout.



NOTES:

4. Dubbing chart printing always takes a Range.
5. Dubbing charts print only the selected tracks. The durations of clips on the non-selected tracks are, however, taken into account, so you can print 12 tracks in one pass and the other 12 in another pass, and the two prints will join side by side to make one large display. This may spread your dub chart more than desired so, to prevent this from happening, deselect and disable the tracks that you do not want involved in any way in the print process.
6. To stop printing, type `<ctrl-Q>`. Then press the `Kill Que` soft key.
7. To split the name of a clip include an ellipsis (...) in its name. The first part will print at the top of the clip and the second part at the bottom.

NOTES:

Chapter 26 - System Files

INTRODUCTION

Satellite uses a number of files to store setup information. These are normally set to sensible values at the factory, but in some cases you may need to change them.

The Configuration files are stored in OS9 partitions on the boot drive.

The names of the files, which are given below, include the disk partition and all elements of the directory tree that is needed to access them.

Some options are only taken into account when the machine boots up. Therefore, to ensure your changes take effect, restart the machine by switching it off and on.

WORKING WITH SYSTEM CONFIGURATION FILES

It is always necessary to access the operating system in order to edit a configuration file, and therefore to QUIT from the disk recorder application. First, type:

QUIT RETURN

wait for the hash prompt (#) to appear.

Editing a Configuration File

Type: **ED filename RETURN**, where filename is the name of the file you want to edit. Move the cursor around the file using the arrow keys.

To add text, move the cursor to the desired location and start typing. Text is always inserted, never overwritten.

To remove text, use the **DEL** or **BACKSPACE** key.

Type **ESC** to view the command options.

Saving Changes to a File

When you have the file exactly the way you want, type **ESC ZY**. This will close the file and save your changes.

If you want to abandon editing without saving changes, type **ESC QY**.

To return to the Disk Recorder program, type: **SAT RETURN**

NETWORK SETUP FILE

When starting up, the QDC engine automatically loads the latest version of console software on to the console via TCP/IP over the ethernet cable. For this to occur the IP addresses must be setup correctly on both the QDC Engine and the Satellite console.

To enable communication the subnet mask must be the same on both console and engine. The console and engine IP address must be within the same subnet range.

The Satellite console bootup menu provides a `config` softkey menu for specifying the IP addresses of both the console and the engine, and the subnet mask. Communication may be tested by using the `PING` softkey. When pressed, the button will go amber, if communications are established the button will return to its green state, if not, it will go red briefly.

To configure the networking setup on the engine, `quit` to the hash prompt and type `setup`.

Under the `[web]` section edit the `IP_ADDRESS` and `NET_MASK` values for the QDC engine.

```
Default IP_ADDRESS 192.168.0.11
Default NET_MASK 255.255.0.0
```

Under the `[Console]` section edit the `SERVER IP` address of the console.

```
Default IP_ADDRESS 192.168.0.21
Default NET_MASK 255.255.0.0
```

Check the bottom of the setup screen for details on the various sections of the setup file.

·A Cross-over Ethernet cable must be connected between the Satellite and the QDC Engine.

See “Network Configuration” on page 29-4 for more details on configuring the console.

THE MDR CONFIGURATION FILE

This file contains many settings that are used by the Multitrack Disk Recorder program (MDR). To open it when Satellite is running, type:

```
CFG RETURN
```



CAUTION:

The MDR Configuration File contains many things that you should not change! If you do, some operations of the system may become unstable, or not work at all. **DO NOT CHANGE ANYTHING** that is not described fully here.

The following lines may be changed:

@ArmKeyDelay on

Normally there is a delay in the reaction time of the track keys, to allow for the possibility of double clicking.

Change this setting to “off” in order to remove this delay (useful when using the track keys to put individual tracks into record). When it is off, double clicking does not work.

@FadeDefault 72

Every clip is played with a fade at both ends (unless it is butted up to another clip), even when you do not specify one. The value here is used every time the system powers up (you may change it temporarily while the system is running). The number is set in time units, which are equivalent to sample periods at 48 kHz. A table shows you the equivalents in subframes at various frame rates.

@DitherOutput 24

This allows you to set the dithering of the digital and analog outputs. In most cases this should be left at 24, but if you are outputting to a digital system where only 16 or 20 bits are going to be used, you should set the dither accordingly.

@DefaultInputType 1

This will set the input type for newly created Projects, immediately upon power up. Once a Project has been loaded or created, all new Projects created after it will inherit the patching and input type from it. The numbers of the different input types can be seen in the file you are editing.

Note that the mixer also has a default input type, and that each Title will overwrite the settings of the inputs to match their state when the Title was saved.

@PlayInhibitThreshold 24

When you are recording a large number of tracks at once, Satellite may sometimes have difficulty keeping up with the disk playback bandwidth requirements. Turning on this function (by setting it to the number of tracks you are recording) tells the Satellite not to try to load playback buffers on the tracks you are recording. This means when you exit Record, there will be no audio loaded to provide playback, (but this would have happened anyway if you are recording a lot of tracks simultaneously, for more than about 10 seconds.)

This parameter does not normally need to be altered unless you are doing a lot of recording with more than 16 tracks armed.

@BeepsTrackNumber

If you are using the ADR Menu, and you have set one of the GPIs to BEEPS, you will also get audible beeps from one of the outputs. This parameter allows you to choose the track that the beeps will output. It may be the track you are recording on if you want.

@BeepsVolume

Sets the audio level of the beeps. Set it to -99 if you do not want any beeps.

@BeepsFrequency

Sets the frequency of the beeps in Hertz.

@MinSegmentDuration 0

Sometimes a large amount of editing can result in lots of tiny clips sandwiched between larger ones. These clips are played, but not really heard, and can absorb a lot of disk bandwidth by requiring a single disk seek to fetch only a few inaudible samples. By setting this parameter to a non-zero number, these unnecessary seeks are avoided. In addition, any files that are being passed to the DaD will play much better if this parameter is set to 16 or more samples.

THE SONY_ID FILE

The Sony ID file tells the system about the characteristics of different 9 pin devices, such as how many analog and digital tracks it has, and whether it is a fast or slow machine.

There is one line of importance that you can change. When Satellite is emulating a 9 pin device, it replies to the controlling machine with a device ID. Normally this is set to the official Fairlight ID, which is FA. But many editors do not recognise this device name, because it is too recent, and it is then useful to be able to give a device name that is familiar to the editor or other controller.

To open Sony_ID for editing, first QUIT, then type:

```
ED /DD/USR/SYS/SONY_ID RETURN
```

To change the systems device name, edit the last line in the file:

```
0xFA 0xA0
```

Change this ID to the ID for any Sony device that the controlling machine knows. All the Sony devices listed in this file have their corresponding ID at the beginning of the line, which can be copied over the Satellite ID. This will not affect the ability of another system to recognise it.

THE SYSTEM PAGE

This page is used for setting some system parameters. To reach it press **BLUE S**. Your mouse is used to make changes on this page, then save them to disk if necessary. Whenever you wish to save the current configuration, click on the **SAVE** icon. To return to the track display type **BLUE t**.

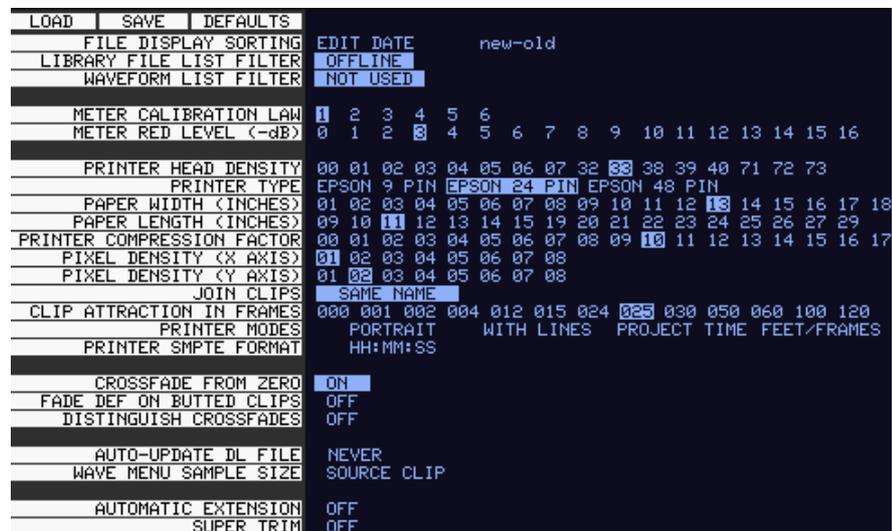


Figure 48: System Page

Print Options

Many of the fields on the S Page concern the operation of the printing software. These are described fully in "Setting Printer Characteristics" on page 25-3.

File Display Sorting

Allows you to choose the order in which files are displayed on the F Page. This may be done by the last Edit Date, the File Creation date, or alphabetically. The right hand field determines the direction of the sort.

Library File List Filter

A list of the current library files i.e. Projects from which the current Project is borrowing clips, can be displayed by typing **BLUE** `l`. The list can be filtered to show only libraries that are offline, which means they cannot be found on the network connected to this machine, and therefore cannot be opened. This filtered list is useful because you can see immediately which files must be restored to the system before the borrowed clips in the Project will play properly.

Waveform List Filter

A list of all Master Recordings (Waveforms) used by the current Project can be displayed by typing **BLUE** `w`. The list can be filtered to show only waveforms which have no clips referencing them (choose NOT USED with the mouse).

Meter Settings

The Meter Calibration Law sets different curves for the channel meters. There are two groups: from 1 to 3 has a lower limit of -54 dB, and from 4 to 6 has a lower limit of -72 dB. Within each group, the lower numbered curves devote more meter length to the higher levels. You can change the meter calibration law at any time the meters are displayed by typing `law number <RETURN>`, where number is the meter calibration law you wish to use.

Meter Red Level allows you to set the level at which the meter elements are coloured red. You can also change this at any time the meters are displayed by typing `red number <RETURN>`, where number is the audio level where the meters are to turn red. You may include the minus sign or not, just as you prefer.

Crossfade from Zero

This is used when you have set a crossfade that is longer than one of the clips in the overlapping region. When ON is chosen, the short clip will fade in such a way that it will reach a level of -∞ at the edge of the clip, even if the crossfade is not at an end. When OFF is chosen the clip will fade in the normal way as dictated by the crossfade parameters, and then it will stop playing at its end, with the level still up.

Fade Def on Butted Clips

This option allows you to decide whether fade defaults are used at butted clips. It is generally a good idea to leave it switched off if the audio is continuous across your edits.

Distinguish Crossfades

If this is set to ON, crossfades are shown on the video screen using black shading.

Auto-Update DL File

Allows you to have Satellite create a Dubber file automatically whenever a Project is closed. Options are NEVER, ASK (you will be prompted each time a Project is closed), or ALWAYS.

Wave Menu Audio Format

Allows you to choose whether Wave Menu operations (Time Stretch etc.) produce new Master Recording in the original format of the clips being processed, or in the current system bit depth.

Automatic Extension

When ON, causes a new file to be created automatically if the 4 Gigabyte maximum file size is reached while recording. This file is an extension of the previously existing file, and all clips, marks and names are carried forward into the new file.

Super Trim

When ON is selected, the user is shown when the full length of a clip when trimming. See the Binnacle Editing Chapter earlier within this manual

OS9 COMMANDS

The Satellite system runs on the high performance, multi-user, multi-tasking, real-time industrial operating system called OS-9. Satellite systems are supplied fully configured. It is not usually necessary to operate the system at operating system level. However, during installation, configuration or upgrade, the advanced user may need to modify the configuration files described above.



CAUTION:

The following OS-9 command details are included to assist the advanced user or systems administrator. Modifying aspects of the operating system setup may cause your system to become unstable or inoperative. If not confident, do not proceed. Call your Fairlight distributor for assistance.

Most commands will provide help on syntax and options by typing the command name followed by the `-?` option.

ATTR

Function: Display or change file attributes

Syntax: `attr [<opts>] {<path> [<opts>] <permissions>`

Attributes: `d s pe pw pr e w r`

- turns attribute on
- n turns attribute off

Options:

- a do not print attributes after changes
- x directory to search is execution directory
- z get list of file names from standard input
- z= <path> get list of file names from <path>

CHD

Function: Change current directory

Syntax: `chd <path>`

COPY

Function: Copy data from one path to another

Syntax: `copy [<opts>] <srcpath> [<dstpath>] [<opts>]`

Options:

- a abort on error
- b= <size> buffer size
- f rewrite destination files with no write permission
- p don't print file names copied (with -w option only)
- r rewrite destination
- v verify integrity of files written
- w= <dir name> wild card copy to <dir name>
- x look in execution directory for source
- z get list of file names from standard input
- z= <path> get list of file names from <path>

DATE

Function: Display system date and time

Syntax: date [<opts>]

Options:

- j print day, seconds past midnight in julian time
- m print hour:minute:sec in military format

Dcheck

Function: Check directory/file integrity

Syntax: dcheck [<opts>] <devnam>

Options:

- d= <num> print path to dir <num> deep
- r rebuild allocation map from file structure
- y answer “y” to all questions in repair mode

DEL

Function: Delete files

Syntax: del [<opts>] {<file> [<opts>]}

Options:

- e erases the disk space that the file occupied
- f delete files with no write permission
- p show file name and ask before deleting
- x delete files from execution directory
- z get list of file names from standard input
- z= <path> get list of file names from <path>

DELDIR

Function: Delete a directory

Syntax: deldir [<opts>] {<dir> [<opts>]}

Options:

- q delete directories without asking questions
- f delete files with no write permission
- z get list of directory names from standard input
- z= <path> get list of directory names from <path>

DF

Function: Print Disks/Tape Drives Found and Mounted on The System

Syntax: df [<opts>]

Options:

- e Debug Listing
- t= <name> Only display info with devices with file manager type <name>
- z Debug Enable

DIR

Function: Display directory contents

Syntax: `dir [<opts>] {<dir names> [<opts>]}`

Options:

- a show all files
- d show directories with a slash
- e extended dir listing
- n treat dirs like files
- r recursive dir listings
- r= <num> recursive dir listing to depth <num>
- s unsorted dir listing
- u unformatted listing
- x directory is execution dir
- z get list of dir names from standard input
- z= <path> get list of dir names from <path>

DISKINIT

Function: Initialise a disk drive

Syntax: `diskinit <device> [<size>]`

<device> = device name

<size> = total sectors (DD.TOT) (dec or \$hex)

Options:

- a= <number of allocated sectors>
- b Search for bad blocks before initialization. That might take few hours on larger disks.
- c= <sectors/cluster> (default = 1)
- d= <min sectors in root dir>
- f initializes partition as FAT32. Only options -c, -b, -e and -n from the above list can be used with -f.
- ff As -f above but format fixed disks as if they were removable media.
- i <device> is image file
- m= <max sectors in bit map>
- n= <volume name> (default = 'Blank')
- p= <partition start sector> (dec or \$hex)
- q quiet - do not prompt user
- r do not read device
- s do not display parameters
- v= <logical block size in bytes>
- x do not use old DD parameters
- z read DD.TOT from [scsi] drive
- w initializes partition as FLFS (>4 Gb). Only options -n, -q, -s from the above list can be used with -w.

ED

Function: Edit a file

Usage: `ED [<opts>] <filename>`

options:

- t disable TABS
- h enable hex math
- d enable tvf debug output

ERRMSG

Function: Translate error message

usage: `errmsg <options> errorcode[:errorcode] <options>`

`errmsg num:num` where `num:num` is two decimal numbers

`errmsg num` where `num` is a single decimal number

If a single number is prefixed by 0x then that number is used as a full 16 bit HEX error code. The program can be made to exit with the supplied error code with `-x`.

ESPFIND

Function: Searches directory structure starting at `start_root` for file names that match `match_string`.

usage: `/dd/USR/CMDS/espfind <opts> start_root match_string`

Options:

- d=N don't descend beyond the Nth directory level
(default = 0, no limit)

FIND

Function: Find a file

Syntax: `find [<opts>] [<root directory>] <file>`

Options:

- d show directories searched
- a find all occurrences

FREE

Function: Report free space on disk

Syntax: `free [<opts>] {<device> [<opts>]}`

Options:

- b= <size> buffer size

FTP

Function: Connect to a remote internet site and transfer files

Syntax: `ftp [<opts>] [<host>] [<opts>]`

Options:

- d Turn on debug mode.
- g Turn off wildcard expansions (name globbing).
- n Disable Auto-login to host.
- r Overwrite the existing file on get command.
- s Do not pre-extend file on received data.
- v Verify verbose mode is enabled.

LIST

Function: List a file

Syntax: `list [<opts>] {<path> [<opts>]}`

Options:

- z get list of file names from standard input
- z= <path> get list of file names from <path>

LOGIN

Function: Provides system login security

Syntax: `login [<opts>] <name> [,] <password>`

Options:

- n operate in non-interactive mode (super user only)

MAKDIR

Function: Create a directory

Syntax: `mkdir [<opts>] {<dir name> [<opts>]}`

Options:

- x create directory in execution directory
- z get list of dir names from standard input
- z= <file> get list of dir names from <file>

MOVE :

Function: Move Data from one Folder to another

Syntax: `MOVE <pathlist source> <pathlist destination>`

PD

Function: Display current directory

Syntax: `pd`

RENAME

Function: Rename a file or directory

Syntax: `rename [<opts>] <path> <name> [<opts>]`

Options:

- x path starts from execution dir

SCSIDM

Function: Test Sectors on a disk

Syntax : `SCSIDM /SCX0`

This test can take up to 45 minutes depending on the size and content of the drive.

The time “resting” and percentage are displayed once the command is executed.

SETIME

Function: Set system date and time

Syntax: `setime [<opt>] [yy mm dd hh mm ss] [am/pm]`

Options:

- d don't display time
- s setime for battery backed-up clocks

TCOPY :

Function : Copy an entire folder

Syntax: `TCOPY <Name of the Source folder > <Name of the destination folder >`

UPGRADE

Function: Utility to Install an MFX release from File or Tape - Version 1.15

Syntax: `upgrade -<options>`

Options:

- f= <file> Absolute Pathlist to MFX3 Software Image
- d= <device> Search Root of <device> for release files
- n= <name> Name to Give new disk if and when it is formatted (default:MFX3)
- t Use tape device (default:/mt0)
- s Don't sort release files when browsing
- g Don't OS9GEN (don't make disk bootable) disk

UPGRADING SYSTEM SOFTWARE



CAUTION:

System upgrades are normally performed by your Fairlight distributor. This information is provided for system administrators and advanced users only. Please refer all queries to your Fairlight distributor.

Software upgrades are made available on the internet from the Fairlight web site (www.fairlightsp.com.au). Follow the links on the support pages to locate the latest release. The software release is distributed as *.gz* archive file (e.g. *16.5.21a.gz*). Each release is accompanied by detailed release notes in PDF format.

Carefully read the release notes for any release specific or upgrade issues, prior to starting the upgrade.

The release file may be transferred to the */dd/RELEASE* directory on the QDC engine by making an FTP connection to the QDC engine from a locally TCP/IP networked computer. When making an FTP connection to the QDC engine, login as *mfx*. No password is required (some FTP applications may make it necessary to enter a single space as a password). The QDC engine's IP address is specified in the setup file, see "Network Setup File" on page 26-2.

Type `upgrade` at the hash prompt and follow the onscreen instructions to select the release file and target device. Proceed by following the on-screen instructions and restarting the system as required.

BLUE KEY FUNCTIONS

To move between the various video display windows press the **BLUE** key or **ESC** key and any of the following keys:

- AArm - display input/track meters.
- DDrives - display device list.
- EEQ - display EQ window.
- FFolders - display path.
- KClip layers - display clip layers.
- LLibrary status - display library info.
- MMarks - display marks.
- PPatch - display input patch.
- SSystem - display system screen.
- TTrack - display normal track display.
- WUnreferenced waveforms.
- XCrossfades - display crossfades.

NOTES:

Chapter 27 - Installation

INTRODUCTION

The Satellite is part of a new family of products from Fairlight which marries together QDC processing with an ergonomic physical control surface in a combination that has a significant impact on productivity and efficiency.

The Satellite interface incorporates a dedicated editing console, a unique graphical user interface and powerful database capabilities. These tools allow the operator to work quickly and efficiently without impeding the creativity of the recording and editing process, and can now be fully utilized in the professional audio suite. The Satellite offers a number of unique benefits through its adaptation of DSP and proprietary technology to the audio environment.

SECTION SUMMARY

The purpose of this section of the manual is to provide all the technical information required to design a suitable installation for the Satellite console and engine and to fit and connect the units. It is assumed that the installer is familiar with both analog and digital audio signals. For full operational instructions please refer to chapters 2 - 27 of this manual.

SYSTEM OVERVIEW

The Satellite is made up of four interconnecting components:

- Satellite Console
- QDC Engine
- Video Monitor
- Keyboard

UNPACKING

It is advisable that before any installation work is attempted that the system be unpacked and the contents verified. A sizeable area approximately three meters square should be suitable.

Using the basic packing list attached, record the items you have received; having the relevant details logged in your Installation Manual will help you if you have to make an enquiry in the event of a packing omission. At this stage do not power up the system, nor remove electronic modules from the system, as damage may occur if not handled correctly.

EQUIPMENT SUPPLIED

EQUIPMENT SUPPLIED	QUANTITY	CHECK LIST
Engine	1	
Console	1	
Mouse	1	
Keyboard	1	
Installation and User Manual	1	

STATIC PRECAUTIONS

Please take note that all Fairlight manufactured electronic modules are static sensitive and should be handled under anti-static conditions. When working on a system always ensure that you have an anti-static lead connected and that the system is connected to ground through an earth lead.

Never work on the system while powered up unless you are authorized by Fairlight to do so. As a matter of practice always touch the external chassis of the system before opening the front panel. If cards are not handled under anti-static procedures your machine may sustain damage which could either cause a complete failure or may cause intermittent crashes and subsequent system failure.

When handling cards please ensure that they are placed in anti-static bags when not in the system. For shipment purposes electronic modules should be placed in an anti-static bag and then suitably surrounded with loose packaging materials in a solid card board box. Cards shipped to Fairlight without the correct anti-static packaging will have their warranty voided. If you have any enquiries on this matter please feel free to contact your local Fairlight office or distributor.

ENVIRONMENT

The system is designed to be operated in a clean air-conditioned environment. Generally, an area comfortable for people (20°C - 21°C) should be suitable. The rack mounted unit uses fans for ventilation. Users may find it desirable to install these units away from the operator/console location.

Make sure that the rack unit has access for cool air to flow through the opening on the front of the QDC Engine and expel warm air from the back.

As with all computer systems, the DREAM Satellite will operate more reliably if static generating floor coverings are avoided.

Do not fit the QDC Engine into a closed environment except where ducted cool air is forced through the Unit. Do not run the unit whilst it is on or near the ground as it will accumulate dust, which may eventually cause a failure.

Please Avoid:

- Fitting the QDC Engine or console where air circulation will be restricted

- Installing QDC Engine or console close to heat source
- Installing in dusty or damp area
- Installing in area subject to vibration
- Installing in area with strong magnetic or electric fields

NOTES:

Chapter 28 -Engine Installation

MECHANICAL INSTALLATION

The QDC Engine unit takes up 8 RU, when fitted into a 19" rack. It operates from either 100-120v or 200-250v, 50-60Hz with the mains inputs being auto-switching, as such there are no switches to be set.

At least two people are required to fit the Engine into a 19" rack as the unit weighs approximately 31kg. If available, it is suggested that a third person guide the Engine into the rack from the rear.

The Engine should be fitted so that there are no restrictions to the ventilation at the rear of the unit. If external SCSI devices are to be connected, it is recommended that these be placed on a rack tray above or below the Engine.

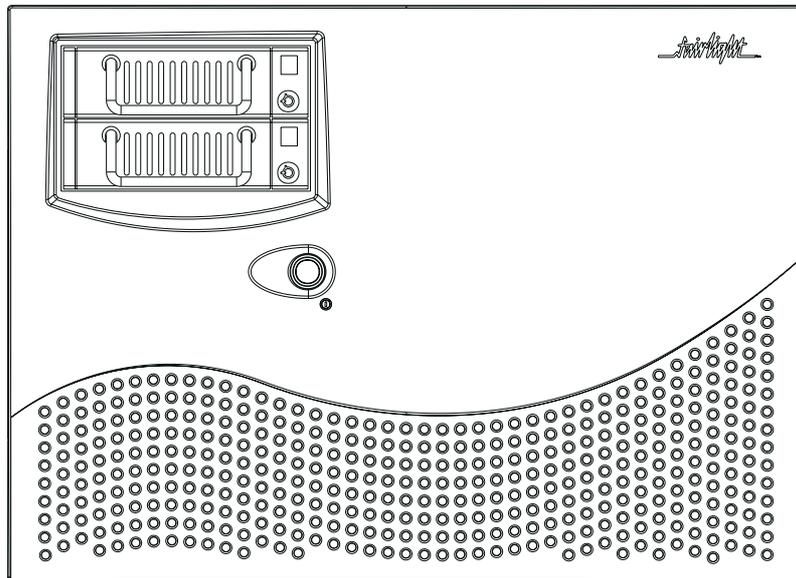


Figure 49: QDC Engine - front view

- Step 1 Remove the front fascia, which is fixed with five pop-out retaining studs, by gripping the edges and pulling firmly.
- Step 2 To mount the Engine into the rack, insert four rack screws on to both the left and right rack mounts. Once this is done, re-attach the front fascia.

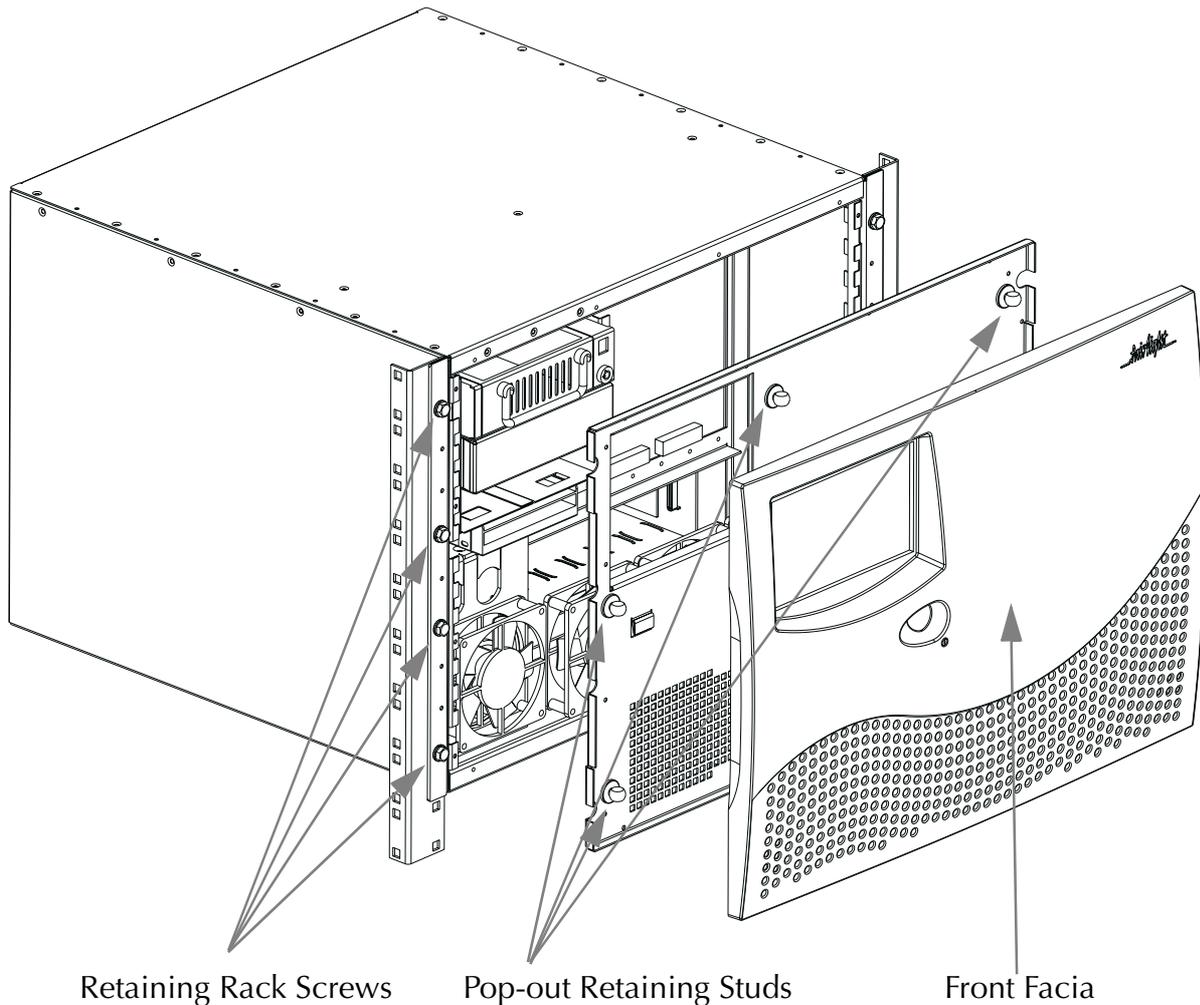


Figure 50: QDC Engine and Rack Mounting Details

ELECTRICAL INSTALLATION

The Engine is designed to run from a single phase power source with one of its current carrying conductors at or near ground earth ground potential (the neutral conductor). Only the line (live) conductor is fused for over-current protection. Systems that have both current carrying conductors live with respect to ground, such as phase-to-phase in multi-phase systems, are not recommended as power sources.

It is recommended that both the Engine and Console are connected to the same electrical supply or ring main which ideally should be regulated and smoothed. If the power source is likely to be unexpectedly cut, then both the units should be fed from a backed up power source such as a UPS.

Refer to “ENGINE Power Requirements” on page 30-32 for more details on power requirements.

ENGINE REAR PANEL CONNECTIONS

The Engine rear is split into two distinct sections; the System I/O Panel, located to the right and the QDC Card Audio I/O section, located to the left.

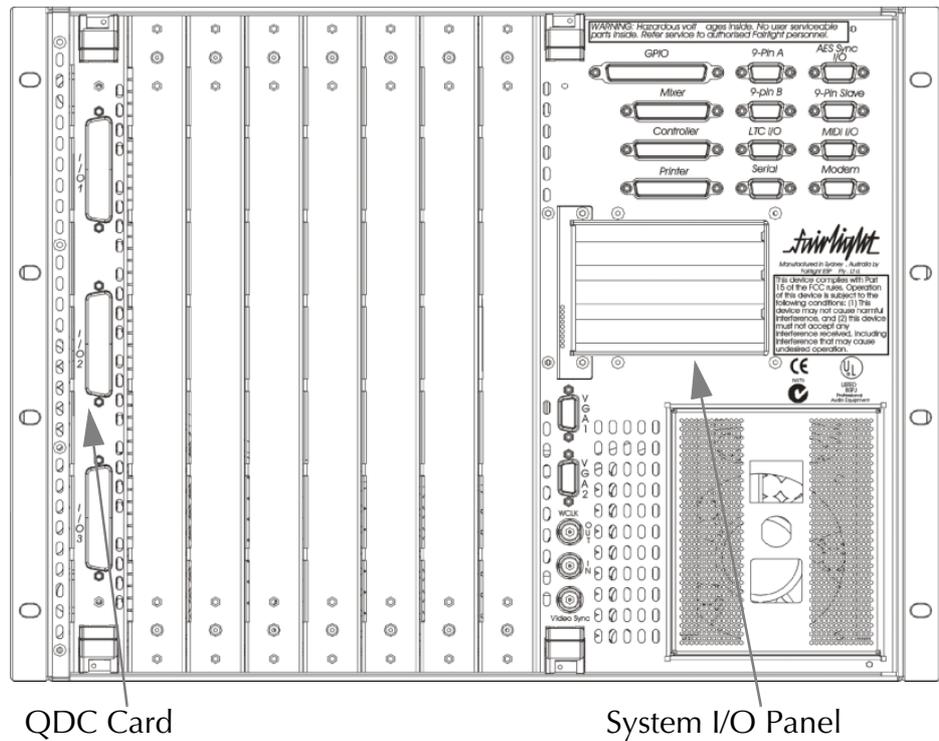


Figure 51: QDC Engine Rear View

The System I/O Panel contains all the synchronization needed to allow communication with external devices including:

- 9-Pin RS-422 Machine Control for external VTRs etc.
- Word Clock I/O for synchronisation.
- Video Sync In for synchronisation.
- Longitudinal Time Code I/O for synchronisation.
- AES Sync I/O for synchronisation.

The System I/O Panel also contains:

- Controller for connection to the Satellite console.
- 100BaseT Ethernet for connection to the Satellite console.
- General Purpose I/O for connection to tally lights and ADR systems.
- Serial port for connection to serial printers and other serial devices.
- SVGA Output for connection to a video display unit.

The Audio I/O Section can contain up to a maximum of four QDC cards, which perform all analog and digital I/O connections and processing. The QDC cards can be configured with a variety of analogue and digital I/O options.

Each QDC card can contain a maximum of -

- 16 analog inputs and outputs, and 16 digital inputs and outputs.
- 32 analog outputs, and 16 digital inputs and outputs.
- 8 analog inputs and outputs, and 32 digital inputs and outputs.
- 16 analog inputs, and 32 digital inputs and outputs.
- 16 analog outputs, and 32 digital inputs and outputs.

Depending on what configuration is ordered, the system can allow for more QDC cards to be configured. Please contact your local Fairlight office or distributor for further information regarding the maximum inputs and outputs which can be configured within the system.

Please refer to the “Audio I/O Configuration” on page 30-2 for further details on the Audio I/O and System I/O Panels.

CABLING

Once the mechanical installation of the Engine is complete, a number of cables must be connected. Some of these connect various components together and may have been supplied with the system, others provide connection to external studio devices.

The interconnecting cables supplied as standard may not be long enough for your installation, in which case you must provide longer cables. The following information gives specific wiring details and highlights any special requirements, however as with all equipment not supplied with the system, it is the installer’s responsibility to ensure that these cables comply fully with the applicable safety and EMC regulations.

EXTERNAL CABLE LENGTH CONSIDERATIONS

Poor cabling can be the bane of a good system. Earth loops, floating inputs and outputs and extended runs are just some of the issues to be addressed when planning an installation.

Control Cable

The Satellite Control Cable connects the Console to the Engine. The cable carries RS232 and RS422 signals and is limited to a maximum length of 30 meters, providing correct attention is paid to signal pairing using twisted pair cable. Ensure sufficient slack is left at the Console end to ensure movement of the Console does not cause undue stress on the connector, or cause the connector to partially disconnect, which can damage the serial drivers. When fitting or reconnecting the cable ensure that power is off at either the Engine or the Console.

Ethernet 100BaseT Cable

The ethernet cable connects the Satellite to the QDC engine. The ethernet connection is required for automatic software configuration of the console. If no network is present the console can be connected to the engine with a cross-over cable. Otherwise the ethernet connection can be made via a hub or other network infrastructure. The maximum length for the ethernet cable is 90 metres.

Sony 9 pin Cable

The 9 pin cable connects the Engine to a Sony 9 pin protocol machine. The recommended maximum length for this cable is 30 meters. The Engine is supplied with a 5 meter cable. Again it is recommended that the power be switched off at one end when connecting to protect the drivers.

VGA Cable

The video cable connects the VGA output from the Engine to the attached Monitor. It is a 15-way shielded RGB and sync 75 Ohm cable with high density D-type connectors at each end. A maximum length of 20 meters is typical. The Fairlight Engine is supplied with a 10 meter cable which has been found to be suitable for the majority of monitors.

Analogue Audio Cable

Standard shielded pair audio cable is suitable.

Digital Audio Cables

Digital audio cables connected to the Engine system must be 110 Ohm shielded pair digital audio cable.

CONNECTING THE VARIOUS SYSTEM COMPONENTS

Once cabling issues have been dealt with, the various system connections need to be made:

1. Connect an IEC power lead to the back of the Engine.
2. Connect the 15 way D connector of the video cable to the VGA 1 connector on the system I/O panel on the rear of the Engine.
3. Connect the console controller cable to the connector on the system I/O panel located on the rear of the Engine.
4. Connect the ethernet cable to the PCI ethernet card on the system I/O panel.
5. Connect any external SCSI drives to the external SCSI card (if fitted) and ensure that the last device is terminated. Ensure that the SCSI ID's are not in conflict with each other.
6. Connect all synchronization cables such as LTC, Word Clock, Video Sync etc.
7. Connect all audio input and output cables to the QDC cards located on the rear of the Engine.

INTERNAL AND EXTERNAL SCSI DEVICES

The Engine unit has been designed to accept two 3.5" drives and two 5.5" drive bays internally which can take either Kingston Technology removable drive enclosures or an Exabyte tape drive enclosure.

The system typically comes configured with one system disk which contains the O/S9 Operating System and DREAM software. This allows for two media drives to be fitted internally in the system. With a second SCSI Controller installed within the Engine, an additional seven SCSI devices can be attached externally.

Typically Exabyte tape drives should be set to ID 5 when connected on either SCSI bus.

Optical based devices should be set to ID 3 when connected on either SCSI bus.

It is recommended that a rack tray be fitted either above or below the Engine to hold external SCSI devices. The last device on the chain should be terminated with all other devices being looped through. The cables should be the shortest length possible to avoid SCSI bus corruption.

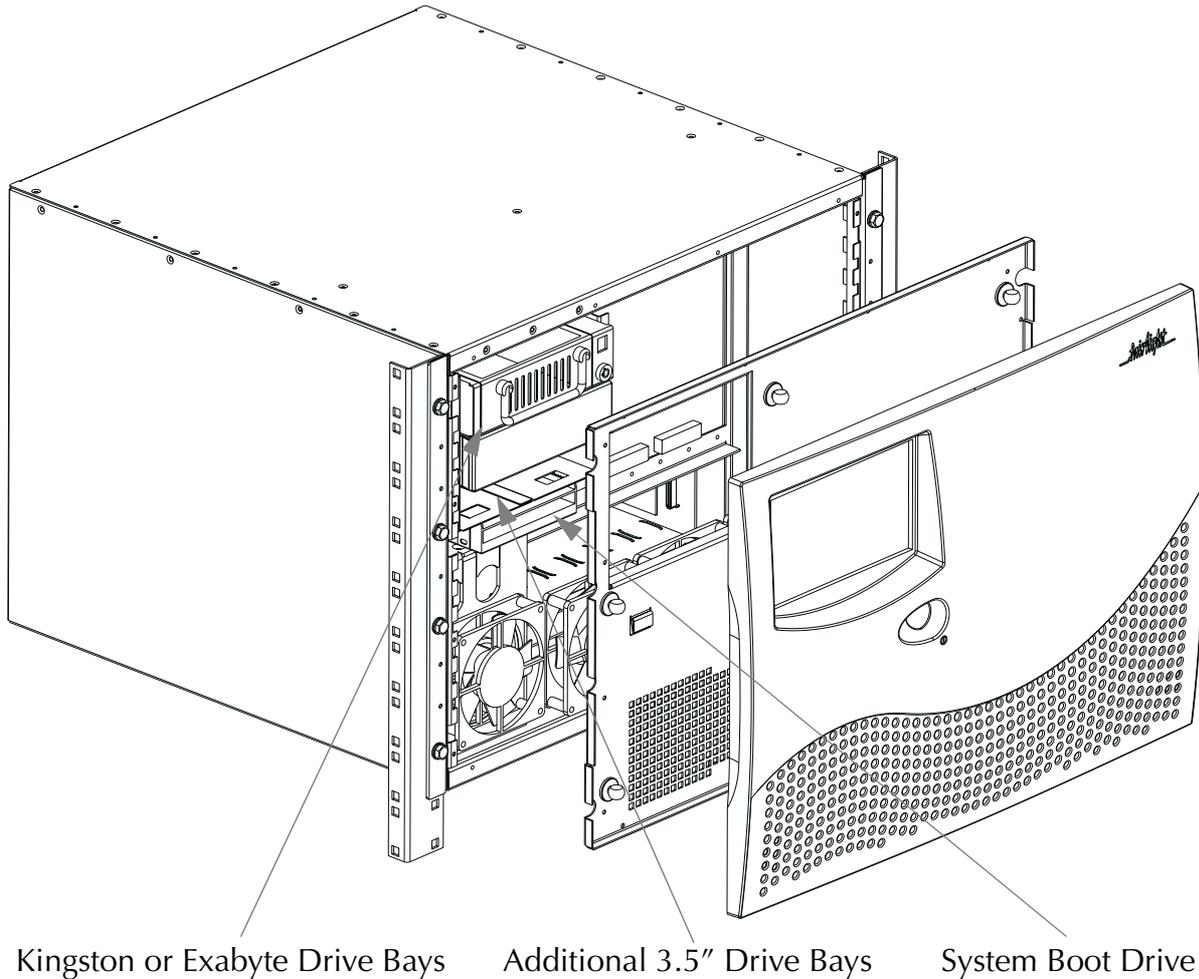


Figure 52: Configuring Disk Drives

CONFIGURING DISK DRIVES

For instructions on formatting storage devices see “Drive Formatting” on page 24-2.

External Hard Disk Drives

An additional SCSI controller can be added to the system and fitted in one of three PCI slots on the PXY main processor board. With the controller physically installed an additional seven SCSI devices can be connected to the system.

Wide Based Disk Drives

The ultra wide single ended SCSI specification is used within the internal and external SCSI busses. This allows for ultra fast transfers speeds from a disk drive up to 40 megabytes a second.

The SCSI controller comes configured with a single ended 68 pin configuration connector. Only a Fairlight supplied SCSI controller can be installed and configured with the Engine.

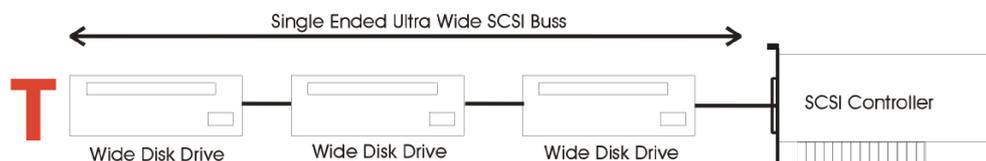


Figure 53: Wide SCSI Device Connection

All cabling to SCSI devices must be kept as short as possible. The maximum length for the entire bus must not exceed more than 1.5 meters. It is highly recommended that drive enclosures with an active backplane be used to reduce cable lengths.

Some disks have SCSI terminating resistors in place and these should be checked and resistors removed when extra disks are being added to the system.

The last disk drive at the end of the chain must be terminated using an active terminator. Lower transfer rates and SCSI errors will result if the bus is not correctly terminated.

SCSI ID's can be 0 through to 6. SCSI ID 7 is reserved for the SCSI controller.

Narrow Based Disk Drives

Narrow based SCSI disk drives may be attached to the bus but must always be the last in the chain after any wide disks are connected.

A quality 68 pin to 50 pin adaptor must be used when connecting from the SCSI bus to a narrow disk drive.

The end of the bus must be terminated using an active SCSI terminator plugged into the last drive in the chain.

When using narrow based disk drives along the SCSI bus the Engine must be configured for narrow use only.

Configuring The Engine For Narrow Use

- | | |
|--------|---|
| Step 1 | Connect disk drives to external SCSI bus port. |
| Step 2 | Power on the disk drives and Engine |
| Step 3 | When the BIOS screen appears, press the Space Bar before the <code>Press Key To Display Boot Menu</code> countdown ends. |
| Step 4 | Under Booting Procedure press RC and press Enter |
| Step 5 | A message should appear next on screen asking

<code>Do you want to use the recommended NVRAM Configuration?</code>

Press N |
| Step 6 | Press C then Enter to Reconfigure The System Setup |

- Step 7 Press **Enter** until the cursor has moved down to the 11th line -
- ```
Slot 1 SCSI Wide.....
```
- At this point you will need to know which PCI slot the SCSI controller card has been fitted in. Looking at the Engine from the rear will show which slot the card is in -
- Slot 1 is the top most slot
  - Slot 2 is the middle slot
  - Slot 3 is the bottom slot
- Step 8 Use the **Enter** key on the console keyboard to move down the list to the correct slot.
- Step 9 Next press **0** on the console keyboard to change from Wide to Narrow use.
- Step 10 Then press **Enter** until the following message appears on screen:
- ```
NVRAM Configuration is complete ....System
will now restart
```
- Press **Enter** on the console keyboard.
- The configuration is now complete.

Mixing Wide And Narrow Disk Drives

It is not recommended to mix wide and narrow based disk drives on the same SCSI bus at the same time - use two separate SCSI busses instead.

Checking for Newly Installed SCSI Devices

Once you have mounted all external and internal SCSI devices, the following procedure will aid you in determining if they are all detected:

- Step 1 Ensure that the Engine is completely reassembled and that there are no loose cables.
- Step 2 Power up the Engine and Console.
- Step 3 Press the **Space Bar** once a gray display is seen. If you miss the time window during which the **Space Bar** must be pressed, simply reboot and try again.
- Step 4 At the displayed prompt, select a boot method from the Menu.
- Step 5 From the prompt type `SCAN` **Enter**.
- Step 6 Observe that all SCSI devices are detected. You may need to run this command a couple of times as some drives are much slower to boot than the Engine.

- Step 7 If a SCSI device is not seen, power down the system and check all SCSI ID's and that the SCSI and power cables are connected.

SETTING UP REMOVABLE MEDIA DEVICES

To set up optical drives for use on the system, it is not necessary to format the media. All that is required is that the following command be run on the media:

```
DISKINIT /tdwx -w -n=name
```

(w is the PCI #, x is the SCSI ID)

This command must be run from the shell, so you will need to quit from the main application to the shell.

See "Drive Formatting" on page 24-2 for more details on formatting storage devices.

When media is not in use, it is strongly recommended that the media is ejected from the drive to ensure that the media has not deteriorated due to the level of heat in the drive itself.



CAUTION - KEEP MEDIA AWAY FROM STRONG MAGNETIC FIELDS AND DIRECT SUNLIGHT AS THIS CAN DAMAGE THE DISK.

The system automatically detects new SCSI devices. For example, if an optical drive is connected at boot up and the media is not present the device will be seen on the Project page, however it will indicate no media. On placing a suitable formatted media in the drive, the device will become available for use.

Hard drives will also be automatically detected if they are installed correctly.

Please avoid connecting external devices by breaking the SCSI chain while the system is running as it can either crash the system or, if a Project is open, lead to Project corruption.

ROUTINE MAINTENANCE

You should clean the units often enough to prevent dust or dirt from accumulating. Dirt acts as a thermal insulating blanket that prevents effective heat dissipation and may provide high-resistance electrical leakage paths between conductors or components in a humid environment.

Clean the dust from the outside by wiping with a soft cloth or small brush. A brush is especially useful for removing dust from around connectors and cooling grilles. Use a cloth dampened in water that contains 50% isopropyl alcohol to remove hardened dirt. You should not use abrasive cleaners.

Cleaning The Monitor Screens

The Graphics Monitor has a special coating on the screen which prevents glare. A cleaning cloth should be supplied with the Graphics Monitor and the instructions given in the monitor manual should be followed.

Cleaning The Engine Air Filter

To ensure good airflow through the Engine, the air filter in the front panel must be periodically cleaned. It is usually sufficient to simply remove accumulated dust using a vacuum cleaner to suck it out of the front panel grille. From time to time, however, the front panel will have to be removed to give the filter a thorough clean or even replace it altogether. The front dress panel should be removed to allow access to the air filter.

1. Gently lift the dress panel away from the Engine.
2. Unclip the air filter and remove it from the front fascia of the second panel.
3. Once the air filter has been removed, clean it thoroughly by washing it in warm water with mild detergent. Make sure it is completely dry before reinstalling it.
4. Reverse the above steps to attach the front dress panel back into place.



CAUTION:

DO NOT ALLOW WATER TO GET INSIDE ANY ENCLOSED ASSEMBLY OR COMPONENT. DO NOT CLEAN ANY PLASTIC MATERIALS WITH ORGANIC CLEANING SOLVENTS, SUCH AS BENZENE, TOLUENE, XYLENE, ACETONE, OR SIMILAR COMPOUNDS, BECAUSE THEY MAY DAMAGE THE PLASTIC.



CAUTION:

DO NOT USE CLEANING FLUIDS, OTHER THAN THOSE MENTIONED IN THE GRAPHICS MONITOR MANUAL, TO CLEAN THE SCREEN - THE SPECIAL COATING COULD BE DAMAGED.

New Air Filters

If the filter cannot be cleaned properly or is worn out, a new one should be ordered. Please contact your local Fairlight office or Distributor.

NOTES:

Chapter 29 - Console Installation

MECHANICAL INSTALLATION

The Satellite console provides a control surface to allow an engineer to work quickly and efficiently.

The console should be placed on a level horizontal surface, along with the mouse and keyboard. Place the Console at a suitable location close to the mixing desk.

NOTE:



Care should be taken to provide the operator with a comfortable seating position. This will reduce fatigue, improve efficiency and minimize the possibility of strain injury.



Figure 54: Satellite Console

INTERCONNECTING THE CONSOLE AND ENGINE



Figure 55: Satellite Console Rear Panel Connections

On the rear of the console connect:

1. The Controller cable to the RS232 and RS422 ports.
2. The ethernet cable to ethernet port.
3. The mouse to the mouse PS/2 port.
4. The keyboard to the keyboard PS/2 port.
5. An IEC mains power supply cable to the power supply inlet port.

Once all connections have been made to the Console, it can be powered up safely, by pressing the switch located on the back panel.

The Control Cable

The control cable connects the console to the Engine unit. The cable carries RS232 and RS422 signals and is limited to a maximum length of 30 meters, providing correct attention is paid to signal pairing using twisted pair cable.

Ensure sufficient slack is left at the console end to ensure movement of the console does not cause undue stress on the connector, or cause the connector to partially disconnect, which can damage the serial drivers. When fitting or reconnecting the cable ensure that power is off at either the Engine or the console.

The Ethernet Cable

The 100BaseT ethernet connection is required for automatic update of console software during boot-up. If no network is present, the console can be connected to the QDC engine with a cross-over wired ethernet cable. If a network is present the ethernet cable can be connected via a 100BaseT hub or other network infrastructure. See “Ethernet” on page 30-25 for wiring details.

CONSOLE CONFIGURATION

On startup, the Console LCD display provides the following soft key options:

LCD Contrast	Press the <code>Contrast</code> soft key and turn the jog wheel to adjust the LCD contrast.
Console Communications	Press the soft key to toggle between <code>Serial</code> and <code>TCP/IP</code> . Select <code>Serial</code> .
Network Config	Press the <code>Config</code> key to enter the Network setup menu.

Network Configuration

If the network configuration has changed, the console and engine TCP/IP addresses must be setup. When the console boots up press the `Config` soft key. Select the IP address for the console and QDC engine.

Press the `Up` and `Down` soft keys to move between addresses. Press the 1 to 4 softkeys to move between IP subnet fields. Use the jog wheel or numeric keys to enter the addresses.

```
Default QDC IP_ADDRESS 192.168.0.11
Default QDC NET_MASK 255.255.0.0
```

```
Default Console IP_ADDRESS 192.168.0.21
Default Console NET_MASK 255.255.0.0
```

This menu provides a `Ping QDC` soft key to test communications between the console and the engine. A successful PING will cause the soft key to light green. A failure to communicate will result in a red soft key. If the PING fails, check the cabling and confirm that both devices have the same subnet mask and that the IP addresses fall within the appropriate range.

Refer to “Network Setup File” on page 26-2 for configuring the engine TCP/IP network settings.

NOTES:

Chapter 30 - Specifications

AUDIO I/O CONFIGURATION

The QDC engine can be configured for a range of different I/O options. Each QDC card can be loaded with I/O daughter boards as shown below. There are three different I/O daughter board options: Analog input, Analog Output, and Digital I/O.

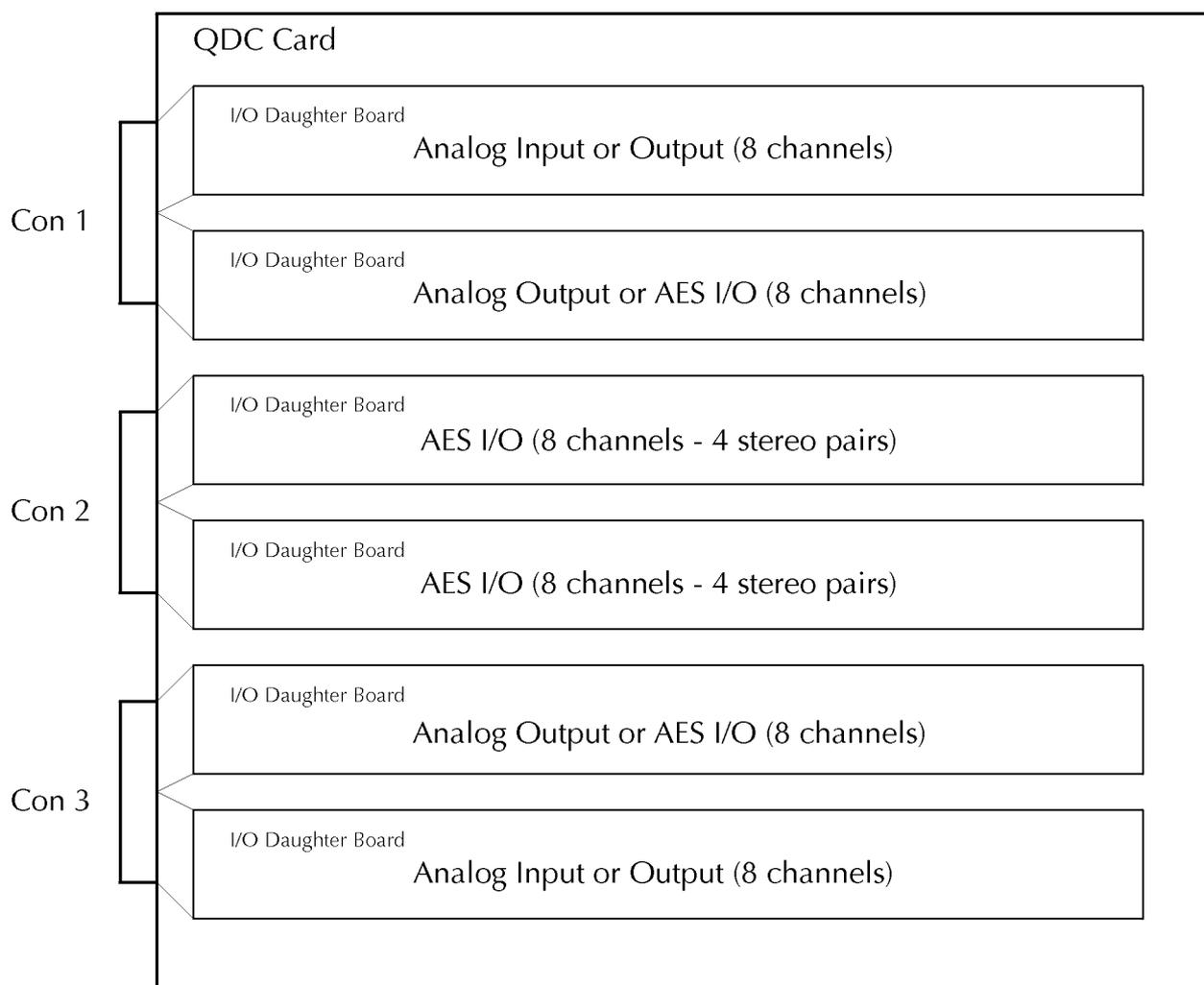


Figure 56: QDC I/O options

This allows the following I/O pin connections depending on what configuration is fitted. The tables below detail QDC cards numbered from left to right viewed from the rear, connectors numbered 1 to 3 from top to bottom, and pin numbers 1 to 50 on each 50 pin D-type.

16 Digital I/Os - 1 QDC Card

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
		+	GND -			+	GND -	D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
								D in 3-4			16 32	D out 3-4			12 28
								D in 5-6			15 31	D out 5-6			11 27
								D in 7-8			14 30	D out 7-8			10 26
								D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
								D in 11-12			8 24	D out 11-12			4 20
								D in 13-14			7 23	D out 13-14			3 19
								D in 15-16			6 22	D out 15-16			2 18
											39				35

8 Analog Inputs - 16 Digital I/Os - 1 QDC Card

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33					D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32					D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31					D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30					D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29					D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28					D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27					D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26					D in 15-16			6 22	D out 15-16			2 18

8 Analog Inputs - 16 Analog Outputs - 8 Digital I/Os 1 QDC Card

Analog Inputs					Analog Outputs					Digital Inputs					Digital Outputs					
Port	QDC	Con	Pins		Port	QDC	Con	Pins		Port	QDC	Con	Pins		Port	QDC	Con	Pins		
A in 1	1	1	17	33	A Out 1	1	1	9	25	D in 1-2	1	2	17	33	D out 1-2	1	2	13	29	46
A in 2			16	32	A Out 2			8	24	D in 3-4			16	32	D out 3-4			12	28	45
A in 3			15	31	A Out 3			7	23	D in 5-6			15	31	D out 5-6			11	27	44
A in 4			14	30	A Out 4			6	22	D in 7-8			14	30	D out 7-8			10	26	43
A in 5			13	29	A Out 5			5	21											
A in 6			12	28	A Out 6			4	20											
A in 7			11	27	A Out 7			3	19											
A in 8			10	26	A Out 8			2	18											
				43	A Out 9	1	3	9	25											
					A Out 10			8	24											
					A Out 11			7	23											
					A Out 12			6	22											
					A Out 13			5	21											
					A Out 14			4	20											
					A Out 15			3	19											
					A Out 16			2	18											

16 Analog Inputs - 16 Analog Outputs - 16 Digital I/Os - 1 QDC Card

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33	A Out 1	1	1	9 25	D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32	A Out 2			8 24	D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31	A Out 3			7 23	D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30	A Out 4			6 22	D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29	A Out 5			5 21	D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28	A Out 6			4 20	D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27	A Out 7			3 19	D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26	A Out 8			2 18	D in 15-16			6 22	D out 15-16			2 18
A in 9	1	3	17 33	A Out 9	1	3	9 25								
A in 10			16 32	A Out 10			8 24								
A in 11			15 31	A Out 11			7 23								
A in 12			14 30	A Out 12			6 22								
A in 13			13 29	A Out 13			5 21								
A in 14			12 28	A Out 14			4 20								
A in 15			11 27	A Out 15			3 19								
A in 16			10 26	A Out 16			2 18								

24 Digital I/Os - 1 QDC Card

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
		+	GND -			+	GND -			+	GND -			+	GND -
				D in 1-2	1	2	17 33	D out 1-2	1	2	13 29				
				D in 3-4			16 32	D out 3-4			12 28				
				D in 5-6			15 31	D out 5-6			11 27				
				D in 7-8			14 30	D out 7-8			10 26				
				D in 9-10	1	2	9 25	D out 9-10	1	2	5 21				
				D in 11-12			8 24	D out 11-12			4 20				
				D in 13-14			7 23	D out 13-14			3 19				
				D in 15-16			6 22	D out 15-16			2 18				
				D in 17-18	1	3	9 25	D out 17-18	1	3	5 21				
				D in 19-20			8 24	D out 19-20			4 20				
				D in 21-22			7 23	D out 21-22			3 19				
				D in 23-24			6 22	D out 23-24			2 18				

8 Analog Inputs - 24 Digital I/Os - 1 QDC Card

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33					D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32					D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31					D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30					D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29					D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28					D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27					D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26					D in 15-16			6 22	D out 15-16			2 18
								D in 17-18	1	3	9 25	D out 17-18	1	3	5 21
								D in 19-20			8 24	D out 19-20			4 20
								D in 21-22			7 23	D out 21-22			3 19
								D in 23-24			6 22	D out 23-24			2 18

24 Analog Inputs - 24 Analog Outputs - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33	A Out 1	1	1	9 25								
A in 2			16 32	A Out 2			8 24								
A in 3			15 31	A Out 3			7 23								
A in 4			14 30	A Out 4			6 22								
A in 5			13 29	A Out 5			5 21								
A in 6			12 28	A Out 6			4 20								
A in 7			11 27	A Out 7			3 19								
A in 8			10 26	A Out 8			2 18								
A in 9	1	3	17 33	A Out 9	1	3	9 25								
A in 10			16 32	A Out 10			8 24								
A in 11			15 31	A Out 11			7 23								
A in 12			14 30	A Out 12			6 22								
A in 13			13 29	A Out 13			5 21								
A in 14			12 28	A Out 14			4 20								
A in 15			11 27	A Out 15			3 19								
A in 16			10 26	A Out 16			2 18								
A in 17	2	1	17 33	A Out 17	1	2	17 33								
A in 18			16 32	A Out 18			16 32								
A in 19			15 31	A Out 19			15 31								
A in 20			14 30	A Out 20			14 30								
A in 21			13 29	A Out 21			13 29								
A in 22			12 28	A Out 22			12 28								
A in 23			11 27	A Out 23			11 27								
A in 24			10 26	A Out 24			10 26								

24 Analog Inputs - 24 Analog Outputs - 24 Digital I/Os - 2 QDC Cards

Analog Inputs					Analog Outputs					Digital Inputs					Digital Outputs									
Port	QDC	Con	Pins		Port	QDC	Con	Pins		Port	QDC	Con	Pins		Port	QDC	Con	Pins						
			+ GND	-				+ GND	-				+ GND	-				+ GND	-					
A in 1	1	1	17	33	50	A Out 1	1	1	9	25	42	D in 1-2	1	2	17	33	50	D out 1-2	1	2	13	29	46	
A in 2			16	32	49	A Out 2			8	24	41	D in 3-4			16	32	49	D out 3-4			12	28	45	
A in 3			15	31	48	A Out 3			7	23	40	D in 5-6			15	31	48	D out 5-6			11	27	44	
A in 4			14	30	47	A Out 4			6	22	39	D in 7-8			14	30	47	D out 7-8			10	26	43	
A in 5			13	29	46	A Out 5			5	21	38	D in 9-10	1	2	9	25	42	D out 9-10	1	2	5	21	38	
A in 6			12	28	45	A Out 6			4	20	37	D in 11-12			8	24	41	D out 11-12			4	20	37	
A in 7			11	27	44	A Out 7			3	19	36	D in 13-14			7	23	40	D out 13-14			3	19	36	
A in 8			10	26	43	A Out 8			2	18	35	D in 15-16			6	22	39	D out 15-16			2	18	35	
A in 9	1	3	17	33	50	A Out 9	1	3	9	25	42	D in 17-18	2	2	17	33	50	D out 17-18	2	2	13	29	46	
A in 10			16	32	49	A Out 10			8	24	41	D in 19-20			16	32	49	D out 19-20			12	28	45	
A in 11			15	31	48	A Out 11			7	23	40	D in 21-22			15	31	48	D out 21-22			11	27	44	
A in 12			14	30	47	A Out 12			6	22	39	D in 23-24			14	30	47	D out 23-24			10	26	43	
A in 13			13	29	46	A Out 13			5	21	38													
A in 14			12	28	45	A Out 14			4	20	37													
A in 15			11	27	44	A Out 15			3	19	36													
A in 16			10	26	43	A Out 16			2	18	35													
A in 17	2	1	17	33	50	A Out 17	2	1	9	25	42													
A in 18			16	32	49	A Out 18			8	24	41													
A in 19			15	31	48	A Out 19			7	23	40													
A in 20			14	30	47	A Out 20			6	22	39													
A in 21			13	29	46	A Out 21			5	21	38													
A in 22			12	28	45	A Out 22			4	20	37													
A in 23			11	27	44	A Out 23			3	19	36													
A in 24			10	26	43	A Out 24			2	18	35													

32 Digital I/Os - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs					
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins		
		+	GND -			+	GND -			+	GND -			+	GND -		
								D in 1-2	1	2	17 33	50	D out 1-2	1	2	13 29	46
								D in 3-4			16 32	49	D out 3-4			12 28	45
								D in 5-6			15 31	48	D out 5-6			11 27	44
								D in 7-8			14 30	47	D out 7-8			10 26	43
								D in 9-10	1	2	9 25	42	D out 9-10	1	2	5 21	38
								D in 11-12			8 24	41	D out 11-12			4 20	37
								D in 13-14			7 23	40	D out 13-14			3 19	36
								D in 15-16			6 22	39	D out 15-16			2 18	35
								D in 17-18	1	3	9 25	42	D out 17-18	1	3	5 21	38
								D in 19-20			8 24	41	D out 19-20			4 20	37
								D in 21-22			7 23	40	D out 21-22			3 19	36
								D in 23-24			6 22	39	D out 23-24			2 18	35
								D in 25-26	2	1	17 33	50	D out 25-26	2	1	13 29	46
								D in 27-28			16 32	49	D out 27-28			12 28	45
								D in 29-30			15 31	48	D out 29-30			11 27	44
								D in 31-32			14 30	47	D out 31-32			10 26	43

16 Analog Inputs - 32 Digital I/Os - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33					D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32					D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31					D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30					D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29					D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28					D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27					D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26					D in 15-16			6 22	D out 15-16			2 18
A in 9	1	3	17 33					D in 17-18	2	2	17 33	D out 17-18	2	2	13 29
A in 10			16 32					D in 19-20			16 32	D out 19-20			12 28
A in 11			15 31					D in 21-22			15 31	D out 21-22			11 27
A in 12			14 30					D in 23-24			14 30	D out 23-24			10 26
A in 13			13 29					D in 25-26	2	2	9 25	D out 25-26	2	2	5 21
A in 14			12 28					D in 27-28			8 24	D out 27-28			4 20
A in 15			11 27					D in 29-30			7 23	D out 29-30			3 19
A in 16			10 26					D in 31-32			6 22	D out 31-32			2 18

32 Analog Inputs - 32 Analog Outputs - 3 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
Ain 1	1	1	17 33	A Out 1	1	1	9 25								
Ain 2			16 32	A Out 2			8 24								
Ain 3			15 31	A Out 3			7 23								
Ain 4			14 30	A Out 4			6 22								
Ain 5			13 29	A Out 5			5 21								
Ain 6			12 28	A Out 6			4 20								
Ain 7			11 27	A Out 7			3 19								
Ain 8			10 26	A Out 8			2 18								
Ain 9	1	3	17 33	A Out 9	1	3	9 25								
Ain 10			16 32	A Out 10			8 24								
Ain 11			15 31	A Out 11			7 23								
Ain 12			14 30	A Out 12			6 22								
Ain 13			13 29	A Out 13			5 21								
Ain 14			12 28	A Out 14			4 20								
Ain 15			11 27	A Out 15			3 19								
Ain 16			10 26	A Out 16			2 18								
Ain 17	2	1	17 33	A Out 17	1	2	9 25								
Ain 18			16 32	A Out 18			8 24								
Ain 19			15 31	A Out 19			7 23								
Ain 20			14 30	A Out 20			6 22								
Ain 21			13 29	A Out 21			5 21								
Ain 22			12 28	A Out 22			4 20								
Ain 23			11 27	A Out 23			3 19								
Ain 24			10 26	A Out 24			2 18								

32 Analog Inputs - 32 Analog Outputs - continued

Analog Inputs				Analog Outputs				Digital Inputs			Digital Outputs				
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 25	2	3	17 33 50	A out 25	1	2	17 33 50								
			+ GND				+ GND								
A in 26			16 32 49	A out 26			16 32 49								
A in 27			15 31 48	A out 27			15 31 48								
A in 28			14 30 47	A out 28			14 30 47								
A in 29			13 29 46	A out 29			13 29 46								
A in 30			12 28 45	A out 30			12 28 45								
A in 31			11 27 44	A out 31			11 27 44								
A in 32			10 26 43	A out 32			10 26 43								

32 Analog Inputs - 32 Analog Outputs - 32 Digital I/Os - 3 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33	A Out 1	1	1	9 25	D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32	A Out 2			8 24	D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31	A Out 3			7 23	D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30	A Out 4			6 22	D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29	A Out 5			5 21	D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28	A Out 6			4 20	D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27	A Out 7			3 19	D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26	A Out 8			2 18	D in 15-16			6 22	D out 15-16			2 18
A in 9	1	3	17 33	A Out 9	1	3	9 25	D in 17-18	2	2	17 33	D out 17-18	2	2	13 29
A in 10			16 32	A Out 10			8 24	D in 19-20			16 32	D out 19-20			12 28
A in 11			15 31	A Out 11			7 23	D in 21-22			15 31	D out 21-22			11 27
A in 12			14 30	A Out 12			6 22	D in 23-24			14 30	D out 23-24			10 26
A in 13			13 29	A Out 13			5 21	D in 25-26	2	2	9 25	D out 25-26	2	2	5 21
A in 14			12 28	A Out 14			4 20	D in 27-28			8 24	D out 27-28			4 20
A in 15			11 27	A Out 15			3 19	D in 29-30			7 23	D out 29-30			3 19
A in 16			10 26	A Out 16			2 18	D in 31-32			6 22	D out 31-32			2 18
A in 17	2	1	17 33	A Out 17	2	1	9 25				39				35
A in 18			16 32	A Out 18			8 24				41				37
A in 19			15 31	A Out 19			7 23				40				36
A in 20			14 30	A Out 20			6 22				39				39
A in 21			13 29	A Out 21			5 21				38				38
A in 22			12 28	A Out 22			4 20				37				37
A in 23			11 27	A Out 23			3 19				36				36
A in 24			10 26	A Out 24			2 18				35				35

32 Analog I/O - 32 Digital I/Os - continued

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	ODC	Con	Plns	Port	ODC	Con	Plns	Port	ODC	Con	Plns	Port	ODC	Con	Plns
A in 25	2	3	17 33	A out 25	2	3	9 25								
			+ GND				+ GND				+ GND				+ GND
			-				-				-				-
A in 26			16 32	A out 26			8 24								
			49				41								
A in 27			15 31	A out 27			7 23								
			48				40								
A in 28			14 30	A out 28			6 22								
			47				39								
A in 29			13 29	A out 29			5 21								
			46				38								
A in 30			12 28	A out 30			4 20								
			45				37								
A in 31			11 27	A out 31			3 19								
			44				36								
A in 32			10 26	A out 32			2 18								
			43				35								

48 Digital I/Os - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
		+	GND			+	GND			+	GND			+	GND
			-				-				-				-
				D in 1-2	1	2	17 33	D out 1-2	1	2	13 29				
				D in 3-4			16 32	D out 3-4			12 28				
				D in 5-6			15 31	D out 5-6			11 27				
				D in 7-8			14 30	D out 7-8			10 26				
				D in 9-10	1	2	9 25	D out 9-10	1	2	5 21				
				D in 11-12			8 24	D out 11-12			4 20				
				D in 13-14			7 23	D out 13-14			3 19				
				D in 15-16			6 22	D out 15-16			2 18				
				D in 17-18	1	3	9 25	D out 17-18	1	3	5 21				
				D in 19-20			8 24	D out 19-20			4 20				
				D in 21-22			7 23	D out 21-22			3 19				
				D in 23-24			6 22	D out 23-24			2 18				
				D in 25-26	1	1	17 33	D out 25-26	1	1	13 29				
				D in 27-28			16 32	D out 27-28			12 28				
				D in 29-30			15 31	D out 29-30			11 27				
				D in 31-32			14 30	D out 31-32			10 26				
				D in 33-34	2	2	17 33	D out 33-34	2	2	13 29				
				D in 35-36			16 32	D out 35-36			12 28				
				D in 37-38			15 31	D out 37-38			11 27				
				D in 39-40			14 30	D out 39-40			10 26				
				D in 41-42	2	2	9 25	D out 41-42	2	2	5 21				
				D in 43-44			8 24	D out 43-44			4 20				
				D in 45-46			7 23	D out 45-46			3 19				
				D in 47-48			6 22	D out 47-48			2 18				

16 Analog Inputs - 48 Digital I/Os - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Plns	Port	QDC	Con	Plns	Port	QDC	Con	Plns	Port	QDC	Con	Plns
A in 1	1	1	17 33					D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32					D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31					D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30					D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29					D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28					D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27					D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26					D in 15-16			6 22	D out 15-16			2 18
A in 9	1	3	17 33					D in 17-18	2	2	17 33	D out 17-18	2	2	13 29
A in 10			16 32					D in 19-20			16 32	D out 19-20			12 28
A in 11			15 31					D in 21-22			15 31	D out 21-22			11 27
A in 12			14 30					D in 23-24			14 30	D out 23-24			10 26
A in 13			13 29					D in 25-26	2	2	9 25	D out 25-26	2	2	5 21
A in 14			12 28					D in 27-28			8 24	D out 27-28			4 20
A in 15			11 27					D in 29-30			7 23	D out 29-30			3 19
A in 16			10 26					D in 31-32			6 22	D out 31-32			2 18
								D in 33-34	2	3	9 25	D out 33-34	2	3	5 21
								D in 35-36			8 24	D out 35-36			4 20
								D in 37-38			7 23	D out 37-38			3 27
								D in 39-40			6 22	D out 39-40			2 26
								D in 41-42	2	1	9 25	D out 41-42	2	1	5 21
								D in 43-44			8 24	D out 43-44			4 20
								D in 45-46			7 23	D out 45-46			3 19
								D in 47-48			6 22	D out 47-48			2 18

32 Analog Inputs - 48 Analog Outputs - 2 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33	A Out 1	1	1	9 25								
A in 2			16 32	A Out 2			8 24								
A in 3			15 31	A Out 3			7 23								
A in 4			14 30	A Out 4			6 22								
A in 5			13 29	A Out 5			5 21								
A in 6			12 28	A Out 6			4 20								
A in 7			11 27	A Out 7			3 19								
A in 8			10 26	A Out 8			2 18								
A in 9	1	3	17 33	A Out 9	1	3	9 25								
A in 10			16 32	A Out 10			8 24								
A in 11			15 31	A Out 11			7 23								
A in 12			14 30	A Out 12			6 22								
A in 13			13 29	A Out 13			5 21								
A in 14			12 28	A Out 14			4 20								
A in 15			11 27	A Out 15			3 19								
A in 16			10 26	A Out 16			2 18								
A in 17	2	1	17 33	A Out 17	1	2	17 33								
A in 18			16 32	A Out 18			16 32								
A in 19			15 31	A Out 19			15 31								
A in 20			14 30	A Out 20			14 30								
A in 21			13 29	A Out 21			13 29								
A in 22			12 28	A Out 22			12 28								
A in 23			11 27	A Out 23			11 27								
A in 24			10 26	A out 24			10 26								

32 Analog Inputs - 48 Analog Outputs - continued

Analog Inputs					Analog Outputs					Digital Inputs			Digital Outputs						
Port	ODC	Con	Plns		Port	ODC	Con	Plns		Port	ODC	Con	Plns		Port	ODC	Con	Plns	
			+	GND				+	GND				+	GND				+	GND
A in 25	2	3	17	33	50	A out 25	1	2	9	25	42								
A in 26			16	32	49	A out 26			8	24	41								
A in 27			15	31	48	A out 27			7	23	40								
A in 28			14	30	47	A out 28			6	22	39								
A in 29			13	29	46	A out 29			5	21	38								
A in 30			12	28	45	A out 30			4	20	37								
A in 31			11	27	44	A out 31			3	19	36								
A in 32			10	26	43	A out 32			2	18	35								
						A out 33	2	1	9	25	42								
						A out 34			8	24	41								
						A out 35			7	23	40								
						A out 36			6	22	39								
						A out 37			5	21	38								
						A out 38			4	20	37								
						A out 39			3	19	36								
						A out 40			2	18	35								
						A out 41	2	3	9	25	42								
						A out 42			8	24	41								
						A out 43			7	23	40								
						A out 44			6	22	39								
						A out 45			5	21	38								
						A out 46			4	20	37								
						A out 47			3	19	36								
						A out 48			2	18	35								

48 Analog Inputs - 48 Analog Outputs - 48 Digital I/Os - 3 QDC Cards

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 1	1	1	17 33	A Out 1	1	1	9 25	D in 1-2	1	2	17 33	D out 1-2	1	2	13 29
A in 2			16 32	A Out 2			8 24	D in 3-4			16 32	D out 3-4			12 28
A in 3			15 31	A Out 3			7 23	D in 5-6			15 31	D out 5-6			11 27
A in 4			14 30	A Out 4			6 22	D in 7-8			14 30	D out 7-8			10 26
A in 5			13 29	A Out 5			5 21	D in 9-10	1	2	9 25	D out 9-10	1	2	5 21
A in 6			12 28	A Out 6			4 20	D in 11-12			8 24	D out 11-12			4 20
A in 7			11 27	A Out 7			3 19	D in 13-14			7 23	D out 13-14			3 19
A in 8			10 26	A Out 8			2 18	D in 15-16			6 22	D out 15-16			2 18
A in 9	1	3	17 33	A Out 9	1	3	9 25	D in 17-18	2	2	17 33	D out 17-18	2	2	13 29
A in 10			16 32	A Out 10			8 24	D in 19-20			16 32	D out 19-20			12 28
A in 11			15 31	A Out 11			7 23	D in 21-22			15 31	D out 21-22			11 27
A in 12			14 30	A Out 12			6 22	D in 23-24			14 30	D out 23-24			10 26
A in 13			13 29	A Out 13			5 21	D in 25-26	2	2	9 25	D out 25-26	2	2	5 21
A in 14			12 28	A Out 14			4 20	D in 27-28			8 24	D out 27-28			4 20
A in 15			11 27	A Out 15			3 19	D in 29-30			7 23	D out 29-30			3 19
A in 16			10 26	A Out 16			2 18	D in 31-32			6 22	D out 31-32			2 18
A in 17	2	1	17 33	A Out 17	2	1	9 25	D in 33-34	3	2	17 33	D out 33-34	3	2	13 29
A in 18			16 32	A Out 18			8 24	D in 35-36			16 32	D out 35-36			12 28
A in 19			15 31	A Out 19			7 23	D in 37-38			15 31	D out 37-38			11 27
A in 20			14 30	A Out 20			6 22	D in 39-40			14 30	D out 39-40			10 26
A in 21			13 29	A Out 21			5 21	D in 41-42	3	2	9 25	D out 41-42	3	2	5 21
A in 22			12 28	A Out 22			4 20	D in 43-44			8 24	D out 43-44			4 20
A in 23			11 27	A Out 23			3 19	D in 45-46			7 23	D out 45-46			3 19
A in 24			10 26	A Out 24			2 18	D in 47-48			6 22	D out 47-48			2 18

48 Analog I/O - 48 Digital I/O - continued

Analog Inputs				Analog Outputs				Digital Inputs				Digital Outputs			
Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins	Port	QDC	Con	Pins
A in 25	2	3	17 33 50	A out 25	2	3	9 25 42								
A in 26			16 32 49	A out 26			8 24 41								
A in 27			15 31 48	A out 27			7 23 40								
A in 28			14 30 47	A out 28			6 22 39								
A in 29			13 29 46	A out 29			5 21 38								
A in 30			12 28 45	A out 30			4 20 37								
A in 31			11 27 44	A out 31			3 19 36								
A in 32			10 26 43	A out 32			2 18 35								
A in 33	3	1	17 33 50	A out 33	3	1	9 25 42								
A in 34			16 32 49	A out 34			8 24 41								
A in 35			15 31 48	A out 35			7 23 40								
A in 36			14 30 47	A out 36			6 22 39								
A in 37			13 29 46	A out 37			5 21 38								
A in 38			12 28 45	A out 38			4 20 37								
A in 39			11 27 44	A out 39			3 19 36								
A in 40			10 26 43	A out 40			2 18 35								
A in 41	3	3	17 33 50	A out 41	3	3	9 25 42								
A in 42			16 32 49	A out 42			8 24 41								
A in 43			15 31 48	A out 43			7 23 40								
A in 44			14 30 47	A out 44			6 22 39								
A in 45			13 29 46	A out 45			5 21 38								
A in 46			12 28 45	A out 46			4 20 37								
A in 47			11 27 44	A out 47			3 19 36								
A in 48			10 26 43	A out 48			2 18 35								

WIRING AND CONNECTION DETAILS

The following information contains all the wiring details to allow users to connect peripheral devices to the back panel of the Engine:

General Purpose Interface

Connector: 37 Pin D Male

Input: TTL Level CMOS Logic Hi Z

Output: TTL Level CMOS Logic (Hi source +15mA max, Lo sink -48mA max)

PIN 1	GND	PIN 19	GND
PIN 2	GPIOBOUT6	PIN 20	GPIOBOOUT7
PIN 3	GPIOBOUT5	PIN 21	GND
PIN 4	GND	PIN 22	GPIOBOUT4
PIN 5	GPIOBOUT2	PIN 23	GPIOBOUT3
PIN 6	GPIOBOUT1	PIN 24	GND
PIN 7	GND	PIN 25	GPIOBOUT0
PIN 8	GPIOIN6	PIN 26	GPIOIN7
PIN 9	GPIOIN5	PIN 27	GND
PIN 10	GND	PIN 28	GPIOIN4
PIN 11	GPIOIN2	PIN 29	GPIOIN3
PIN 12	GPIOIN1	PIN 30	GND
PIN 13	GND	PIN 31	GPIOINO
PIN 14	GPIOOUT6	PIN 32	GPIOOUT7
PIN 15	GPIOOUT5	PIN 33	GND
PIN 16	GND	PIN 34	GPIOOUT4
PIN 17	GPIOOUT2	PIN 35	GPIOOUT3
PIN 18	GPIOOUT1	PIN 36	GND
		PIN 37	GPIOOUT0

Mixer

Connector: 25 pin D Female

PIN 1	GND	PIN 13	SYNCN
PIN 2	RxFFN	PIN 14	RxFFP
PIN 3	RxCLKN	PIN 15	RxCLKP
PIN 4	RxDATN	PIN 16	RxDATP
PIN 5	RxWRN	PIN 17	RxWRP
PIN 6	NC	PIN 18	NC
PIN 7	NC	PIN 19	GND
PIN 8	TxFFN	PIN 20	TxFFP
PIN 9	TxCLKN	PIN 21	TXxCLKP
PIN 10	TxDATN	PIN 22	TxDATP
PIN 11	TxWRPN	PIN 23	TxWRP
PIN 12	HSSLDETn	PIN 24	GND
		PIN 25	SYNC

Controller

Connector: 25 pin D Female on Engine

9 pin D Female RS232 on Console

9 pin D Female RS422 at Console

25 Pin D Type Connector	Signal	Pair	9 Pin D Type Connectors
PIN 5	CONTx	1	232 PIN 2
PIN 7	GND	1	232 PIN 5
PIN 3	CONRx	2	232 PIN 3
PIN 1	GND	2	232 PIN 5
PIN 10	CONTxPOS	3	422 PIN 3
PIN 23	CONTxNEG	3	422 PIN 4
PIN 11	CONRxPOS	4	422 PIN 2
PIN 24	CONRxNEG	4	422 PIN 1

Ethernet

Connector: RJ45

PIN 1	Rx +
PIN 2	Rx -
PIN 3	Tx +
PIN 6	Tx -

Cross-over Cable

RJ45-1	Signal	RJ45-2
PIN 1	Rx +	PIN 3
PIN 2	Rx -	PIN 6
PIN 3	Tx +	PIN 1
PIN 6	Tx -	PIN 2

Printer

Connector: 25 pin D female

PIN 1	PSTROBE _n	PIN 14	PRAUTOFD _n
PIN 2	PDR0	PIN 15	PRFAULT _n
PIN 3	PDR1	PIN 16	PRINTIT _n
PIN 4	PDR2	PIN 17	PRSELIN _n
PIN 5	PDR3	PIN 18	GND
PIN 6	PDR4	PIN 19	GND
PIN 7	PDR5	PIN 20	GND
PIN 8	PDR6	PIN 21	GND
PIN 9	PDR7	PIN 22	GND
PIN 10	PRACK _n	PIN 23	GND
PIN 11	PRBUSY _n	PIN 24	GND
PIN 12	PRERROR	PIN 25	GN
PIN 13	PRSELECT		

9 Pin A

Connector: 9 pin D Female

PIN 1	GND
PIN 2	9ARxA
PIN 3	9ATxB
PIN 4	GND
PIN 5	NC
PIN 6	GND
PIN 7	9ARxB
PIN 8	9ATxA
PIN 9	NC

9 Pin B

Connector: 9 pin D Female

PIN 1	GND
PIN 2	9BRxA
PIN 3	9BTxB
PIN 4	GND
PIN 5	NC
PIN 6	GND
PIN 7	9BRxB
PIN 8	9BTxA
PIN 9	N

9 Pin Slave

Connector: 9 pin D Female

PIN 1	GND
PIN 2	9BTxA
PIN 3	9RRxB
PIN 4	GND
PIN 5	NC
PIN 6	GND
PIN 7	9BTxB
PIN 8	9BRxA
PIN 9	GND

LTC - I/O

Connector: 9 pin D Male

Input Level: -20dbm to +10dbm

Output Level: 0dbm

Unbalanced loads connected to LTC OUT should NOT ground the LTC OUT NEGATIVE signal.

PIN 1	GND
PIN 2	LTC A NEGATIVE
PIN 3	LTC OUT NEGATIVE
PIN 4	GND
PIN 5	LTC B POSITIVE
PIN 6	LTC A POSITIVE
PIN 7	GND
PIN 8	LTC OUT POSITIVE
PIN 9	LTC B NEGATIV

Serial Port

Connector: 9 pin D Male

PIN 1	SER_DCD
PIN 2	SER_Rx
PIN 3	SER_Tx
PIN 4	SER_DTR
PIN 5	GND
PIN 6	SER_DSR
PIN 7	SER_RTS
PIN 8	SER_CTS
PIN 9	NC

MIDI I/O

Connector: 9 pin D Female

PIN 1	NOT CONNECTED		
PIN 2	MIDI IN NEGATIVE	MIDI IN	DIN PIN 5
PIN 3	MIDI OUT NEGATIVE	MIDI OUT	DIN PIN 5
PIN 4	GND	MIDI THROUGH	DIN PIN 2
PIN 5	MIDI THROUGH POSITIVE	MIDI THROUGH	DIN PIN 4
PIN 6	MIDI POSITIVE	MIDI IN	DIN PIN 4
PIN 7	GND	MIDI OUT	DIN PIN 2
PIN 8	MIDI OUT POSITIVE	MIDI OUT	DIN PIN 4
PIN 9	MIDI THROUGH NEGATIVE	MIDI THROUGH	DIN PIN

AES Sync I/O

Connector: 9 pin D Male

PIN 1	GND
PIN 2	AES IN NEGATIVE
PIN 3	AES OUT POSITIVE
PIN 4	BIPHASE TACH
PIN 5	BIP DIRECTION
PIN 6	AES IN POSITIVE
PIN 7	GND
PIN 8	AES OUT NEGATIVE
PIN 9	NOT CONNECTE

Modem

Connector: 9 pin D Male

PIN 1	MOD_DCD
PIN 2	MOD_RX
PIN 3	MOD_TX
PIN 4	MOD_DTR
PIN 5	GND
PIN 6	MOD_DSR
PIN 7	MOD_RTS
PIN 8	MOS_CTS
PIN 9	N

VGA

Connector: 5 pin High Density D Female

Resolution: 1024(H) x 768(V)

Frequency: HSYNC: 60khz VSYNC: 75hz SVGA STANDARD

PIN 1	RED
PIN 2	GREEN
PIN 3	BLUE
PIN 4	GND
PIN 5	GND
PIN 6	GND
PIN 7	GND
PIN 8	GND
PIN 10	GND
PIN 11	GND
PIN 12	NC
PIN 13	HSYNC
PIN 14	VSYNC
PIN 15	NC

Word Clock - In

Connector: BNC

Input Optically Isolated

Input Impedance: 75 Ohms

Video Sync - In

Connector: BNC

Input Level: 1V p-p

Input Impedance: 75 Ohms Terminated

Word Clock - Out

Connector: BNC

Output Level: 4.3V TTL

Output Impedance: 75 Ohms

SYSTEM SPECIFICATIONS

Analogue Inputs and Outputs

Input impedance	>10k Ohms
Output impedance	<55 Ohms
Maximum input level	+24dBu
Maximum output level	+24dBu
Standard operating level	adjustable from +14dBu to +24 dBu
Input signal to noise	>113dB A-weighted (A/D conversion)
Output signal to noise	>113dB A-weighted (A/D conversion)
Through system signal to noise	>110dB A-weighted
Through system THD	<0.0008%
Bandwidth (.25dB)	20Hz to 20kHz

AES/EBU Inputs

Minimum differential	200mV
Input impedance	110 Ohms transformer isolated
Channel status	insensitive to channel status

AES/EBU Outputs

Output level	4V
Output impedance	110 Ohms transformer isolated
Channel status	professional, normal audio, source locked, sample frequency locked to project sample rate, stereophonic, 24-bit word length

Synchronisation

System sample rates	32, 44.056, 44.1, 48, 96kHz
Run-Up/Run-down sample rates	44.044, 44.056, 47.952, 48.048, 95.904, 96.096kHz
SRC range (with optional SRC I/O module)	Input: 0.33 to 3.0 x system sample rate with range limits of 8kHz to 108kHz

Clock references

Output:

current system sample rate converted to any other possible system sample rate

internal, AES reference, WCLK, any digital input, video reference, LTC input

Clocks may be derived from an external WCLK or AES sync that is running at either the system sample rate, 0.5 or 2.0 x system sample rate. Thus, the system may be run at 96kHz locked to a 48kHz reference, or at 48kHz locked to a 96kHz reference, for example.

SRC O/P sample clocks may be independently locked to any of the available references except digital inputs. Where O/P sample rates are exactly 2.0 or 0.5 x system sample rate, the output rate is automatically sample locked to the system rate.

ENGINE DIMENSIONS

Height	360mm
Width	500mm
Depth	460mm

ENGINE POWER REQUIREMENTS

Input	82-275 Vac
	49-63 Hz 300VA
Fuse	10A - 110V
	6.3A - 240V

SATELLITE CONSOLE DIMENSIONS

Front Height	18mm
Rear Height	100mm
Width	420mm
Depth	455mm

SATELLITE CONSOLE POWER REQUIREMENTS

Input	85-264 Vac
	50-60 Hz 60VA
Fuse	2A - 110V
	1A - 240V

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