Diamond 4

Operator's Manual

Version 2

AVOLITES

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Sales and service*	(+1) 423 938 2057
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*Before contacting Avolites for service enquiry please ensure that you have the product serial number and the Software version. The serial number can be found on the back of the desk near the power socket and on the keyboard drawer; the software version is displayed on the title bar of the Diamond application on the VDU.

The latest version of this manual and Diamond Software can be downloaded from the Avolites website.

Reprint and revision history:

First produced Feb 2005
Revision 6/11/2006 Alex Triffitt

New for Version 2

New features:

- **Lock palette mask**. A new user setting allows recorded palettes to have their masks locked to prevent any further attributes being added to them. See page 170.
- **Shape fixture order.** It is now possible to reorder fixture in a shape changing the order in which phase is applied to the shape. See page 176.
- **Cross fade cues**. By setting a cue to a cross fade cue in a cue list all other previously loaded cues in the cue list will be faded out. See page 213.
- **Autosave countdown**. The time remaining to the next auto save is displayed on the Status bar and the auto save can be delayed by 10 minutes. See page 121.
- **Patch List**. A text or CSV file of the patch list can be exported from the desk in an easily printable format. See page 126.
- **Setting chase speed**. By tapping the Go button twice on he chase controlled the chase speed can be set. There is also a 20 second timeout on all tap twice to set speed functions. See page 194
- **Tracking backup**. A tracking backup system has been implemented that allows a separate PC to run as a backup t th Di mond. See page 126.
- **12 DMX lines**. There are now 12 logical DM lines, 8 of these can be mapped to physical DMX lines. All of the gical lines can be mapped to difference DMX nodes. See page 110 and page 153.
- **Renumber Cues**. It is now possi le t renumber all cues with a constant increment between each cue. ee page 202 and page 213.
- **Timecode Source**. You can now select the system clock to be the time code source. See page 226
- **Status Bar**. The st tus b r on the VDU no longer mirrors what is displayed on the p els LCD menu display. It now gives details on the time to the next uto save and the status of the Panel and ShowSafe. See page 126 for more details on what the ShowSafe and Panel related messages m an.
- **Title Ba** The title bar now displays the name of the computer the soft a e is running on. This is very useful when using ShowSafe or a tracking backup product.
- **Information Display**. More information is displayed for the user. On the itle bar of the Diamond Software the name of the computer is displayed. This can be useful for any networking system when it is necessary to identify the software engine being used. The available physical memory is now shown on root of the LCD menu below the Fixture Bank and Palette Bank values is page filing is disabled. The computer name is also shown here.
- **Select If.** The select if function has now been implemented to work on unfolded cue lists or chases.

Bugs resolved:

- The user setting to allow the use of left and right mouse buttons to turn the wheels now works.
- Fixture exchange has been improved.

- Moving groups then saving a loading a show could cause some groups to disappear, this has now been fixed.
- Patching a dimmer to the same DMX address as a fixture with no dimmer would result in a crash, this has now been fixed.
- It is now possible to patch a dimmer to address 512 on any DMX line.
- VL5. When dimmer moved to another fixture or dimmer, the whole fixture will park itself, this has now been fixed.
- It was not possible to move DMX from Dimmer to a Vl5 pending Dimmer, this is no longer a problem.
- It is now possible to patch more than one DMX channel to the dimmer channel of a two part fixture
- Log files are more accurate.
- The Rec Times and Options menus now work on both playback con rollers
- Leaving the Options menu for a playback now returns you to the appropriate menu.
- The timecode source is now saved in the show file.
- The auto connected property for cue lists is now saved i the show file.
- When inputting a timecode for the internal timer the fo matting works correctly.
- The help sections within dialogue boxes now ope the standard help file at the correct chapter.
- There is no longer a rare communicati ns problem between the panel and the desk which caused the desk to beha e unexpectedly.
- When a show file is saved erro trapping is fully functional so if a file does not safe correctly a warning is g ven to the user.
- A file name can now only ontain alphanumerical characters, dots, underscores or dashes. Any other character inputted will be replaced by a space.
- Shortcut on to playback controllers fixed so that the goto function now consistently works

This manual was written by Tim Mitchell, Sabre Technology Ltd
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TUTORIAL CONTENTS

REFERENCE MANUAL CONTENTS

INTRODUCTION

1. Welcome to the Diamond 4

This manual is designed to help you get the most out of your Diamond 4 console. We have divided it into two sections.

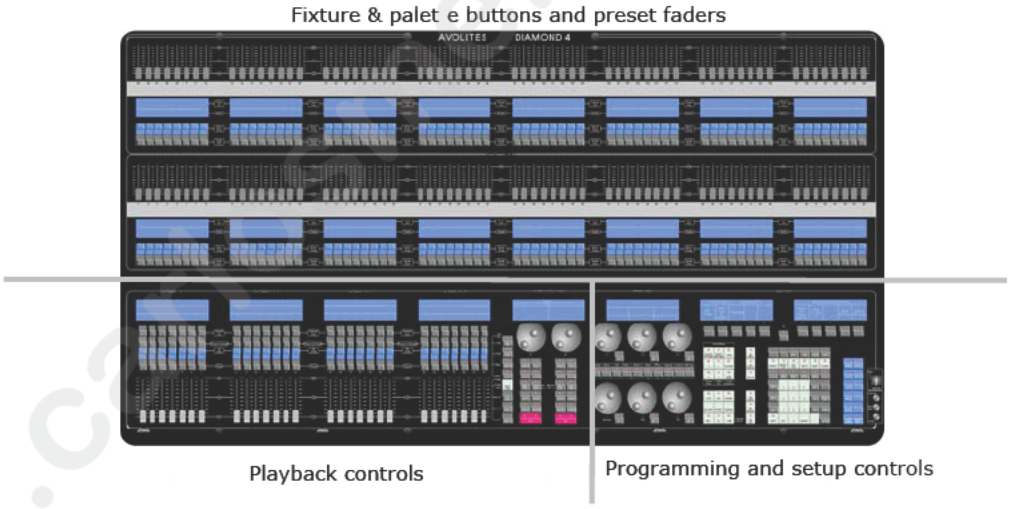
- This first section is a tutorial which gives you a step by step guide of how to carry out the most common functions of the Diamond 4. If you are new to the console, working through this part will give you a good introduction.
- The second section is a reference manual which tells you everything there is to know about the Diamond 4.

To help you move between the two sections, we have made the chapter numbering the same, so if you are using the tutorial and you wa t more information, just look for the same chapter number in the reference manual.

This manual applies to the Diamond 4 Vision, Elite and Classic consoles. It doesn't apply to the earlier Diamond 2 and 3 con oles but for simplicity we'll refer to the Diamond 4 consoles mply as "the Diamond". The manual refers to software version 2 o 1.5.2, features may be changed or added in later software

1.1 Quick tour around the console

The Diamond console is big! In th s first part we will give you a quick tour round the console so you know where to find things.



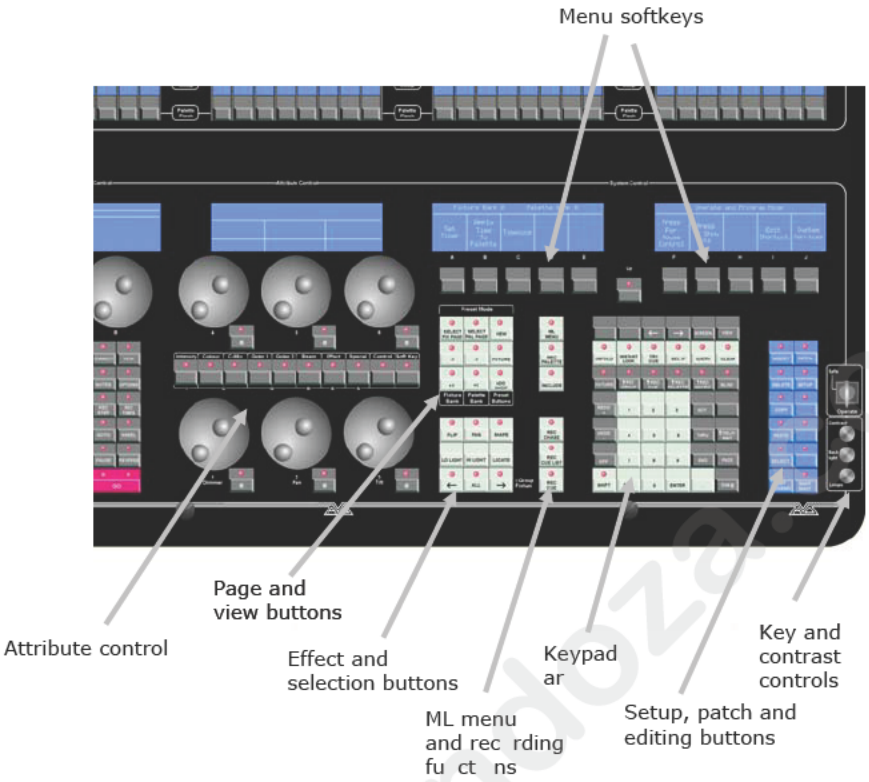
The console has three main areas.

The top half of the console has two rows of faders, buttons and displays for fixtures and palettes. You can also store cues, chases and cue lists in these faders and buttons. The Diamond Elite has only a single row of faders which can be allocated to either the upper or lower row of buttons and displays.

The bottom left of the console has the playback buttons and faders which are normally used for storing cues, chases and cue lists.

The bottom right of the console has all the programming and setup controls and displays.

Programming and setup controls



Menu softkeys: These two displays and 10 buttons are the nerve centre of the console, allowing you to select a wide range of menu options. The Up button tak s you back to the previous menu level. Shift+Up takes you back to the top menu level.

Attribute control: Th s is where you set the position, colour, gobo, dimmer intensity an other attributes of fixtures when you are programming t e console.

Page and v w buttons: Page buttons allow you to swap the controls to another age of fixtures or cues. View allows you to show various screens on the displays.

Effec and selection buttons: These buttons provide useful functions w en programming moving lights, and also allow you to step through elected fixtures one at a time.

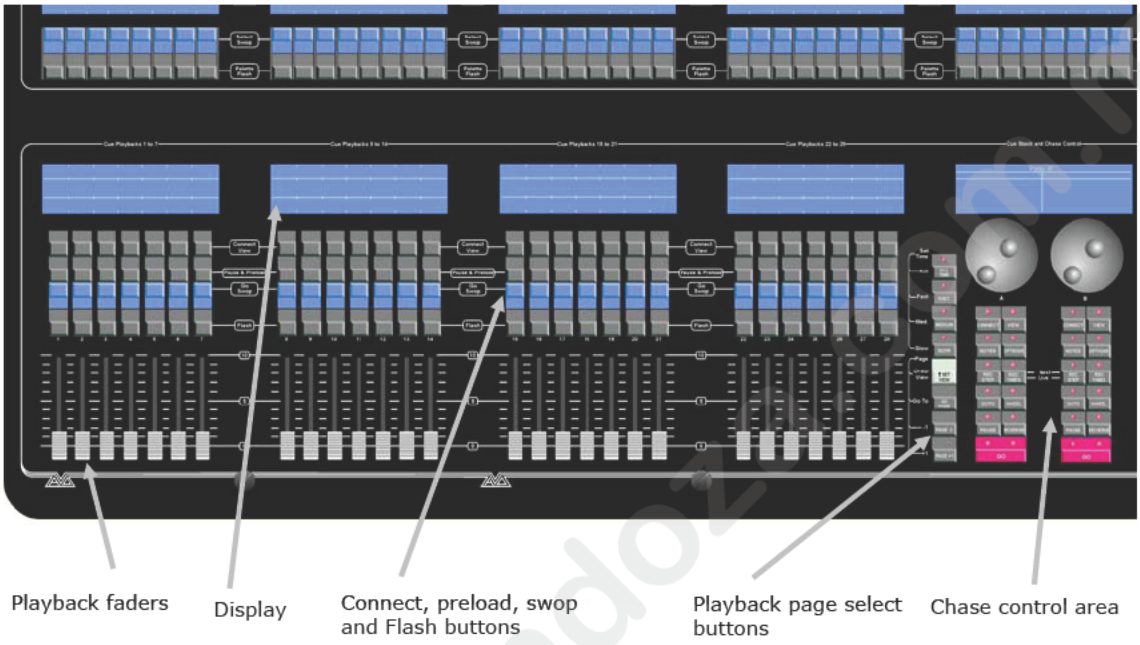
ML Menu and recording functions: These buttons give access to the Moving Light menu and allow you to record chases, cues and cue lists

Keypad area: This area contains the numeric keypad for number entry, cursor buttons, the shift button (which accesses any functions with a small up-arrow next to them), and buttons to record groups, palettes, cues and macros.

Setup, patch and editing buttons: These buttons allow you to set up the console and also to edit programming.

Key and contrast controls: The key allows you to switch the console to Safe mode which is a playback-only mode preventing changes being made. Starting from the top, the knobs control LCD contrast, LCD back light brightness and desk lamp brightness.

Cue Playback faders and buttons



This area is where you store and playback cues, chases and cue lists (you can also store playba ks on the preset faders).

Playback faders: A low you to fade the playback in and out.

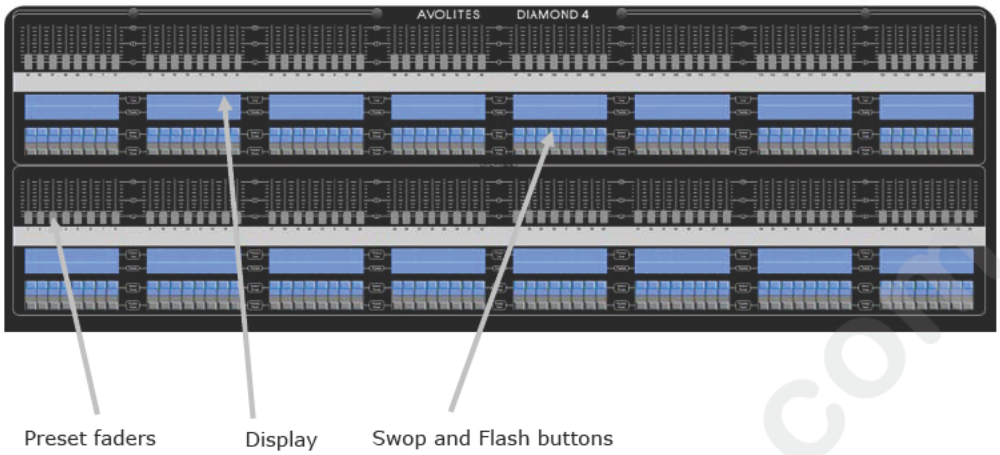
Displays: Show legends for the playbacks, which you can set to help you remember what s in them.

Connect, preload, swop and flash buttons: The Connect button allows y u t onnect a cue list or chase to a chase controller so you can c ntro playback and set timing and other options. The Preload button will position all moving light fixtures to the programmed pos ions in the cue so that when you fade up the fader, the lights will al eady be in their proper positions. The Swop button is used to select the playback when programming and can be used to "solo" the playback and the flash button is like moving the fader to full.

Playback page select buttons: The Vision console has 28 playbacks per page, the Elite console has 14. You can select a different page of playbacks using these page select buttons.

Chase control area: Allows you to start and stop chases and cue lists and control the speed, fade, direction and set other options

Preset faders and buttons



This area is where dimmers and fixtures are controlled nd also where palettes, groups, page shortcuts and playbacks may be stored.

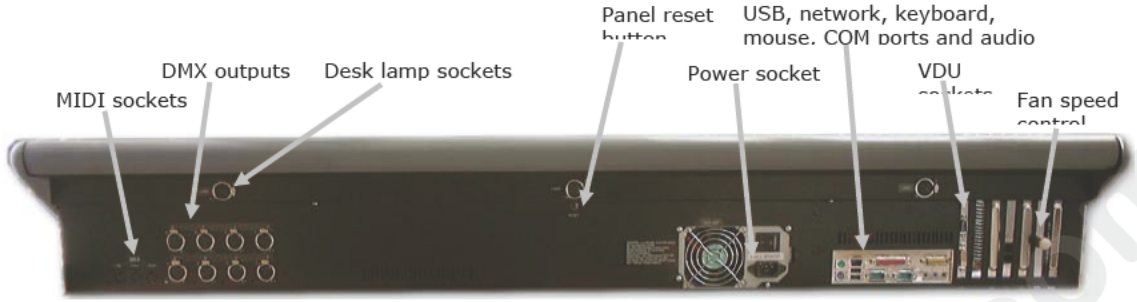
Preset faders: Control the intensity of the dimmer r fixture. If a playback is stored on the preset the fader i u ed o fire the playback and set its level.

Display: The top section shows the nam /type of the fixture patched to that fader. The bottom section sho s which palette, group or shortcut is stored in each positio .

Select/Swop and Palette/Flash buttons: The Select button selects the fixture for control. The alette button recalls palettes, groups or page shortcuts.

Other controls and connections

The rear of the console has all the connections. The front of the console has a CD or DVD drive, floppy drive and a keyboard/trackball in a drawer.



The "heartbeat" LED at the bottom right of the console shou d flash

during normal operation. If he heartbeat stops, press the panel reset button. This will restart the control panels of the console. The main operating system is n affected by the reset button. The DMX output of the console will b inte rupted while the control panels reset and will continue unchan d w en the reset is complete.

1.2 Setting up the console

If the console has a 110V/240V selector switch, you must ensure it is s t orr ctly before connecting the power. If the console does not have a voltage selector, it can be safely used on any mains voltage. If your mains supply is in any way suspect or prone to interruption, use a UPS uninterruptible power supply) to give you chance to shut down the console properly if the power fails. If the console loses power unexpectedly it can cause delay when power returns due to the console checking itself.

You need to connect at least one VDU screen to the console (although in an emergency you can use it without one); it's often helpful to connect two screens. The Diamond has one VGA output and one DVI output; the DVI output can be used as a second VGA output by attaching an adaptor plug.

Lighting fixtures and dimmers are connected to the eight DMX outputs on the rear of the console. Each output will control up to 512 channels. The outputs are wired to the DMX-512 standard: Pin 1 is earth, pin 2 is negative data and pin 3 is positive data.

1.3 Turning it on

Ensure the power switch on the power supply (rear of the console) is turned on (this switch can be left on permanently).

Press and release the power switch on the front left of the console to start it up (on a few consoles this switch is fitted at the back). The console displays should light up and the VDU screen should show a boot screen. The console takes about 20-50 seconds to start up fully.

If you have problems starting the console up, it may be carrying out a disk check due to not powering down correctly when it last ran. If this is happening you have to wait until it has finished the check before the console will run. The Troubleshooting section of the reference manual can help you out here (see page 129).

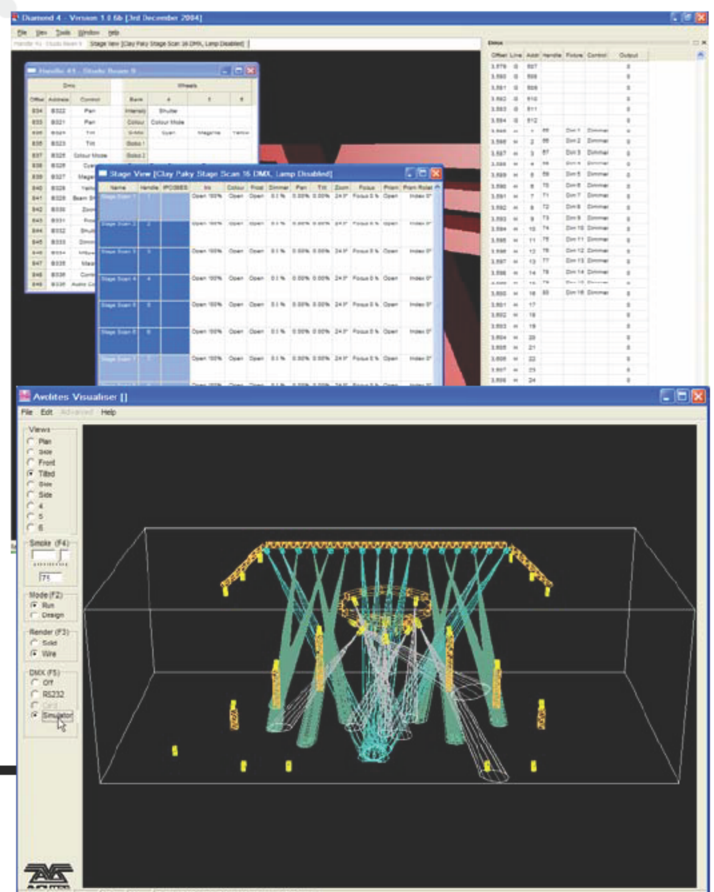
1.4 Turning it off

Press and release the power switch. The console will perform controlled shutdown which takes about 15-30 seconds. Do not disconnect the power from the console while it is shutting down. You should also avoid disconnecting the power to the console while it is running as any changes to your show (since the last Autosave) will be lost. This may also upset the operating system which will delay the next startup.

1.5 Operating the console

The console can be operated entirely from its buttons and faders, and the rest of this tutorial tells you how.

However, inside the console the Microsoft Windows XP Embedded operating system is used and there are a few "Windowsy" things you can do if you want to. Mostly you can forget that there's a computer inside and if you don't know how to use Windows, it doesn't matter.



You can arrange the way the console's view windows (Stage view, DMX view etc) are shown on the screen using the trackball or a mouse in the usual way.

You can change the sort order of columns in the view windows by clicking on the top row of the column you want to sort on.

You can move show files around (for example, to USB pen drives, floppy disks or CD ROMs) using the folder structure of Windows.

The console runs the

Visualiser lighting simulator internally (this is where the second VDU screen can come in handy) which allows you to program a show without the rig connected or powered up. (You need to select "Simulator" mode in Visualiser to view the output from the Diamond).

You can play audio CDs on the console, if you connect some speakers to the line out jack (green) on the rear of the unit (you can't use the headphone jack on the CD drive, if one is fitted).

1.6 The Diamond 4 Simulator

A console simulator is available as a free download from the Avolites website, allowing you to create or edit shows on a normal PC if you don't have access to the real console. (PC must be running Windows XP). The simulator runs identical software to the real console (includ ng Visualiser), using a "virtual panel" on the screen to allow you to pe ate the controls.

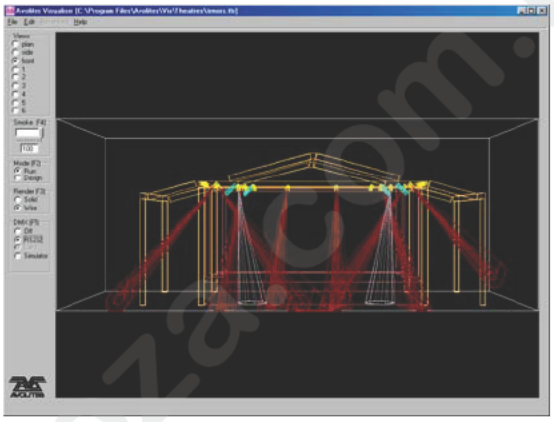
You use the mouse to click buttons and move the faders and wheels. To save space on the screen, the blue select and grey palette buttons of the preset faders are not shown, instead you just cl ck o the legend display below the fader. If you need to hold a bu on n the virtual panel and press another button, use the right mo se button to click the first button.

Shows saved on the simulator can be loaded directly into the real console.

1.7 What you will need for the tutorial

The rest of the first part of this manual is a hands-on tutorial. If you have never used an Avolites console before, by working through the rest of the tutorial section you should be able to get the Diamond 4 up and running, and be well on the way to programming and running a show with it.

The tutorial is organised in the order you'll need to do things to get the console set up and working, so try to work through it in sequence. To make the most of it, you will need a few lights set up to play with; a couple of moving lights and a few dimmers would be best. If you can't lay your hands on any real lights, you can use the Visualiser to simulate some lights.



When you are preparing to start programming a new show, it's handy to have the following things.

- A lighting plan of your rig which you can scribble on
- Some blank CD-R's or USB pen drives to save your work
- Paper & pen to make notes (or a laptop, depending on how technological you are)
- Manuals or DMX tables for the fixtures you're using
- A supply of beverages of your choice

CHAPTER TWO

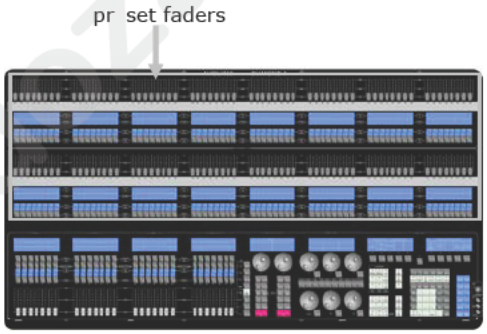
2. Patching

In this chapter: how to set up the Diamond to control dimmers and fixtures.

- clearing the memory for a new show
- patching dimmers
- patching moving light fixtures
- setting addresses on the fixtures
- saving the show file

So, you have your fixtures and dimmers all connected up with DMX cables and the Diamond 4 connected to the end of it. (If you have a big rig, you might find it easier to learn the basics using a few dimmers and a few moving lights, and leave the rest of it till you're an expert).

First you need to allocate each fixture or dimmer to a preset fader on the Diamond, so that you can tell it which of the fixtures or dimmers you want to control at any time.



The fader and the blue button below it allow you to take control of a fixture and are called a Handle. The fader will control the intensity of the dimmer or fixture and the blue Select button is used when programming to select the dimmer or fixture.

You also need to tell the Diamond what type of fixture is a located to each fader. When you have entered this information, the Diamond can tell you what DMX addresses to set on your fixtures and dimmers and which DMX line to plug them into so they match the settings it is using. If you prefer, you can set your fixtures and dimmers beforehand and tell the Diamond what DMX addresses and lines it should be using.

This setup process is called **Patching**.

If you need to patch more than 128 dimmers and fixtures (96 on the Elite), you can select another page using the Fixture Bank buttons below softkey A.

The Diamond controls dimmers and fixtures slightly differently, so we will look at each in turn.

2.1 Clearing the Diamond - Wipeall

It's always a good idea to start a new show by wiping the memory before you start a new setup. This ensures that you are starting with a clean slate.

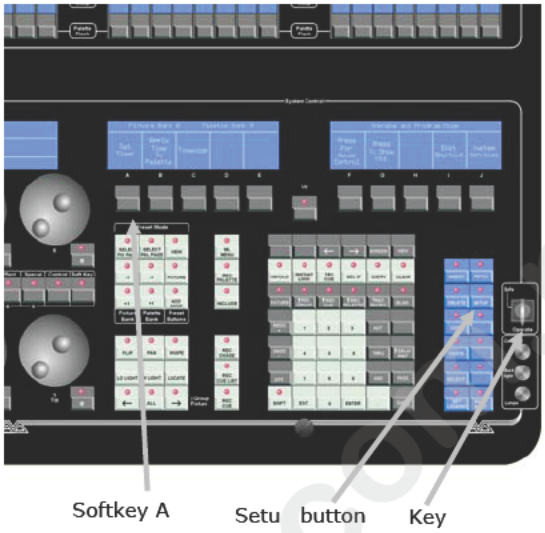
Clearing the Diamond

1> Check the key is set to "Operate".

2> Press the blue Setup button (bottom right of console).

3> Select softkey A [Start new show Wipeall].

4> Press A [Press to Confirm Wipeall]. The console will be wiped.



The Diamond is now pristine and new, with all playbacks empty, ready for you to start your show. (User settings will remain the same).

2.2 Patching dimmers

Each dimmer channel you want to use is alloc ted to one of the preset faders. Then, when you want to control th dimmer channel, you just raise the fader.

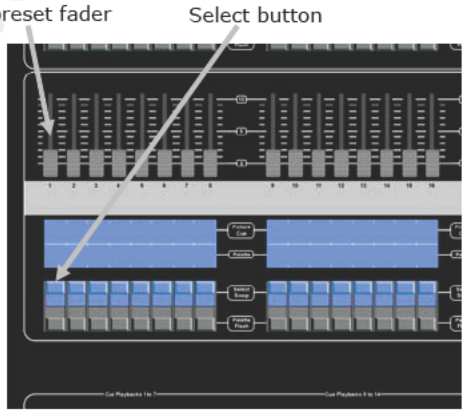
Patching dimmer channels

1> Check the key is set to "Op rate".

2> Press the blue Patch b tton (bottom right of conso).

3> Press A [Dimmers .

4> The Diamond ll s rt at DMX address 001 on output line A (shown ab ve Softkey B on the display) If y ur dimmer rack is at a different address, you can cha ge his by pressing B [Dmx xx Press to Change], typing in the new address on the numeric keypad and pressing Enter. If it is on a different DMX line, press A [Line=A Press to Change].

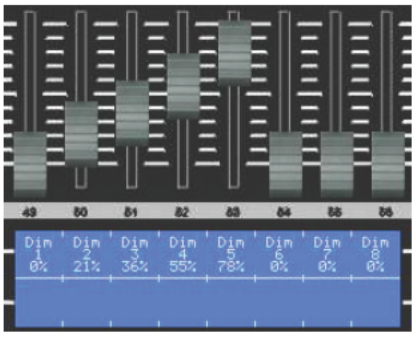


5> Press the blue "Select" button below preset fader number 1. The fader and Select button will now be used to control that dimmer channel.

6> The display below the fader will show the dimmer fixture number and its output level.

7> The Diamond will update the DMX address to the next free channel, so you can just press another button to patch the next dimmer.

8> Press Shift and Up to exit patch mode.



You can now control the dimmer channel on

preset 1 using the fader.

If you have lots of dimmers to patch, there are some quicker ways. If you just want to patch 10 dimmers in sequence on to presets 21-30, you can do it this way:

Patching a range of dimmers to preset faders

1> Enter Dimmer Patch mode.

2> Enter the DMX channel you want the range to start at, if it's different to the one the Diamond is displaying.

3> Hold down the Select button of the first fader to be patched (preset 21).

4> Press the last Select button (preset 30).

5> Release the first Select button, then the last Select button

6> Each preset fader will be patched in order to a dimmer han l.

7> Press Patch then Exit (or "Up") to exit patch mode.

You can also patch more than one dimmer channel on the same fader. This can be useful when you have several lights on dif erent dimmer channels, but you always want to control them together. For example, if you have lit an area with several spots a d y u just want them all to come up on one fader, this is a good w y t do that.

Patching several dimmers to the same fader

1> Enter Dimmer Patch mode.

2> Enter the DMX addres of t e first dimmer channel to be patched.

3> Press the Select b tt n for the preset you want to use (this patches the first d mmer).

4> Enter the DMX address of the next dimmer channel to be patched (the Diamond will have automatically increased the address by 1).

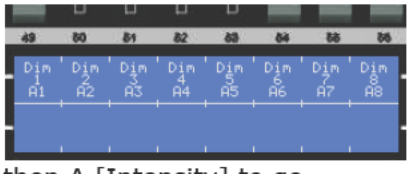
5> Press th Select button again.

6> P ess Patc then Exit (or "Up") to exit patch mode.

Yo can repeat this procedure to patch as many dimmers as you like on o on preset fader.

You can see how DMX channels are patched by opening the DMX window on the VDU screen. Press View (above the numeric keys), then press softkey G [DMX].

You can also display the DMX channel each fader is patched to by pressing Preset Mode View (below softkey B) then C [DMX]. The display below each fader will show the DMX channel it is controlling and the DMX line A-H (A1=channel 1 on DMX line A). If multiple dimmers are patched, only the first one is shown. Press Preset Mode View then A [Intensity] to go back to showing the intensity below the fader.



2.3 Patching moving light fixtures

Moving light fixtures are controlled slightly differently to dimmers; a dimmer only has one controllable attribute, intensity, but a moving light fixture can have many attributes, such as pan, tilt, colour, gobo etc. However, the principle is still the same.

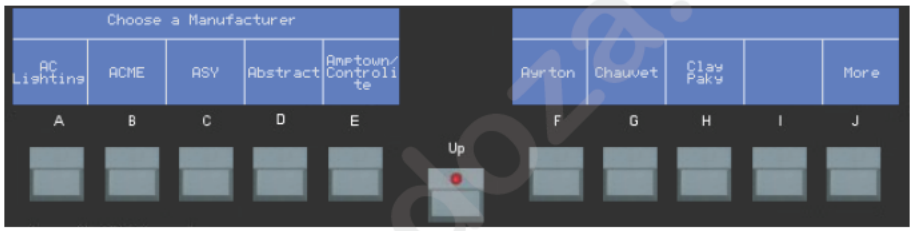
The Diamond has personality files for most lighting fixtures in the known universe, and these are stored internally in the console. If you want to use a personality not available in the console, you can download it from the Avolites website and copy it to the console. See section 14 in the reference manual for details of how to download personalities.

Patching a fixture

1> Press Patch (bottom right of console).

2> Press B [Fixtures].

3> A list of fixture manufacturers will appear above the sof keys.



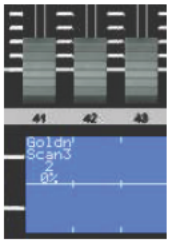
4> Press the button for [Clay Paky]. (The button may change depending on the fixture library you're using. Use Softkeys I and J to page through the list of m nufacturers until you find it.)

5> A list of fixtures made by C ay Paky will appear above the softkeys.

6> Press J [More] t how the second page, then press the button for [Golden Scan 3] to select the fixture type.

7> The displa will show "Select a mode for the Clay Paky Golden Scan 3"

8> Press B [6 DMX Rain On] to select the 6-channel mode. Make sure you ch e the mode which matches the setting of the f xtur



9> The Diamond will offer you the first free DMX address above Softkey B. You can change this by pressing B [DMX=xx Press to Change] and typing the new address on the numeric keypad.

10> Press the Select button on preset 41 to patch a Golden Scan 3 to preset 41.

11> The display below the fader will show what you have patched. You can show the DMX channel it is patched at by pressing Preset Mode View (just below Softkey B) then C [DMX].

12> Patch more fixtures, or press Shift and Up when you have finished to exit patch mode.

You can continue to patch this type of fixture at the next free DMX address by pressing the next Select button you want to use. You can also patch a range of fixtures by holding down the first button in the range and pressing the last button, as with dimmers.

If you want to patch different fixtures, you can change the type of fixture to be patched very easily.

To change the fixture type

1> Press F [Select a manufacturer] to choose a fixture from a different manufacturer, or

2> Press G [Select a <manufacturer name> Fixture] to patch a different fixture from the current manufacturer, or

3> Press H [Select a new <fixture name> mode] to patch the current fixture in a different mode.

4> Choose the fixture type from the list on the softkeys.

5> Patch as before.

The Diamond has eight physical DMX output lines, identified A, B, C, and so on up to H. You can patch onto any of the 8 lines by using C [Select a DMX line]. However, to keep it simple, sti k to line A while you are learning.

2.4 Setting legends for fixtures

You can set a legend for each fixture (o dimmer) to help you remember where it is on the stage. The le end is shown on the display below the fixture's fader and Select bu ton in place of the fixture type.

Setting fixture legend

1> Press the blue Set Leg nd button (bottom right of console).

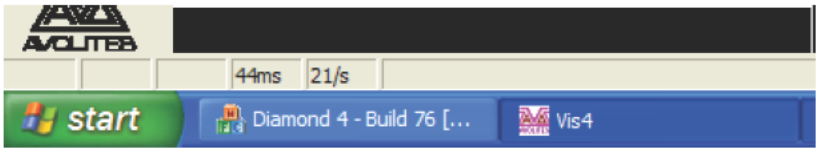
2> Press the Select but n of the fixture you want to set.

3> Type the legend on the Diamond's keyboard. You can only display 2 rows of 5 cha acters so make it brief!

4> The legend appears by the fixture's handle as you type it. It is also displayed above softkey C so you can see how it is going to be format ed.

5> Pre s E er to store the legend.

Note: If the keyboard appears not to work, this is probably because he Visualiser application is the current Windows application rather than the Diamond 4 application. Use the trackball to click on the "Diamond 4" application on the Windows taskbar.



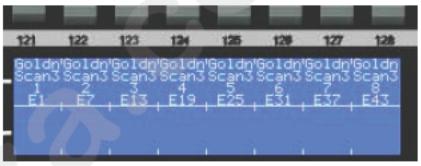
2.5 Addressing lights to match the Diamond

For the purposes of this tutorial, it's easiest to let the Diamond allocate all the DMX addresses, then go round to the actual dimmers and fixtures and set the addresses to match the Diamond's settings. This makes sure that there are no overlaps or gaps in the DMX addresses.

In a real lights rig it's a good idea to plan out the DMX map beforehand (either yourself, or patch the Diamond before rigging using the simulator). You can then set up your fixtures before they are rigged.

The Diamond can tell you the DMX address it is using for each fixture. Write down the addresses for all the fixtures, then go and set them.

Displaying the DMX address for fixtures



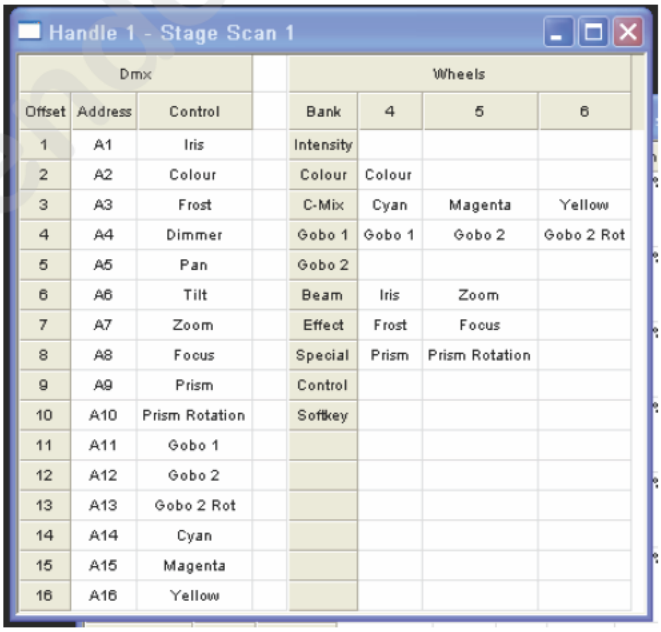
1> Press the Preset Mode View button (below Softkey B).

2> Press C [DMX].

3> The displays below the fixture faders show the DMX addresses of each fixture, with the DMX line and address (e.g. A24 is ad ress 24 on DMX line A).

4> If you press View again, then a fixture select button, a window will open on the VDU screen showing all the DMX details for that fixture.

5> The DMX window n the VDU screen shows you all the DMX channels an h w they are patched. f you c n't ee this window, turn it on from the iew menu on the VDU s reen.



Dmx			Wheels			
Offset	Address	Control	Bank	4	5	6
1	A1	Iris	Intensity			
2	A2	Colour	Colour	Colour		
3	A3	Frost	C-Mix	Cyan	Magenta	Yellow
4	A4	Dimmer	Gobo 1	Gobo 1	Gobo 2	Gobo 2 Rot
5	A5	Pan	Gobo 2			
6	A6	Tilt	Beam	Iris	Zoom	
7	A7	Zoom	Effect	Frost	Focus	
8	A8	Focus	Special	Prism	Prism Rotation	
9	A9	Prism	Control			
10	A10	Prism Rotation	Softkey			
11	A11	Gobo 1				
12	A12	Gobo 2				
13	A13	Gobo 2 Rot				
14	A14	Cyan				
15	A15	Magenta				
16	A16	Yellow				

2.6 Changing what you have done

If you need to change the patching you have done, it's possible to re-patch a fixture to a different DMX address using the Repatch Fixtures softkey (Press the blue Patch button then G [Repatch a fixture]). You can make a copy of a fixture on a different handle, and delete a fixture from a handle. How to change the patching is described in detail in section 4 of the reference manual on page 150.

2.7 Patch Utilities

You can invert the operation of channels and set various other fixture-specific options from the Patch menu. Inverting pan and tilt channels can be useful to mirror fixtures on opposite sides of the stage, or to correct for a fixture being rigged the wrong way round. Section 4 of the reference manual on page 152 describes how to set these options.

2.8 Completing the patch

When you have patched all your dimmers and fixtures, press Patch then the Exit button on the numeric keypad to go back to normal mod (or press Shift and "Up"). You have now finished setting up the lighti g system, and it's time to get to work on programming a show. But there's one important thing to do first…

2.9 Saving the show

You can save any number of different shows on the Diamond's internal hard disk.

Saving the current show

1> Press the blue Setup button.

2> Press D [Save Show].

3> Press E [Use Current Show] to j st s ve the latest version of the current show, or if you want to s ve it under a new show name, enter a show name on the keyboard. (You can press A to insert the time and date into the filename).

4> Press Enter. The show wi l be saved.

5> Press Up to leave S tup mode.

The Diamond will autom tically load the last show when it is turned on. If you want to load a different show:

Loading a differen show

1> Press the lue Setup button.

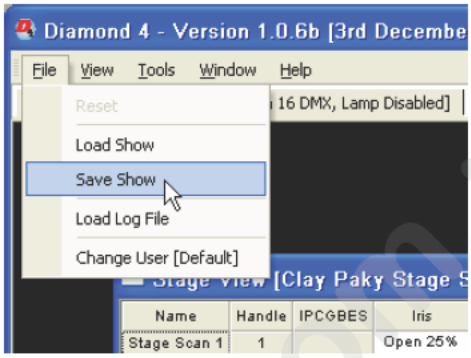
2> Press B [Load Show].

3> Available shows are listed on the softkeys; press the key to load th show (if there are more than 8 the I and J keys show more pages).

4> Press Up to leave setup mode.

The Diamond will automatically save your show to its internal hard disk when you shut it down. It will also autosave the show every 30 minutes (you can alter the time or turn this off) in case the console loses power. However, it's a good idea to regularly copy a backup of the show either to floppy disk or USB pen drive just in case something bad happens to the console. To save to a CD-R, you need to copy the show file across as described further down the page.

Creating a backup of the current show



1> Insert a USB pen drive or a floppy disk; larger shows might not fit on a floppy disk.

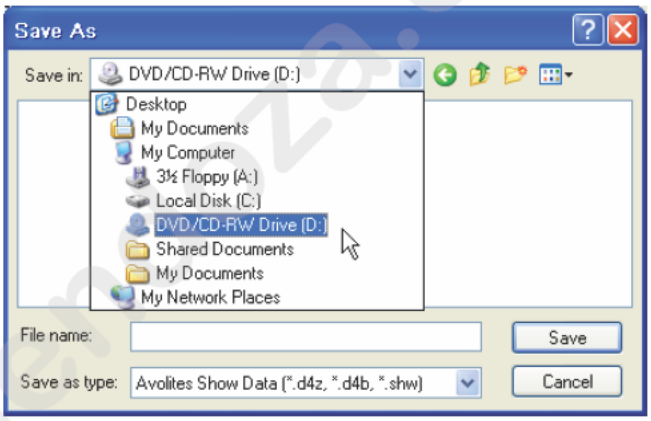
2> On the VDU screen, ensure the "Diamond 4" window is open. If not, click on it on the task bar at the bottom of the screen.

3> Click on the File menu and select "Save Show" .

4> Pull down the "Save in" list and select the drive where you want to make a backup of th sh w (Floppy or USB drive; for CD ROM use the method be ow).

5> Type a filename for the show in the "File name".

6> Click on Save.

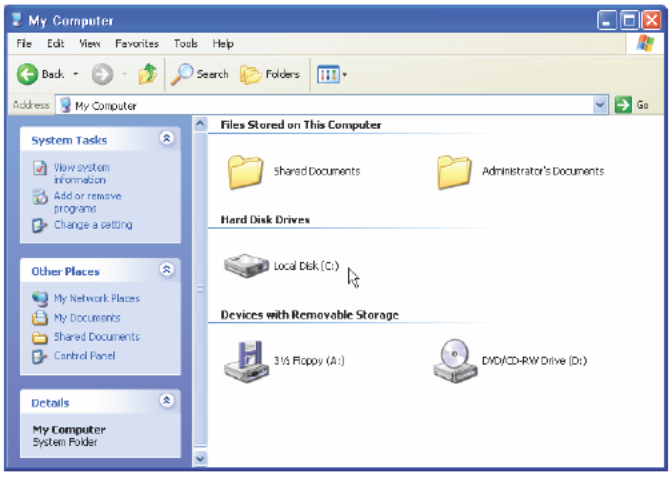


To reload a saved show from a removable device, use the Load Show option on the VDU File menu.

To backup a show to CD-ROM, you have to copy it across using Windows functions like this.

Creating a backup of an existing show

1> On the VDU s reen, click on the Start menu, then My Computer.



2> Double lick on "Loca Disk (C:)" .

3> Double click on he "Avo" folder.

4> Double click on he "ShowData" folder .

> The VDU screen will show a list of the saved shows.

6> Click on the show you want to backup. If you want to backup more than one, hold down the Ctrl button on the keyboard while clicking them.

7> Right click on a selected file, and select "Send to" from the pop up menu which appears.

8> Select the drive where you want to make a backup of the show file.

9> *A CD ROM icon should appear in the bottom right toolbar. Click the icon then select Write these files to CD from the window which opens.*

For a compete live backup system see page 126

2.10 Examples

How do I patch a 6 channel DMX dimmer pack at DMX address 13 to faders 1-6?

Press Patch, then A [Dimmers]. Press B [DMX address] and type "13" on the numeric keys, then press Enter. Hold the blue Select button fo preset 1, then press the Select button for preset 6. Release both buttons. Press Shift & Up to leave Patch mode. Finally ensure your dimmer pack's DMX address is set to 13 and it is connected to L ne A. (If you are not sure what address the dimmers are patched at, press Preset Mode View (below softkey B) then C [DMX]. The display elow each fader will show the DMX channel it is controlling).

How do I patch a Mac600 on DMX address 65 to h ndle 10?

Press Patch, then B [Fixtures]. Press J [More] un l on of the softkey options is "Martin". Press the softkey for that opt n Then select the Mac600 fixture by pressing its softkey (pre s J [M re] if it is not on the first page). Select the DMX mode requ red from the options on the softkeys (the mode should match the se ing on the fixture). Press B [DMX address] and type "65" on the umeric keys, then press Enter. Press the blue Select button of pr et 1 to patch the fixture. Press Shift & Up to leave Patch mode. Finally ensure the Mac600 is set to the correct DMX address and mod

CHAPTER THREE

3. Controlling dimmers and fixtures

In this chapter: how to control dimmers and fixtures manually.

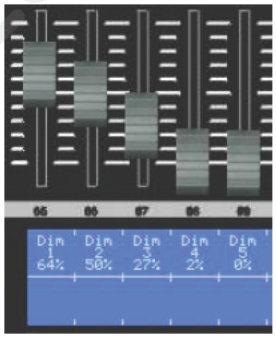
- controlling dimmers and fixtures
- changing attributes
- using and creating groups
- align and fan functions

Having patched all the dimmers and fixtures you want to use, you are ready to start operating them. This chapter explains how you do this

The Elite version of the console does not have faders for the upper 48 preset handles, just Select and Palette buttons. You can select whether the lower 48 faders control the upper or lower handles using softkey D at the main menu. The settings are [Preset Faders control f xtures 1-48] (lower) or [Preset Faders control fixtures 49-96] (upper).

3.1 Controlling dimmer channels

Controlling dimmer channels is simple – you just push up the fader of the preset where the dimme is patched. The display below the fade shows the output level of the dimmer. On the Diam nd, dimmers work just like a normal "pre et" ghting desk. If you want to turn on lots f dimmer channels at the same time, you an a so select the dimmers and use the Dimmer ontrol wheel as described below, or you an enter the dimmer levels on the numeric key ad using the Dim@ button.



3.2 Controlling fixtures

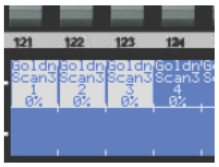
Controlling f x ures is nearly as simple, except there are a few more attribu es t co trol than just intensity.

The fi st thing you have to do is to select the fixtures that you want to contr l The Diamond then knows that any changes you make are only t b sent to these fixtures. You can select fixtures individually, or seve al at once. You can then control the selected fixtures using the att ibute wheels as described in the next section.

Selecting fixtures or dimmers

1> Press the blue Select buttons for the fixtures you want to control.

2> The display above the Select button will go inverted to show you which fixtures are selected. If you've got the Stage View or Intensity View windows open on the VDU, the selected fixtures are highlighted in dark blue.



3> If you select a fixture you don't want, press its Select button again to deselect it.

4> You can select a range of fixtures by holding down the Select button for the first fixture in the range, then pressing the Select button for the last fixture.

5> *Press Shift and the Locate button to position the selected fixtures at a central position with the light on, so you can see where they are. Dimmer channels are set to 100%. (Pressing the Locate button without Shift will turn the fixture on to open white without changing its position).*

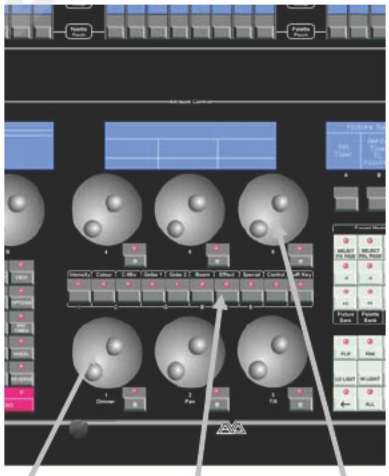
You can change the fixture page, if you need to, by pressing the Fixture Bank -1 or +1 buttons, or by pressing "Select Fix. Page" button and typing the new page number on the numeric keys, followed by Enter.

3.3 Changing attributes of fixtures

Having selected the fixtures you want to control, you then need to select which attributes (pan, tilt, colour etc.) of thos fixtures that you want to change.

The attributes are selected using the attribute wheels and buttons in he fr nt centre of the Diamond. The th ee heels nearest to you are always a oca ed to Dimmer, Pan and Tilt att ibutes. The top three wheels can be s lected to control different attributes using he buttons below them.

The attributes you can control will vary depending on t e type of fixture you are using. F r d mmer channels, you can only change the "Dimmer" attribute (intensity). For intelligent fixtures, you c n con rol pan, tilt, colour, gobo and man other functions.



Controlling pan and tilt of a fixture

1> *Select some fixtures using the Select buttons.*

2> *Press Shift and Locate to position the fixtures at a central position with the lamp on (you don't have to do this, but it helps you see what's happening).*

3> *Control the tilt using the Tilt wheel and the pan using the Pan wheel. You should see the selected fixtures move.*

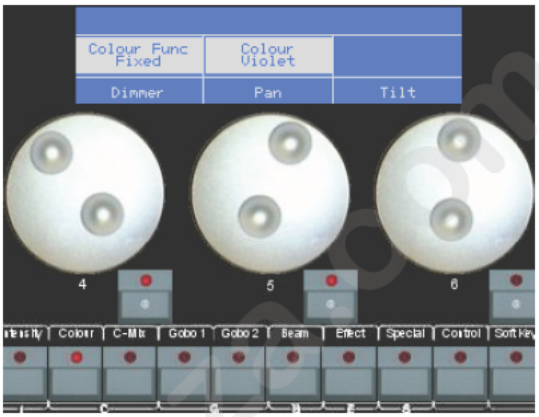
4> *Hold down Shift while turning the wheels to make large changes.*

5> *The display above the wheels shows you which attribute is being controlled by each wheel and the value being output.*

Any other attribute of the fixtures you selected can be controlled by

pressing one of the attribute buttons and using the top three wheels. The display will show which attributes the wheels are going to control. Very few fixture types have the full range of attributes; if the display remains blank when you select an attribute button, that attribute is not available on the fixtures you selected. This example uses the Clay Paky Goldenscan 3 which we patched earlier.

Controlling other attributes using the wheels



1> Select some fixtures using the Select buttons and Locate them.

2> Press the Colour attribute button below the top row of wheels.

3> Set the colour mode using wheel 4. Control the colour using wheel 5 (this may be different for other fixture types). You should see the selected fixtures change colour.

4> The display area above the wheels shows you which attribute is b ing controlled by each wheel and the output value of the ttrib te.

You can use the Dimmer wheel to con rol the intensity channel of the fixture, or you can use the preset fader which it is patched on. The effect is the same.

Note: Once you have chang d a y attributes, all the selected fixtures will be automatic lly d selected the next time you press a fixture select b tton

Sometimes control of a complicated attribute is shared by several wheels, called Function Wheels. For example a rotating gobo may have one function wheel t select continuous or indexed mode, and another function wheel o control rotation speed or position. This makes it much easier t find the function you want when the actual fixture may have both thes functions (and more) combined into a single DMX channel.

ou an also select attributes (such as "Green" or "Open Gobo") from a lis on the softkeys. This can be easier than scrolling through all the alues on the wheels.

Setting attributes from the softkeys

1> Select some fixtures using the Select buttons and Locate them.

2> Press the Colour attribute button below the top row of wheels.

3> Press Shift and the "@" button below the wheel labelled "Colour" on the display (usually 4 or 5).

4> The softkeys now give a list of possible colours on the fixture's colour wheel. Press a key to instantly set the selected fixtures to that colour.

5> You can also select gobos, gobo rotation and so on like this.

3.4 Attribute groups - IPCGBES

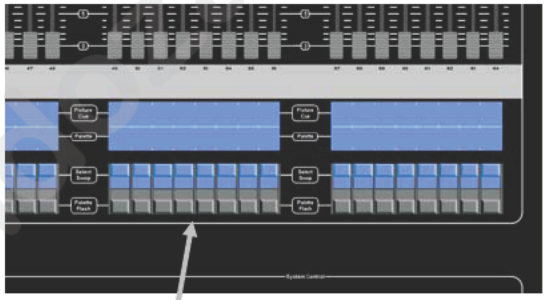
To make life a bit simpler, the Diamond groups together attributes which have similar effects, using the letters IPCGBES. You can see these letters below the Attribute select buttons.

I-Intensity (dimmer, strobe, shutter)
P-Position (pan, tilt)
C-Colour (colour wheel, CMY mixing)
G-Gobo (gobo wheels, gobo rotate, gobo position)
B-Beam (iris, focus, zoom, beam shaper)
E-Effects (prism, frost)
S-Special (motor speeds, control)

This becomes important later when you are recording palettes, shapes, cues and cue lists.

3.5 Using groups

If you've got several units of one fixture type, you often want to select them all at the same time. To avoid lots of select-button pressing, the Diamond allows you to create a group of fixtures or dimmer channels. This is stored on a grey Palette button; you can then select all the fixtures in the group just by pressing one button.



Palette button

Creating a group

1> Select the fixtures or dimmer channels you want to put into the group.

2> Press Shift and "Store Group" (above the numeric keys).

3> Press the grey Palette button where you want to save the Group.

Once you have created a group, you can then quickly select all the fixtures in the group:

Selecting a group of fixtures

1> Press the grey Palette button where you saved the group.

2> The fixtures in the group are selected.

You can set a legend for the group by pressing the blue Set Legend button, then the palette button where the group is stored, then typing the legend on the keyboard.

3.6 Copying settings from other fixtures – Align

If you've set a nice colour on one of your fixtures, and you want to copy it to all the other fixtures of the same type, the Diamond's Align function can do that. You can also use it to make all pan and tilt positions the same for a range of units or to make dimmer levels the same.

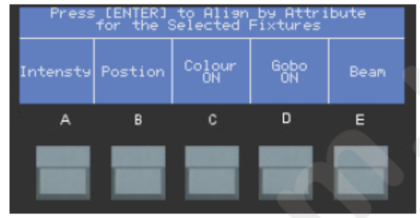
Copying settings from other fixtures

1> Select the fixture or dimmer you want to copy from.

2> Select the fixtures or dimmers you want to copy to.

3> Press the ML Menu button (below softkey D), then D [Align fixtures by attribute].

4> Select the attributes you want to copy using the softkeys (all are OFF to start with) and press Enter.



If you want to align all attributes, you can press ML Menu then C [Align fixtures].

3.7 Fan mode

Fan mode automatically spreads out a selected range of fixtures to produce a fan of light beams, like rays of sunlight. The first and last fixtures of the range are affected most, and the central fixtures are affected least. The amount of fan can be set using the wheels.

Note: The order in which you select the fixtures sets how the fan effect works. The fixtures you select first and last will be the ones which change most.

The fan effect, while normally used on pan or tilt attributes, can be applied to any attribute.

Fanning out a range of fixtures

1> Select the range of fixtures you want to fan and Locate them.

2> Tilt the fixtures away from their 50/50 central position.

3> Press the Fan button (to the right of wheel 3).

4> Move the Pan (or Tilt) wheel to fan out the fixtures.

5> Press one of the other attribute buttons and use the top wheels to fan other attributes.

6> Press the Fan button again to exit Fan mode when you've finished.

You will be able to see the effect of fan mode best if you have a row of at least 4 fixtures. If you have an odd number of fixtures, the central fixture will not move in fan mode.

Remember to turn off Fan mode when you have finished (by pressing the Fan button again), or you will get very confused when the controls don't do what you expect.

3.8 Examples

How do I fade up the dimmers on presets 1-6?

Just push up the faders 1-6.

How do I make the Mac 600 on handle 10 go blue and point at the cyclorama?

Select the fixture by pressing the blue Select button for fader 10. Press

Locate (to the right of wheel 3) to set the Mac 600 to open white. Turn wheels 2 (pan) and 3 (tilt) until the fixture is pointing in the right place. Press the "C-Mix" attribute button. Turn wheel 4 clockwise to increase the amount of Cyan (you can turn wheel 5 clockwise to increase the Magenta which will give a darker blue). You can also type in a value for the Cyan by pressing @ (below wheel 4): type in a cyan percentage from 0 to 100, then press enter.

CHAPTER FOUR

4. Palettes

In this chapter: how to use palettes to set colours, gobos and positions.
- Using palettes to set values
- Creating your own palettes
- Setting which attributes are recorded in a palette
- Shared and individual palettes

When you are programming or controlling your lighting, it is nice to instantly call back a position for a set of lights such as centre stage, or set all lights to a particular colour like red, blue etc, rather than having to set the values on the wheels every time.

The Diamond allows you to store these settings on the grey preset buttons, and they are called "palettes".

Palettes have another big advantage. If for example you program a centre stage spot position as a palette, when you use this position in a cue the Diamond remembers the palette you used, rather than the actual value. This means that if you move to another venue, you can just reprogram the "centre stage spot" palette and every cue using that position will automatically be updated. If you'd programmed all your cues directly using the wheels, you would need to go through and reposition every single cue.

Palettes are also useful when you are programming using Visualiser and you don't know exactly where the lights will point; you can program your cues using palette positions, then you just update a few palettes when you get the real lights in the real venue and the show programming is done.

4.1 Creating a palette

You can easily save your own palettes, or modify existing ones. We'll create a position palette; when you use this palette it will only affect the positioning of the fixture and will leave all the other attributes unchanged.

Rec Palette button

Creating a palette

1> Press Clear (next to the numeric keys) to clear all the changes you have made so far.

2> Select a couple of fixtures and press Shift and Locate.

3> Position the fixtures using the tilt and pan wheels.

4> Press Rec Palette (below softkey D).

5> Press D [Set mask=Exclude All].

6> Press A [Press to set mask].

7> Press B until the display shows [Save All Pan Tilt Channels]. This ensures that only the Pan & Tilt information will be stored in the palette.

8> *Press Up.*

9> *Press one of the grey palette buttons to store the positions. The position of the fixtures is stored as a palette.*

10> *The display above the palette button will show an automatic name for the palette.*

You can set a legend for each palette to help you remember what it is. This is shown on the display above the palette select button.

Setting a legend for a palette

1> *Press the blue Set Legend button (bottom right of console).*

2> *Press the grey Palette button whose legend you want to set*

3> *Type the legend on the keyboard and press Enter.*

4> *There is only room for 2 rows of 5 letters; the display by the palette button and the display above Softkey C updates a you type to show you what it is going to look like.*

The bottom line of the palette name shows you which type of attributes are saved in the palette using the IPCGBES letters (I=intensity, P=position, C=colour etc, ee page 30 for the full list). If there are more than 3 attributes the display shows th fi st 3 with a + sign.

4.2 Using a palette

The Diamond shows you the available palettes on the bottom line of the display above the palette buttons.

Using palettes

1> *Select the fixtures you want to control by pressing their Select buttons*

2> *P ess the rey Palette button for the palette you want to recall.*

You c n ha e many different pages of palettes. Select different pages using he Palette Bank buttons below softkey B.

4.3 What's stored in a palette

Although you can store all attributes of a fixture in a single palette, it's easiest to store some palettes which only affect colour, others which only affect position, and so on. This means when you recall a palette entry, you know which attributes of the fixture are going to change. It's also helpful when you're running a show to have position palettes saved in one area of the console, colour palettes in another area, and so on, then you can find everything quickly.

You do this using the Mask function when saving the palette. In the example above, we had the "Pan-Tilt" attribute selected when storing the palette, so only the pan & tilt values were recorded.

Setting which attributes will be recorded in the palette

1> *Press Clear to clear all the changes you have made so far.*

2> *Select a couple of fixtures and Locate them.*

3> *Set a colour using the "colour" attribute button and wheels.*

4> *Position the fixtures using the "pan-tilt" attribute button and wheels.*

5> *Press Rec Palette (below Softkey D).*

6> *Press D [Set Mask=Exclude All].*

7> *Press A [Press to set mask].*

8> *Softkeys A-G allow you to set which attributes will be stored and which will be excluded.*

9> *Press Up when you have set the attributes you want.*

If you press C [Set Mask=Save All] before storing th will store all the attributes of the fixture in the palette.

4.4 Shared and normal palettes

For some attributes, such as colour, you want to set the same control values on all the fixtures of the sa e type. So if you pick red, you want the control value for "Red" to go to al fixtures.

For other attributes, like po ition each fixture needs a different setting to get the light beams to po t where you want.

When saving a palette ou an set whether it will be Shared or Normal.

If you select J [Save As Shared Palette] when creating a palette, the value will be av ilable to all fixtures of that type. This is very useful if you patch more fixtures of that type at a later date, as they will be able to use all the shared palettes.

If you se ct I [Save as Normal Palette], the Diamond creates an "indiv dual palette which stores a different value for each fixture. This is normally used for positioning palettes, and sometimes for image focu ing. You can add positions for more fixtures to a Normal palette just by saving the palette again with the new fixtures set.

4.5 Examples

How do I store a palette which makes my Mac 600's point at the cyclorama?

Press Clear to clear any changes. Press the select buttons for the Mac fixtures. Press Locate to turn them on. Press the "→" button to the right of wheel 3. The first fixture will be selected. Use wheels 2 and 3 to point the fixture where you want. Press the "→" button again and point the next fixture. When all fixtures are positioned, press Shift and Rec Palette. Press I [Save as normal palette]. Press D [Set Mask=Exclude All]. Press A [Press to set mask]. Press B until the option shows [Save all pan tilt channels]. Finally press the grey Palette button where you want to store the palette. The pan and tilt settings only will be stored.

How do I make the Mac 600's point at the cyclorama using the palette I just saved?

Press the select buttons for the Mac600 fixtures you want to position. Press Locate to turn them on. Press the palette button where your palette is stored. The Macs should move to the position you programmed earlier.

CHAPTER FIVE

5. Shapes

In this chapter: how to use the shape (effects) generator
- selecting a shape
- positioning
- setting size and speed
- using shapes with multiple fixtures

The Diamond, in common with other Avolites consoles, has a shape generator (sometimes known as an Effects Generator on other consoles). This allows you to quickly create exciting light shows with lots of movement and changes, using the minimum amount of programming.

There are a large number of pre-programmed shapes available, which can be used on the fixture's position, colour, gobo, dimmer, iris, focus and more. You can control the size, speed and positioning of the shape, and how the shape is allocated across a range of fixtures.

To understand how shapes work and how they can be spread across multiple fixtures, it's best to set up at least four fixtures next to each other. Once you have mastered the basics you can try some more interesting arrangements.

5.1 How shapes work

A shape is a pre-programmed movement sequence which usually repeats over and over again. Typical shapes are circles, spirals, squares, waves, etc. A circle shape, for example, would cause the beam of the fixture to move in a circular path on the stage.

When you apply a shape, it works based on the current settings of the fixture. So if you apply a circle to the pan and tilt attributes of a fixture, the centre of the circle will be at the current pan and tilt position. You can change the size of the circle, and the speed of the circle. By moving the pan and tilt position of the fixture, you can move the whole shape around the stage.

Shapes can be applied to other attributes of a fixture, not just pan and tilt. You can use them to create colour changes, gobo changes, iris changes and a variety of other attributes. Each shape is designed to modify one particular group of attributes.

5.2 Selecting a shape

To select a shape you simply pick it from a list on the softkeys. Shapes are listed using the IPCGBES attribute groups, so you can pick from a list of Intensity shapes, or a list of Pan/Tilt shapes, or Colour shapes, and so on. You can also pick from a list of All Shapes.

When you choose a shape, it will be applied to all selected fixtures.

Selecting a shape

1> Select the fixtures you want to apply the shape to by pressing the Select buttons. In this example we will apply a position shape, so the fixtures will need to have pan & tilt attributes.

2> Press Shift and Locate to turn on the fixtures and move them to a central position.

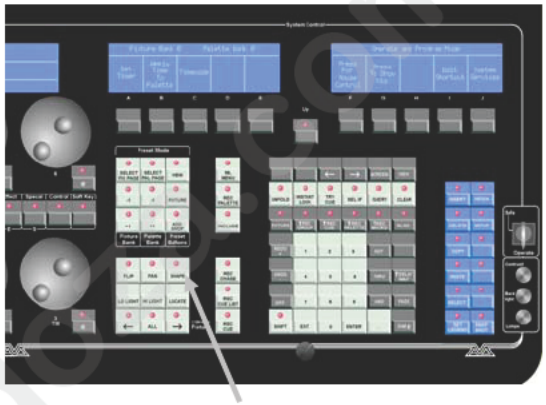
3> Press the Shape button (to the right of wheel 3).

4> Press A [Create] to start a new shape.

5> Press B [Pan/Tilt] to look at the list of Pan & Tilt shapes.

6> Press H [Circle] to select a circle shape.

7> The shape will be applied to all selected fixtures.



Shape button

There are a wide range of different shapes available for each attribute; use Softkeys I and J to look through the different pages. "Rainbow" shapes only work on fixtures capable of CMY colour mixing, and there are other shapes such as Iris and Focus which will only work if your fixtures have those functions.

The best way to find out what al the shapes are like is to try them out. Sometimes it's hard to de cribe the effect in the few letters which fit on the display.

5.3 Changing size and speed of a shape

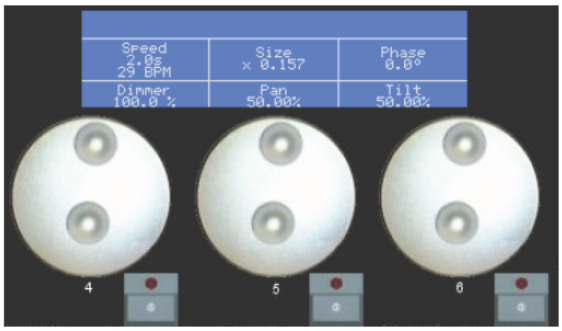
It is easy to ch nge the size and speed of a shape after it has first been selected

Changing he size and speed of a shape

1> Control the speed of the shape using wheel 4.

2> Control the size of the shape using wheel 5.

3> The size and speed is shown above the wheels on the display.



The minimum size is zero. Obviously, you won't see the shape, and the fixture will resume its previous settings.

If you change fixture attributes while a shape is running, the wheels will change to control the fixture attributes. You can get the Shape controls back again by pressing the "Soft Key" button at the right hand end of the attribute buttons.

5.4 Editing and deleting a shape

You can have a number of different shapes running at once. When in the Shape menu Softkey B [Edit] allows you to select which shape is currently being controlled by the wheels. All active shapes are displayed above the softkeys, press a softkey to make that shape the current shape. The selected shape is highlighted on the display.

You can delete shapes using softkey C in the Shape menu.

Deleting a shape

1> Press Shape, if you aren't already in the Shape menu.

2> Press C [Delete].

3> A list of active shapes is displayed above the softkeys.

4> Press the key for the shape you want to delete.

5.5 Changing the positioning of a shape

Shapes are based on the current settings of the fixture This means that for a position shape, movements will be centred around the current position of the fixture.

Changing the positioning of a shape

1> Select the fixtures you want to change

2> Use the Size/Speed wheels to reduce the shape size to 0 (it's difficult to see the position when erything is moving).

3> Set the position using the Pan and Tilt wheels.

4> Using the Size/Speed wheels, change the size of the shape back to where you want it.

If the Size of a shape is set to be large, the shape will go from the maximum to minimum settings of the attribute and you may not see the current position Reduce the Size to zero or a small value to see the effect of th cu rent position.

5.6 How a shape works across multiple fixtures

Sha es get more interesting (and look more impressive) when you apply them to multiple fixtures. The Diamond lets you set how a shape is phased across several fixtures. This is great for creating instant wave" or "ballyhoo" type effects.

The display above Wheel 6 shows the phase in degrees, and below that, the number of fixtures before the shape repeats. For example, 180 degrees repeats every 2 fixtures, 90 degrees repeats every 4 fixtures, 60 degrees repeats every 6 fixtures, and so on. You'll need to apply the shape to at least 4 fixtures to see the effect of phase.

Changing the Phase of a shape

1> Set the phase using wheel 6.

2> You can type in a value for the phase by pressing the "@" button below wheel 6 and enter the value on the numeric keys.

3> Or, if you want the shape to repeat every 4 fixtures, press @, type 4 and press A [Set Part].

Note: The order in which you select the fixtures determines how the shapes are applied; the "first" fixture is the one you select first and the "last" fixture is the one you select last. If you use a group to select the fixtures, it uses the order in which you selected the fixtures when you saved the group.

5.7 Examples

How do I make my Mac600's wave around in a trendy manner?

Select the Mac600's by pressing the select buttons. Press Locate to light them up. Press Shape (just above locate). Press A [Create] Pr ss B [Pan/tilt] to look at the list of position shapes. Then press H [Circl]. The fixtures will move. Turn wheel 6 until the phase is set t 90 degrees; this will spread out the movement of the fixtures. Use Wheel 4 to set the shape speed. Use wheel 5 to set the shape size.

How do I make my Mac600's change colour in a ra bow?

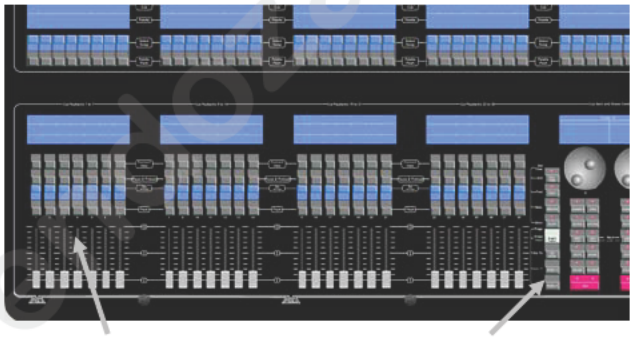
Select the Mac600's by pressing the swop button Press Locate to light them up. Press Shape (just above locate). Press [Create]. Press C [Colour] to look at the list of colour shapes Ke p pressing J [More] until you see the option [Rainbow] (no Rai bow RGB, which is for LED fixtures). Press the softkey for that shape The fixtures will change colour. Use wheel 6 to set the phase zero to make all fixtures do the same colours, or change the pha e make them do different colours. Use Wheel 4 to set the colour cy ling speed. Use wheel 5 to set the range of colours used. Note: R inbow shapes only work with fixtures capable of CMY colour mixing

CHAPTER SIX

6. Cues

In this chapter: how to record cues into the playback faders
- explanation of HTP and LTP channels
- how the Diamond works when programming
- recording and playing back cues
- playback pages
- setting legends for cues
- setting fade times for cues
- copying and deleting cues
- the include function
- editing cues
- record by fixture, channel, mask or stage

So, you now know how to control your dimmers and fixtures and how to use the shape generator. This chapter tells you how to record the wonderful effects you have created so that you can recall them at the touch of a button or fader. The Diamond 4 Vision has 28 playback faders (Diamond 4 Elite has 14) across the bottom of the desk, into which you can record your effects. You select a different page of playback faders using the page select buttons.



Before we get onto the details of recording cues, there are a couple of general things about how the Diamond works. The first thing to understand is what happens when you play back more than one cue at a time. It's important to understand this before going on, or nothing else will make sense.

6.1 What are HTP and LTP channels?

If two or more cues are turned on together, or if you fade out a cue, the Diamond needs to know how to output the levels from the cues. To make this work the Diamond treats channels which control intensity differently from other moving light control channels.

Dimmer or intensity channels work on the principle of "Highest Takes Precedence" (HTP). This means that if the same HTP channel is turned on at different levels in several cues, the highest level will be output. When you fade a cue out using the playback fader, the HTP channels in that cue will fade to zero (or to the next highest level if other cues are fired).

Moving light channels work on the principle of "Latest Takes Precedence" (LTP). This means that the latest change takes over from any other values, so the most recent cue to be turned on is the one which is output. When you fade in a cue, LTP channels do not normally fade, but come on at their full values, and stay there until another value is set. This is important, because when you fade in a cue you

normally just want the fixtures to fade up in their proper position, colour and gobo, you don't want the fixtures moving and changing colour (though you can do this using fade times if you need to). When you fade out a cue, the LTP channels just remain in their last position.

The fixture personality file tells the Diamond which attributes of a fixture are Dimmer attributes and it treats these as HTP. All other attributes are treated as LTP.

6.2 The Editor and Programmer

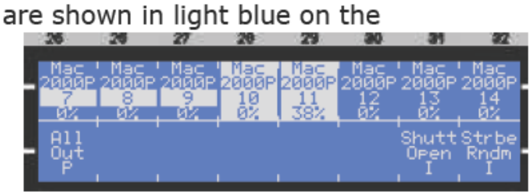
When you select one or more dimmers or fixtures for control, they are loaded into the Editor. You can then use the wheels, palettes and the @ button to edit the settings on the fixtures. You can also apply shapes.

Once you have changed some attributes, the next time you select a fixture a new selection is started. The previous selection is stored in a "Selection Group". You can go back through previous Selection Groups using Shift and the ← → buttons to the right of wheel 3.

All fixtures and attributes that have been edited since the last Clear are stored in the Programmer. The order in which you selected the fixtures is also stored, and is used with the Fixture Overlap function. When you record a cue, the contents of the programmer are saved into the cue.

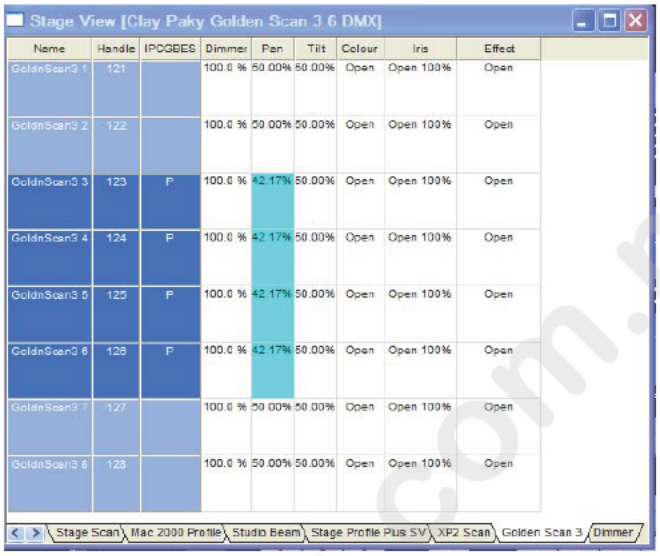
When you press Clear (by the numeric keypad) the programmer and editor are emptied. You should get into the habit of pressing Clear before you start to program a cue, or you can end up recording fixtures you don't want. You also need to press Clear when you finish programming, because any attributes in the programmer will override playbacks.

Fixtures which are in the programmer are shown in light blue on the VDU Stage View. Attributes in the programmer (the things you have changed) are shown in cyan on the VDU Stage View screen. Also, fixtures which are in the programmer have their numbers inverted on the LCD screens (In this picture, Macs 7-11 are in the programmer and 10 & 11 are currently selected).



Note	Firing a cue does not place the values from the cue in the programmer (the Include function lets you do this, see page 49). The Locate function does not place any values in the programmer either.

In the stage view screen shown here, the Locate function has been used on fixtures 1 to 8, then the pan value has been changed on fixtures 3 to 6. Only the changed pan value is in the programmer. The dark blue highlighting shows which fixtures are selected. The IPCGBES column shows which attribute groups have been changed. The light blue highlighting shows fixtures which are in the programmer (ones which have been selected since Clear was last pressed).



6.3 Recording a cue

So now that is all out in the open, let' rec rd a cue.

Recording a cue

1> Press Clear to clear the prog ammer. This ensures that you are starti g wi h a clean slate.

2> Set up a nice effect us ng the fixtures and dimmers. You can n lude shapes in a cue if you want. Remember! Only the fixtures/dimme s you have changed will be recorded in the cue.

3> Press Rec Cue below softkey D).

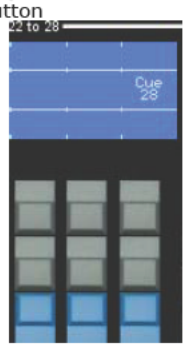
4> Press the o/Swop button of an empty playba k ader you want to use.

5> he display above the fader will change to s ow that you have saved a cue there.

6> You can set a legend for each cue which is shown on the display above the fader in the same way as for Palettes (see page 34).

7> Press Clear to clear the programmer.

Rec Cue button



If you'd rather have it all on one page for instant access, you can also record cues into any unused preset faders. The preset fader then works like a playback fader.

You can press Softkey E [Press to latch menu] which allows you to keep saving cues without having to keep pressing the Rec Cue button. If you do this, you need to press Up to leave Record Cue mode.

6.4 Playing back a cue

Playing back (firing) a cue is very simple. Just raise the fader. (Make

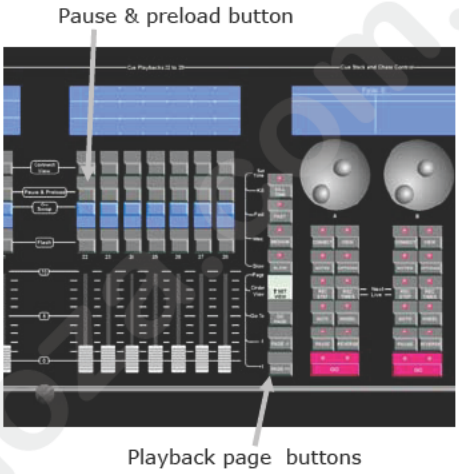
sure there are no values in the programmer by pressing the Clear button, because anything in the programmer will override the playback).

Playing back (firing) a cue

1> Raise the playback fader.

2> To stop the cue, lower the fader.

All the HTP (intensity) channels in the cue will fade up with the fader. The output level of the HTP channels will be mastered by the fader; if you only put the fader to 50%, all the HTP levels will be 50% of their programmed value.



The LTP (movement) channels will be set as soon as the fader leaves the zero position (actually when it passes 3%) and are not normally affected by the fader position. If you need to move the LTP channels with the fader, set the cue to mode 2 (see page 187 in the reference manual).

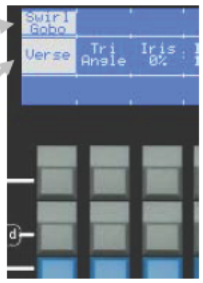
You can also press the Flash button above the fader to turn the cue on instantly. The cue will turn off again when you release the button.

When you're running your show, yo can preload the LTP channels (pre-position the fixtures) by pre sing the Pause & Preload button above the fader. This can b u eful if you want to position the fixtures in blackout and have them r ad to turn on, rather than seeing them wobble into position if you put the fader up quickly.

6.5 Changing playback pages

You ca ch nge pages to select another 28 cues (14 on the Elite) using the Page 1 and Page+1 buttons to the right of the last playback fader, or press Go Page and enter the new page number on the numeric keypa

f an playbacks are fired when you ch nge page, they remain active. The isplay above the playback shows you the running cue from the previous page, then above that, the cue from the new page.



If you want to use the same playback fader on a new page, you need to lower it to zero to kill the first playback, then raise it again to fire the new playback on the new page. The legend for the cue on the new page will drop down to the normal position.

If you have playbacks on the preset faders, you use the Fixture Bank buttons to change pages (below Softkey A).

6.6 Setting a legend for cues

The display above each playback fader allows you to set a legend for each cue, so you can see at a glance what is stored in each fader.

Setting a legend for a cue

1> Press the blue Set Legend button (bottom right of console).

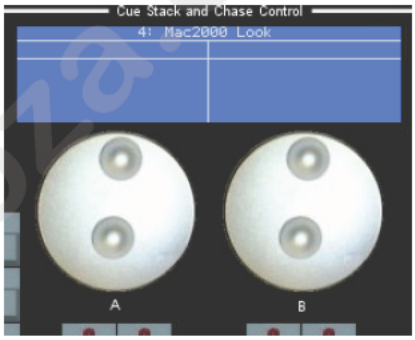
2> Press the Go/Swop button of the playback you want to legend.

3> Enter the text using the keyboard. You can enter 2 lines of 6 letters.

4> The display above the playback fader shows you what you are typing. The display above Softkey C also shows you your text and how it will be formatted.

5> Press Enter to save the legend.

You can also set a legend for the playback page by pressing A [Set Page legend] from the Set Legend menu. The page legend is shown above the Cue Stack control wheels.



6.7 Copying a cue

Copying a cue is very fast and simple

Copying a cue

1> Press the blue Copy but n (bottom right of console).

2> Softkey B [Press t Copy Legend] or [Copy legend enabled] lets you set whether t e legend will be copied with the cue.

3> Press the Go/Sw p button of the cue to be copied.

4> Press the o/Swop button of the playback (or the Select/Swop button of the reset fader) you want to store it in.

5> E [Press to latch menu] keeps the Copy mode active, so you can keep copying things without having to keep pressing the Copy button Press Up to leave Copy mode.

The ew cue is a separate copy of the old one. Copies are not linked to each other.

6.8 Deleting a cue

If you want to delete a cue so you can store something else in it:

Deleting a cue

1> Press the blue Delete button.

2> Press the Go/Swop button of the playback you want to delete.

3> Press the Go/Swop button again to confirm the delete.

Warning: You cannot undo deletion of a cue, once it's gone, it's gone.

6.9 Editing cues

You can edit any part of a cue you have already saved simply by

making the changes and saving the new information on top of the cue.

Editing a cue

1> Press Clear to empty the programmer.

2> Fire the cue you want to edit, so you can see what you are doing.

3> Select the fixtures you want to change, and make the changes.

4> Press Rec Cue.

5> Press the playback Go/Swop button for the cue you are editing to save the changes.

6> The cue will be updated with your changes.

The changes you have made are saved into the cue. None of the oth r information in the cue is affected.

If you want to replace the cue with a new cue, delete the old cue from the playback first.

If you need to remove fixtures or individual attributes of fixtures from the cue, you can use the Off function to do this. The Off function is described in the reference manual on page 184. Yo can lso use the Shift+Off function (called On) to put removed fix ure r attributes back into cues.

6.10 The Include function

Sometimes it's useful to be able to re use some aspects of a cue you have already created in another c If you've created a really nice pattern of criss-crossing light be ms, for example, you might want to use it again in another cue with di ferent gobos and colours.

Normally when you play bac a cue, the information is not loaded into the programmer, so yo c n't simply fire a cue, modify it and save it to a new cue. The Include function lets you reload a cue back into the programmer. You can then use it in a new cue.

The Include fun tion loads selected attributes of selected fixtures into the program r. So, for example, if you have a cue which contains positio co our and gobo information for 8 fixtures, you can use the Include f nction to load only the colour information for 4 of the fixtures into the pr grammer. You could then Include position information from another cue into the programmer and so build up a new cue using information from several existing cues.

Using Include

1> Press the Include button (below softkey D).

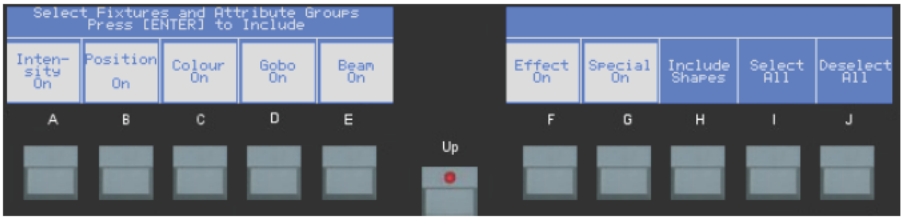
2> Press the Go/Swop button for the cue you want to use.

3> Select the fixtures from which you want to take settings. All fixtures used in the cue are automatically selected by default, so you just need to deselect the ones you don't want to use.

4> Use the softkeys to select which attributes will be used. Buttons I and J let you turn them all on or off. By default they are all On.

5> Press Enter.

6> The selected attributes of the selected fixtures will be loaded into the programmer.



If you don't change any options, all attributes of all fixtures in the cue will be Included.

If the cue you are including contains shapes, you can select whether the shapes will be Included using softkey H.

Include is also useful when you are programming chases and cue lis s, which is described in the next section.

6.11 Setting fade times for a cue

You can set a fade in and fade out time independen ly fo every cue. The fades are set using softkey C for fade in and D fo fade out. When you fire the cue or kill it, the console will fade the cu in or out with the time you programmed.

Setting fade times for a cue

1> Press A [Set Times] (if option A s not [Set times], press Shift+Up to get the top level menu).

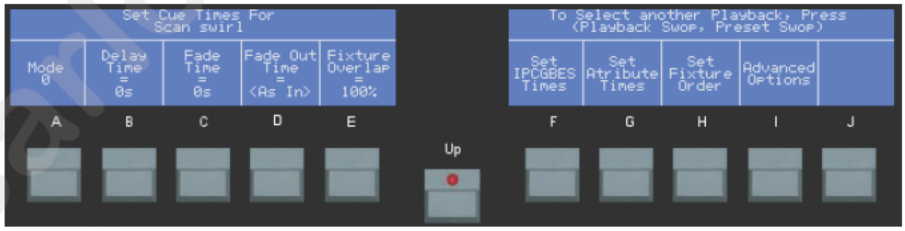
2> Press the Go/Swop button of the playback you want to set times for

3> The display shows you he times you can set.

4> Press C to set Fade In time, or D to set Fade Out time.

5> Use the numeric keypad to enter the new time. Press Enter to save it.

6> Press Up to lea e Set Times mode.



Cues can be set to Mode 0, 1, 2 or 3 (Softkey A) which affects how the fade will operate. This, and the many other timing functions available, are described in the reference manual on page 187.

6.12 Record by fixture, channel, mask or stage

Normally, if you change just one attribute of a fixture the Diamond records all the attributes of that fixture even though you haven't changed those attributes. So if you change the pan position, the Diamond will also record the tilt, colour, gobo, iris, and so on. However, the Diamond also has more selective modes of operation where it only records the changed attributes. You can choose the mode using

Softkeys G, H, I and J when recording a cue.

- **I- Record by fixture**: This is the normal mode of the Diamond. It means that when you record a cue, all attributes of every fixture in the programmer are recorded in the cue. So if you change only the position of a fixture, the colour, gobo, intensity and all other attributes of that fixture are recorded as well (just selecting a fixture puts it in the programmer, you don't have to change anything). This is useful because you know that when you recall the cue it will look exactly as it did when you saved it. However, it can be slightly inflexible if you want to combine cues.
- **H- Record by channel**: This means that only attributes you hav changed are recorded in the cue. So if you change the position f a fixture, only the position is recorded. When you recall the e, the colour, gobo etc will remain as they were last set. This mea s you can use a cue to change the position of some fixtur while leaving the colour set by a previous cue, allowing mor va ety when you are running a show. It is a powerful feature b t you can easily get yourself into trouble with it so you need to be sure which attributes you want to record and which you ant to "show through". When you're learning, it's best to ecord some cues using Record by fixture which set the fixtures to a known state, then have some colour cues to modify j st t colour, or some gobo cues to set the gobo, or other a trib tes.
- **G- Record by Mask**: You can selec which attributes will be recorded in the cue, using the IPCGBES attribute groups. Above Softke G [Record by Mask] the display shows yo which attributes are going to be saved. Press G again to change the attribute s lect on.

- **J- Record Stage**: Th Diamond will record all fixtures or dimmers which are either in the programmer or hich are lit (have intensity above zero). The cue will contai the actual output values at the time; if you have used Palettes to set the look, the palettes are not stored.

Interna ly t e D amond actually records all output from the console in every cue regardless of the mode, but it ignores unwanted output using the " ff" function. This means you can recover settings later if you use th wro g mode. See page 185 in the reference manual for more about his.

6.13 Using shapes in cues

As you would expect, any shapes you have set up will be saved as part of the cue. If you are using Record by Channel mode, there are some interesting possibilities.

If you have changed the position of the fixture, then the new position will be stored in the programmer. When you recall the cue, the fixture will start the shape at the position you set in the cue.

If you have not changed the position of a fixture, when you recall the cue the shape will run starting at the current position of the fixture. This allows you to make a "shape only" cue which overlays shapes on the current positioning of the fixtures.

6.14 Examples

How do I save my dimmer settings on a fader as a cue?

Press Clear to remove any changes you've made so far. Set the dimmers as you want them using the preset faders. The display below the dimmer channels should invert to show you that the dimmers are now in the programmer (if the "Preset Fader Selects Fixture" user setting is turned off, you will have to select the dimmers yourself by pressing their Select buttons). Press Rec Cue. Press the Select button of an empty fader where you want to save the cue. You can save cues in playback faders (across the bottom left) and preset faders (across the top of the console).

Why don't my Mac 600's move to the position I've programmed when I fire a cue?

You have not pressed clear since you positioned the fixture for another cue, so the Mac600 positions are held in the programmer. he programmer overrides cues. If you press Clear your cues should work.

How do I save a cue containing only the positi ns from another cue?

Press Include (below softkey D), then the swop b tt n of the cue you want to take positions from. All fixtures in the cue are selected, deselect any you don't want. Press J [Dese ect All]. Press B until the option shows [Position On]. Press Ente . The position information for the selected fixtures will be recalled f om the cue. Then save the cue by pressing Rec Cue and an empty Sw p button.

CHAPTER SEVEN

7. Chases

In this chapter: how to use chases
- explanation of chases
- programming a chase
- running a chase
- setting speed and crossfade
- editing a chase using Unfold
- copying and deleting chases

7.1 What is a chase?

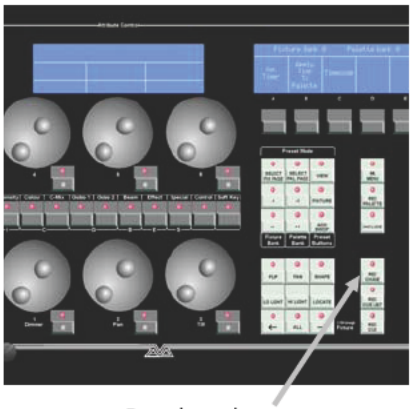
A chase is simply an automatic sequence of cues. It is norm lly used to flash lights in a sequence or to change fixtures in a sequence without you having to keep pressing buttons. You can set a spe d and a crossfade setting which the Diamond uses when mov ng from one cue to the next. You can also set individual timings fo cues in chases if you want to.

Don't get shapes confused with chases A hap simply moves one attribute of the fixture around in a patte A chase allows you to define each attribute of the fixture in a cont olled step-by-step manner.

However, you will find that using sha es can save you a lot of work, and you won't have to program a many chases as you would on a conventional lighting desk.

7.2 Recording a chase

To program a chase, you have to set up the lighting state fo ea h cue in the chase. You can either set all th fixtures and dimmers manually f r ea h cue, or you can use Include o load in the information from cues you h ve lready recorded. Remember, if you j st fire a cue, it does not go into the p ogrammer and won't get saved as part of a chase unless you use Record Stage mode or Include.



Rec chase button

Programming a chase

1> Press the Rec Chase button.

2> Press the Go/Swop button of the playback where you want to store the chase.

3> Press Clear, then set up the lighting for the first cue, either manually or by using "Include" on existing cues (see page 49). You can save shapes in chase cues.

4> The display above softkey A shows the number of the cue currently being programmed; the top line of the display shows how many cues are stored in the chase.

5> Press the playback Swop button or A [Append Cue 1] to record the cue. The information from the programmer is stored as Cue 1

of the chase.

6> *Set up the lighting for the second cue, then press Swop or A again to save cue 2.*

7> *If you get a cue wrong you can press C [Insert Cue] then type the cue number you want to change on the number keys. You then have the option to A [Merge] or B [Overwrite] the existing cue.*

8> *When you have saved as many steps as you want, press Clear, then press Exit or Up to finish.*

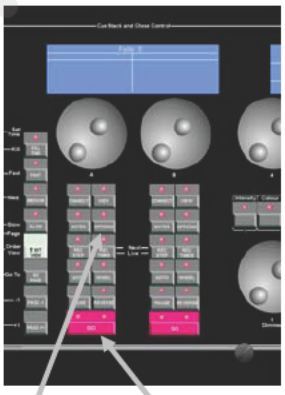
Remember to press Clear at the end of programming, or the settings for the last cue will remain in the programmer and will override the chase when you load it, so you won't see the chase properly.

7.3 Running a chase

Just raise the playback fader and the chase will start to run This is known as firing a chase.

You can pause the chase by pressing the Pause & Preload button above the fader. The Go/Swop button will continue the chase.

The most recent chase will be automatically "connected" to the Chase Controller A wheels and buttons. These allow you to change the set ings of the chase. If you want to connect a differ nt chase to Chase Controller A or B, press the Connect button of the controller (ju t below the wheel) then the Connect/View or Swop button above the fader of the chase y u want to connect.



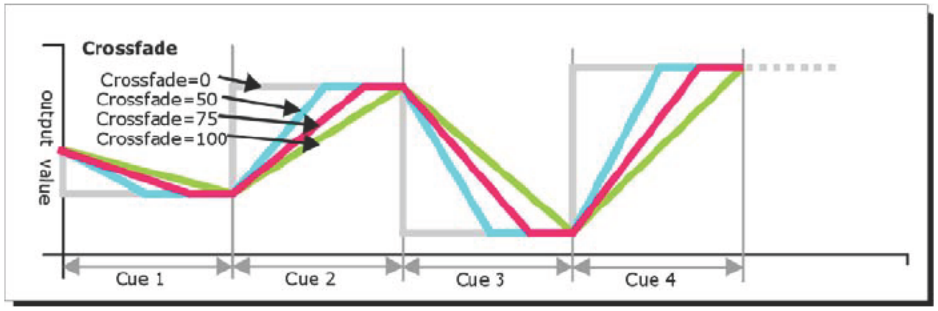
The HTP (intensity) channels in the chase will be mastered by the position of the fader; in other words if you set the fade at 50% then all HTP channels will run at 5 % of their programmed levels. The othe ch nnels (LTP) will be set as soon as the fader moves above zero. You can pre-position the LTP channels to the first cue in the chase by pressing the Preload button of the play ack

7.4 Setting speed, fade and other chase options

You can change the Speed and Crossfade (Xfade) of the chase.

Crossfade is the "slope" between cues; with a crossfade of 0, the fixtures snap instantly to the next cue, but with a crossfade of 100, the fixtures spend the whole cue time fading to the next cue. With a crossfade of 50, the fixtures delay for half the cue time and fade for the other half of the time.

The following picture illustrates how crossfade works.



Setting chase speed and crossfade

1> Fire the chase you want by raising the fader.

2> Press Options on the chase controller.

3> Press C [Speed] to change the speed.

4> Type the speed you want in Beats Per Minute and press Enter (you can change this to Seconds in the user settings).

5> You can also press C twice from the Options menu to "tap" the chase speed.

6> Press B [Xfade] and type the fade from 0 – 00 to set the crossfade. 0=no fade, 100=max fade

You can also change the speed by turning the wheel of the chase controller.

When you are recording a chase you can record by Channel, Fixture, Mask or Stage as with cues. This allows you to make chases which only control certain attributes of the f xtures, and leave the other attributes unaffected. See page 50 in Cue chapter for an explanation of how this works.

The chase normally s arts at cue 1, and runs forward. You can change the direction of the chase by pressing the Reverse button on the chase controller. You can make the chase run once and stop by pressing B [Stop On L st ue]. You can make it bounce (run forward to the end, then backw rds back to the start) by pressing C [Bounce].

There are lso Overlap options which allow you to overlap the current cue w h the next cue in various ways to create astounding effects from mundane chases. Rather than all fixtures moving to the new position at the same time, you can make them move one after the other. Overlap is explained in the reference manual on page 198.

7.5 Setting legends for chases

You can set a legend for chases in exactly the same way as you did for a cue. In addition, you can set a legend for individual cues of a chase. The reference manual tells you how to do this.

Setting a legend for a chase

1> Press the blue Set Legend button (bottom right).

2> Press the Swop button of the playback you want to legend.

3> Enter the legend using the keyboard (the legend will appear above the fader and above Softkey C as you type) and press Enter..

7.6 Editing a chase using Unfold

The Diamond has a powerful chase editing system. The Unfold function places each cue in a chase on one of the playback faders, allowing you to examine and edit each cue individually as if it was a normal stand-alone cue.

If your chase has more cues than the console has playback faders, you can change pages using the playback page+1 and page-1 buttons.

Editing a chase using Unfold

1> Press the Unfold button (above the numeric keys).

2> Press the playback Swop button of the chase to be ed ted.

3> The chase cues are loaded into the playback faders.

4> Raise a playback fader to view the contents of n cue.

5> To edit the contents of any cue, make the changes then press A [Record] then the Swop button of the playb ck for that cue (or type the cue number on the numeric keys a d press Enter).

6> You can change the timings of individual cues in the chase using B [Set Cue Times] (see reference manual page 198 for details).

7> To change the times for the who e the chase, use softkey G [Set chase times].

8> Press the Unfold button again to finish.

The other softkeys allow y u to insert, delete or copy cues in the chase. This is described in the eference manual.

You can also edit chas cues while you are running the chase, without using unfold. The "R c Step" button allows you to record the current programmer ettings directly into the current cue of the chase. This is described i mo e detail in the reference manual.

7.7 Copying a chase

Chases can be copied in exactly the same way as cues.

Copying a chase

1> Press the blue Copy button (bottom right).

2> Press the Swop button of the chase you want to copy.

3> Press the Swop button of the playback you want to store it in

4> You can change page after pressing the first Swop button if you want to copy a chase to a different page.

Copied chases are not linked to the original.

7.8 Deleting a chase

If you want to delete a chase:

Deleting a chase

1> Press the blue Delete button (bottom right).

2> Press the Swop button of the chase you want to delete

3> Press the Swop button again to confirm the delete.

You cannot undo deletion of a chase.

7.9 Examples

How do I program a dimmer chase?

Create the chase by pressing Rec Chase then a swop button of a vacant playback or preset. Press Clear, and turn on the dimmers for step 1. Press A [Append Cue] to save the step. Press clear, then turn on the dimmers for step 2, and press A to save. When you have saved all the steps, press Shift and Up to end.

I've programmed a chase from some existing cues but when I fire it, nothing happens

To use existing cues in a chase, you must use the Include f nct on to load the cue into the programmer. If you just fire a cue and then try and save that as a chase step, nothing will be saved be ause the cue will not be in the programmer (you can also use Reco d Stage mode to use existing cues in a chase).

The last step of my chase doesn't play b ck

After programming you need to press lear to clear the programmer (which overrides the chase output).

CHAPTER EIGHT

8. Cue Lists

In this chapter: how to use cue lists
- programming a cue list
- running a show using a cue list
- setting timings
- editing a cue list using Unfold

8.1 What is a cue list?

A cue list is a sequence of cues, each one having its own fade times and being triggered by the Go button. You can program all the cues for your show into a cue list and run the show simply by pressing one button This is ideal for complex theatrical shows where the show has to un the same night after night.

In addition, you can tell the console to automatically trigger other playbacks when a cue is run. These are called Autol ads and allow complex sequences to be operated from the cue list

Cue lists differ from chases in the way the consol handles changes between cues. Chases will crossfade between cue whereas a cue list will track changes. For example: You record dimmer 1 in cue 1, press clear, record dimmer 2 in cue 2, press c ear, ecord dimmer 3 in cue 3.

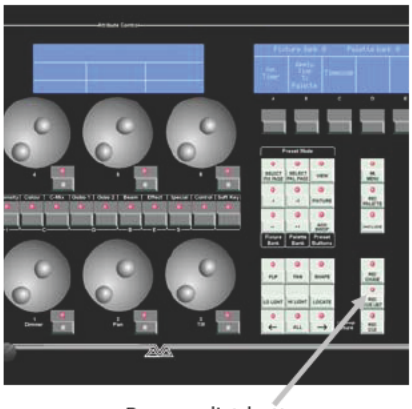
If this were a chase, when you play it bac each cue would fade out the dimmer from the previous cue, so o ce you get to cue 3, you would only have dimmer 3 active.

If it was a cue list, when cu 2 fades in, dimmer 1 would not fade out as there is no data about dimm r 1 in cue 2. This means that once you get to cue 3, it would have accumulated the data from all the cues and the output would consis of dimmers 1, 2 and 3 together.

If you wanted cu 2 to turn off dimmer 1, you would have to explicitly set the level of immer 1 at zero (by selecting it and setting the Intensity to 0); or you can miss out pressing Clear in between saving each c e.

8.2 Recording a cue list

To e ord a cue list, you simply set up the lo k for each cue. You can either set all the fixtures and dimmers manually for each cue, or you can use existing cues.



Rec cue list button

Creating a Cue List

1> Press the Rec Cue List button.

2> Press the Go/Swop button of the playback where you want to store the Cue List.

3> Press Clear, then set up the lighting for the first cue.

4> The display above softkey A shows the cue number of the cue currently being programmed, the top line of the display shows how many cues are stored in the cue list.

5> Press J [Record Stage Hard Cue] to set the recording mode. This

mode will record everything which has its intensity above zero, plus everything in the programmer.

6> Press the playback Swop button or A [Append Cue 1] to record the step. The information from the programmer is stored as Cue 1 of the cue list.

7> Set up the lighting for the second cue, then press Swop or A again to save step 2. Do not press Clear in between cues, as faders moving to zero will not be recorded. If you do press Clear, you need to make sure that all faders you have changed are selected (by pressing the blue Select button below the fader).

8> To insert a cue, or to update (merge) or overwrite an existing cue press C [Insert Cue] and type the cue number to be inserted. If this is the number of an existing cue, you then have the option to A [Merge] or B [Overwrite] the existing cue. To insert a new cu , enter a number between two existing cues (such as 2.5 to g between 2 and 3)

9> When you have saved as many cues as you want, press Clear, then press Exit or Up to finish.

You can set times for each cue while you are recording the cue list by pressing B [Set times], which will set the times for the last cue you recorded. You can also set default timing which w l be automatically used for new cues by pressing D [Default t mes]. The various timing functions are described in the reference ma u l on page 187.

8.3 Running a cue list

To run a cue list you need t first connect it to a controller, then raise the fader and use the G butt n to fire cues. The fader acts as a master for the intensity (HTP) han els in the cues, so if you put the fader at 50%, all the intensi ies w ll be 50% of their programmed values.

Running a cue lis

1> Press the Connect button on chase controller A.

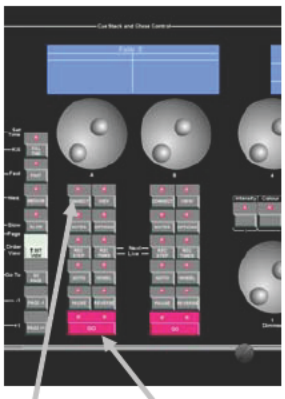
2> P ess the Connect/View button of the playback where the cue list is stored.

3 Raise the fader of the cue list.

4> Press the red Go button to fire the cues.

> The cue list fader is the master intensity fader for all cues in the cue list.

6> When you have finished with the cue list, press Shift and the swop button of the playback to deactivate it (otherwise the last cue remains active).



You can press the Pause button of the controller to pause a fade (press Go to resume) or the Reverse button to go back to the previous cue using the programmed fade times.

The chase autoconnect function does not operate for cue lists.

8.4 Setting legends for the cue list

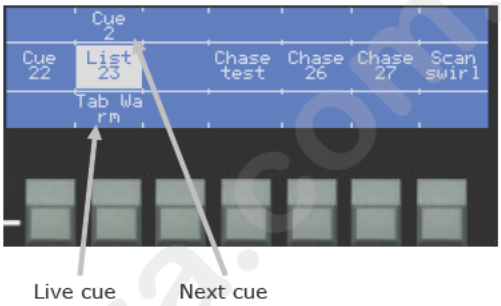
You can set a legend for the cue list itself and for individual cues. The legends are displayed above the playback fader and above the controller wheel.

Setting an overall legend for a cue list

1> Press the blue Set Legend button.

2> Press the Swop button of the playback you want to legend.

3> Enter the legend using the keyboard (the legend will appear above the fader and above Softkey C as you type) and press Enter.



You can set a legend for each cue which is also displayed above the playback fader. The legend for the live (current) cue is immediately above the fader and the legend for the next cue is displayed on the top line of the display.

Setting cue legends in a cue list

1> Open the cue list for editing by pr ssing Rec Cue List then the swop button for the cue list

2> Press B [Set times] and lec the cue you want to set using softkey I.

3> Press J [Playback p ions] then F [Set legend]

4> Type the cue legend on the keyboard and press Enter.

5> Select another c e to legend using softkeys I and J or press Shift+Up to fi ish.

8.5 Setting times for cues

Each ue c n have its own individual timings. You can also link cues togeth r if you want them to run on automatically.

Ther are two basic times: A delay time (delays the start of the cue af r you have pressed the Go button) and a fade in time (over which he cue fades from the previous state to the state recorded in the cue). There are additional timing options which are described in the reference manual on page 211.

Setting times for cues in a cue list

1> Open the cue list for editing by pressing Rec Cue List then the swop button for the cue list.

2> Press B [Set times] and select the cue you want to set using softkeys I [Select cue].

3> To set the delay time, press B [Delay Time], type a time on the keypad and press Enter. To set a fade time, press C [Fade Time] and enter the time.

4> Select another cue using I or press Shift+Up to exit.

8.6 Editing a cue list using Unfold

The Diamond has a powerful editing system for cue lists called Unfold. The Unfold function places each cue on one of the playback faders, allowing you to examine and edit each cue individually as if it was a normal stand-alone cue.

If your cue list has more cues than the console has playback faders, you can change pages using the playback page+1 and page-1 buttons.

Editing a cue list using Unfold

1> Press the Unfold button (above the numeric keys).

2> Press the playback Swop button of the cue list to be edited

3> The cues are loaded into the playback faders.

4> Raise a playback fader to view the contents of any cue

5> To edit the contents of any cue, make the changes then press A [Record] then the Swop button of the playback for that cue (or type the cue number on the numeric keys and pre s Enter)

6> You can change the timings of individual cues using B [Set Cue Times] (see reference manual page 208 for details)

7> Press the Unfold button again to finis

The other softkeys allow you to inse t, delete or copy cues in the cue list. This is described in the refer nce manual.

8.7 Copying a cue list

Cue lists can be copied n exactly the same way as cues.

Copying a cue list

1> Press the blue opy button (bottom right).

2> Press the wop button of the cue list you want to copy.

3> Pre s the Swop button of the playback you want to store it in.

4> ou can change page after pressing the first Swop button if you w nt to copy a chase to a different page.

C pied cue lists are not linked to the original.

8.8 Deleting a cue list or a cue

If you want to delete the whole cue list:

Deleting a cue list

1> Press the blue Delete button (bottom right).

2> Press the Swop button of the cue list you want to delete.

3> Press the Swop button again to confirm the delete.

To delete an individual cue from within a cue list:

Deleting a cue from a cue list

1> Open the cue list for editing by pressing Rec Cue List then the Go/Swop button for the cue list.

2> Press the blue Delete button (bottom right).

3> Type the cue number you want to delete and press Enter.

Be warned that you cannot undo either of these operations.

8.9 Examples

How do I program the cues for my show into a cue list?

Press Rec Cue List, then a swop button of a vacant playback or preset. Press Clear, and turn on the dimmers for cue 1 either using the preset faders or by typing the levels (e.g. 1 THRO 10 DIM@ 5 to set channels 1-10 at 50%). Set up any fixtures you are using. Press A [Append Cue] to save the cue. Set the fade times for cue 1 using B [Set times]. Press clear, then turn on the dimmers for cue 2, and press A to save. When you have saved all the steps, press Shift and Up to end.

To run the cue list, press Connect on chase controller A, th n the swop button of the cue list. Raise the fader, then press the Go but n on controller A to start the first cue. The fader sets the master levels for the cues.

They want to add in another cue between 5 nd 6, how do I insert a cue?

Press Rec Cue List, then the swop button o the cue list. Press Clear, then set up the dimmers and fixtures fo the new cue. Press C [Insert Cue] then enter "5.5" on the keypad nd ess Enter. A new cue will be created between 5 and 6. Press B [Set Times] to change the times for the new cue.

CHAPTER NINE

9. Running your show

In this chapter: running your show with the Diamond 4
- Showtime
- Master faders
- Manual control during a show (busking)

9.1 It's showtime...

At regular intervals during your programming, and especially when you have finished programming (or you've run out of time) and it's showtime, the most important thing is to back up the show to USB pen drive or CD. Even saving it as a new file on the internal disk is better than nothing (see end of section 2 on page 23 for instructions).

If your show is being operated by a lesser mortal, t rn the key to Safe and remove the key. This prevents anyone from lter g the programming of the console.

9.2 Master faders

Master faders are used to control the verall output of the console, for example if you want to fade down verything, or just fade the preset faders.

The Diamond does not have dedicated Master faders, but allows you to assign one or more of the pl yback faders as Master faders.

Assigning master f d rs

1> Press J [Utils].

2> Press B [S t M sters].

3> Select typ of master fader (Grand, Playback, Flash, Preset, Swop)

4> P ess the Go/Swop button of a playback to assign that fader as a Master.

5 Keep pressing Up until the button light goes out to return to the root menu.

- **Grand Master** controls the output level of the entire console.
- **Playback Master** controls the overall level of playback faders.
- **Flash Master** controls the level of cues fired with the Flash buttons.
- **Preset Master** controls the overall level of the Preset faders.
- **Swop Master** controls the level of cues fired with the Swop buttons.

Any Masters which are not assigned to faders are fixed at 100%, so you don't need to assign master faders if you don't need them.

9.3 Flash and swop buttons

The Flash and Swop buttons on the playback faders may be used to flash and solo cues and chases. The Flash button adds the playback into the current output, the Swop button turns off all output except its own playback.

You can also flash and swop individual fixtures or dimmer channels using the Select/Swop and Palette/Flash buttons below the preset faders. To use them for this, you need to enable Add and Swop mode by pressing the Add/Swop button below softkey B. In Add/Swop mode you cannot select fixtures or palettes from the buttons.

Press the Fixture button above it to return the Add/Swop buttons to fixture and palette control.

9.4 Manual control during a show ("busking")

If you have not had as much programming time as you wou d have liked, you might need to make up some additional effects during the show. This is sometimes called "busking", and is where he fun starts!

You can create instant variations by recalling pale te values to modify your existing cues. The Diamond can fade to the alette values for added effect.

Fading palettes over time

1> Select some fixtures which are already in use on stage.

3> Type "2" (or any time, in seconds) on the numeric keypad.

4> Press a Palette button to recall a colour palette.

5> The selected fixtures wil c ange to the new colour over a time of 2 seconds.

When a fade time is nte ed, you can also change the "Fixture Overlap" using softkey A. This allows you to create "roll" or "peel" effects when using a series o fixt res. With overlap=100%, all fixtures change at the same time. If verl p=50%, the second fixture will not start its fade until the fir t fix ure is half way (50%) through fading. The order of the fixtures i se by the order in which you selected them.

When programming your palettes, group all the colour palettes in one ar of the console, position palettes in another area, and so on. This elps you to find them when the show is running and the pressure is on

You can use "Record by channel" or "Record by mask" mode when programming to set some cues to only affect position and other cues to set colours, gobos, add shapes, and so on. By combining two or more cues you can produce a much wider range of effects than if all your cues control all the attributes. However, for this to work well you need to make sure you know which attribute is going to be affected by each cue; as if you fire two "colour only" cues then nothing is going to light up.

Refer to the Reference Manual for more useful tips when running your show.

C H A P T E R T E N

10. Introduction to intelligent lighting

In this chapter: A quick rundown of intelligent lighting and DMX control

- What is intelligent lighting
- DMX control
- Cautions when using DMX

This section is for those who have not used intelligent lighting much before, who are put off by dip switches, lights that move unexpected and strange digital control systems that fly down microphone cable

10.1 Ordinary lighting

Standard lighting consists of a variety of light bulbs connected to dimmers. The lights may be anything from par cans to theatrical lanterns, and the dimmer controls the intensity of the light. A typical controller for standard lighting has a set of faders and each fader controls the intensity of one dimmer using a low-voltage control signal of 0 to 10 volts. The standard way to link the faders to the dimmers is by using a multicore cable with one core (wire) for each dimmer channel.

10.2 So what is intelligent lighting?

Intelligent lighting usually contains more functions than just intensity; a typical intelligent light, often called a "fixture", can also change colour, project different patterns (called "gobos") and direct the light beam in any direction using a movable mirror or by motorised control of the light unit itself. The fixtures are called "intelligent" because they contain a small computer which controls the movement of the internal motors in response to the control signals. Some fixtures can also listen to music and produce their own light show, sometimes synchronising themselves with other intelligent fixtures. However they are actually not all that intelligent and usually need a user to make them do something interesting.

10.3 How do you control it?

Each function of an intelligent fixture requires its own control signal, so the user can select the colour, position, gobo etc. You can use 0 to 10 volt control signals on some fixtures, but the cable carrying the control signals again has to be a multicore with one core for each function, so each fixture might need 8 or more cores in the control cable. Some of the more complicated fixtures use 20 or more channels.

When several fixtures are used, the number of cores needed in the control cable soon becomes large. The cable also has to split at each fixture. It all gets a bit complicated.

10.4 The DMX control system

Fortunately, there is an easy to use system for controlling intelligent lighting and dimmers. It is called DMX-512, which stands for Digital MultipleX, and it sends up to 512 control signals down a single data

cable. The cable can be simply daisy-chained from each fixture to the next. Microphone-style XLR connectors are usually used, sometimes 3-pin and sometimes 5-pin. More recently, standard computer network (RJ45) connectors are being used.

The DMX system sends out the level for channel 1, followed by the level for channel 2, then 3, then 4 and so on, all the way up to a maximum of 512, though not all DMX systems send out all the channels. It then goes back to channel 1 again. All the units connected to the DMX receive all the channels, and you tell them which channels to respond to by setting the "base channel" or "DMX address" on each unit. The computer inside the fixture waits for the correct channels to come up, then reads in the levels for those channels.

Dimmers can also understand DMX; some dimmers can read it di tly, others use a demultiplexer or "demux" to convert the DMX into he normal 0 to 10 volt analogue signals they are used to.

10.5 Moving light control desks

Faders are ideal for controlling dimmers. More comp icat d dimmer control desks have cues to record the level of all he immers, so you can recall a setting without having to set all the f ders again during a show.

However, once you start controlling lights t at move and change colour, faders become less ideal, because it is th movement rather than the end level which is important. Dedicat d moving light desks such as the Diamond include many helpful funct ons which makes the programming of intelligent lighting much easier such as palettes of pre-programmed colours and positions, and a shape generator to create movements.

10.6 A few cautions about using DMX

DMX is a robust syst m which normally works very well, but sometimes it can be problematic. Here are a few tips for making DMX work well.

- DMX cabling should be twisted-pair data cable. Microphone cable is not recommended because it doesn't transmit the signal as well. You will p obably get away with it, but equally you might have p oble s.
- Always ensure the last fixture in the DMX line is terminated. This p events data interference on the line. On some fixtures this can be done by flipping a switch, others are self- terminating, but often you will have to fit a terminating plug into the vacant DMX output on the last unit. This has a 120 ohm resistor across the DMX line.
- Don't split the DMX cable. Loop it from one unit to the next. If you have to split it, use a proper active splitter unit.
- The DMX specification says that you should not run more than 32 fixtures from one DMX line unless the fixtures are buffered or optically isolated. Either use several DMX lines (the Diamond has eight) or use a DMX repeater unit. In practice, most fixtures do not put maximum loading on the DMX line and you will probably get away with using more if you have to, but the DMX signal may be weaker than it should be which could cause erratic fixture operation.
- Try to avoid running your DMX lines near high voltage cables or

neon effects. They may pick up interference which will stop the system working.

CHAPTER ELEVEN

11. Introduction to Avolites consoles

In this chapter: How Avolites consoles relate to other moving light consoles

- Operating the console
- Manual control of lights
- Programming

If you have used intelligent lighting before, this section explains the thinking behind how Avolites consoles work and tells you what everything is called. The Diamond consoles are the biggest in th Avolites family and differ in some ways from their smaller brothers.

11.1 Operating the console

The console has two main modes, set using the keyswit h; these are **Operate** (which allows everything to be changed us for programming a show, and running a show for expert users), and **Safe** (used when running a show and allows limi ed us override but no changes to programming).

The operation of the console is based arou d the two LCD screens on the bottom right of the console and th A J **Softkeys** below them, which allow you to select the me u o tions on the screens. These options change depending on what the console is doing. In addition there are many buttons which allow one-button access to key functions.

One or two **VDU screen** can be connected to the console which provide many useful s een giving information to the user.

11.2 Controlling lights

To an Avolites console, a light is either a **Dimmer** (single intensity control cha nel or a **Fixture** (Multiple control channels)

All Fixture have a **Personality File** which tells the console how to contr l the fixture. You don't need to know how the fixture works, you jus tell the console what you want to do with the fixture (such as change colour) and it knows which controls to change to get the effect.

You tell the console what fixtures/dimmers you have and their DMX addresses by **Patching** them. When you patch, you allocate a **Handle** to the device. The handle is one of the **Preset Faders** and **Select** buttons across the top of the console. You can allocate several dimmers to one handle if you want to group them, but only one fixture can be allocated to any one handle. The display below the fader shows you what is patched there, you can set your own legends here.

To control a fixture, you need to select the fixture you want to control by pressing the Select button of the handle. The display above the button inverts to tell you that the fixture/dimmer is selected.

Additionally you can control a dimmer, or the intensity of a fixture, using the **Fader** of the handle. If you change pages so that the fader has been controlling something else, you will need to **Match** the fader to the current dimmer level before it operates the dimmer.

Control of fixtures is done using some or all of the six **Attribute Wheels**. To change the **Attributes** of the fixture(s) you've selected, just spin the wheels. The bottom three wheels always control Dimmer, Pan and Tilt. The top three wheels can be allocated to control other attributes (colour, gobo, effect etc). Select which attribute you want to control using the buttons between the two sets of wheels. The display above the wheels shows you which attributes are being controlled.

11.3 Programming the console

To store your looks you've created on the stage, the console provides **Cues, Chases** and **Cue Lists**. These are stored in **Playback Faders** across the front left edge of the console (you can also store them in the **Preset Faders** if you want). Many **Pages** of playbacks are available using the **Playback Page** buttons. You can set a **Legend** for each cue which is shown on the display above the fader.

When you save a playback, the console only saves settings you have changed using the wheels. Whenever you select a fixture and control it using the wheels and attribute buttons, your changes are stored in the **Programmer**. The console allows you to save just the changed attributes (Record by Channel), or it can save all attributes of every fixture you've selected (Record by Fixture). You can also choose to record only specific attributes using Record by Mask. This selective saving of attributes is often called "Tracking" on other consoles; fixture attributes remain in their last state unless you specifically change them.

The programmer records all changes in the console until you press the **Clear** button. You should press the Clear button before setting up the look for a cue, otherwise there may be all sorts of changes you don't want in the programmer, which would end up in your cue.

You can reload information from cues, chases and cue lists into the programmer, if you want to save them in another cue, using the **Include** function. This function allows you to reload either the whole cue, or selected parts of the cue into the programmer.

When you fire a playback, the console sets the fixtures to their programmed positions as soon as the fader rises above zero. The intensity of the fixtures, and any dimmers, are controlled by the fader. The intensity channels are called **HTP** (highest takes precedence) channels, because if the channel is active in more than one cue, the highest level will be output. All other channels are called **LTP** (latest takes precedence), because if the channel is active in more than one cue, the most recent change will be output.

You can program the LTP channels to fade with the fader if you want to.

Avolites consoles have a **Shape Generator** (sometimes called an effects generator on other consoles). This automatically changes attributes in a preprogrammed pattern. Fixtures can be made to move around in a circle, or to fade colours, or move in and out of focus. When a shape is applied to more than one fixture, the shape can be **Phased** so that the changes are offset in a sequence giving wave-type effects.

When you apply a shape, it goes into the programmer and is saved if you record a cue or a chase.

Avolites consoles allow you to save frequently-used positions, colours or other attributes into a **Palette** (sometimes called a Focus or Preset Focus on other consoles). Palettes are stored in the grey buttons below

the preset faders and each button can be given a legend on the display. When you want to use that setting, you simply press the button to recall the palette. If you use palettes when programming cues, the console remembers the palette rather than the actual fixture settings. This means that if you change venues or fixtures are moved, you can quickly reprogram your position palettes and all cues using those palettes will be updated. This can save you having to reprogram many cues.

Palettes can also be very useful when "busking" (modifying your programming) during a show. The console allows you to fade between palettes (**Timed Palettes**) to give smooth live changes.

CHAPTER TWELVE

12. The Diamond for Avolites experts

If you're an expert on another Avolites console, this chapter explains how the Diamond differs from the rest.

12.1 The Basics

The Diamond looks very similar to other Avolites consoles, but inside it is quite different. It is based around a Microsoft Windows XP PC which is built into the console. This means that:

- you need to be a bit careful turning it on and off. Always shut it down by pressing the power switch on the front. You should avoid disconnecting the power to it while it is running.
- the VDU is a standard Windows display; you can open and c ose windows, reposition them, use the menus etc. A keyboard and trackball are provided in a drawer to do this. The c nsole provides some dedicated buttons to do it as well.
- you can do anything with it that you could do with a PC such as play CDs. You can save your show to CD ROM or USB pen disks.

But remember: It's still an Avolites console an you can mostly forget about the PC inside and get on with ope ting it using the faders and buttons in the way you know and lov

12.2 Operating it

Softkeys and menus: T e ell known LCD screen and associated softkeys are replaced by a dazzling array of smaller LCDs and buttons. But fear not, the fam liar softkey structure is still there, using the two displays and 10 softkeys in the bottom right hand corner of the console.

The Up butt n takes you back up a menu level when the LED is lit. This is normally the ame as pressing Exit. Shift+Up takes you back to the top menu level.

Playb ck faders: The playback faders are across the bottom left of the c n ole. These are the same as on other consoles, but separate buttons are p ovided for Preload and for Connect (used with chases) and each fader has a display area above it to show what's in it. Memories are ow called Cues. The Theatre Stack function is replaced by one or more Cue Lists. Simple chases are still called chases.

Preset faders / handles: An impressive number of Preset Faders are provided across the top of the console. As usual, Dimmers and Fixtures are patched here. Each preset fader has a display to show you what is patched in it. The blue swop buttons don't have lights to show you which fixtures are selected, instead the display inverts for that fixture.

Palettes: Are saved on the grey buttons below the Preset Faders. The display above can be programmed to remind you what is in the palette.

Fixture Groups and Page Shortcuts can also be stored on the grey buttons. Shortcuts allow you to set a particular playback page, palette page, fixture page and VDU desktop layout with one button press.

A rather novel feature is that in addition to storing playbacks on as the

playback faders, you can also store cues, chases and cue lists in the preset faders. This allows you to have an enormous number of playbacks at your fingertips.

Fixture Attributes are controlled using six wheels rather than the normal two. This means you don't have to keep selecting different attributes as often. The bottom 3 are always Dimmer, Pan and Tilt. The attributes controlled by the top 3 are selected using the Attribute buttons below.

Locate Fixture (now just called Locate) does not move the fixture to a central position, it just turns it on in open white. If you want to move the fixture to its central position as well, hold Shift and press Locate.

Attributes have been grouped into Intensity, Pan/tilt, Colour, Gobo, Beam, Effect, Special and are referred to using the initial letters IPCGBES. The Diamond allows you to filter out or include any type o attribute when saving playbacks or palettes. Palette legend display what is contained in them using the IPCGBES letters.

A "fixture overlap" function is added which allows you to make fixtures move to their new position one after the other rath r th all at the same time. This can quickly make exciting effect from simple chases or cues. Overlap can range from 0% (all fixtures move at the same time) through 50% (2nd fixture will start to ve hen first one is 50% through its movement) to 100% (2nd fixtu e wi not start to move until first has completed its movement).

Diamond 4

Reference Manual

REFERENCE MANUAL CONTENTS

CHAPTER ONE

1. Setting up the console

This chapter contains: Connecting mains power, DMX lines, VDUs; configuring the console and the various VDU windows; guide to where everything is on the console; loading and saving shows.

1.1 Connecting up

1.1.1 Connecting mains power

Important! Before connecting the mains power to the Diamond yo must check if the Diamond has a voltage selector switch next to the mains socket; if it does, make sure it is set to match your mains supply. It can be set to 120V or 220V.

If the Diamond does not have a voltage selector switch you can safely connect it to any voltage from 80 to 260V.

If you connect mains power with the switch set ncorrectly, you will probably blow up the power supply unit. If this happens you will need to shamefacedly return the console to Avol tes for repair.

If your mains supply is suspect or unrel ble, un the console from a UPS (uninterruptible power supply). I the console unexpectedly loses power, you can lose data (up to the las Autosave) and the console may want to check its disks on startup wh ch can cause delays.

1.1.2 Connecting DMX lines

The Diamond can output 8 universes of DMX down 8 separate lines. It can also output DMX er E hernet to the Avolites Console DMX Interface (ACDI) app icat on which is used to interface the console to a non-Avolites visu liser application.

When you patch a d mmer or fixture you tell the Diamond which DMX line it is on Th lines are identified by the letters A,B,C,D,E,F,G,H.

The 8 sta dard DMX outputs come out of the 5 pin XLR sockets on the back of the console. They are wired like this:

Pin 1	Earth
Pin 2	Data -
Pin 3	Data +
Pin 4	Not used
Pin 5	Not used

Each DMX line should pass through all the fixtures to be connected on that line one after the other and have a DMX terminator fitted at the end (120 ohm resistor between pins 2 and 3). You should not split the DMX lines using passive splitters as this can mess up the data.

The Diamond has 12 DMX universes. The first 8 universes correspond to the DMX lines A – H. All 12 universes are fully customisable and can be transmitted through various different protocols which can be set in the Setup DMX outputs option in the Tools menu. More details of DMX outputs can be found in on page 136.

1.1.3 Connecting VDU monitors

You need at least one VGA monitor on the Diamond, which is plugged into the VGA port on the rear of the console. You can connect a second monitor to the DVI port next to it; if your monitor doesn't have a DVI input, an adaptor is supplied to convert the output to VGA.

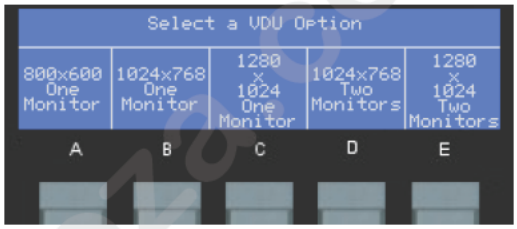
The second monitor can be useful if you need to see lots of windows at the same time, or if you want to keep Visualiser full screen all the time.

The first time you connect displays, you need to tell the console the resolution you want to use (such as 1024 x 768) and whether you have one or two displays connected. You can reconfigure this at any time if you change display type.

1> Press Setup button (bottom right).

2> Press G [Set VDU Options].

3> Select A,B,C,D or E for preset modes or press J to open the standard Windows desktop setup dialog.



- If the VDU appears garbled when the console starts up, this is probably due to a different monitor being used which does not support the output resolution set on the console. Press Setup, G then A. This will set the output to the lowest resoluti n which should work on all monitors.

1.1.4 Other connections

You can connect an externa keyboard and mouse to the console if for some reason you don't ike the trackball and keyboard in the drawer on the front.

The console provides MIDI connections, but currently only MIDI timecode is imp emented in the software.

You can co nec the console to a LAN (local area network) using the RJ45 so ke on the rear. This allows you to back up the console to anoth r m chine, or to link to a DMX-over-ethernet system.

Three -pin XLR sockets for desk lamps are provided on the rear edge f th console. Suitable lamps are available from Avolites. The lamps are 12 volt, wired from pins 1 and 2 of the XLR. The brightness of the lamps can be adjusted using the bottom control knob near the keyswitch.

1.2 Configuring the console

The Diamond is based around a Microsoft Windows XP Embedded PC which is built into the console. This means that the VDU uses a standard Windows interface; you can open and close windows, reposition them, use the menus etc. A keyboard and trackball is provided in a drawer to do this. Some standard Windows functions are also directly available from buttons on the console.

For those who hate PC's, you can mostly forget about the PC inside and get on with operating it using the faders and buttons like any other lighting console.

1.2.1 Turning it on and off

Ensure the power switch on the power supply (rear of the console) is turned on (this switch can be left on permanently).

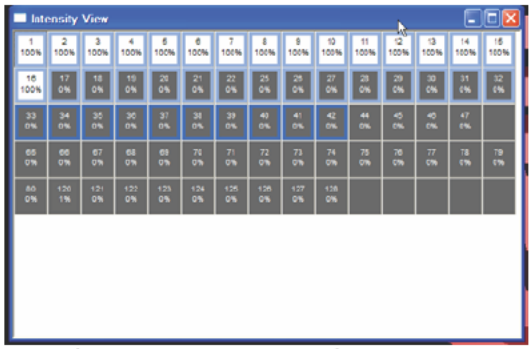
Press and release the power switch on the front left of he onsole to start it up (on a few consoles this switch is fitted at the ck). The console displays should light up and the VDU sh ld show a boot screen. The console takes about 20-50 seconds to s art up fully. If the console appears to freeze on startup with blank d plays, it is probably doing a disk check due to an irregular ow r-d wn; in this situation you must leave the console to complete the heck, after which it will power up normally, but the check may take seve l minutes.

To turn the console off, press an re ease the power switch on the front of the console. The console will p rform a controlled shutdown which takes about 15-30 seconds. Do not disconnect the power from the console while it is shutting d wn. You should also avoid disconnecting the power to the console while it is running as any changes to your show (since the last Au save) will be lost and also it may upset the operating system wh ch will delay the next startup.

1.2.2 The VDU desktop

The deskto is our view into what the Diamond is doing. It can display windows sho ng Intensity output, Stage output, DMX output, and you can also tu n on or off views of the command line and status bar.

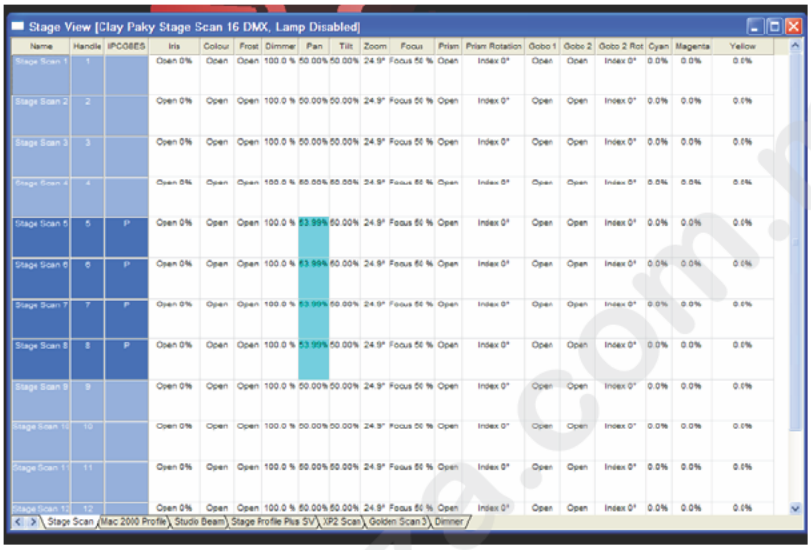
Th **Vir ual Panel** brings up an on creen version of the console front pa l, this allows the operator to erform on screen all of the functions access from the panel.



The **Intensity view** shows you the intensity output of all patched fixtures. The brightness of the graphic shows the intensity of the fixture (White=Full intensity, dark grey=Off). The intensity is also shown as a percentage. By right clicking on this screen you can also enable or disable display of the Legend, control group, DMX address and dimmer curve of each fixture.

Fixtures are highlighted in light blue if they are in the programmer (if their output has been changed by the user). They are highlighted in dark blue if they are currently selected (they are in the editor and the

programmer).



The **Stage view** shows you the detail of all fixtures patched on the console. You select the fixture type to view using the tabs across the bottom of the screen.

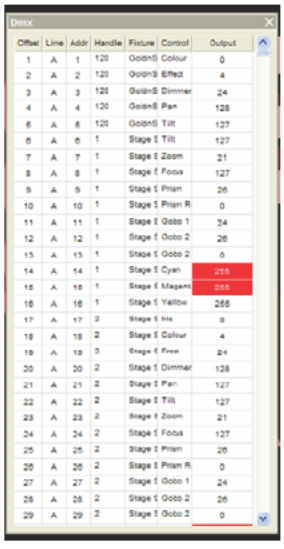
Again the light blue colour shows fixtures which are in the programmer and dark blue shows fixtures selected to the editor. Any change attributes are shown using Cyan.

The window shows the output value of e ch attribute of each fixture. If the fixtures are under control of a pla bac or palette, the display shows what last controlled each attribu

You can sort the fixtures on the screen by any of the columns; just click on the column header. Click again to reverse the sort order. By right clicking on this screen you can enable or disable highlighting of changes, and display of p yback/palette control of attributes.

The **Show Library** a lows the operator to view any aspect of the recorded show (playb cks), and edit times on screen in a spreadsheet like manner.

The **DMX view** shows the output value of each DMX channel, and which f xtu e is patched to it.



As with th stage view, you can sort the list on any of the co umns by clicking on the column header.

The d values indicate values which are currently cha ging.

The VDU screen also has a **Command Line** window, which shows the commands that the console is currently processing and provides useful feedback, and a status bar which shows what the on-board menu displays are currently showing.

You can select which windows are visible using the grey View button below softkey H. This will give a list of windows which can be opened by selected the appropriate softkey.

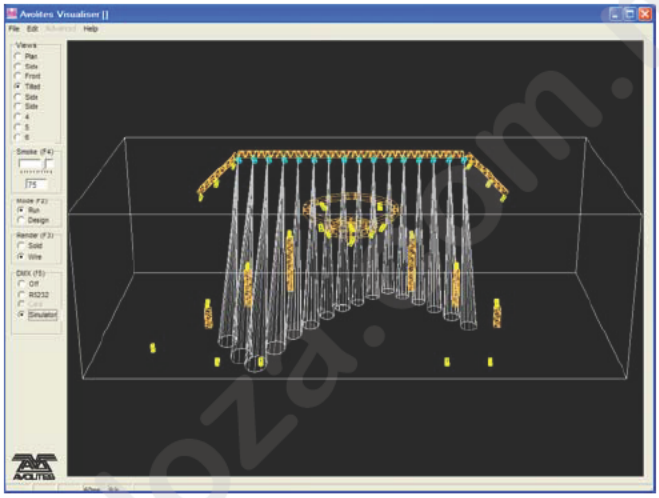
If you are happier using the trackball to access the menu in the normal Windowsy way, you can of course do it that way.

You can rearrange the windows on screen as you like using the

trackball. You can save several different versions of the desktop layout using Shortcut buttons (see page 219). If you move the DMX view window to the edge of the screen it will "dock" there.

The operating options of the console are set from the VDU screen, see section 13.1.1 on page 230 for details.

1.2.3 Visualiser



The Diamond 4 runs Avolites Visualiser internally. This allows you to view the output of the console if you can't use the real lights, enabling you to make changes to your show at home or in your hotel. You can show or hide (minimise) Visualiser using G [Press to show/hide Vis] on the top level menu. You need to select the "Simulator" option on Visualiser to make it read the output of the Diamond.

The operation of Visualiser is not covered in this manual, please ref r t the Visualiser manual.

If you have two VDU screens connected you can keep Visualiser permanently visible using the User S ttings (see page 230). If you only have one screen, the Diamond application may keep popping up over the top of Visualiser, and you have to click on it on the taskbar to get it back.

Auto Patch

The Auto Patch functi n automatically creates a Visualiser rig from your D4 show. To sta t u Vis with a pre patched theatre press the "Show/Hide Vis" key on the top level Operate menu. Visualiser will open with a repr sen ation of your patch.

You will s e the fixtures laid out on screen as they are on the console, so any spaces between fixtures will be preserved and fixtures patched to the p row of presets will be shown above fixtures patched to the bottom row of presets.

If you have patched across multiple pages, each page of fixtures will be eparated by a truss to make it easy to identify them. The Visualiser will start in run mode, with the simulator tab selected so you can start controlling lights immediately.

Multiple dimmers patched to one handle will appear as a singe fixture in Visualiser.

If you wish to open vis normally, Press the grey View button, then Softkey B "Vis".

Fixture Select

When a Visualiser rig has been created with Auto Patch, the Visualiser will indicate any fixtures that are currently in the programmer by highlighting them in blue.

1.2.4 Diamond 4 Simulator

A console simulator is available as a free download from the Avolites website, allowing you to create or edit shows on a normal PC if you don't have access to the real console. (PC must be running Windows XP). The simulator runs identical software to the real console (including Visualiser), using a "virtual panel" on the screen to allow you to operate the controls.

You use the mouse to click buttons and move the faders and wheels. To save space on the screen, the blue select and grey palette buttons of the preset faders are not shown, instead you just click on the legend display below the fader. If you need to hold a button on the virtual panel and press another button, use the right mouse button to click the first button.

Shows saved on the simulator can be loaded directly into the real console.

1.3 Guide to the console

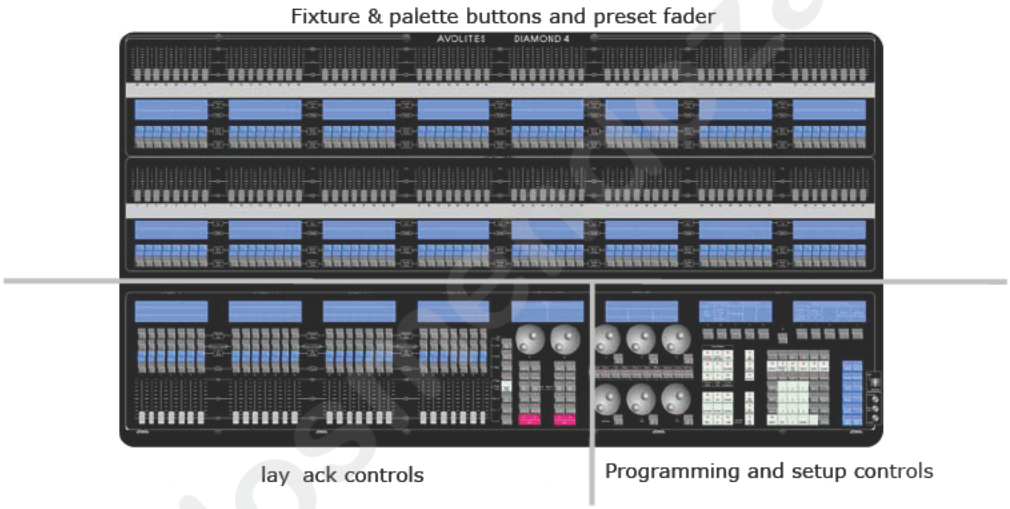
1.3.1 The different versions of console

There are three versions of the Diamond 4 console: The Classic, Vision and Elite.

The Classic and Vision versions are the same to operate, having 128 preset handles (all with faders) and 28 playback faders. They differ slightly in mechanical assembly.

The Elite console has 96 preset handles, of which the top 48 do not have faders. The faders from the bottom 48 handles can be allo ated to control either the bottom or top set of handles. It has 14 playback faders.

1.3.2 Main features of the Diamond 4



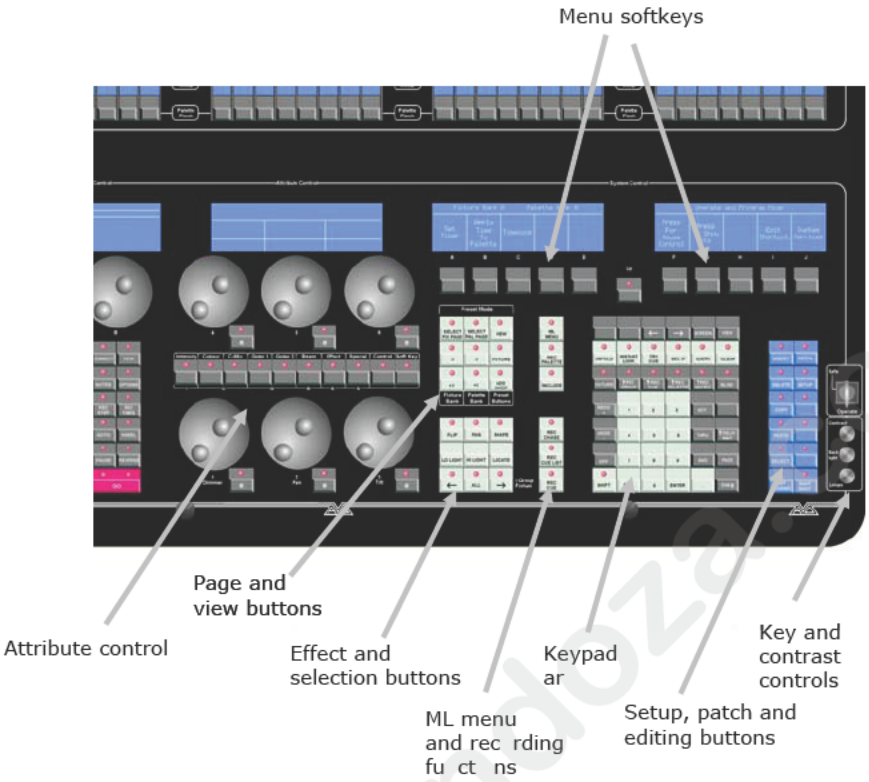
The cons le s three main areas.

The p half of the console has faders, buttons and displays for fixtures and pal ttes. You can also store cues, chases and cue lists in these ader and buttons.

The bottom left of the console has the playback buttons and faders which are normally used for storing cues, chases and cue lists.

The bottom right of the console has all the programming and setup controls and displays.

Programming and setup controls



Menu softkeys: These two displays and 10 buttons are the nerve centre of the console, allowing you to select a wide range of menu options. The Up button tak s you back to the previous menu level. Shift+Up takes you back to the top menu level.

Attribute control: Th s is where you set the position, colour, gobo, dimmer intensity an other attributes of fixtures when you are programming t e console.

Page and v w buttons: Page buttons allow you to swap the controls to another age of fixtures or cues. View allows you to show various screens on the displays.

Effec and selection buttons: These buttons provide useful functions w en programming moving lights, and also allow you to step through elected fixtures one at a time.

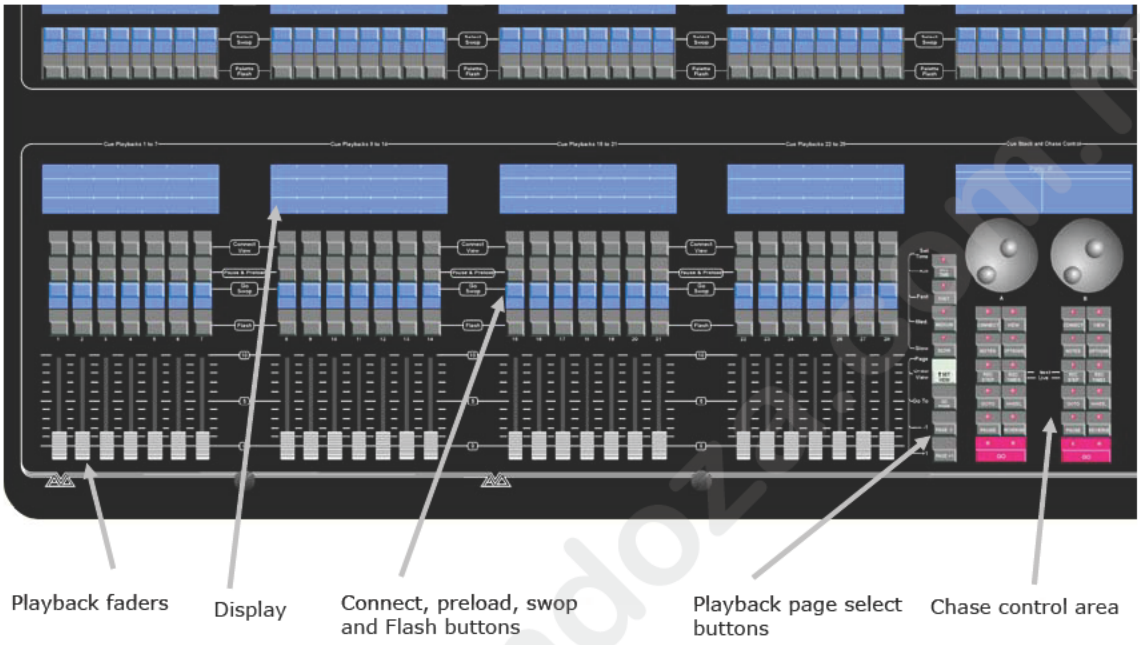
ML Menu and recording functions: These buttons give access to the Moving Light menu and allow you to record chases, cues and cue lists

Keypad area: This area contains the numeric keypad for number entry, cursor buttons, the shift button (which accesses any functions with a small up-arrow next to them), and buttons to record groups, palettes, cues and macros.

Setup, patch and editing buttons: These buttons allow you to set up the console and also to edit programming.

Key and contrast controls: The key allows you to switch the console to Safe mode which is a playback-only mode preventing changes being made. Starting from the top, the knobs control LCD contrast, LCD back light brightness and desk lamp brightness.

Cue Playback faders and buttons



This area is where you store and playback cues, chases and cue lists. You can also store playbacks on the preset faders.

Playback faders: A low you to fade the playback in and out.

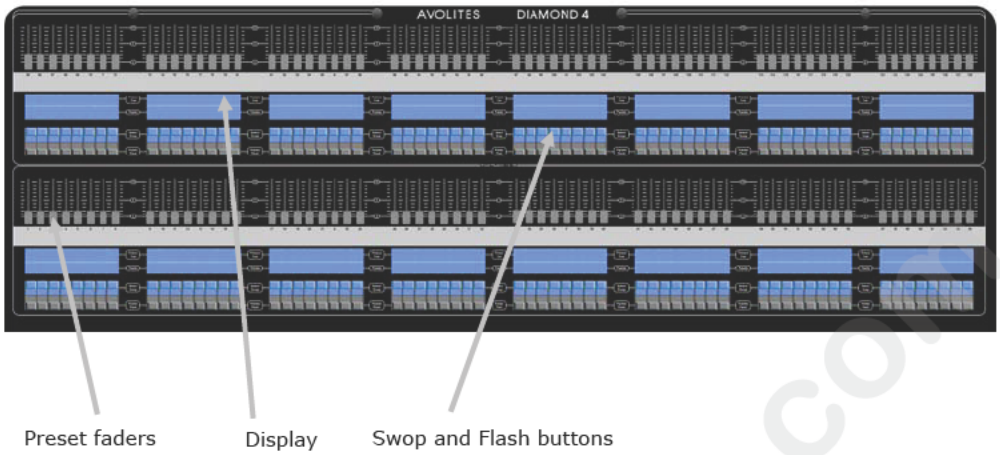
Displays: Show legends for the playbacks, which you can set to help you remember what s in them.

Connect, preload, swop and flash buttons: The Connect button allows y u t onnect a cue list or chase to a chase controller so you can c ntro playback and set timing and other options. The Preload button will position all moving light fixtures to the programmed pos ions in the cue so that when you fade up the fader, the lights will al eady be in their proper positions. The Swop button is used to select the playback when programming and can be used to "solo" the playback and the flash button is like moving the fader to full.

Playback page select buttons: The Vision console has 28 playbacks per page, the Elite console has 14. You can select a different page of playbacks using these page select buttons.

Chase control area: Allows you to start and stop chases and cue lists and control the speed, fade, direction and set other options

Preset faders and buttons



This area is where dimmers and fixtures are controlled nd also where palettes, groups, page shortcuts and playbacks may be stored.

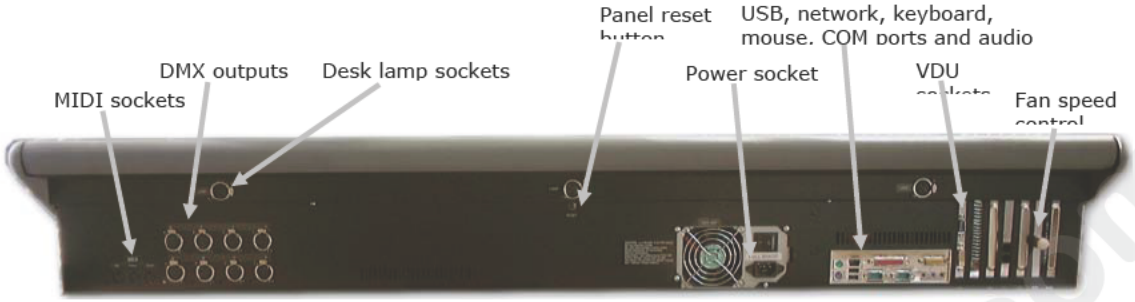
Preset faders: Control the intensity of the dimmer r fixture. If a playback is stored on the preset the fader i u ed o fire the playback and set its level.

Display: The top section shows the nam /type of the fixture patched to that fader. The bottom section sho s which palette, group or shortcut is stored in each positio .

Select/Swop and Palette/Flash buttons: The blue Select button selects the fixture for contr l. The grey Palette button recalls palettes, groups or page shortcut Th Select and Palette buttons may instead be used to flash and swop t e patched fixture (or the playback stored in the preset) if the Add/Swop button below Softkey B is pressed.

Other controls and connections

The rear of the console has all the connections. The front of the console has a CD or DVD drive, floppy drive and a keyboard/trackball in a drawer.



The status LEDs are Red for power on and Green for disk ac ity. If the

green LED is lit constantly and t e console is not responding, it is carrying out a disk check and will come to life again in a few minutes when it has finished.

The "heartbeat" LED t the bottom right of the console should flash during normal operation. In the unlikely event that the heartbeat stops, press the panel reset button. This will restart the control panels of the console. The m in operating system is not affected by the reset button, but the DMX outputs will be interrupted while the panels reset. The output of he console will resume as it left off when the reset has comp eted.

1.4 Loading and saving shows

You can save any number of different shows on the Diamond's internal hard disk.

The Diamond will automatically save your show to its internal hard disk when you shut it down. It will also autosave the show every 30 minutes (you can alter the time or turn this off in the User Settings) in case the console loses power. The time remaining to the next auto save is shown on the status bar of the software; if you wish to delay an auto save by 10 minutes simple:

1> *Press J [Utils]*

2> *Press J [Delay autosave by 10 minutes]*

3> *The time to autosave time will now be incremented by 10 minutes.*

You can also save your show at any time either with i cur ent name or with a new name.

1> *Press the blue Setup button.*

2> *Press D [Save Show].*

3> *Press E [Use Current Show] to save he how with its current name. Press C [Overwrite Show] t display a list of existing shows on the softkeys; you can then select a show to overwrite by pressing its softkey. Or you can enter a new show name on the keyboard; A [Embed time and date] will insert the current time and date into the filenam for you.*

4> *Press Enter. The show will be saved.*

5> *Press Up to leave Set p mode.*

Shows are saved in e C:/Avo/ShowFiles folder, unless you change this in the User Settings.

The Diamond will automatically load the last show when it is turned on. If you wan to l ad a different show:

1> *P ess the blue Setup button.*

2> *Press B [Load Show].*

3> *Available shows are listed on the softkeys; press the key to load the show (the I and J keys show more pages).*

> *Press Up to leave setup mode.*

You can save any number of different shows on the Diamond's internal hard disk.

- You can update the DMX addresses of patched fixtures to make them match the addresses in an existing show file by pressing Setup then C [Load DMX Patch]. Fixtures will only be updated if the fixture type and handle number on the console match the type and handle number in the show file.

If you are loading a show file from a previous software version, you will notice that the legends for groups and palettes on the LCD screen have changed. This is because of the new User Numbers system automatically applied when these items are created.

Previous versions of D4 software have included the handle number as

part of the legends for groups and palettes. This meant, however that it was not possible to recall them from the keypad. In order to create this function, the legend now uses user numbers instead of handle numbers.

You may notice that groups and palettes are displayed without numbers, for example "Pal _ _ _" instead of "Pal 28". This is because any item that you have not assigned a user number to will appear blank.

1.5 Backing up the show to CD-ROM or USB drive

It's a good idea to regularly copy a backup of the show to an ex ern l storage device such as floppy disk, CD ROM or USB pen drive just in case something bad happens to the console. You can't do t is from buttons on the console, you need to use the VDU and trackball to select options from the Diamond 4 window on the VDU.

1.5.1 Backup to USB pen drive

You can save the show to a USB pen drive or floppy disk using the Save Show menu command on the VDU. You can't backup to CD-R this way, to write to CD-R you need to copy the showfile across as shown at the bottom of the page.

1> *Insert a blank floppy or insert a USB pen drive in a spare USB socket (larger shows may not fit on a floppy disk).*

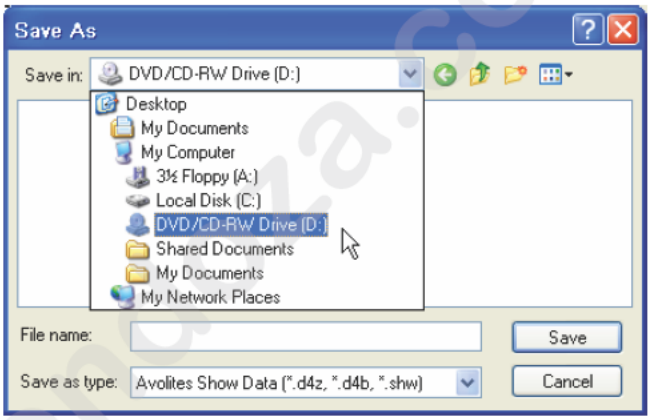
2> *On the VDU screen, ensure the "Diamond 4" window is open. If not, click on it on the task bar at the bottom of the screen.*

3> *Click on the File menu and select "Save Show" .*

4> *Pull down the "Save in" list and select the drive where you want to make a backup of the show (Floppy drive or USB drive)*

5> *Type a filename for the show in the "File name".*

6> *Click on Save.*



To reload a saved show from a removable device (including a CD) use the Load Show option on the VDU File menu.

1.5.2 Backup to CD-ROM

To backup a show to CD-RO y u need to copy the showfile across using Windows functions.

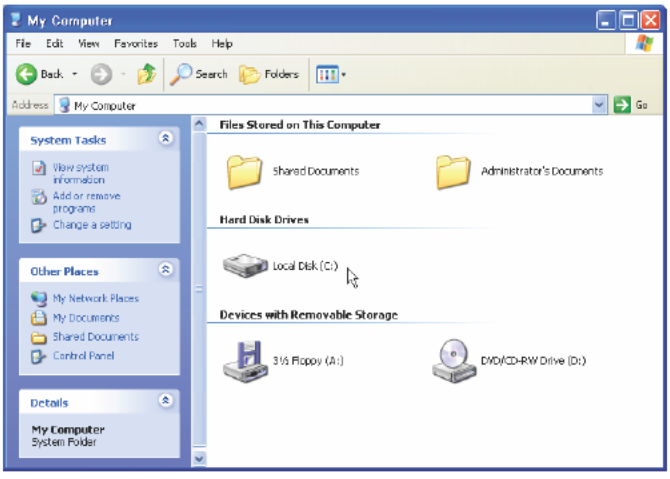
1> *On the VDU sc en, click on the Start menu, then My Computer.*

2> *Double click on "Local Disk (C: "*

3> *Doubl cli k on th "A o" folder.*

4> *Doub click on the "ShowData" folder.*

5> *The VDU screen will show a list of the saved shows.*



6> *Click on the show you want to backup. If you want to backup more than one, hold down the Ctrl button on the keyboard while clicking them.*

7> *Right click on a selected file, and select "Send to" from the pop up menu which appears.*

8> *Select the drive where you want to make a backup of the show file.*

9> *A CD-ROM icon should appear in the bottom right toolbar. Click this icon, then on the window which opens click Write these files*

to CD.

For a compete live backup system see page 126

1.6 Clearing the console

When you start a new show on the Diamond it is usually a good idea to clear the console. All programming and patching is deleted, but user options are not changed.

If you want to use the same patch setup as another show, you can load the patch from a saved show using option C [Load DMX patch].

1> Press the blue Setup button.

2> Press A [Start New Show Wipeall].

3> Press A again to confirm.

4> Press Up to leave setup mode.

1.7 Using Presets on the Elite Version

The Elite version of the console does not h ve faders for the upper 48 preset handles, just Select and Palette but ns You can use the lower 48 faders to control the upper presets us g softkey D at the main menu. (Press Shift and Up to show th main menu).

To control the upper presets (49-96) press D so the option shows [Preset Faders control fixtures 49 96]. To control the lower presets (1-48) press D until the option shows [Preset Faders control fixtures 1-48]. The option toggles betw e the two settings each time you press the button.

1.8 Utilities Menu

Softkey J in the Operate menu is the "Utilities" key. This brings up the utilities men on the softkeys, which currently contains the following options:

[Set User Numbers]

- B [Set Masters]
- C [Enable 2 Preset Mode]
- D [Create Patch List]
- E [Tracking Backup Setup]
- F [Enable Hardware Check]
- J [Delay Autosave by 10 minutes]

1.8.1 Set User Numbers

Set User Number allows you to change the numbers assigned automatically to groups, palettes and fixtures.

Using the Set User Number function for Fixtures

1> Press Softkey E "Utilities" Button.

2> Press Softkey B "Set User Numbers".

3> Press Softkey A "Fixtures".

4> Enter the number you wish to use.

5> Press the Swop of the Fixture you wish to change

Using the Set User Number function for Groups

1> Press Softkey E "Utilities" Button.

2> Press Softkey B "Set User Numbers".

3> Press Softkey B "Groups".

4> Enter the number you wish to use.

5> Press the Flash of the Group you wish to change

Using the Set User Number function for Palettes

1> Press Softkey E "Utilities" Button.

2> Press Softkey B "Set User Numbers".

3> Press Softkey C "Palettes".

4> Enter the number you wish to use.

5> Press the Flash of the Palette you wish to change

In the Set User Numbers menu you can sp cif h w the numbers increment as you change multiple items

- F [Add 1] The number will increment y one each time you apply a change, regardless of whether the next number is already in use
- G [Minus 1] The number wil decr ment by one each time you apply a change, regardle of hether the next number is already in use
- H [Find Next Free] Th desk will find the next number that is not already in use
- I [Find Previo s Fr e]

1.8.2 2 P e et Mode

If you a e using a Diamond 4 Vision or Classic to control generic lights, you m y ish to operate the console in "2 Preset Mode".

In this mode both the top and bottom row of faders control the same dimmer channel. Fader 65 controls the same dimmer as fader 1, fader 66 c ntrols the same dimmer as fader 2, and so on.This allows you to set up two different lighting states and fade between them using the 2 masters that you set up on the console, as you would on a basic lighting desk.

1> Patch dimmers as necessary, to the bottom row of faders.

2> Press Softkey J [Utils] on the root menu.

3> Press Softkey B [Set Masters]

4> Press Softkey G [Preset A Master]

5> Press a Playback Swop to assign the A master

6> Press Softkey H [Preset B Master]

7> Press a Playback Swop to assign the B master

8> Press "UP"

9> Press Softkey C [Enable 2 Preset Mode]

10>2 Preset Mode is now enabled

You will see that the dimmers from the bottom row of faders also appear on the top row on faders. Preset A master controls the overall intensity of the bottom row of faders, Preset B Master controls the overall intensity of the top row of faders.

With both masters at 0%, raising a preset fader will display the fader value in the LCD screens. When you then bring up that faders' master, the display will invert and show the faders' value multiplied by the value of its' master fader. This allows the operator to easily see the levels being set ready to be faded in.

In this mode all flash buttons are disabled and if you wish to record a cue, you will need to use the record stage option.

1.8.3 Create Patch List

By selecting this option you will be presented with a menu o se ect either a CSV (comma separated values) or TXT (text file). Th TXT format has been specifically designed to print out in n tepad.

That patch list is useful if you want to print out the addresses of all your fixtures so they can be addressed before be ng rigged.

This file is outputted into root of the C:\ dri e To f nd it simply double click on "My computer" then double cli k o "Local Disk (C:)". The file will be called PatchList.

1.9 Tracking Backup

The tracking backup function a ows for ShowSafe or a laptop to mirror the actions of a master nsole. In the unlikely event of the master console going wrong S owS fe can be used to recover a show. In a tracking backup sys m t ere are two computers the slave (ShowSafe) and the master (Your Diamond 4). The slave will imitate everything the master does wh le they have a connection. For details on how to connect Show afe to the Diamond please refer to the ShowSafe manual Fo details on how to set IP addresses refer to page 246.

1.9.1 Setup

Wh n S owSafe is connected to a Diamond 4 console you must tell the Diamond that is can use tracking backup on ShowSafe.

> Press J [Utils]
2> Press E [Tracking Backup Setup]
3> Press C [Select A Backup Console]
4> Select the ShowSafe console

On the Diamond 4 console you should now see the following messages in the status bar in black text "ShowSafe Ready & Tracking" and "Panel Connected". If a VDU screen is connected to ShowSafe the following messages will be displayed "ShowSafe Ready and Tracking" and "Panel Disconnected".

If any of these messages aren't shown or a message is shown in red then there is likely to be a problem. The following messages could be shown:

- ShowSafe Not Connected – this means that ShowSafe has not

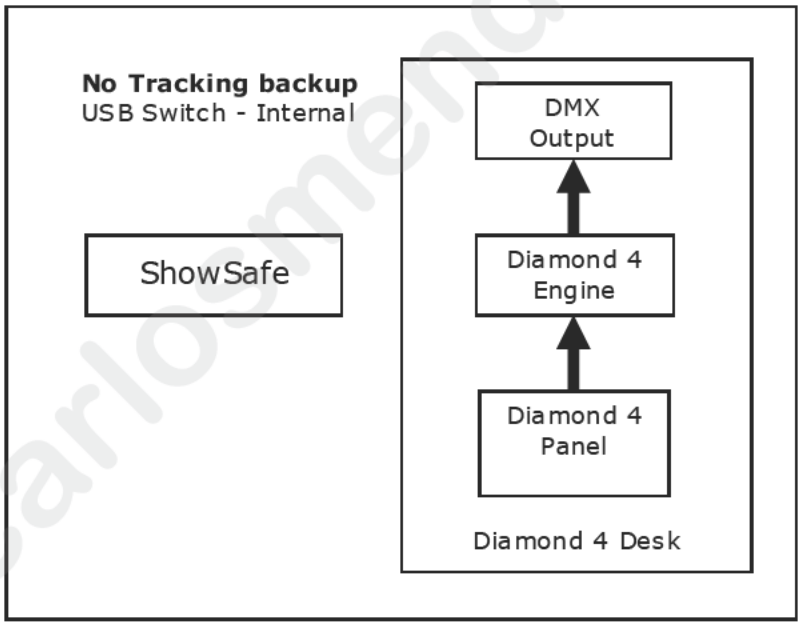
been setup or is not working. If all the physical connections are correct then you must follow the steps described above. If ShowSafe was working, no changes to the tracking backup settings have been made and this message is displayed then it is likely that the physical network connection has been broken.

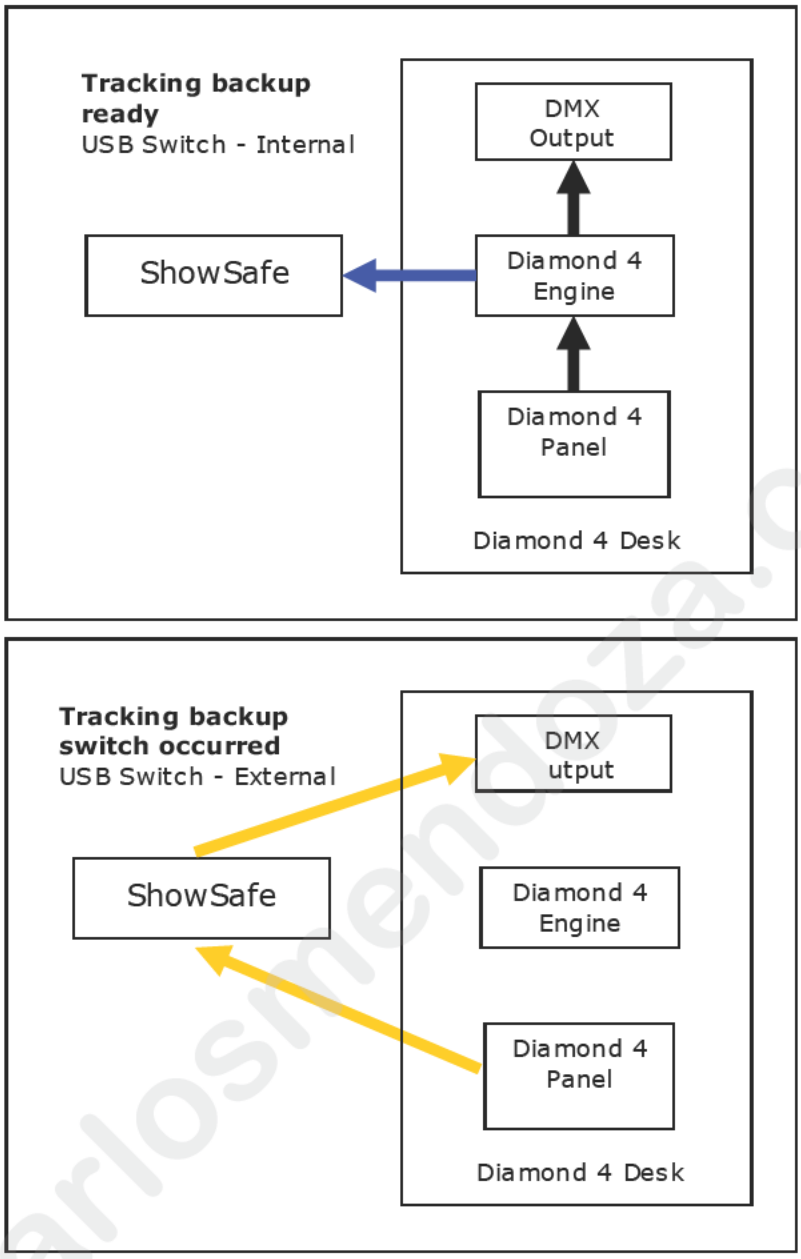
- ShowSafe Synchronising – this means that ShowSafe is synchronising and currently not tracking the changes on the Diamond 4. Once ShowSafe has completed catching up with the Diamond then this message should change to "ShowSafe Ready".
- Panel Disconnected – this means that that panel (faders and buttons) on the Diamond 4 is not connected to the engine tha is displaying this message.

Note: Before connecting to ShowSafe it is worth while beginnin a new session on the Diamond. Do this by saving your show (and backing it up on external memory) Wiping the desk nd then reloading the show. Now connect ShowSafe as described and it will load the show and synchronise with the Diamond 4.

1.9.2 Logical Data Flow

There are three different ways that a Diamo d 4 nd ShowSafe can be logically connected depending on what pos tion the USB switch on the back of the console is in. The following t ree diagrams show these.





The first diagram shows data flow when a tracking backup system is not being used. Data is sent from the Panel to the Engine and out the outputs. All these connections are internal as shown by the black arrows.

The second diagram shows data flow when a tracking backup system is being used. Data goes from the panel to the Engine and from the engine to ShowSafe and to the DMX outputs. The blue arrow indicates that the data sent from the Engine to ShowSafe is sent over Ethernet. In this situation the USB cables must be connected as well to have the backup system ready to switch across, until the switch occurs the USB cables aren't used so no data is shown moving through them.

The final diagram shows the data flow after a switch has occurred. The Diamond 4 Panel communicates directly with ShowSafe via USB which then sends the data on via USB to the DMX outputs, bypassing the Diamond 4 Engine.

1.9.3 Testing

Testing ShowSafe before going live with a show is vitally important to ensure that everything is working correctly. This can be done by following the procedure above then simply switching the USB switch on the back of the desk from internal to external. The LED should change from Green to Red. The panel will now be controlling ShowSafe and the Diamond 4 software should display the messages "Panel Disconnected and "ShowSafe No Connected". If a VDU is connected to ShowSafe it will be displaying the messages "ShowSafe Live" and "Panel Connec ed (ShowSafe). Switching back using the USB switch will return the Panel to control the Diamond 4 engine. The DMX output will return to how it was when the switch initially occurred.

At this point it is necessary to reset up the master/slave relationship the Diamond has with ShowSafe, do this by following th instructions at the beginning of this section.

1.9.4 What happens if....?

All the events listed below presume th t th Di mond 4 and ShowSafe are connected and that ShowSafe is trac ing the events on the Diamond, unless otherwise stated.

Event	Resu t
Raise a fader on the Diamond.	Sh wSafe will imitate this and every event the user performs on the Diamond Panel.
Change user settings on the Diamond.	User settings will be changed on ShowSafe.
Change factory Set ngs on the Diamo d	ShowSafe will NOT change its factory settings.
Save a ho n the Diamond.	ShowSafe will save the same show.
L d a show on the Diamond.	ShowSafe will load the same show.
Wipe all on the Diamond.	ShowSafe will wipe all.
Disconnect the network connection.	ShowSafe will wait for a connection to be established.
Reconnect the network connection after disconnecting.	ShowSafe will resynchronise with the Diamond.
Restart the Diamond	ShowSafe will resynchronise with the Diamond once it has restarted. (A new show session will be added to the ShowSafe.)
Restart ShowSafe	ShowSafe will resynchronise with the Diamond once it has restarted.
Connect ShowSafe mid	ShowSafe will synchronise with the

Show	Diamond 4 from the point of the last WipeAll or Load Show. The output from the Diamond will not be affected.
Flip the switch to USB external	The panel will control ShowSafe, the network connection between Diamond is broken. The output should not be affected
Flip the switch to USB external, make some alterations and flip the switch back	The Panel will control the Diamond Engine. The panel state and output will return to how it was before the first switch occurred. The output WILL be affected. The connection between th Diamond and ShowSafe will need t be re-established.
The Diamond crashes	The network connection might be broken. Switch USB to Exte nal to control ShowSafe.

Note: The network connections can sometimes take up to a minute or so to detect other network devices. If afte this time the slave device you have connected to the etw rk has not been displayed you may have to rest rt t e Diamond 4.

1.10 Troubleshooting

If you have problems with t e console, this section may help you resolve it. If you are still hav ng problems, the friendly folks at Avolites would be only too pleased help you out; various means of contacting them are listed on the fi st page of the manual, just inside the cover.

Problem	Possible reasons/solutions
The desk do sn't witch on (the red led is ff a d the LCDs aren't backlit)	• The power supply isn't plugged in and switched on. • The power lead is faulty or the plug fuse has blown. • The power button has become unplugged from the motherboard. • The CPU has overheated (check fan is set to full, fan is working, heatsink is secure, nothing obstructing airflow, etc)
The VDU displays "keyboard error" and doesn't respond to the keyboard in the drawer	• Unplug the power, count to 10, plug in and restart.
The desk switches on (the LCDs are backlit) but no information is displayed on the LCDs	• If the red and green leds are on together, then it is performing a disk check and you have to wait for it to finish. • Check that the CPU fan is running (if not, check cables

	to the fan).
The desk shuts down on its own	• The power supply should have been modified to be earthed to the chassis. If not, contact Avo. • The reset cable going from the DMX board to the motherboard should have been disconnected (if not, contact Avo). • The CPU has overheated (check fan is set to full, fan working, heatsink is secur nothing obstructing airflow, etc).
The Desk stops outputting dmx and the heartbeat LED stops flashing	• Press the reset button on the back of the desk • Close the D4 software and wait for it t rest rt. • Close the D4usb program and restart t fr m the desktop. • Power own the desk and r s rt .
The D4 stops responding to input, but continues to output DMX	Check for any error message windows on the VDU and click on OK to close them (if Visualiser is on top, minimise it) • Close and restart the Diamond 4 application
The D4 stops responding and displays an error me age aying that it has to shutd wn	• Click OK and wait for the application to restart itself. Contact Avolites and email us the report file in C:\avo\Report
When selecting Midi Timecode the Diam nd how an error message "Unable o find midi port"	• Go into the console BIOS by restarting the console and pressing Delete during power up. Then go to Integrated Peripherals and set the Midi Port Address to 300. Press F10 to save and exit.
When selecting Midi Timecode the Diamond shows an error message "Unable to initialize directX component DirectMusic"	• Download and install the latest version of DirectX from Microsoft's website http://www.microsoft.com To download the DirectX package onto your PC for installation onto the console, look for the "Redist" download (otherwise the site will attempt to use a smart installer which you cannot transfer to the console).

CHAPTER TWO

2. AvoTalk

AvoTalk allows devices on a standard network to communicate and share information. In the case of Avolites consoles it allows the console to talk to fixtures and get information such as personalities and Mode information.

AvoTalk is designed to work alongside other lighting protocols such as eDMX or ArtNet. Once a network connection is established AvoTalk will detect any compatible devices and start talking.

This chapter refers to settings IP addresses. There is more detail on IP addresses on page 246.

2.1 AvoTalk Example

We will look at setting up a Green Hippo Hippotiser wit the Diamond 4 using a combination of AvoTalk and ArtNet.

2.1.1 Requirements

You will need the following:

1. Diamond 4 with Software Version 1.5 (or greater)
2. Green Hippo Hippotiser
3. AvoTalk Hippo Plugin
4. Crossover cable

2.1.2 Setting up

1. Turn on the Diamond 4 and the Hippotiser. For this example I have assumed you have performed a wipeall on the Diamond.
2. Connect the Diamond and the Hippotiser together using the crossover cable. Note that there may be a cable already connected to th n twork port on the Hippotiser that comes from within the unit. T is is connected to the DMX box on the front, and can be di connected.
3. S t up the Diamond for ArtNet. Go to Tools / Setup DMX Outputs, c ick on settings, then select ArtNet. Set the adapter if necessary, then click OK. The ArtNet IP warning will appear. Make sure that "default 2.x.x.x" is selected then click OK.

For more information on the DMX Modules, see Chapter 3 on DMX outputs.

At the moment you don't need to add any nodes, so click OK to close the Setup DMX Outputs window.

4. Install the AvoTalk Hippo Plugin on the Hippotiser, but don't run it just yet. The Hippotiser software should not yet be running either.
5. Using the Stage Settings application, set up the Hippotiser to run in the preferred mode (please refer to the Hippotiser manual for further information).
6. Run the Hippo Plugin on the Hippotiser. Click on "Set network adapter" and set the adapter, then click on "Detect Hippotiser Layers". The plugin will now look for all of the media files and setup

of the Hippotiser. Please note that this may take some time, depending on the number of clips that are available. If you receive the message "No Hippotiser available" ensure that the Hippotiser is enabled.

7. On the Diamond, go to Patch / Active fixture and select "Hippo (Ser.No.)". In this case the Active Device is called Hippo 15. If there are no active devices found, try exiting the menu and waiting for a few moments before trying again (there can be a short delay while the media clips are examined by the plugin).
8. On the Diamond, enter a DMX address and press a swop button to patch the Hippotiser. The required number of fixtures will be patched to consecutive handles, and the Hippotiser DMX address will be assigned to the one entered on the Diamond.
9. Now run the Stage application on the Hippotiser. **DO NOT C OSE THE PLUGIN.**
10. Finally, on the Diamond, go to Setup DMX Outputs and y will see the Hippotiser appear as a Node. Add this to the required DMX line. Again, there may be a slight delay before the Hi pot er node appears.

Once the Hippo Plugin is installed, it will automat cal y start every time the Hippotiser is started. If you change the Hip otiser mode, you will need to go to the Hippo Plugin, re-dete t the H ppotiser and re-start the Diamond.

If you disconnect the network cabl yo ill need to go to the Hippo Plugin, re-detect the Hippotiser and r -patch the Diamond.

If you decide to re-patch to a d fferent DMX address you will need to re-start the Hippotiser software You will also need to reset the ArtNet nodes if you are moving a ross DMX lines.

CHAPTER THREE

3. DMX Outputs

This chapter containsACDI; ArtNet IP Warning; ART Net; EDMX; EzDMX; Module Setup; Reinstalling Modules.

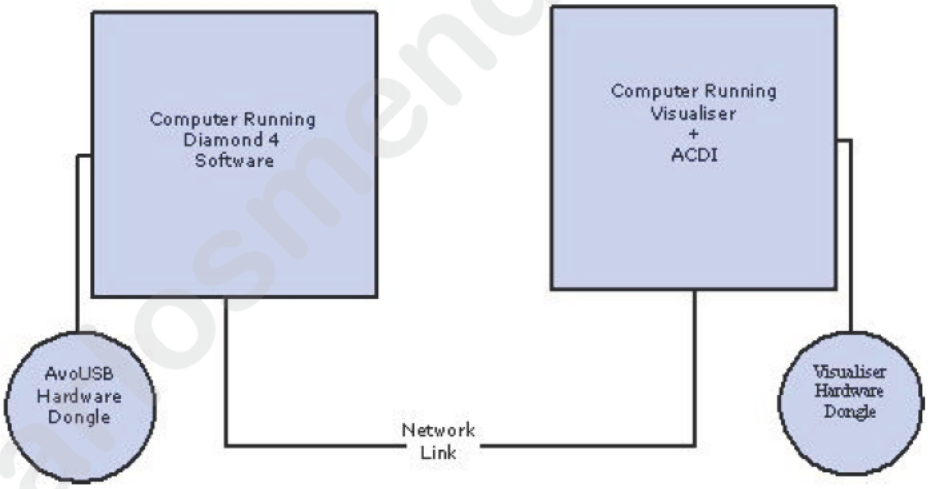
The DMX outputs of from the Diamond 4 are how the desk communicates with fixtures. There are a number of ways to do this beyond the traditional DMX cables which the Diamond 4 supports The Diamond 4 also supports communicating with a number of different visualisers which over various different communication methods.

This chapter refers to settings IP addresses. There is more detail on IP addresses on page 246.

3.1 ACDI

ACDI is Avolites' Application for Interfacing Consoles a d Simulators with lighting software such as Visualiser, Capture or Show designer.

If you are using the Diamond Simulator wi h the Avolites Visualiser, running on 2 separate computers, you will ee a separate Dongle connected to each computer.



The connection can be made through either a crossover cable, or through a network hub.

For this example, both computers are connected together via a crossover cable.

First, we will set up the Network setting for both computers.

On the computer running the Diamond:

1. Click on Start, Control panel, Network connections
2. Right click on the connection you wish to use.
3. Click Properties.
4. In the connection properties window select TCP/IP and click Properties

5. Set the PC network adapter to a free address on the network. (You can set any number in the range 192.168.0.X where X is a number between 0 - 254 and is not used by any other device on the network.)
6. Set the subnet mask, (most of the time 255.255.255.0 will be acceptable.)
7. Click OK

On the computer running the Visualiser:

1. Click Start, Control panel, Network connections.
2. Right click on the connection you wish to use.
3. Click Properties.
4. In the connection properties window select TCP/IP and cl ck Properties
5. Set the PC network adapter to a free address on the n twork.
6. Set the subnet mask.
7. Click OK.

Close any network windows on both machines.

Install and run ACDI on the Visualiser Compute .

In ACDI change "Source" to "Simulato "

Do not close the ACDI window

To setup the DMX outputs on the Diamond 4:

1. Click on Options, Setup DMX Outputs.
2. Click on settings
3. Select the ACDI module.
4. Ensure that the correct Network adapter is set (this may not be the Defa lt A apter)
5. Click OK
6. If ou get the Art Net IP address warning, Click Ignore. (Clicking OK will alter your network settings to be Art Net compatible, rasing any changes you may have made.)
7. Select a DMX line for the simulator
8. Select the ACDI Ethernet node that you want to connect to
9. Click on Add Node. This will add an ACDI node to that DMX output. The correct node will have the name your computer on which the Diamond is loaded.
10. Select the node you have added to make sure the properties are correct. (Problems can be caused if you attach the same node to multiple DMX lines.)

To remove a node from a DMX line, select the node (i.e. Broadcast 2) and select Remove Node.

Finally, start the Diamond, and open or create the theatre file. (See the Visualiser manual for more information on this)

Once ready to connect to the Diamond, go to run mode in the Visualiser, and select simulator under DMX.

The Diamond should now be connected to the Visualiser.

3.2 ArtNet IP Address Warning

3.2.1 Why this Warning is Displayed

The Art Net standard requires that all devices wishing to connect to an Art Net should use an IP Address that is specific to that device. This reduces the risk of devices having conflicting IP Address, which would result in the device not working.

The Art Net standard also states that the first part of the IP Address should be 2 or 10.

This warning is displayed when the IP Address of the your Netw rk Adapter does not match any of the required IP Addresses in the standard.

3.2.2 Compatible IP Addresses

There are two types of compatible IP addresses 2 ?.? ? or 10.?.?.?. You must decide on which type you wish to use when setting up the network. If you are unsure which one to use then u e the default one of 2.?.?.?.

Once you have made this choice, each d vice should fill in the ? and assign its IP Address automatically. T e d vice should calculate its IP Address using its own manufactur cod and the network devices MAC address.

3.2.3 Recommended Action

To ensure that this con ol works correctly on your Art Net it is recommended that y u select either of the two options 2.?.?.? or 10.?.?.? and click OK This will then calculate a compatible Art Net IP Address and setup you network settings correctly.

If you have more than one Network Adapter then the new settings will only effect he etwork adapter you chose for Art Net.

If the Network Adapter is already configured for a different network then the new settings may prevent that network from functioning co ect .

3.2.4 Additional Resources

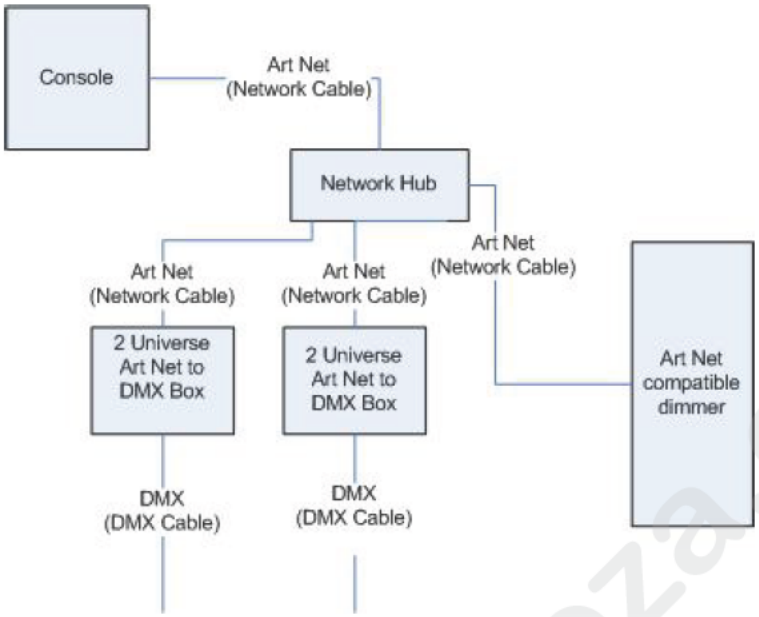
To find out more information about Art Net please refer to the Art Net Standard published by Artistic Licence.

3.3 ArtNet

Art Net is an open standard for transmitting Lighting information over Ethernet. It is not specific to one range of products, and is recognised and implemented by a growing number of manufacturers. Many products (such as Dimmers and Moving lights) can accept the Art Net signal directly, so there is no need to convert the signal to DMX. Most people will, however, need to output DMX to their equipment and this can be done using an Art Net to DMX converter.

In the following diagram, an Art Net compliant Console (such as the

Diamond 4) is connected via a network hub to an Art Net compatible dimmer and 2 DMX conversion boxes.



Once the system is connected together th dif erent outputs (or Nodes) can be configured.

- The dimmer is given the start ddress of 200
- The 1st DMX box is set t uni erse 1 and universe 2
- The 2nd DMX box is ls set to universe 1 and universe 2

The console is then used to s t the DMX lines to the Art Net nodes.

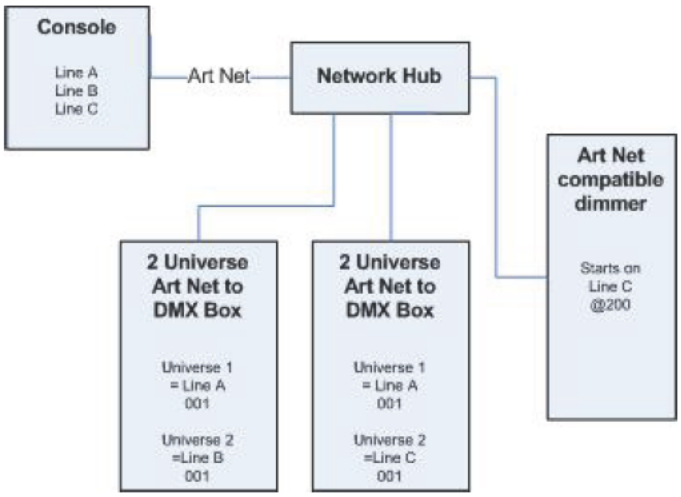
It is important to reme ber:

- Each Art Net t DMX box (or compatible Dimmer, or compatible moving l ght) is a device,
- Each de ice may have one or more nodes(i.e. the Art Net to DMX box has 2 nodes, these are the 2 DMX outputs; the dimmer its lf is a node),
- Each node can be set to a Universe (1-256). This universe is equivalent to a 512 channel DMX line

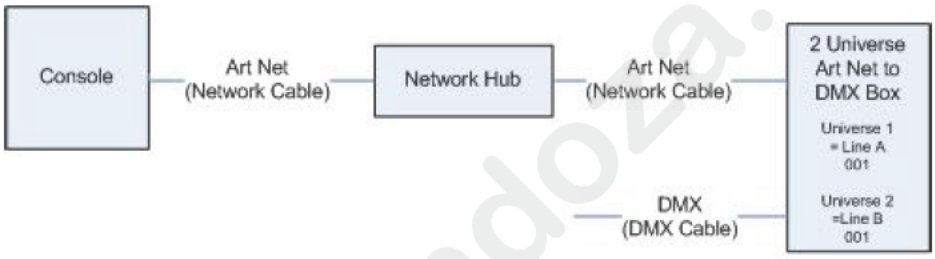
You can then specify which node is assigned to which console line. Multiple nodes can be assigned to a single line, but only one line should be assigned to each node.

Here, the console assigns the following:

- Line A to Box 1 universe 1 and box 2 universe 1
- Line B to Box 1 universe 2
- Line C to Box 2 universe 2 and the dimmer rack



3.3.1 Setting up a simple ArtNet system



For this example, it is assumed t at you will connect the Diamond to an Art Net DMX output box (su h s an Artistic License Net-Lynx) via a network hub

Using standard network cables, attach the devices together

Note: Do not connec you devices together using crossover cables

Set the Net-Lynx box as follows:

- Subnet Mask = 0
- DMX A Universe = 1
- DMX B Universe = 2

Wit everything connected, start the Diamond

1. Click on Options, Setup DMX outputs.
2. Click on settings
3. Select the ArtNet module.
4. Ensure that the correct Network adapter is set (this may not be the Default Adapter)
5. If you wish to turn off the Art Net output, you can un-check the "Enable DMX output" option. This will stop the Console from outputting Art Net on any Lines.
6. Art Net normally only sends Data when it is changed, rather than a continuous stream. There are times when it is preferable to send Art Net all the time. to do this, check the "Continuous ArtNet Data Stream" option.
7. The "Always broadcast ArtNet" option enables you to

send Art Net to the entire network, rather than a specific IP address.

8. Click OK
9. If you get the Art Net IP address warning, Click Ignore. (Clicking OK will alter your network settings to be Art Net compatible, erasing any changes you may have made.)
10. Select a DMX line for the Diamond 4
11. Select the ArtNet node that you want to connect to
12. Click on Add Node. This will add an ArtNet node to that DMX output.
13. Select the node you have added to make sure the properties are correct. (Problems can be caused if you attach the same node to multiple DMX lines.)

Make sure that the Universe is set to 1 for Line 1, and 2 or Line 2.

Art-Net uses a subnet mask with its universe Fo Diamond purposes:

- Diamond universes 1 - 16 a e ubnet mask = 0, Art-Net universes = 1 - 16,
- Diamond universe 17 32 are subnet mask = 1, Art-Net universes = - 16, and so on.

14. Click OK

The Diamond 4 should now be wo king correctly.

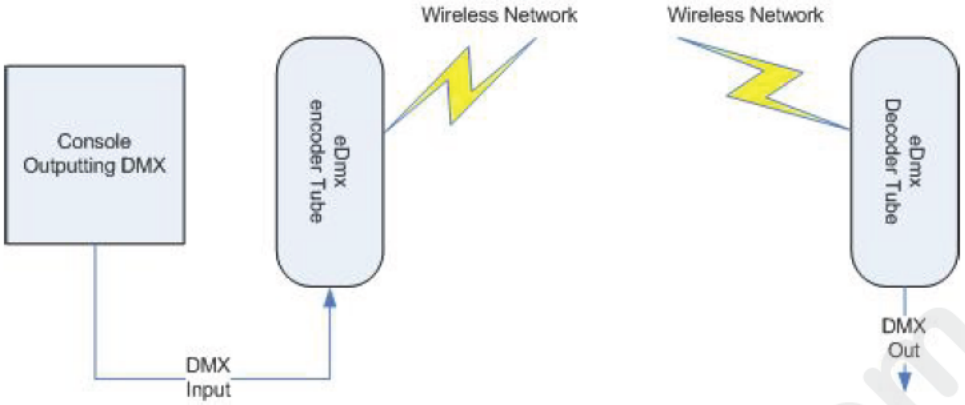
To remove a node from a DMX line, select the node and select Remove Node.

3.4 eDmx

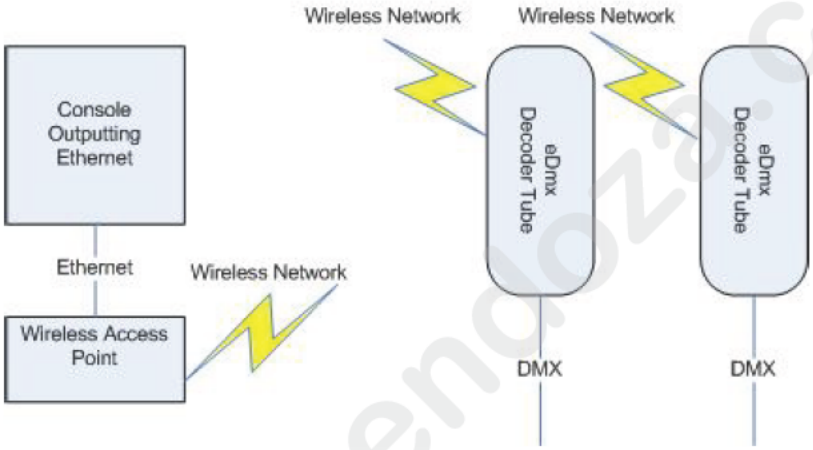
eDmx is an Avolites product for transmitting DMX wirelessly over Etherne I consists of Encoder and Decoder "tubes" and is able to convert DMX to Ethernet, transmit the signal and convert it back to DMX, egardless of the console being used.

Whe used with the Diamond, you can connect your PC directly to the tubes through a wireless network adapter, or wireless access point.

n the following diagram, a console is connected directly to an eDmx Encoder and DMX data is transmitted wirelessly to an eDmx Decoder.



Connection from a PC would look like this:



3.4.1 Setting up eDmx with Diamond 4

We will set up a sys m with one Diamond, a Wireless access point, and one eDmx Decod r Tu e

First we need to set up the decoder tube.

Please Refer to he eDMX user manual for further information on setup

Ensur that the following settings are correct:

SSID his is the Wireless networks SSID or name, it must be the same s th WAP and all other Tubes on the same network for every device to function accordingly. The default SSID is Avolites (note that this is all lower case)

IP Address This is the IP address of the unit. One of the benefits of the eDMX system is that it utilises full IP addresses which enable the routing of the eDMX data across all kinds of switched and unswitched networks. I have used 192.168.1.71

Wendi Universe Set the Wendi universe to 1.

Next, Connect the Diamond to the wireless access point, (or Wireless card)

1. Click on Start, Control panel, Network connections
2. Right click on the connection you wish to use.
3. Click Properties

4. In the connection properties window select TCP/IP and click Properties
5. Set the PC network adapter to a free address on the network.
6. Set the subnet mask , most of time 255.255.255.0 will be acceptable. This must match the setup on the tube.
7. Click OK
8. Close any network windows and start the Diamond 4

On the Diamond 4:

1. Click on Options, Setup DMX outputs.
2. Click on settings
3. Select the eDmx module.
4. Ensure that the correct Network adapter is set (this may not be the Default Adapter)
5. Click OK
6. If you get the Art Net IP address warning, Click Ignore. (Clicking OK will alter your network settings to be A t Net compatible, erasing any changes you may have made.
7. Select a DMX line for the Diam nd
8. Select the eDmx Broadcast node.
9. Click on Add Node. This will add a eDMX node to that DMX output.
10. Select the node you have added to make sure the properties are correct. (Problems c n be caused if you attach the same node to multiple DMX lin s)
11. Click OK

The Diamond 4 hould now be working correctly. In some circumstances y u may need to restart the Diamond 4 before all settings take effect.

To remo e a n de from a DMX line, select the node and click Remove Node.

3.5 EzDmx

EzDMX is Avolites USB to DMX box. It is designed to be used with the Avolites simulators and not a physical Diamond 4 console.

The output is automatically set once the box is connected in the following manner for the diamond Simulator:

- Node 1 = DMX Line 1
- Node 2 = DMX Line 2
- Node 3 = DMX Line 3
- Node 4 = DMX Line 4
- Node 5 = DMX Line 5
- Node 6 = DMX Line 6

- Node 7 = DMX Line 7
- Node 8 = DMX Line 8

The EzDMX box also allows the use of MIDI in and MIDI out for the simulator, enabling you to control the simulator from other midi devices.

3.6 Module Setup

A module is a method of sending DMX and can be thought of as a collection of nodes.

For example, eDmx uses wireless networking technology to transmit DMX to several individual tubes. Each tube is configured to outp t a specific universe of DMX. In this case, the eDmx system as a wh le is the module, and each tube is a node.

In the case of EzDMX, each USB box is a module, and each DMX output on the box is a node. The nodes, however, are preset o th Simulator in the following manner:

- Node 1 = DMX Line 1
- Node 2 = DMX Line 2
- Node 3 = DMX Line 3
- Node 4 = DMX Line 4
- Node 5 = DMX Line 5
- Node 6 = DMX Line 6
- Node 7 = DMX Line 7
- Node 8 = DMX ne

The Module Setup window enables you to set the specific properties of the Modules used with the Diamond. These were selected during the installation process If no modules are shown, or the one you wish to use is not show , then they can be added by running the installer again and sel cting the required items.

The output s set from the Setup DMX outputs window by clicking the "Settin s" button

ou an only use different modules (i.e. Art Net and eDmx) if you have se eral network adapters, or by re-configuring the IP addresses of the Devices to be compatible.

In the Setup DMX Modules window, click on the Module that you wish to adjust, and its properties will be shown.

This allows you to adjust settings for each module, and to select a network adapter for ACDI, Art-Net and eDmx. Most people will only have one network adapter, however many laptop users will have their standard network adapter and also a WiFi (wireless) adapter, both of which will be shown.

3.7 Re-Installing Modules

If the DMX Module that you want to use has not been installed, you can

add it by running the Diamond 4 installer again and checking the option(s) that you want in the setup window.

CHAPTER FOUR

4. Patching

This chapter contains: patching dimmers; patching moving light fixtures; checking the patching; changing the DMX address; deleting a patched fixture; patching options.

Patching is the process where you tell the Diamond

- What type of lighting units you have connected to it
- What DMX addresses they are operating at
- Which DMX output line each unit is connected to (there are 8)
- Which Preset Faders you want to use to access them

You should normally plan out the lighting rig in advance to allow the DMX addresses on your fixtures to be set up before they ar rigged. The easiest way to do this is to patch the fixtures on the console, then read off the DMX addresses from the console (see se on 4 1.4) and use them to set up the addresses on the actual fixt res. You can use the Diamond 4 simulator to configure the patch i you don't have access to the real console.

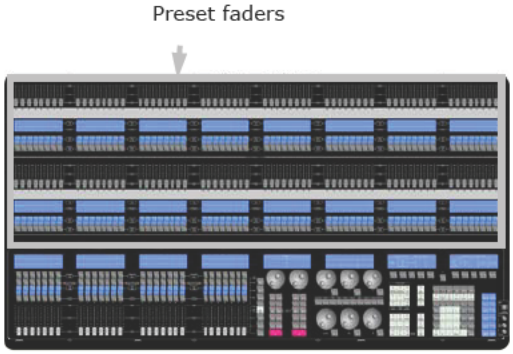
Alternatively you can allocate the DMX add ess s to the fixtures yourself, and set up the console to mat h.

The Diamond's key must be set to Operat before you can patch.

4.1 Create

4.1.1 Preset faders (handles)

To control intelligent fixtu es or dimmer channels they must be patched to a Pre et. These are the faders, butt ns and displays located in 2 ro s a ong the top of the console. Each preset consists of:



- a fader, used to set the intensity f the fixture or dimmer
- a blue Select button which is used to select the fixture
- a grey Palette button which is used to store and select Palettes, Groups and various other things
- a space on the LCD display which shows what is controlled by the preset and what palette, group, etc is stored on the palette button.

The fader, buttons and display are together referred to as a handle.

The Preset/fixture page buttons are located below Softkey A in the column labelled "Fixture Bank". You can change the page at any time using the -1 and +1 buttons or press Select Fix Page and type in the new page number on the keypad. Palettes, groups and shortcuts have different page controls and won't change when you select a different Preset page.

The Diamond allows you to allocate fixtures and dimmers to Groups, which can be useful if you usually select the same set of fixtures together. Groups are described in the next chapter.

4.1.2 Patching dimmers

Each dimmer channel is allocated to one preset. If you want to link dimmers together, you can allocate several to the same preset.

1> Press Patch, then A [Dimmers].

2> Softkey A [Line=] shows you which of the 8 DMX output lines you are patching onto. Press A to change the line. Softkey B shows the DMX address about to be patched. You can change this by pressing B [DMX=xx Press to Change], typing in the new address on the numeric keypad and pressing Enter or just by typin in the new address on the numeric keypad.

3> To patch a single dimmer, press a preset Select butto . To patch a range of dimmers, hold down the Select button for the f rst dimmer in the range, then press the last Select button in the range. The range of dimmers will be patched t sequential DMX addresses.

4> To patch another dimmer to the same ha d , press B, type in the new DMX channel, press Enter, then pr ss t preset Select button again.

5> Repeat from step 2 for other dimm rs.

- To see how DMX channels are pa ched, open the DMX window on the VDU screen. Press View (ab ve the numeric keys), then keep pressing the down arrow to select "DMX" from the "View" menu. (or use the trackball o mouse in the normal Windows manner).
- You can make the d splay below the fader show the DMX channel it is patched to in tead of the intensity. See section 4.1.4 on the next page.
- F [Press to sh w DMX channels] in the dimmer patch menu will turn on the output of the DMX channel which is about to be patch d (so if the Diamond is about to patch channel 10, it will tur on that channel). This can be a useful visual check of which l nte ns you are patching. Softkey G turns this off.
- The number in brackets below the DMX address on softkey B gives he Absolute DMX address, which takes the DMX line into account (line A=1 to 512, line B=513 to 1024, line C=1025 to 1536 etc).

4.1.3 Patching moving light fixtures

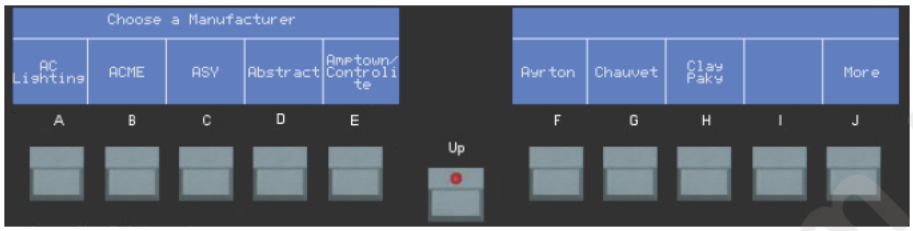
Moving light fixtures are more complicated to patch than dimmers because they have more attributes to control, such as pan, tilt, colour etc., whereas a dimmer channel just has intensity.

The Diamond uses a "personality" system to control fixtures. This means you don't have to know how each fixture works, you just tell the Diamond what you want to do and it will send the right control commands. There is a personality file in the Diamond for most types of fixture, which tells it what attributes are available and how to control them. If the Diamond does not have the personality for your fixture, you can download further personalities from the Avolites website or Avolites can create one for you. See chapter 14 on page 239 for details

of how to find personalities.

1> *Press Patch (bottom right of console).*

2> *Press B [Fixtures].*

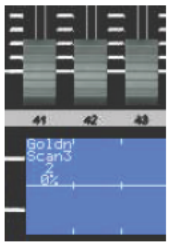


3> *Select correct fixture manufacturer from the softkeys (I and J page through the list of manufacturers).*

4> *Select correct fixture from the softkeys (I and J show othe pages).*

5> *Select an operating mode for the fixture.*

6> *Softkey B shows the first free DMX address. Type the new address on the numeric keypad if you want a different one. Press C [Select a DMX line] to patch to a different DMX line.*



7> *Press a Preset Select button to patch the se ted fixture.*

8> *The display below the fixture will s ow what you have patched. You can show the DMX cha nel it is patched at by pressing Preset Mode Vie (bel w Softkey B) then C [DMX].*

9> *Repeat from 7 to patch more f the same fixture type. The DMX address automatically updates so you can just keep patching by pressing Select but ns.*

10> *Softkeys F G and H allow you to change the fixture being patched.*

- You can pat h a r nge of fixtures by holding down the first and last Select butt ns of the range, in the same way as for dimmers.
- Unlike dimmers, you cannot patch more than one fixture onto a preset. If the preset is already used, the patch will fail.
- a patch goes over the capacity of a DMX line, the Diamond will p tch at the beginning of the next line. For example if you try to atch a Mac500 at channel A510, it will actually be patched at B1.
- If you are patching a fixture which uses a separate dimmer channel such as a VL5™, you can patch the dimmer channel onto the same handle as the moving light part of the fixture, so you can control it all together. This is called a Pending dimmer.

4.1.4 Checking the patching

If you need to read off the DMX settings for each fixture you have patched, you can display the DMX address like this.

1> *Press Preset Mode View (below Softkey B).*

2> *Press C [DMX].*

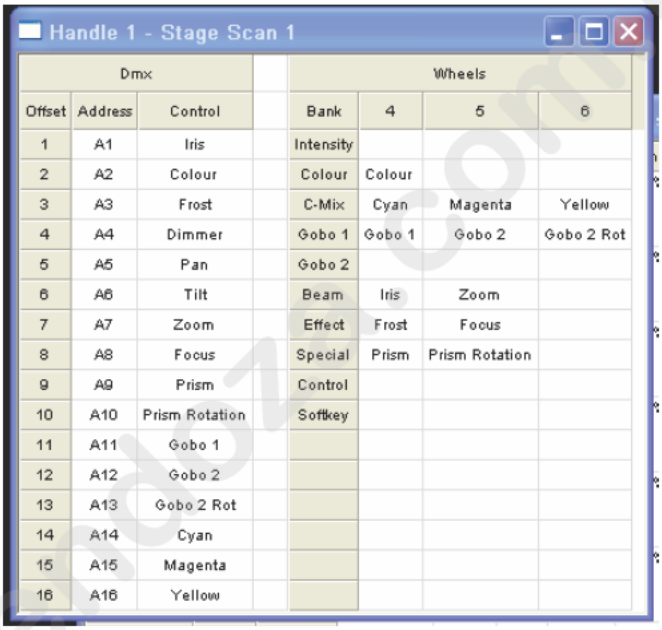
3> *The displays below the fixture faders show the DMX addresses of*

each fixture, with the DMX line and address (e.g. A24 is address 24 on DMX line A).

4> *Press View then A [Intensty] to go back to showing the fixture intensities on the displays.*

5> *Press View then a fixture select button to open a window on the VDU screen showing all the DMX details for that fixture.*

- The fixture display shows which DMX channel is controlling each function of the fixture, and also which wheels will control the attributes.



Dmx			Wheels			
Offset	Address	Control	Bank	4	5	6
1	A1	Iris	Intensity			
2	A2	Colour	Colour	Colour		
3	A3	Frost	C-Mix	Cyan	Magenta	Yellow
4	A4	Dimmer	Gobo 1	Gobo 1	Gobo 2	Gobo 2 Rot
5	A5	Pan	Gobo 2			
6	A6	Tilt	Beam	Iris	Zoom	
7	A7	Zoom	Effect	Frost	Focus	
8	A8	Focus	Special	Prism	Prism Rotation	
9	A9	Prism	Control			
10	A10	Prism Rotation	Softkey			
11	A11	Gobo 1				
12	A12	Gobo 2				
13	A13	Gobo 2 Rot				
14	A14	Cyan				
15	A15	Magenta				
16	A16	Yellow				

- Option D [Absolute DMX] on the View menu shows under the fader the effective DMX channel when the DMX universe is included (for example channel 10 on DMX line B is Absolute DMX 522; channel 1 on line C is absolute DMX 1536). The 8 univ rs s of DMX produced by the console correspond to abs lu e DMX addresses 1 - 4096.
- Option E [Show Use Fixture Numbers] will show your user defined numbers for the f xtures (see page 152).

4.2 Edit

4.2.1 Changing the DMX address of a fixture

You can re-patch a fixture to a different DMX address or a different DMX output line. All programming is kept.

1> *Press Patch (if you're not already in Patch mode).*

2> *Press G [Repatch a Fixture].*

3> *Press the blue Select button of the fixture you want to change.*

4> *To change DMX type the new address and press enter*

5> *To change the DMX output line, press A [Line=x Press to Change] and choose a new output line by pressing A - H.*

6> *Press Enter to confirm the change.*

7> *Repeat from step 3 if you want to change other fixtures.*

- If the new DMX address already had another fixture or dimmer patched on it, the console will ask "Do you want to park fixtures?". If you select Yes, the previously patched device will be "parked".

All programming for the parked fixture is preserved, but you need to repatch it to a free DMX address using the above procedure before you can use it again. The console display below the preset will show "park".

4.2.2 Moving a fixture to a different preset/handle

You can move a dimmer or fixture from one preset to another by copying it (see section below) then deleting the original. However, the moved fixture will disappear from any fixture groups of which it was a part.

4.2.3 Setting legends

You can set a legend for each fixture or dimmer you've patched which is displayed below the fader. This can be really useful to help you identify the fixture.

1> Press the blue Set Legend button.

2> Press the Select button for the fixture you want to legend.

3> Type the legend on the keyboard. The display be o the fixture's fader and above Softkey C updates as you ype to show you what it's going to look like.

4> Press Enter to when you have finished.

- The legend is limited to 2 rows of characters.

4.3 Copy

4.3.1 Copying a patched f xture

You might want to do his if you need an additional fixture of a type you've already patched a d programmed. The new copy will come complete with all the cues and palettes of the original fixture you've copied.

The copied ixt re will be "Parked" (have no DMX channel allocated) and you wil need to repatch it before you can use it (see section 4.2.1 above).

1> P ess the blue Copy button.

2> B [Copy legend] allows you to either copy the legend as well, or if set to Disabled, the Diamond will generate a new legend.

> Press the Select button of the fixture you want to copy.

4> Press the Select button of the empty Preset where you want to patch the copy.

4.4 Delete

4.4.1 Deleting a patched fixture

You can delete a fixture or dimmer from a preset if you patched it accidentally or if you change your rig and want to use the preset for something else.

1> Press the blue Delete button.

2> *Press the Select button of the fixture you want to delete.*

3> *Press the Select button again to confirm.*

- All programming for the fixture is also deleted. You cannot undo deletion of a fixture or get the programming back by repatching a fixture to the same handle.

4.4.2 Deleting an individual DMX channel

You can delete an individual DMX channel from a preset:

1> *Press Delete.*

2> *Press B [Delete a DMX channel].*

3> *Press A to select the DMX output line.*

4> *Type the address.*

5> *Press Enter to confirm.*

- This is useful for deleting dimmer channels from handles hich have multiple channels patched to them. Be careful not to delete individual channels out of fixtures using this functi n, as the whole fixture will be deleted and you will have to r patch the fixture and recreate all programming for it.

4.5 Advanced options

4.5.1 Set Fixture Numb r

You can give each fixture a um er to identify it. This allows you to select the fixture easily r m the keypad.

1> *Press Patch.*

2> *Press F [Se a Fix ure Number].*

3> *Type the number you want to use on the keypad.*

4> *Press he wop button of the fixture to be numbered.*

5> *Pre s other Swop buttons to continue numbering or press Up twice when finished.*

- Yo can set the fixture number from the fixture's current DMX address using option A [Use DMX]. (If you subsequently repatch the fixture, the fixture number does not change).

  You select fixtures on the keypad using the Fixture button. See page 162.

- You can display the fixture numbers on the console displays by pressing preset mode View (below softkey C) then E [Show User Fixture Numbers].

4.5.2 Swap pan and tilt

This allows you to make the pan channel control tilt and the tilt control pan. This is useful for moving-mirror fixtures rigged sideways.

1> *Press Patch.*

2> *Press H [Swap Pan Tilt].*

3> *Select the fixtures to be pan-tilt swapped. They will highlight and*

display "Swap" to show you which ones are and aren't swapped.

4> Press Up twice when finished.

4.5.3 Invert channels

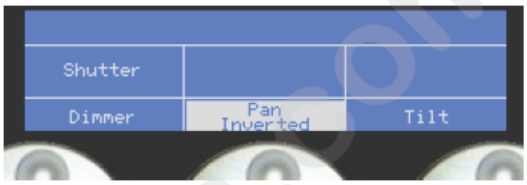
This option inverts individual channels of fixtures. Useful if you have a fixture which pans right when the rest pan left, saving a trip up the rig to set fixture options.

1> Press Patch.

2> Press I [Invert Channels].

3> Select fixture to be changed.

4> Press '@' button next to the wheel of the attribute you wish to invert. Setting is displayed in the attribute window - 'Pan' or 'Pan Inverted'.



5> For attributes other than Dimmer, Pan or T t, select the attribute group using the Attribute buttons, then press the appropriate "@" button. Some attributes can't be inver ed

6> Press Up twice to exit.

- You can change the invert on m ltipl fixtures by selecting more than one, but the "Inverted" displ will not show if there is a mixture of inverted and non-inv rted fixtures in the selection.
- Some attributes cannot b inverted. If the attribute you want is not displayed above a whe l, then it cannot be inverted.

4.5.4 Setting DMX outputs

There are 8 physical DMX lines and 12 logical DMX lines. Any logical DMX line can be m ped to output out of a physical DMX line (i.e. one on the back of the desk) By default logical lines A – H output on physical lin s A – H. However if you wish to change this:

1> P es Patch

2> ress J [Set DMX Outputs]

3> Select the physical line you wish to set the output for

4> Select the logical line you wish to output on your previously selected physical line.

4.6 Fixture Exchange

The Fixture exchange function enables you to replace fixtures which are used in your show with alternative fixtures, retaining important elements such as cue times, shapes and legends. It is an important feature for touring shows and venues with a high turnover of events.

For example, if you have programmed your show in a venue which has MAC 500s and are moving to a venue with VL6s you can exchange the MAC 500s for VL6s whilst retaining many elements of your show.

The pan, tilt and dimmer will always be preserved from one fixture type to the next, as will times, shapes and legends for recorded items.

In order to maximise the Exchange function, you should use Palettes to create your cues wherever possible.

Cues recorded with absolute values direct from the fixture(s) will need to be re-recorded, preferably using palettes.

Links from the palettes to groups, cues, chases and cue lists will also be preserved, so the show can be easily recreated by updating your palettes as normal.

Fixture exchange also gives you a powerful way to re-use an existing show with new lights, so you can give yourself a programming head start when faced with a new fixture.

It is always advisable to save your show before performing major changes such as fixture cloning. Should you change your mind, y wil easily be able to return to your show to its previous state.

1. *Click tools, Exchange Fixture*
2. *Use the three dropdown boxes at the top of the screen to elect the new type of fixture.*
3. *Select the existing fixture(s) you want to exchange. u can select individual rows or click and drag to select a r nge fixtures.*
4. *Click Assign to set the new fixture type. The t ble can be sorted by any column by clicking on the head of that column*
5. *You can set the new DMX link and address or each fixture in the table.*
6. *When setting the DMX addresses s me rows in the grid may change colour. Blue means that this is th currently selected fixture. Grey means that this fixture DMX address has been used elsewhere and this fixture will be parked when exchanged. Red means that this fixture has been assigned to an illegal DMX address.*
7. *Repeat steps 2 – 6 o exchange other fixture at the same time.*
8. *Once all the changes have been made click Exchange*

CHAPTER FIVE

5. Controlling dimmers and fixtures

This chapter contains: Selecting fixtures and dimmers for control; changing attributes of the selected fixtures; the @ buttons; using groups; selecting fixtures one at a time from a group; the align and flip buttons; entering levels as numbers and selecting fixtures using numbers.

When you are programming a show, and sometimes when you are running a show, you need to manually control the fixtures and dimm rs to set the intensity, position, colour, etc. To do this you first select he fixtures you want to change using the Swop buttons, then you s t the attributes of those fixtures using the Wheels and Attribute buttons.

5.1 Create

5.1.1 Selecting fixtures and dimmers fo control

To select the fixtures or dimmer channels that you want to control, you use the blue Preset Select buttons to load e f xtures into the Editor. You can select fixtures or dimmers indivi ually, or several at once.

You can control dimmer channels and xture intensity directly from the preset fader, or select the chann ls as described below and use the Dimmer wheel.

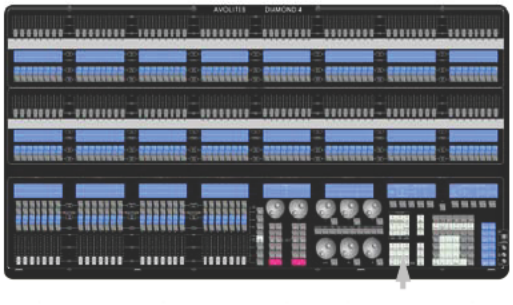
1> Press the blue Preset S le t buttons for the fixtures you want. The display is inverted fo selected fixtures (they are also shown in dark blue on the VDU screen).

2> To select a rang of fixtures, hold down the Select button for the first fixture th n press the Select button for the last fixture.

Here are some ther things to know:

- Pre s L ate to light up the select d fixtures in open white. I you are using record by channel mode, these values won't be saved in a cue.

  If you want to move the fixture to a central position as well as turning it on in open white, press Shift and Locate.



Locate button

- You can deselect a fixture by pressing the select button again.
- Once you have changed any attribute, pressing a preset Select button will deselect all fixtures and start the selection process again. All previously selected fixtures (since you last pressed Clear) stay in the programmer. They have their number inverted on the console displays, and are shown in blue on the VDU Stage View window. You can go back to a previous selection group by pressing shift and the ← → arrows next to wheel 3, see section 5.1.8.

- Press Clear (top right of numeric keys) to deselect all fixtures and remove all changes from the programmer.
- You can select fixtures on another page by pressing one of the Fixture Bank +1 or -1 buttons (below softkey A). Or press the Select Fix Page button and type in the page number you want. Palettes, groups and shortcuts do not change with the fixture page.
- If a preset is active (the fader is raised) when you change page, you may want to control a fixture on the new page using the same preset. In this situation you have to match the fader level to the existing fixture level before the fader will take control. For example if preset 1 is on at 100%, you change to page 2 and w nt to control the fixture on preset 1 on page 2. If the page 2 fix re is currently Off, you will have to lower the fader to zero be ore t takes control. If the page 2 fixture is at 50%, the fader ill take control when it matches the 50% value.
- You can select fixtures or dimmers and set levels using the keypad, see section 5.1.12.

5.1.2 Using presets on the Elite version of the console

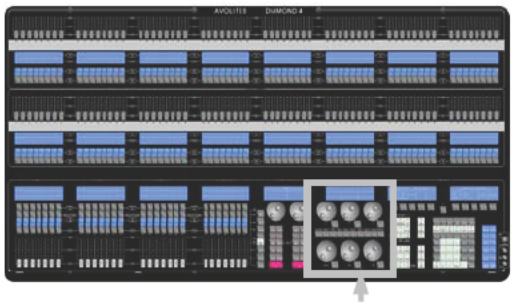
The Elite version of the console does not hav fad s for the upper 48 preset handles, just Select and Palette but ons You can use the lower 48 faders to control the upper presets u ing oftkey D at the main menu. (Press Shift and Up to show the m n menu).

To control the upper presets (49-96) press D so the option shows [Preset Faders control fixtures 4 -96]. To control the lower presets (1-48) press D until the option h ws [Preset Faders control fixtures 1-48]. The option toggles bet een the two settings each time you press the button.

5.1.3 Changing attributes using the wheels

"Attributes" are the functions of the fixture, like pan, tilt, colour, dimmer, etc Attributes of fixtures which are selected into the editor are controlled sing the wheels in the lower centre of the Diamond. The attribut s a ailable depend on the fixture typ Dimmer channels only have dimmer attribute.

The ottom 3 wheels are always assigned to Dimmer, Pan and Tilt. The function of the top 3 wheels is assigned using the Attribute select buttons below them. The display area above the wheels shows which attribute is being controlled by each wheel, and the output value or setting.



Attribute controls

- You can directly control the intensity of the fixture/dimmer using the fader of the handle.
- Some attributes may need more than 3 wheels to control; pressing the Attribute select button again will assign the extra functions to the wheels. For example if your fixture has Iris, Frost, Prism and Beamshape functions, when you press the Beam button you will get the first three, press Beam again to get the fourth function.

- You can also use palettes or the @ button to set attribute values.
- You can view the available attributes of a fixture on the VDU by pressing the Fixture View button (below B) then the select button for that fixture. A window will open showing the available attributes for the fixture you've selected.
- The wheels operate in an "acceleration" mode. If you spin the wheel quickly, the fixture changes in larger steps. If you move the wheel slowly, the fixture moves in smaller increments.
- Hold down Shift and spin the wheel to put it into "hyperdrive" mode. In this mode it will go from zero to full in a single revolution.
- The display above the wheels shows the output value either a value range, or for attributes with defined position such as a colour wheel, as attribute names (such as "Open", "Red", "Orange" and so on as you turn the wheel).
- Sometimes control of an attribute is shared by several wheels, called Function Wheels. For example a rotating gobo attribute may have one function wheel to select continuous or indexed mode, and another function wheel to control rotation speed or position. This makes it much easier to find the function you want when the actual fixture may have both these functions (and more) controlled by different ranges of a single DMX channel.
- Some LED colour mixing fixtures have a Virtual Dimmer function (using the Intensity wheel) which offers intensity control by mastering the RGB levels when the fixture itself does not provide an intensity channel.

5.1.4 Attribute groups IPCGBES

To make life a bit simpler, the Diamond groups together attributes which have similar effects using the letters IPCGBES. You can see these letters below the Attribute select buttons.

I-Intensity (dimmer strobe shutter)

P-Position (pan tilt)

C-Colour (colour wheel, CMY mixing)

G-Gobo (gobo wheels, gobo rotate, gobo position)

B-Beam (iris, focus, zoom, beam shaper)

E-Effects (prism)

S-Special (motor speeds)

These groups are used to select which attributes you want to work with in many of the functions on the console.

5.1.5 Selecting named attributes (Shift+@ button)

You can select particular colours and gobos from the softkeys by name. This can be a lot easier than finding them on the wheels.

1> Press the attribute button you want to set (e.g. Colour).

2> Press Shift and the "@" button below the wheel function you want to set. The display above the wheels shows you which attribute is controlled by each wheel.

3> The softkeys give a list of values available for the attribute.

4> Press a softkey to set that value (I and J change pages).

5> Press Up twice to get back to normal.

- An option in the user settings allows you to access this function without pressing shift (just press the @ button). If this option is turned on, the normal @ menu is accessed using Shift @.

5.1.6 Other attribute control functions (@ button)

You can directly enter values for fixture attributes if the attribute has a range.

1> Select the fixtures to be set by pressing their Select buttons.

2> Select the attribute to be set by pressing the @ button next to the appropriate wheel. Use the Attribute buttons to select a diff re t group of attributes to the top wheel.

3> The top line of the display above softkeys A-E will show the range of values available. If the range is "0-0" then you can't set a value this way.

4> Type the value to set and press Enter.

5> The attribute will be set to the value you en er d.

- A [Remove Attribute From Programm r] r moves the selected attribute from the programmer so hat it will not get stored in any cues you record. This is useful if you ccidentally change something but don't want to eco d the change.
- B [Switch On Attribute] put the attribute into the programmer without you having to hange the value
- C [Switch Off Attribute] l bels the attribute as being "off", effectively removing i from the programmer. See page 184 for an explanation of "Off
- D [Select from table] allows you to recall a particular setting (such as "Green") from the softkeys (same as Shift+@, see previous section).
- E [npu Named value] allows you to search for a particular setting whos name you type on the keyboard (e.g. you can type "Green" t set the fixtures to Green). The softkeys will change as you type to show all attribute values which match what you've typed.
- The @ button lights up when its attribute is in the programmer.

5.1.7 Using groups

You can create groups of fixtures or dimmer channels, to make selecting them faster. You can, for example, make a group for each type of fixture, or group by stage left / stage right, etc. You can then select all the fixtures by just pressing a grey Palette button.

1> Select the fixtures/dimmers you want in the group (the order in which you select them will also be stored in the group).

2> Press Shift and Rec Group (above the numeric keys).

3> Press the grey Palette button where you want to store the group.

4> Press Clear then repeat from 1 to store other groups.

- To select all the fixtures/dimmers in a group, just press the grey

palette button for the group.

- You can set a legend for the group button using the Set Legend button.
- The order in which you originally selected the fixtures when creating the group is also stored. This takes effect when you use the last fixture – next fixture functions described in the next section, and when you use Shapes, Fan mode and Fixture Overlap functions.

You can also recall a group by doing the following:

1> Press the grey Group button.

2> Type in the number of the group you want to recall.

Press Enter.

5.1.8 Stepping through selected fixtures one at a time

If you have selected a range of fixtures, or a group, the Diamond has functions to step through the selected fixtures one at a time. This can make it easier to program a range of fixtures because y u don't have to select each one manually.

This mode uses the ← ALL → buttons to the right of Wheel 3.

1> Select a range of fixtures or a group.

2> The ← and → buttons will select the fixtures in the range one at a time (in the order you selected them). The ALL button will select all fixtures in the programmer (everything which has been selected since Clear was las pressed). Shift+ALL will deselect everything.

3> Press Shift and the arrow buttons to go through previously selected groups o fix ures. You can go back through all selections until the last time y u pressed Clear.

- The Hilight function can be used to highlight the output of the selected fixture see the next section.

5.1.9 Hig lighting the selected fixture

When stepping throught a fixture selection using the ← ALL → buttons, you ca highlight the selected fixture on stage. This makes it very easy to se which fixture you are controlling. The other fixtures in the se ection go to a dimmed Lolight level..

ress the HiLight button to enable highlight mode. The arrow button LEDs flash when in highlight mode. Press HiLight again to disable hilight mode. When you are in hilight mode, the hilighted attribute is overridden and any changes you make to it are not stored in the programmer (so if the hilight uses intensity, you cannot change the intensity of the fixture).

You can set custom HiLight and LoLight states for a particular fixture type by setting up a fixture and pressing Shift+HiLight or Shift+LoLight. The HiLight and LoLight states normally only set the intensity but you can change them to set any attributes; however remember that you cannot program any attributes used to generate the hilighted state.

1> Select a fixture, and set its attributes to the custom hilight or lolight state you want.

2> Press Shift+Hilight (or Shift+Lolight to set lolight state).

3> The Hilight Record Mask is displayed. Select which attributes you want to record in the Hilight state and which you wish to exclude by pressing the appropriate softkeys.

4> Press Enter to record the Hilight state.

5.1.10 Selecting fixtures which are using a palette (Sel If)

It can sometimes be useful to reselect all fixtures which are Red, for example, to change them to another colour. The Sel If function will automatically select all fixtures in the programmer which are using a certain palette.

1> Press Sel If (above numeric keys).

2> Press a Palette button.

3> All fixtures in the programmer using this palette will be selected.

5.1.11 The Align and Flip functions

The Align function allows you to copy an attribute from one fixture to others. This can be useful if you want to set row f scans to have the same tilt position, or if you want to copy a colo r from one fixture onto other fixtures.

1> Select the fixture to use as the r ference.

2> Select the other fixtures you want to align to the first one.

3> To copy all attributes, press ML Menu (below softkey C), then C [Align Fixtures].

To only copy some ttributes, press ML Menu, then D [Align Fixtures By Attrib te]. Select which attributes you want to copy using the softk ys, hen press Enter.

4> The selected attributes will be copied to all the selected fixtures.

- If you s a g oup to select the fixtures, the one you selected first when you ecorded the group will be the reference fixture.
- If Tracking mode is on (see section 5.2.1), aligning the Pan/Tilt ttribute will cause all the fixtures to point at the same place on the stage rather than copying the actual Pan/Tilt values.

The Flip function is used with moving head fixtures. This type of fixture usually has two possible pan and tilt positions for each point on stage, and the Flip button alternates between them. This allows you more freedom to make movements without hitting the pan stop.

1> Select the fixtures to flip.

2> Press Flip (next to wheel 3).

3> The selected fixtures will flip to their alternate position.

- The other functions on the ML menu are described at the end of the chapter.

5.1.12 Selecting dimmers and setting intensity levels on keypad

You can set levels using the numeric keypad as you would on a theatrical lighting desk. If you are used to doing this, it can be faster

when plotting dimmer levels for a scene than using the select buttons and the wheels. This is done using the Fixture button above the numeric keys.

1> Press the Fixture button (top left of numeric keys). Press A [Select by Desk Handle] if this mode isn't already selected.

2> Type the dimmer or fixture handle number (as shown on the display below the fader; not the DMX channel) on the keypad.

3> Press Dim@ (bottom right of numeric keys).

4> Press 0 - 9 for the intensity (0=0%, 1=10%, 2=20%, 3.5=35%), or Dim@ again for 100%.

5> Press the decimal point key and another digit for more accurate control.

Other things you can do while in Fixture mode:

- You can allocate your own numbers to fixtures and dimme s and select them using C [Select Fixture Number]. See page 152 for details of how to allocate user fixture numbers.
- The softkey options on the Dim@ menu are A [Blackout], D [+5%], E [-5%] (the last two increase or decrease the level by 5%).
- You can select multiple dimmer handles (which you can then control using the wheels) using the THRO button. Press Fixture, enter the first dimmer number, res THRO, then the last dimmer. For example 1 THRO 1 0 would s le t dimmers 1 to 10.
- You can also set multiple dimmers to the same level using THRO. Enter first dimmer numbe , THRO, last dimmer, DIM@, level. For example, 1 THRO 1 0 DIM@ 5 would set dimmers 1 to 10 to 50%.
- On the Fixture menu, Softkeys A [Select by desk handle] and B [Select fixture type] lets you tell the console the type of fixture you are working with. Normally it is set to [desk handle] and will select any yp of fixture using the preset/handle numbers. If you set it to a particular fixture type, e.g. dimmer, it will only select dimm rs, tarting at the first dimmer patched, so selecting 1 TH O 0 would select the first 10 dimmers, wherever they are patch d, using the fixture numbers as shown on the display below e preset faders. You can set the option to any fixture type you have patched on the console. See next section.
- Softkey F [Curve] lets you select the dimmer curve for the selected dimmers or fixtures. This allows you to set channels to be "switching" and to change how the dimmer tracks the fader. The available dimmer curves are listed on page 234; press J to go to the second page or I to go back to the first page.

5.1.13 Selecting fixtures from the keypad

If you have got a large number of one type of fixture patched across several pages, it can be easier to select them from the numeric keypad.

1> Press the Fixture button (top left of numeric keys).

2> Press B [Select Fixture Type].

3> Select the fixture type you want to work with from the softkeys (all patched fixture types are shown).

4> Type the fixture handle number of the first fixture on the keypad.

5> Press THRO (right of numeric keys).

6> Type the fixture handle number of the last fixture on the keypad.

7> Press Enter. The fixtures will be selected.

8> Press Exit or Up to get back to normal.

- You can allocate your own numbers to fixtures and dimmers and select them using C [Select Fixture Number] . See page 152 for details of how to allocate user fixture numbers.

5.1.14 Fan mode

Fan mode automatically spreads out the values on a selected range of fixtures. If used on pan and tilt, the result is spreading out "rays" of light beams. The first and last fixtures of the range are affected mos and the central fixtures are affected least. The amount of fa can be set using the attribute wheels.

As with shapes, the order in which you select the fixtures sets how the fan effect works. The fixtures you select first and la t w ll be the ones which change most. If you use a group to select the f xtures, the order you selected the fixtures when you recorded th roup is used.

The fan effect, while normally used on pan r ilt ttributes, can be applied to any attribute.

1> Select the fixtures you want to f n.

2> Press Fan.

3> Set the amount of fan using the attribute wheels.

4> The display shows whi h ttribute is being controlled by each wheel. You can Fan any att ibute.

5> Turn off Fan by press ng the Fan button again when you have finished.

Fan mode ne ds to be used on at least 4 fixtures to give good effects. If you have an dd number of fixtures, the central fixture will not move in fan m de.

Press the Fan button again to leave Fan mode. Any effects you have set will remain in the programmer.

- It's fairly easy to accidentally leave Fan mode turned on and be very confused about why the wheels aren't working properly, so turn it off as soon as you have completed the effect.

5.2 Advanced options

5.2.1 The ML menu and Tracking

The "ML menu" (Moving Light menu) button allows access to some handy features for moving lights.

A [Remove fixture from programmer] allows you to remove fixtures which are selected from the programmer. This can be useful if you have changed a fixture you didn't want to include in a cue – just select the fixture, then use this option.

B [Invert fixture selection] deselects fixtures which are selected, and reselects fixtures which have previously been selected (since Clear was last pressed). Previously selected fixtures are shown with inverted numbers on the console displays.

C and D [Align Fixtures] are described in section 5.1.11 on page 161.

E [Fixture macro] is used to run "macros" which are used to strike lamps or reset fixtures, etc. These features often require a sequence of levels to be sent on different control channels. Available macros for the selected fixtures are shown on the softkeys.

H [Define Stage] and I [Recall Stage] are used to define the stage for the Diamond's 3D tracking mode. See section below.

J [Tracking] allows you to turn the 3D stage tracking mode off or on. When tracking mode is on, the pan and tilt controls set the position on the stage rather than absolute DMX values. This makes it very easy to point a number of fixtures at one spot. You need to Define the Stage (see next section) before you can use Tracking.

5.2.2 Training the console for Tracking mode

The Diamond can learn the layout of the stage and the rig you are using. This enables it to calculate where it needs to point each light so that they all hit the same place on the stage. This is called Tracking mode and it is a very powerful feature of the Diamond. If you need to program lots of "specials" to light people in different places, Tracking mode can really help you out. It can also be used to spot people in real time using multiple fixtures (such as when the lead singer decides to stand 3 feet to the left of your programmed position).

You need to mark a square on the stage, ideally the sides of the square need to be half the depth of the stage but as long as it's square and you can point all the fixtures at the corners, the size is not that important.

1> Press ML Menu then H [Define Stage].

2> Select all the fixtures you want to use for Tracking.

2> Point all the fixtures so they light someone standing at the back left hand corner of the square (don't light a circle on the floor, or your lights will be pointing at peoples' feet all the time).

3> Press A [Top left]. This stores the positions.

4> Point them all so they light someone standing at the back right hand corner, then press B [Top right].

> Repeat for the front corners of the stage using options C and D to store the positions.

6> Press F [Calibrate] to complete the process.

7> Press Up when the display shows "Calibration complete".

8> Press J [Tracking] to enable Tracking mode (option shows [Tracking ON] when tracking is enabled).

- You can recall a position you have already set, if you want to edit it, using I [Recall Stage] then A B C or D to recall one of the positions.
- You need to make sure you are lighting a person rather than making a spot on the stage, because otherwise the beams will cross over at the wrong place. If you can't find a handy spare person, use a plastic cup or a light coloured item of clothing over

the end of a mic stand at head height.

- If you are using moving head fixtures, you need to ensure when hanging them that the pan stop is on the side away from the area to be lit, or the fixtures will not be able to track over the whole area. You also need to keep the Tilt value less than 50%, or the heads may "flip" when you track into some areas.
- Fixtures which have not been trained for Tracking will operate as normal when tracking mode is enabled.

CHAPTER SIX

6. Palettes

This chapter contains: About palettes; shared and normal palettes; recalling a palette; storing a palette; palette masks.

When programming a show you will find that you frequently use certain positions, colours, etc. The Diamond lets you store these settings so you can recall them at the touch of a button rather than having to find them on the wheels every time. Palettes are stored and selected using the grey Palette buttons and you can set legends for the palette values so that you know what you're getting.

6.1 Create

6.1.1 Palette values stored as a reference

The most important thing about palettes is that wh n you use a palette value in a cue, the Diamond stores a reference to the p lette, rather than the actual value. This means that if you program your cues using palettes, you can easily change all the positi s in your show just by reprogramming a few palette entries rathe than having to reprogram all the cues. This is handy if you are tou ing nd have to cope with different stages or truss heights ever sho .

- If you use Record Stage mode when recording cues, palettes are not stored; instead the absol te output values are used.

6.1.2 Shared and Normal palettes

Palette entries can be shar d or normal. This is selected when you record the palette.

- Shared: Used for settings which are the same for all fixtures of the same type, uc as Colours or Gobos. When you save a Shared palette fo one fixture, it is then available to all fixtures of the s me ype If you patch more fixtures of that type at a later date, they will also be able to use all the shared palettes.
- Normal: For settings which need to be individual for each fixture, su h as positioning and image focus. You can add positions for more fixtures to a Normal palette just by saving the palette again with the new fixtures set.

6.1.3 Which attributes are stored in palettes

A palette entry can store any or all attributes of a fixture, so you could store position, colour and gobo in the same palette entry. However, it's easier to operate the Diamond if you have some palettes which only set positions, some for colour, some for gobo and so on. It's also best to group similar palettes together on the console buttons to make them easier to find, so have an area for Colour palettes, and another area for Position palettes, and so on.

6.1.4 Storing a palette

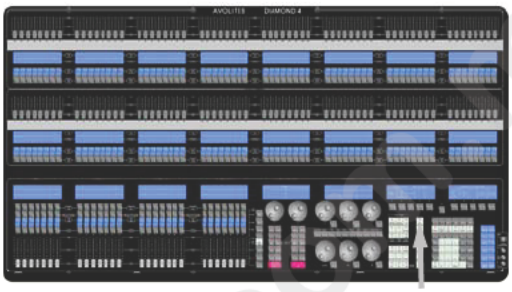
This is how you save a palette value:

1> Press Clear to clear the programmer.

2> Select the fixtures for which you want to store palette values.

3> Using the attribute buttons and wheels, set the attributes you want in the palette entry. You can store any or all attributes of a fixture in each palette entry.

4> Press Rec Palette (below softkey D).



Rec Palette button

5> Select which attributes are to be recorded in the palette. Softkey C turns on all attributes. D turns them all off, and you can t rn them back on individually using A [Press to set mask]. It's best to save only one type of attribute (e.g. Tilt/Pan). he top line of the display shows you which attributes will be saved.

6> Select whether all modified fixtures are to b saved (softkey G) or just currently selected ones (softkey F)

7> Select if the palette is to be Shar d o No mal (softkeys I and J).

8> Press a grey Palette button to sto e the palette.

- F [Save selected fixtures on y] is useful if you are in the middle of programming and don' want to have to press Clear. You can save only the fixtures which re selected and ignore all other fixtures in the programmer.
- When setting the M sk options using A [Press to set mask] there are three possibl settings for each attribute group:
  [Exclude A l <a tribute> channels] will miss out the attribute from the sav d pal tte
  [Save All <attribute> channels] will store the current setting of the attr bute even if it's not in the programmer
  [Save <attribute> channels in the programmer] will store the c rrent setting of the attribute only if it is in the programmer. This last option is like "Record by channel" mode.

6.2 Playback

6.2.1 Recalling a palette value

To recall a palette value, this is what you do:

1> Select the fixtures to be changed. Shared palettes can be set to any fixture of the same type. Normal palettes will set individual values to each fixture.

2> Press the grey Palette button you want to recall. The palette will be set to the selected fixtures.

- You can make palettes fade over a time when you recall them, see section 6.5.1 below.

6.2.2 Palette pages

You can select different pages of palettes using the Palette Bank –1 and +1 buttons below softkey B. Or you can jump to a page by pressing the Select Pal Page button, typing the page number on the keypad and pressing Enter.

The current Palette page is shown on the top line of the display above softkeys A-E when at the top menu level.

- You can create a shortcut on a Palette button which will set up a particular playback page, fixture page and palette page. See page 219.
- Shortcuts on the palette buttons do not change with the palette pages and remain on the same buttons.

You can also recall a palette by doing the following:

1> Select some lights
2> Press the grey Palette button
3> Type in the number of the palette you want to e ll.
4> Press Enter

6.3 Edit

6.3.1 Editing and deleting palettes

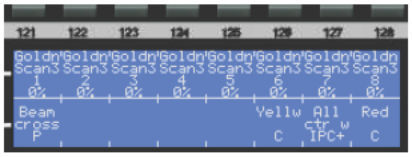
- You can edit a palette nt y by recalling it, making the changes you want, then saving he new information back on top of the existing palette entry Anything you haven't changed will not be affected, values yo have changed or added will be amended.
- You can add addi ional fixtures to a palette without affecting existing on . For example, if you have colour palettes for Mac 600s, yo ca add colours for your Mac 500s without affecting any p eviously ecorded values in the palette.
- You c n remove attributes from palettes using the Off function, ee page 184.
- You can delete a palette entry by pressing the blue Delete button, then the grey Palette button to be deleted. Press the palette button again to confirm the deletion.

6.3.2 Setting legends for palettes

You can enter a legend for each palette which is displayed on the screen immediately above the buttons.

1> Press the blue Set Legend button.
2> Press the grey palette button for the palette you want to legend.
3> Type the legend on the keyboard. The display above the palette button and above Softkey C updates as you type to show you what it's going to look like.
4> Press Enter to when you have finished, then press Up to leave Set Legend mode, or repeat from 2 to set more legends.

- The attribute groups used in the palette are displayed below your legend, so for example Position palettes will show a P, colour palettes a C and so on. If more than 3 attribute types are saved, the display shows the first 3 with a + (as shown in palette 127 above).



6.4 Moving

To move a palette:

1> Press the blue Move button (bottom right of console).

2> Press the Go/Swop button of the cue to be Moved.

3> Press the Go/Swop button of the playback (or the Select Swop button of the preset fader) you want to Move it to.

4> E [Press to latch menu] keeps the Move mode active, so you can keep Moving things without having to keep pres ng he Move button. Press Up to leave Move mode.

6.5 Timing

6.5.1 Fading a palette

A timed palette is a very useful ol a lowing easy "busking" of shows. When a palette is recalled in this w y, a time is added and the palette fades in over that time.

1> Select some fixtures

2> Type in the time for t e palette on the keypad

3> Press the pale te button

Palette fading can be very useful when recalling a palette live during a show, as y u can smoothly move fixtures to a new position or change colour sl wly (n colour mixing fixtures).

Palet s applied with a fade time do not get put into the programmer, so will ot be saved in any cues; don't use fade times when rog mming. This is to ensure that when used in a live situation, the next cue will override the palette and play back as intended.

here is a user setting under the Panel tab which allows you to access this function from any menu, not just the top level root menu.

6.6 Locking

The mask which a palette is saved by can now be locked on all palettes to prevent any further attributes being added. This is particularly useful if say for example you have recorded a series of position palettes which need adjusting but you do not want to record any other attributes into them. Rather than worrying about setting the palette mask and checking it you can simply lock the palette mask to that of what is already recorded and you will only be able to adjust the attributes that

are recorded in that palette. To lock the palette mask do the following:

1> *Click on Tools and User Setting.*

2> *Select the Palette tab.*

3> *Ensure the tick box labelled Lock Palette Mask is ticked.*

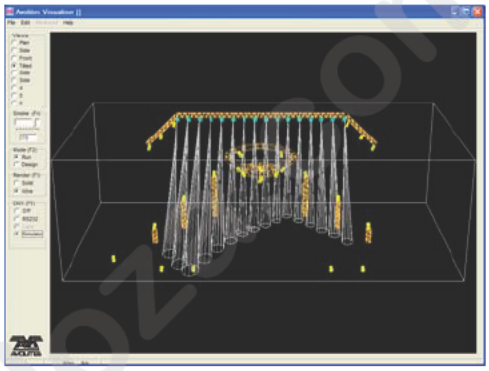
4> *With this ticked it is now only possible to edit existing attributes in palettes, creation of palettes has not been changed.*

CHAPTER SEVEN

7. Shapes

This chapter contains: Selecting a shape; changing the size and speed of a shape; spreading a shape across multiple fixtures; editing shapes which are running.

The Diamond, in common with other Avolites consoles, has a shape generator (sometimes known as an Effects Generator on other consoles). This allows you to quickly create exciting light shows using lots of movement and changes, with the minimum of programming.



A shape is simply a sequence of values which can be applied to any attribute of a fixture. A circle shape, for example, applied to the pan and tilt attributes, would cause the fixture to move its beam around in a circular pattern. You can set the centre point of the circle, the size of the circle and the speed of the circle movement.

In addition to position shapes, there are a large number of other shapes available in the Diamond. The shapes are defined for a particular attribute such as colour, dimmer, focu a d so on. Some shapes will not work with some fixtures; focus s apes, for example, can produce nice "focus pull" effects on fixtures which have DMX focusing, but will do nothing on fixtures which don't have focusing.

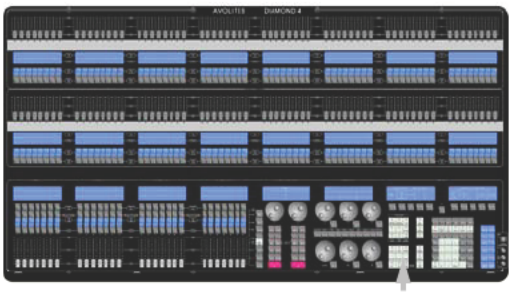
When you use a shape w h more than one fixture, you can choose to either apply the shape den cally to all the fixtures, or offset them so that the shape runs long the fixtures creating "wave" or "ballyhoo" type effects. This is ca led the *Phase* of the shape.

7.1 Playback

7. .1 Creating a shape

To create a shape you simply pick it from a list on the softkeys. Shapes are listed using the IPCGBES attribute groups, so you can pick from a list of Intensity shapes, or a list of Pan/Tilt shapes, or Colour shapes, and so on. You can also pick from a list of All Shapes.

When you choose a shape, it will be applied to all selected fixtures.



Shape button

1> *Select the fixtures the shape is to be applied to.*

2> *Press the Shape button (to the right of Wheel 3).*

3> *Press A [Create] to start a new shape.*

4> *Press a softkey to select the attribute type of the shape or press H*

[All shapes] for a full list.

5> Press a softkey to select a shape.

6> The shape will be applied to all selected fixtures.

- Shapes are based on the current settings of the fixture, so a circle would move around the current pan-tilt position of the fixture.
- You can change the base value of a shape (e.g. the centre of a circle) by changing the attributes using the wheels in the usual way. You can reduce the Size to zero (see next section) to help you see what the base value actually is.
- You can run more than one shape at a time by repeating the above procedure. You can run several shapes on one fixture.
- Press Shape then then B [Edit] to show what shapes are running.
- If you apply the same shape to two different groups of fixtures, the shape will appear twice on the shape list. You can edit he two shapes separately to give different directions, speeds etc (see later)
- Each shape is designed to work on a particular attr bute. Obviously if the fixtures don't have the attribute, you will not see any effect if you use the shape.

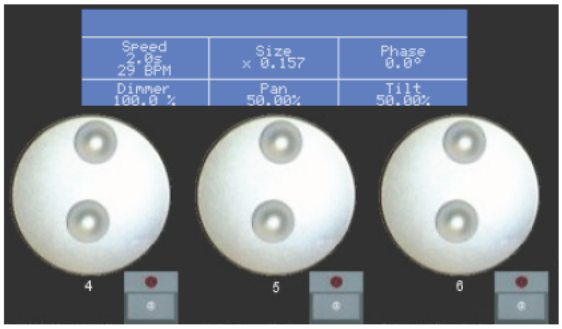
7.1.2 Changing size and speed of a shape

It is easy to change the size and speed of a shape after it has first been created.

1> Control the speed of the shape using wheel 4.

2> Control the size of the sh pe using wheel 5.

3> The size and speed s shown above the wheels on the display.



Other things to know about size and spe d of hapes:

- If you have more than one sh pe running, the controls operate on the most recent one. You an edit the parameters of any shape that's running using the Edit Shape function, see section 7.2.1.

  You can enter a speed on the keypad by pressing the @ button for wheel 4. Type the speed in seconds and press Enter, or type the BPM speed and press A [Set BPM]. You can also enter a size on the keypad by pressing the @ button for wheel 5.
- The minimum size is zero. This will "hide" the shape, and the fixture will resume its previous settings. The shape is, however, still active.
- If you change any fixtures while running a shape, the wheels will revert to attribute control. You can get the Shape controls back by pressing the Soft Key button (below wheel 6)

7.1.3 Changing the phase of a shape across multiple fixtures

Shapes get more interesting (and look more impressive) when you apply them to multiple fixtures. The Diamond lets you control how a shape is phased across several fixtures. You can either set the phase in degrees, or you can specify the number of fixtures before the shape repeats itself.

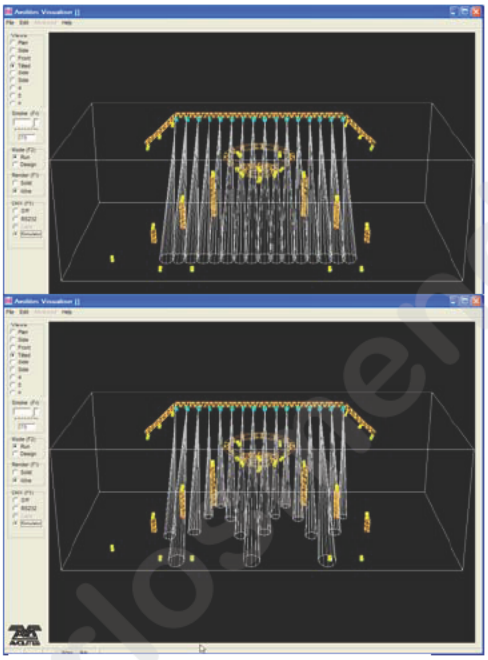
1> *Set the phase using wheel 6.*

2> *Alternatively, type in a value for the phase by pressing the "@" button below wheel 6 and enter the value on the numeric keys.*

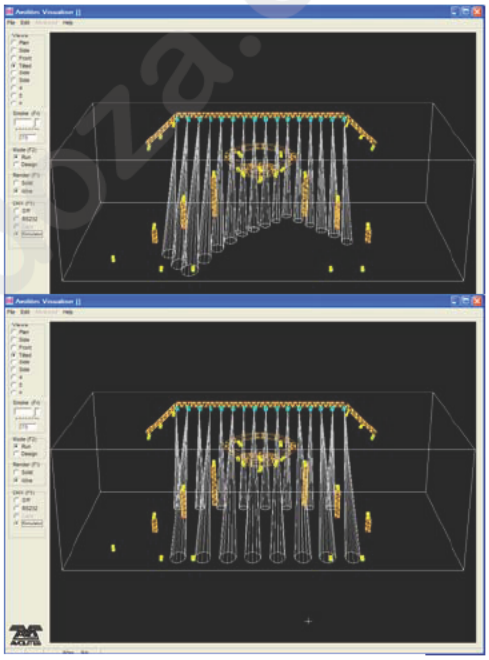
3> *Or, if you want the shape to repeat every 4 fixtures, press @, type 4 and press A [Set Part].*

The display above Wheel 6 shows the phase in degrees, and below that, the number of fixtures before the shape repeats. For example, 180 degrees repeats every 2 fixtures, 90 degrees repeats every 4 fixture , 60 degrees repeats every 6 fixtures, and so on.

Phase=0 deg



Phase=22.5 deg (16 f xture epeat)



Phas 60 deg (6 fixture repeat)

Phase=180 deg (2 fixture repeat)

7.2 Edit

7.2.1 Editing shapes which are running

If more than one shape is running, you can select which one is connected to the control wheels using Shape option B [Edit].

1> If you are not in the Shape menu, press the Shape button.

2> Press B [Edit].

3> Above the softkeys is a list of the currently running shapes.

4> Press a softkey to make the shape active. The active shape is highlighted.

5> Press Up when you have finished.

- To change the order which a shape is applied to fixtur do the following:

1> Enter the Shape Edit menu as described abov

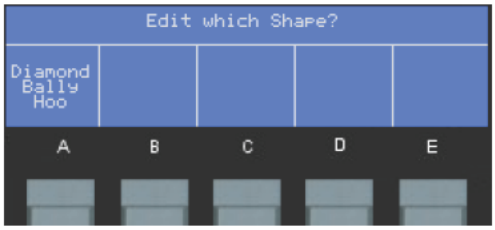
2> Select a shape

3> Only the fixtures in that shape are shown in the preset LCD screens with a number underneath t em ndicating their order in the shape.

4> Press a preset swop button for fixt re to set its order in a shape. You can enter a new tart g number on the keypad or press the backspace butto to r move entered numbers.

- Any changes you mak to a shape will affect all fixtures which are running that shape. If you applied the same shape several times to different fixtures, y u can change each copy of the shape independently.

- If you are editing shapes being played bac from a cue, chase or cue list the shape name on the s ftkey list also shows the play ack legend (in the screen shown the shape name is Diamond" and the playback ame is "Bally Hoo"). Make sure that you edit the shape from the playback you are working on, otherwise when you record the playback you will record another shape into it.



7.2.2 Reversing a shape

You can reverse the direction of a shape by pressing E [Reverse] from the shape menu, then pressing the softkey for the shape you want to reverse.

7.3 Moving

To move a shape:

1> Press the blue Move button (bottom right of console).

2> Press the Go/Swop button of the cue to be Moved.

3> Press the Go/Swop button of the playback (or the Select/Swop button of the preset fader) you want to Move it to.

4> E [Press to latch menu] keeps the Move mode active, so you can keep Moving things without having to keep pressing the Move button. Press Up to leave Move mode.

7.4 Delete

7.4.1 Deleting shapes

You can delete a running shape by pressing C [Delete] from the shap menu, then pressing the softkey for the shape you want to delet .

7.5 Advanced options

7.5.1 Shape fade mode

When a shape is stored in a cue, you can set h w the shape fades in using the cue's Mode setting.

Mode 0: The shape will start at full size nd peed when the fader moves above the trigger point
Mode 1: The shape size will grow from ze o to the programmed size using the timer settings of the cue. If the time is set to zero, this will be the same as mode 2.
Mode 2: The shape size will be set by the fader position. It will start at zero and grow to its programm d size when the fader reaches 100%.
Mode 3: The shape size wi l crossfade from the previous cue.

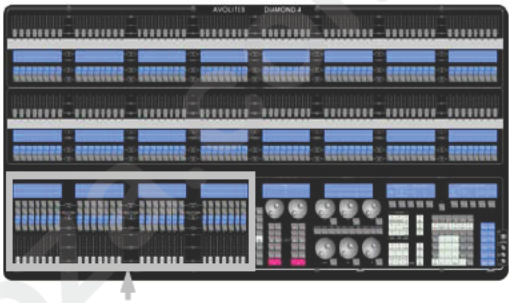
CHAPTER EIGHT

8. Cues

This chapter contains: HTP and LTP channels; how the Diamond works when programming; recording a cue; playing back a cue; changing playback pages; setting fade times for a cue; copying and deleting cues; the include function; editing cues; the "off" button; blind mode; using shapes in cues.

The Diamond has many functions for producing a complex light show, and the most fundamental part is a Cue, in which you can store a "look" you have created using your lights.

Cues are stored on the playback faders across the near edge of the console. You can also store cues on the Preset faders if you want to. You can have as many pages of cues as you want, the pages are selected using the Page-1 and Page+1 buttons to the right of the playback faders.



Playback faders

The cue functions on the Diamond are very powerful; the first part of this section explains the basics of how the Diamond uses cues.

8.1 Create

8.1.1 How the Diamond works when programming

When you select one or more dimmers or fixtures for control, they are loaded into the Editor You can then use the wheels, palettes and the @ button to change th settings on the fixture. You can also apply shapes to it.

If a fix ure s se ected after you have changed some attributes then the current li t of fixtures is emptied and a new list is started. The previous list of fixtures is stored in a "Selection Group". You can go back through previous Selection Groups using Shift and the ← → buttons to the right f wh el 3.

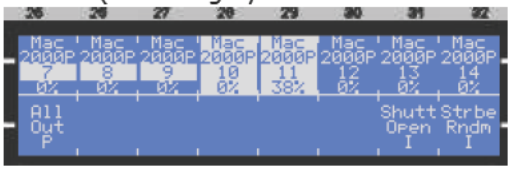
All fixtures and attributes that have been edited since the last Clear are tored in the Programmer. The order in which you selected the fixtures is also stored, and is used with the Fixture Overlap function. When you record a cue, the contents of the Programmer are saved into the cue using the Record Mode as described below.

When you press Clear (by the numeric keypad), the programmer and editor are emptied. This makes sure you don't record fixtures you don't want. You also need to press Clear when you finish programming, because any attributes in the programmer will override playbacks.

You can deselect all fixtures (remove them from the Editor but leave changes in the Programmer) by pressing Shift+All (between the arrow buttons). To select all fixtures in the Programmer into the Editor press All without Shift.

Fixtures which are in the programmer are shown in light blue on the

VDU Stage View. Attributes in the programmer (the things you have changed) are shown in cyan on the VDU Stage View screen. Also, fixtures which are in the programmer have their numbers inverted on the LCD screens. (In this picture, Macs 7-11 are in the programmer and 10 & 11 are currently selected).



The Diamond has four Record Modes which are selected on softkeys G-J when you save a cue:

- I [Record by fixture]: This is the normal mode of the Diamond. When you record a cue, all attributes of every fixture in the programmer are recorded in the cue. So if you change only th position of a fixture, the colour, gobo, intensity and all oth r attributes of that fixture are recorded as well (fixtures a pu in the programmer when you select them, you don't have to hange anything). This is useful because you know that when y u recall the cue it will look exactly as it did when you sav d it. However, it can be slightly inflexible if you want to combin cu You can also use this mode to copy some fixtures to anot er cue; fire the cue, select the fixtures you want, then save to a ew cue.
- H [Record by channel]: Only attributes you have changed are recorded in the cue; for example f yo change the position of a fixture, only the position is recorded When you recall the cue, the colour, gobo etc will remain as t ey were last set. This means you can use a cue to change the p sition of some fixtures while leaving the colour set by a previous cue, allowing more variety when you are running s ow. It is a powerful feature but you can easily get yourself into t ouble with it so you need to be sure which attributes y u want to record and which you want to "show through". It is bes to record some cues using Record by fixture which set the fi tures to a known state, then have some colour cues to modify just the colour, or some gobo cues to set the gobo, or other attribu es.
- G [Re ord by Mask]: You can select which attributes from changed fixt res ill be recorded in the cue, using the IPCGBES attribute groups. Above Softkey G t e display shows you which attributes are going to be saved. Press G again to change which attributes will be recorded.

  J [Record Stage]: The Diamond will record all fixtures or dimmers which are either in the programmer, or which are lit (have intensity above zero). In Cue List recording this mode is called [Record Stage Hard Cue]. Note that the cue will contain the output values of the fixtures; palettes are not saved when using Record Stage. If you update a cue, palettes in the cue will be overwritten with absolute values.

Firing a cue does not place the values from the cue in the programmer (although the Include function lets you do this, see page 152). Also, if you use record by channel mode, the changes made by the Locate function will not be stored in cues you save.

8.1.2 Creating a cue

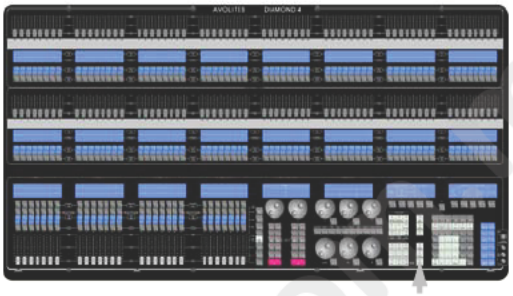
1> *Press Clear to clear the programmer. This ensures that you are starting with a clean slate.*

2> *Set up the look using the fixtures. You can include shapes in a cue. Remember that only the fixtures you have selected will be included in the cue.*

3> *Press Rec Cue.*

4> *Select the Record mode using softkeys G-J.*

5> *Press the Go/Swop button of an empty Playback to record the cue. (Select a new page first if you want to use a different page).*



Rec Cue button

6> *Press Clear to clear the programmer. Repeat from 2 to program more cues.*

Other useful things to know about recording cue

- If you are recording a lot of cues, you can p ess E [Press to latch menu] to keep the Rec Cue menu act ve. Press Exit to leave Rec Cue mode.
- To record a cue onto a preset fa er, ress a Preset Select button instead of a playback Swop b tton
- The display above the fader shows a legend for each cue. You can change this to help you remember what's in it. Press Set Legend, then the playback Go/ wop button (or the preset Select button), then enter a legend on the keyboard. Your typing is shown above the fader and abo e softkey C so you can see what it is going to look like (there re 2 rows of 6 letters). Press Enter to store it.
- You can al o le end the current playback page this way, by pressing A [S t Page Legend] instead of the playback Swop. The page egend is displayed above the Chase controllers.

8.1.3 Us ng shapes in cues

As you would expect, any shapes you have set up will be saved as part f th cue.

You can create a cue which contains a shape with no base reference alues; a shape cue like this can then be overlaid on other cues to give you instant effects based around the settings in that cue. When recording the cue, use Record By Mask mode and ensure that all attributes other than the Shape option are excluded from the cue.

8.2 Playback

Because it's possible to play back a large number of cues at the same time, the Diamond has to have rules on how it combines the output from different cues. These are called HTP and LTP rules.

8.2.1 HTP and LTP

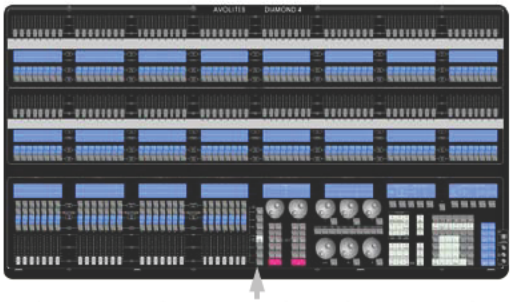
The Diamond treats control channels in two ways:

- Dimmer or intensity channels work on the principle of "Highest Takes Precedence" (HTP). If an HTP channel is active at different levels in several cues, the highest level will be output. When you fade out a cue, the HTP channels fade out with it.
- All other channels work on the principle of "Latest Takes Precedence" (LTP). The latest change takes over from any other values, so the most recent cue to be turned on is the one which is output. When you fade out a cue, LTP channels retain their values until changed by another cue.

8.2.2 Playing back a cue

To fire (play back) a cue, raise the fader. (Make sure there are no values in the programmer by pressing the Clear button, because anything in the programmer will override the playback).

- You can fire several cues at once.
- The HTP levels in the cue will be mastered by the fader level; for example if you set the fader at 50% then all HTP levels will be 50% of their programmed values.
- LTP channels are triggered as soon as the fad r passes 3% (you can set the point at which this occurs on t e User Settings menu). If a fade time is programmed the LTP channels will start to fade; if there is no fade time they will s ap t position (unless the cue is set to Mode 2; see the timings se ti n on page 187 for details of modes).
- You can Flash the cue by ressing the grey flash button. You can Swop (solo) the cue by pre sing the blue Swop button (all other active cues will turn ff while the button is pressed).
- You can pre-positio the LTP channels before raising the fader by pressing the Pau e & Preload button. This is useful if you want to avoid the f xtu e "swinging" into position when you turn the playback on.
- If you nee to quickly kill the cue, press Off then F (see page 85).
- If you need to quickly kill all playbacks, press Off then G (see page 185). To reactivate playbacks you have to take the faders to 0 and put them back up again.



Playback page buttons

You can also fire a cue by doing the following

8.2.3 Changing playback pages

You can change playback pages using the Page-1 and Page+1 buttons to the right of the playback faders. You can directly jump to a page number by pressing the Go Page button, typing the page number on the numeric keys, and pressing Enter.

If you have stored cues on the preset faders, you select different pages of preset faders using the Fixture Bank buttons below Softkey A.

The current playback page number (and legend, if you've set one) is displayed on the top line of the Chase controllers display.

- Playbacks which are fired when you change page remain active. The display above the fader shows the name of the active cue in the middle row, and the name of the cue from the new page in the top row.
- If you want to fire a cue on a fader which is already on from a previous page, lower the fader to zero then raise it again. The cue from the previous page will stop and the cue from the new page will fi
- You can legend the current playback page by pressing Set Legend, then A [Set Page Legend], then entering a legend using the keyboard. The page legend is shown at the top of the isp ay above the chase control wheels.
- You can create a shortcut on a Palette button hic will set up a particular playback page, fixture page and palet e page. See page 219.

8.3 Edit

8.3.1 Editing a cue

You can edit any part of a cu you have already saved simply by making the changes and sa ing he new information on top of the cue.

1> Press Clear to empty he programmer.
2> Fire the cue yo wa t to edit, so you can see what you are doing. Kill all other cues to avoid confusion.
3> Select the fixtu es you want to change, and make the changes.
4> Press Rec Cue.
5> Press the Go/Swop button for the cue you are editing.
6> he Diamond will merge the existing cue with your changes. Unchanged information is not affected.

- If you are in "Record by fixture" mode, all attributes of any fixture you've changed will be updated in the cue with their current settings. If you only want to update certain attributes of a fixture, you need to use "Record by channel" or "Record by mask" mode to only save those attributes.
- If you want to overwrite the cue entirely, you need to delete the old cue first (press the blue Delete button, then press the Go/Swop button twice)
- If you want to edit a shape within a cue, when you select the Shape Edit function (see page 176) you will see the cue legend below one of the shapes. Make sure this is the shape you edit, otherwise you will save another shape into the cue when you record it.
- If you edit a cue using Record Stage mode, palettes will not be stored. If you update a fixture which was using a palette, the

palette will be removed and replaced with absolute values.

8.3.2 The Include function

The Include function lets you load selected parts of a cue back into the programmer. (Normally, only manual changes to fixtures are put in the programmer). You can then use this to make a new cue. This is useful if you want to make a cue which is similar to one you already have, or to build a new cue from various parts of other cues.

When you use Include, you specify which attributes of which fixtures you want to load into the programmer. So, for example, if you have a cue which contains position, colour and gobo information for 8 fixtures you can use the include function to load only the colour information f r 4 of the fixtures into the programmer. You could then "Include" p itio information from another cue into the programmer, and build u a n w cue using information from several existing cues.

1> Press Include (below softkey D).

2> Press the Go/Swop button of the cue you want to include.

3> All fixtures in the cue will be selected. If you don't ant them all, deselect the fixtures you don't want.

4> Use the softkeys to select which Attributes you want to include (All are included by default). Softkey H lets you include or exclude Shapes from the cue.

5> Press Enter. The selected attributes f the selected fixtures will be loaded into the programmer.

6> Repeat from 2 to include other ttributes from the same fixtures, or repeat from 1 to include other fixtures.

- If you want to put the who e cue into the programmer, ensure all Attributes are selected in step 4 (press I [Select All]). Everything will be placed in th programmer.

8.3.3 Remov ng attributes from cues using "Off"

The "Off" button all ws you to remove an attribute which has been stored in a cue, as if you never recorded it.

For example, suppose you recorded a cue which had scans at a certain positi n, with the colour set to green. If you later decide that you don't wa t a colour recorded at all in the cue, so that the colour set by rev us playbacks will remain, you use the Off function to turn off the co our in the cue. You can also use the Off function to remove complete xtures from a cue by selecting all the attributes.

Setting an attribute to Off is not the same as recording an attribute at zero, since this would change the attribute when the cue was fired. It is the same as excluding that attribute using the mask when recording, and the attribute will remain unchanged when the cue is fired.

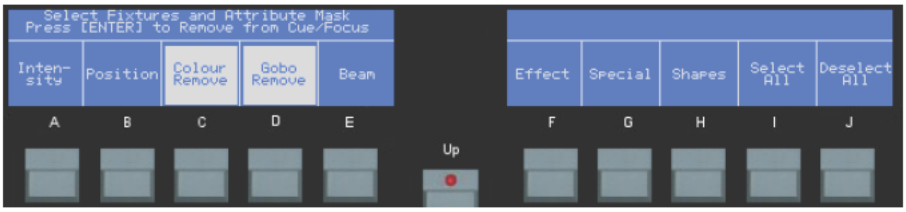
1> Press the OFF button (left of the numeric keys) to display the Off menu.

2> Press the Go/Swop button of the cue you want to change.

3> All fixtures in the cue will be selected. If you don't want to change them all, deselect the fixtures you don't want.

4> Use the softkeys to select which Attributes you want to remove. Softkey H lets you remove Shapes from the cue.

5> Press Enter to remove the selected attributes of the selected fixtures from the cue.



- Attributes marked as "Off" are not deleted from the cue, they are just disabled. You can reinstate the recorded values using the On function as described below.
- You can also use this function to turn off fixtures or at ribu es in a palette. Use the procedure above, but press a palette select button instead of a cue Go/Swop button.

8.3.4 Reinstating attributes to cues usi g "On"

This allows you to reinstate an attribute which ha been switched off.

In addition, when the Diamond records a cue, i actually records not just the programmer or masked setting but the entire console output. Anything not in the programmer is m rke as "Off" but the information is still recorded.

This means that you can go back to a cue and make it include fixture settings which were not sav d originally. This is handy if you save a cue using the wrong Record Mas settings.

1> Press Shift and OFF to display the ON menu.

2> Press the Go/Swop button of the cue you want to change.

3> All patched fixtures and dimmers will be selected. If you don't want to chang them all, deselect the ones you don't want.

4> Use the softkeys to select which Attributes you want to re-enable.

5> Press Enter to reinstate the selected attributes of the selected ixtures back into the cue.

8.3.5 Other "Off" functions

Press Off (left of numeric keypad) to access the Off menu.

F [Stop Playback] (followed by a playback Swop button) kills a playback instantly. The playback fader has to be pulled down to zero and put up again to restart the playback.

G [Stop all active playbacks] is the same as pulling down all the playback faders to zero.

I [Remove fixtures from program] removes selected fixtures from the programmer (so if you save a cue, they won't be included)

J [Remove group from program] allows you to remove a group of fixtures from the programmer. Select this option then press the Palette/Flash button for the group of fixtures to be removed.

8.3.6 Viewing a cue

You can view the contents of a cue by pressing one of the Chase Control View buttons then the swop button for the cue. The intensity levels of fixtures in the cue are shown on the fixture displays (below the preset fader where the fixture is patched). Fixtures which are not in the cue disappear from the displays.

- This does not work if the chase controller is connected to a chase. Press Connect twice to disconnect the controller before pressing View.

8.4 Copy

8.4.1 Copying a cue

Copying a cue is very simple on the Diamond. All copies are independent of each other, not linked.

1> Press the blue Copy button (bottom right).

2> Press the Go/Swop button of the playback you wa t to copy.

3> Press the Go/Swop button of the playback wher you want to store the copy.

Press E [Press to latch menu] to keep the opy mode active. You can keep copying using steps 2 and 3 without h ving to keep pressing the Copy button. Press Up to leave latched co y mode.

Press B [Copy Legend] to set whe her not the legend is copied with the cue.

8.5 Delete

8.5.1 Deleting a ue

To delete a cue

1> Press the lue Delete button (bottom right).

2> Pre s the Go/Swop button of the cue you want to delete.

3> Press the Go/Swop button again to confirm the delete.

Pres E [Press to latch menu] to keep the delete mode active. You can keep deleting using steps 2 and 3 without having to keep pressing the Delete button. Press Up to leave latched delete mode.

8 6 Moving

To move a cue:

1> Press the blue Move button (bottom right of console).

2> Press the Go/Swop button of the cue to be Moved.

3> Press the Go/Swop button of the playback (or the Select/Swop button of the preset fader) you want to Move it to.

4> E [Press to latch menu] keeps the Move mode active, so you can keep Moving things without having to keep pressing the Move button. Press Up to leave Move mode.

8.7 Timing

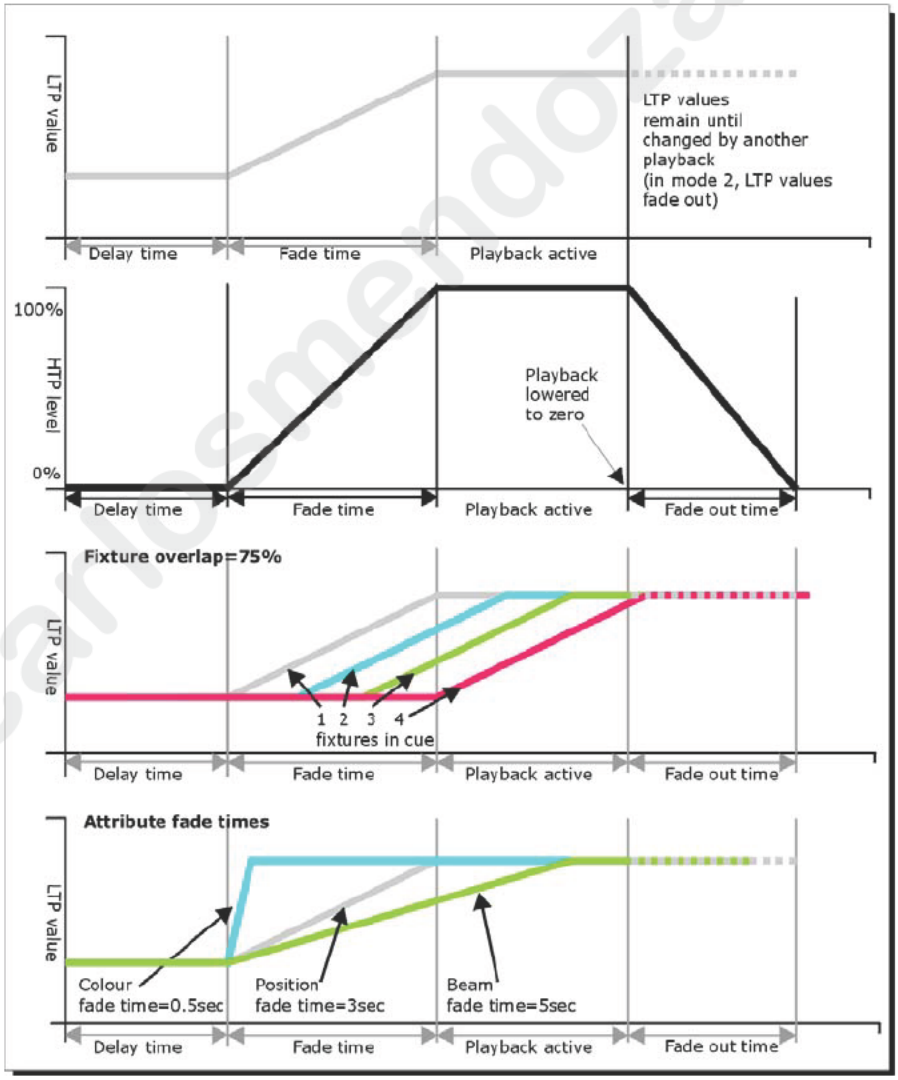
The Diamond allows a wide variety of timing functions to be set.

8.7.1 Setting fade times and Overlap for a cue

You can set a delay, fade in and fade out time independently for every cue. Shapes in the cue will also be affected, depending on the fade mode.

You can delay the fade times between fixtures in a cue so that the cue is applied sequentially to each fixture. This is called Fixture Overlap and can create some amazing "peel off" or "roll" type effects with no programming at all.

In the diagram below, the top picture shows how the LTP chann ls change when used with delay, fade and fade out times. The second picture shows how the HTP channels change. The third and fourth pictures show what happens to the LTP channels when fixture overlap and attribute fade are used.



The times are set like this:

1> *Press A [Set Times] at the top level menu.*

2> *Press the Go/Swop button of the cue.*

3> *Press A [Mode x] to set the cue mode. This sets how the times are used, see below.*

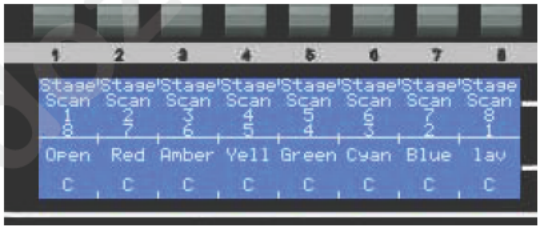
4> *Press B [Delay time] to set the delay before the cue starts, C [Fade time] to set the fade-in time of the cue, and D [Fade out time] to set the fade-out time of the cue.*

5> *Type the new time (in seconds) using the numeric keypad and press Enter to save it.*

6> *Press E [Fixture Overlap] to change the overlap, then enter 0-100 on the keypad. 100% means all fixtures fade together. 0% means that the first fixture will finish its fade before the next one starts 50% means that the 2nd fixture will start fading when the first one is half way through its fade. The order of the fixtures is set by the order you selected them, or use option H to change order.*

7> *Press Up to get out of Set Times mode.*

- You can also set independent times for the IPCGBES attribute groups, and for each individual attribute, see next section for details of this.
- H [Set Fixture Order] allows you to change the order of fixtures when using Overlap (Normally the order is set by the order in which you select the fixtures) The display below the fixture presets changes to show the order on the bottom line (in the display on the right the order has been set to 8 7 6 5 4 3 2 1). You can reorder the fixtures by typing the start number on the numeric keys, then pressing the Select buttons in the order you want them. For example, to set the order of 8 fixtures, press 1 on the keypad, then press the Select button of the fixture to be first, then the Select button for the second, and so on. You can set multiple fixtures to the same position in the sequence, or set them to 0 to exclude them from the overlap effect.
  Press Up to finish setting the fixture order.



- I [Advanced options] allows you to select a different Fade Curve. Press A [Curve] then select a different curve from the softkeys. See page 234 for a description of the different curves available.

The effect of the times is shown in the following picture.

The times you enter are affected by the cue mode:

- Mode 0 – Channels will fade in as set by the fade time. The Fade Out time is ignored. If times are set to zero, the HTP channels fade in with the 0-100% position of the playback fader and the LTP channels will snap.
- Mode 1 - Channels fade in as set by the fade time. HTP channels fade out as set by the fade out times (LTP channels remain as set in the cue). If times are set to zero, the HTP levels will fade in and out with the fader and the LTP channels will snap when the cue is fired.

- Mode 2 – Channels will fade in as set by the fade time. The Fade Out time is ignored. However, the fade will stop when the fader position is reached, so if the fader is set to 50%, the attributes will stop half way to their programmed position. You can reverse the fade back to the original position by moving the fader back. If times are set to zero, both HTP and LTP channels are controlled by the fader position.
  In this mode LTP channels revert to their previous settings when the cue is deactivated.
- Mode 3 - Crossfade cue. All channels, including intensity channels, will fade to the settings in the new cue. All other cues fade out and all other active playbacks become inactive; if you need to re-fire a playback, take the fader to zero and put it up again.
- If the cue includes shapes, then the shape will change with fad times. The changes will be timed for a Mode 1 cue and ntrolled by the fader position for a Mode 2 cue. This allows yo to reate a shape which gets bigger or faster as you push up the fader.

8.7.2 Setting attribute fade times for a cue

You can set individual fade times for e ch ttribute group (such as Position), or for each attribute (such as P n). If you set a time, it overrides the normal times.

To set an attribute group fade time:

1> Press A [Set Times] at th top level menu.

2> Press the Go/Swop but on of the cue to be changed.

3> Press F [Set IPCG ES imes].

4> Select the Attri ute groups for which you want to change the timing. H [All] sel cts all of them.

5> All fixtures in t e cue will be selected for changing. If you don't want to change the times for some fixtures, deselect them now.

6> Press A [Set delay] to set delay time, B [Set fade] to set fade t me r E [Clear times] to delete the attribute times and go back o the normal times.

7> Type the new time using the numeric keypad and press Enter to save it, or press A [Clear] to clear that individual time.

8> Press Enter to save the changes.

If you don't want to change all attributes in a group, for example you just want to change the Pan time but leave the Tilt time as default, use option G [Set Atribute Times] in step 3, then select the individual attributes you want in step 4.

8.8 Advanced options

8.8.1 Playback Options

You can enter the playback options menu by doing the following

1> Press Softkey B "Playback Options".

2> Press the blue Swop key for the playback you wish to edit.

Or by

1> Connect a list or chase to a controller.

2> Press the 'Options' key on the controller panel.

This menu presents you with the following options:

- A [Release Settings]
    - A [Freeze all attributes] The Fixtures LTP channels will stay in the same position when the playback is Killed.
    - B [Release all attributes] All LTP attributes will return to the Power On position with the dimmer turned off (The position they were in when initially patched)
    - C [Release all but pan/tilt] Pan and Tilt will sta in position, all other LTP attributes will return to the Power On position.
- B [Shape Size:Fader] If the cue is a shape th n th size of the shape will be defined by this option.
- C [Shape Speed:Fader] If the cue is a hap then the speed of the shape will be defined by this option.
- D [Curve = Linear] This options d fines the type of curve associated with that particular cue.

8.8.2 Recording in Blind mode

The Diamond has a useful fu ct on called "Blind mode", which allows you to program cues w tho t altering the output of the console. The contents of the Programmer are saved on entering Blind mode, and restored when you le ve Blind mode. Any playbacks turned on continue as normal, and ou can make any changes you like without affecting the output. The cha ges you are making can be viewed on the internal Visualiser system so you can see what you are doing.

This is us ful if for some reason you need to edit a cue in the middle of a show without upsetting the current state.

T r Bli d mode on and off using the Blind button to the top right of he numeric keys.

If you have edited a playback which is already turned on, you will need to turn it off then on again to load the new version.

CHAPTER NINE

9. Chases

This chapter contains: Programming a chase; running a chase; setting speed, crossfade and direction; manually controlling the chase steps; setting step times and unlinking; editing a chase using unfold; editing a chase which is running; copying chases; chase options.

As well as being used to store static cues, the playback faders on the Diamond can also be used to store chases (sequences of cues). You can also store chases on the preset faders.

Chases can run once or repeat continuously. You can set individual fade time for each cue in the chase and unlink cues so that the console waits for you to press Go before the chase continues.

9.1 Create

9.1.1 Programming a chase

To program a chase, you have to set up the look for each cue in the chase, then save it. You can select record by fixture, by channel, by mask or record stage as with cues.

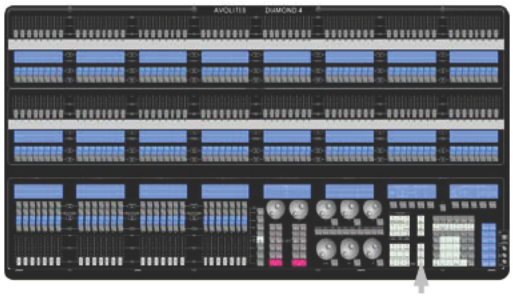
You can either set all the fixtures and dimmers manually for each cue in the chase, or you can use Include to load in the information from cues you have already recorded.

You can also use "Record Stage" mode to save an existing cue in a chase, just by turning it on

1> *Press the Rec Chase button (below softkey D).*

2> *Press the Go/Swop button of the playback or the Select/Swop button of the preset where you want to store the chase.*

3> *Select the Record Mode of the console: by Fixture, Channel, Mask or Stage using softkeys G-J. See page 187 for a description of these modes.*



Rec Chase button

> *Set up the look for the first cue, either manually or by using "Include" on existing cues.*

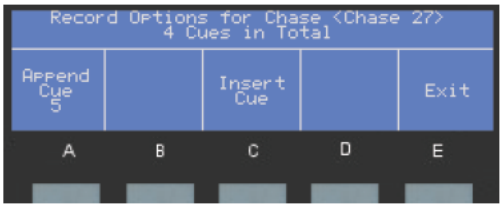
5> *Press the Go/Swop button of the playback or A [Append Cue] to store the programmer contents as Cue 1 of the chase.*

6> *Press Clear (unless you want to re-use the contents of the programmer), then repeat from step 4.*

7> *Press E [Exit] to finish when you have stored all the cues you want.*

- If you get a cue wrong, you can change or overwrite it by pressing C [Insert Cue], then entering the cue number you want to change. You can then choose A [Merge] or B [Replace]. You can also insert a new step by entering a step number in between two steps, for example to insert a cue between cues 2 and 3, use cue number

2.5.



- The cue number currently being saved is displayed above Softkey A, and the total number of cues is shown on the top line of the display.
- Press Clear when you have finished recording the chase, otherwise when you try to play it back the programmer will override the chase and you won't see the chase properly.
- You can record shapes in a chase. If the same shape is saved in subsequent cues it will continue from step to step and if not it wi l stop at the end of the cue. (The Diamond considers the shape o be the same if you didn't press Clear after the previous step a d didn't change the speed, size or phase of the shape fr m the previous step; or if you Included the shape from the p evi us step and have not modified it)
- You can set a legend for the chase by pressing Set egend, then pressing the Swop button for the chase and ent ring the legend, as with cues.
- There is no limit to the number of ste s in a chase.

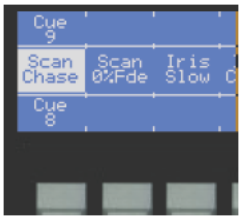
9.2 Playback

9.2.1 Playing back a cha e

To fire a chase, raise the fad r f the playback. (You can also use the Flash/Swop buttons). The hase will start to run.

- The HTP (inten ty) channels in the chase will be controlled by the fader; if fad tim s are programmed, the fade will stop at the fader level The other channels (LTP) will be set as soon as the fader mo es bove zero according to the fade times programmed in the cha e. You can set the point at which the LTP channels acti ate from the User settings menu.
- While the chase is running, press the Connect/View button of the playback to open a window showing details of the chase steps on the VDU screen (this screen is described in the Timings section on page 213).

  You can preload the first step of the chase (which will pre-position all fixtures to the first step) by pressing the Pause & Preload button of the playback.



- You can temporarily pause the chase by pressing the Pause & Preload button of the playback while it is running. Press Go/Swop to resume playback (see section 9.2.4).
- The display above the fader shows the live and next cue legends (or numbers) as shown on the right. The live cue is on the bottom line and the next cue on the top line.
- If you need to quickly kill all playbacks, press Off then G (see page 185). To reactivate playbacks you have to take the faders to

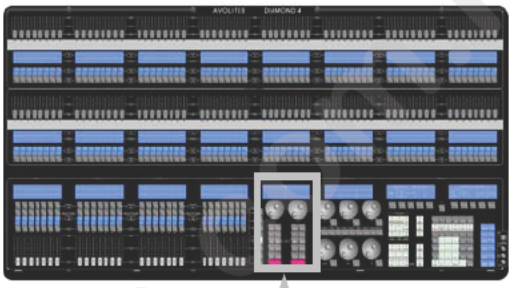
0 and put them back up again.

There are many options you can set to determine the way the chase runs and these are described in the rest of this chapter.

9.2.2 Connecting a chase to a Controller

The Diamond has two identical controllers (A and B) for controlling chases and cue lists.

When you fire a chase, chase controller A is automatically connected to it. If you fire a second chase, controller A is connected to the newer chase.



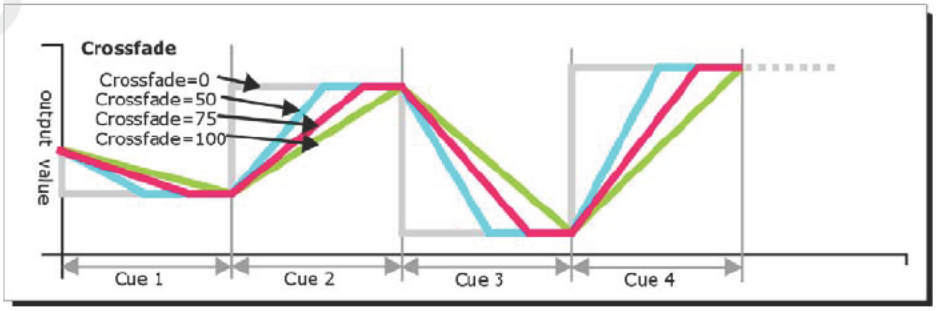
Chase controllers

- You can connect a different chase to either controller by pressing the Connect button (below the wheels) then the Connect/View button above the chase you want to control.
- The display above the controller shows the chase name, speed, current cue number and % progress of fades (WFG means "Waiting for Go")
- Disconnect a chase from the controller by double pressing the controller's Connect button.
- You can turn off the "chase auto onnect" option in the User Settings menu if you don't wa t to connect to a chase when you fire it. You will have to use he Connect button to control the chase if you do this.

9.2.3 Setting speed nd crossfade for a Chase

The controller wheel s assigned to control the Speed of the chase it is connected to. You can also enter a speed from the keypad. The last speed you set on th wheel is always remembered, you do not have to tell the Diamond to save it.

Crossfade i the "slope" between cues; with a crossfade of 0, the fixtures s ap instantly to the next cue, but with a crossfade of 100, the fixtures spend the whole cue time fading to the next cue. With a crossfade of 50, the fixtures delay for half the cue time and fade for the the half of the time.



You set the crossfade and speed as follows:

1> Press Options on the Chase Controller if you have one connected, or press A [Set Times] from the top level menu then the Go/Swop button of the chase.

2> To set the crossfade, press B [Xfade] and type the fade from 0 – 100. 0=no fade (the chase will "snap"), 100=max fade (the chase will move continuously from step to step).

3> To set the speed, press C [Speed], type the new speed, then press Enter. The speed can be set in Beats Per Minute (BPM) or seconds depending on the User Settings. Keep pressing the C button repeatedly in time with the music to set the speed to match the music.

Note: It is also possible to set the speed of a running chase by doub e tapping the go button on the chase controller.

There are other options you can set for the chase from this menu including Cue and Fixture Overlap, which are described in t e T mings section on page 198, and Chase Direction, Bounce, Loop and Random which are described in the Advanced Options section on page 202.

You can set individual times for each cue in a chase and unlink cues from each other so they wait for you to press the Go button. This is done using the Unfold function which is described on page 196.

9.2.4 Manually controlling the steps of a chase

You can take manual control over a chase by pressing the Pause & Preload button. (If the chase is connec ed to a controller, you can press the Pause button on the controller)

Press the Go/Swop button, o he red Go button of the controller to resume playback of the cha e.

While paused, you can re s the Pause button again to jump to the next step.

To set the "next" tep o be a particular step number, press Goto on the controller, t pe the step number on the numeric keypad then press A [Press to u cue Live]. After pressing Goto you can also press D [Cue -1] or E [C e +] to move forward and backwards.

The R ver e button of the controller will reverse the direction of the chase If the chase is paused, it will also resume playback.

9.2.5 Viewing Chase steps

You can preview the steps in a chase on the display. The chase does not have to be connected or running.

1> Press View.

2> Press the Connect/View button of the chase to view.

3> A window will open on the VDU showing the steps.

9.3 Edit

9.3.1 Opening a chase for editing

You can open a chase for editing by pressing Rec Chase then the Go/Swop button of the chase. This does not affect any existing cues in the chase. You can then save new cues at the end using the A [Append] option, or you can insert/overwrite cues using the C [Insert] button.

9.3.2 Editing a chase using Unfold

The Diamond has a powerful chase editing system. The Unfold but n places each cue in a chase on one of the playback faders, allowi g y u to fire and edit each cue individually as if it was a stand-alone cue. Unfold also allows you to set individual timing for cues in the ch se.

1> Press Unfold (top left of numeric keys), then the Go/Swop button of the chase to be edited.

2> The first 28 cues of the chase are loaded in th playback faders (14 for the Diamond Elite). The displays show the legends for each cue (or the cue numbers if you h v n't et individual cue legends).

3> Raise a playback fader to output th contents of that cue (fade times will operate as programm d).

4> Various Unfold options are ava lable, the details are below.

5> Press Unfold again to get ou of unfold mode.

- To edit the contents of a cue: Press Clear to empty the programmer, raise the fader to output the cue, make the changes, press A [Record], hen the Go/Swop button for the cue number.
- To change indivi ual times for the cue, press B [Set Cue Times], then the Go/S op button for the cue (or type the cue number), then set the times. To change overall times for the chase press G [Set chase times]. This is described in detail in the Timing section on he f l owing page.
- To Insert a new cue, set up the look for the new cue, press C [I sert], then type the cue number for the new cue (such as 1.5 go between 1 and 2). If this cue number already exists it will be merged with the look you have created. Otherwise a new cue is inserted.
- To Delete a cue, press D [Delete] then the Go/Swop button for the cue you want to delete, or press the blue Delete button followed by the Go/Swop button.
- To copy a cue, press E [Copy], press the Go/Swop button of the cue to copy, then press the Go/Swop button of the destination cue. Option A lets you set whether the legend is copied with the cue.
- If the chase has more steps than there are playback faders, you can go between pages using the Playback Page-1 and Page+1 buttons.

9.3.3 Editing a chase which is running

You can also edit cues in a paused chase without using Unfold. This uses the Rec Step button of the controller.

1> Start the chase and press the Pause button to pause it.

2> Keep pressing the Pause button to step on to the step you want, or press Goto and enter the step number you want. The Live and Next step numbers are shown on the display above the controller wheel.

3> Press Clear to make sure the programmer is empty.

4> Make the changes that you want to the current step.

5> Press Rec. Step, then Enter, to save the changes to the step. (You can change the Record by Fixture/Channel/Mask/Stage mode using softkeys G-J if you need to).

6> Press the Pause button to jump on to the next step.

- You can also use Shift+Rec Step to record into the Next step rather than the current one.
- The Rec Times button on the controller is not available for chases, only for Cue Lists.

9.4 Copy

9.4.1 Copying chases

You can copy a chase in exactly the same way as a cue.

1> Press the blue Copy button (bottom right).

2> Press the Go/Swop b tton of the playback you want to copy.

3> Press the Go/Swop button of the playback where you want to store the copy.

Press E [Press to latch menu] to keep the copy mode active. You can keep copyi g u ing steps 2 and 3 without having to keep pressing the Copy button P ess Up to leave latched copy mode.

Press B [Copy Legend] to set whether or not the legend is copied with the ch se or cue list.

9.5 Delete

9.5.1 Deleting a chase

To delete a chase:

1> Press the blue Delete button (bottom right).

2> Press the Go/Swop button of the playback you want to delete.

3> Press the Go/Swop button again to confirm the delete.

Press E [Press to latch menu] to keep the delete mode active. You can keep deleting using steps 2 and 3 without having to keep pressing the Delete button. Press Up to leave latched delete mode.

9.5.2 Deleting a step from a chase or cue list

You can delete a step from the connected chase:

1> Open the chase or cue list for editing by pressing Rec Chase (or rec cue list) then the Go/Swop button for the chase or cue list.

2> Press the blue Delete button (bottom right).

3> Type the cue number you want to delete and press Enter.

Alternatively you can Unfold the chase or cue list, and press D [Delete]. Either type the Cue/Step number and press Enter, or press the Go/Swop button of the cue/step you want to delete twice.

9.6 Moving

To move a chase:

1> Press the blue Move button (bottom right of console).

2> Press the Go/Swop button of the cue to be Moved.

3> Press the Go/Swop button of the playback (or the S lect/Swop button of the preset fader) you want to Move it o

4> E [Press to latch menu] keeps the Move mo e active, so you can keep Moving things without having to keep pr s ing the Move button. Press Up to leave Move mode.

9.7 Timing

9.7.1 Global timing for chases

When a chase is first p grammed, each cue in the chase has identical timing. This is called he global timing for the chase. If you want you can then set each cue o have its own timings using Unfold. This is described in the nex section.

1> Press A [S t Times] from the top level menu then the Go/Swop but on of the chase.

2> et the Cue Overlap, Crossfade, Speed, Fixture Overlap and A tribute Overlap settings as described below.

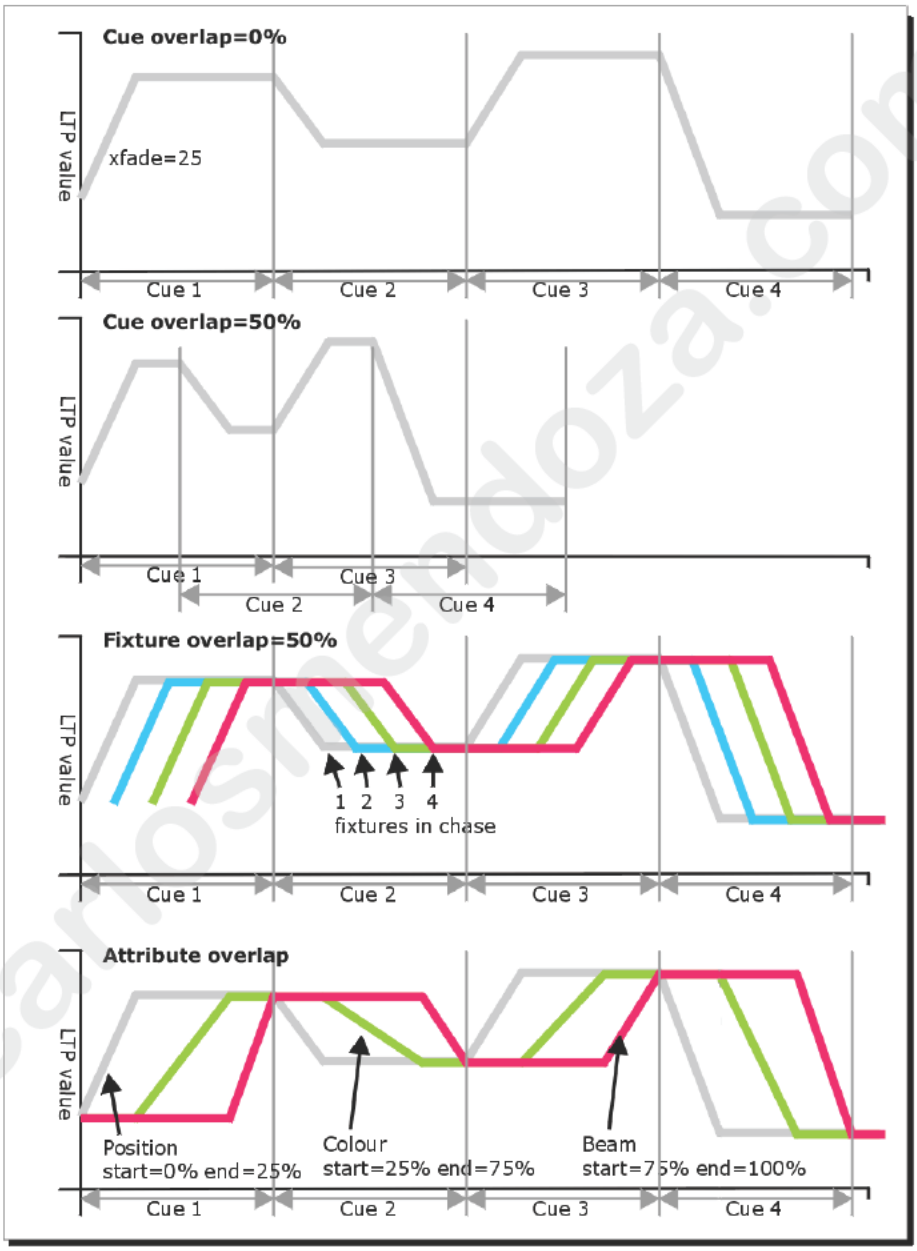
3> Press Up to finish.

To set crossfade, press B [Xfade] then type the fade from 0 – 100 and press Enter. 0=no fade (the chase will "snap"), 100=max fade (the chase will move continuously from cue to cue)

- To set speed, press C [Speed] then type the new speed, then press Enter. The speed can be set in Beats Per Minute (BPM) or seconds depending on the user settings. Press C repeatedly in time with the music to set the speed to match the music (tap tempo function).
- You can set the first cue of the chase to either fade in using the crossfade settings or to start instantly. Press J so the option shows [Cue 1 use Fade Time] for fading or [Cue 1 Skip Fade Time] for instant start.
- The other options on the Set Times menu are described in the Advanced Options section on page 202.

The Overlap functions allow you to offset and overlap the timing of changes in the chase. This can create really amazing visual effects with hardly any programming. The best way to learn about overlap is to program a chase with two cues involving several fixtures, then experiment with the overlap settings to see the various "roll" and "peel off" effects which result.

The following diagram shows you the effects of cue overlap, fixture overlap and attribute overlap in chases.



- A [Cue Overlap] lets you overlap cues from the chase. 100% means that the next cue will start when the previous cue is 100% complete. 50% means that the next cue will start when the previous cue is half way complete.
- Press D [Fixture Overlap] then enter 0-100 on the keypad to change how fixtures overlap in the cue. 100% (the normal setting) means all fixtures fade together. 0% means that the first fixture

will finish its fade before the next one starts giving a "rolling" change across a range of fixtures. 50% means that the 2nd fixture will start fading when the first one is half way through its fade. The order of the fixtures is set by the order you selected them when the cue was saved; you can change the order using Unfold.

- Press E [Attribute overlap] to set how each attribute group fades between steps. For example you can make the Position fade happen in the first half of the step time (Position Start=0% and End=50%), then the colour change happen in the second half of the step time (Colour Start=50% and End=100%). There are also "All start" and "All End" options to set all the start and end times together.

9.7.2 Individual cue times in chases

You can configure each cue in a chase to have its own timing information. You need to use the Unfold function to set individual times for cues in chases.

1> Press Unfold (top left of numeric keys), then the Go/Swop button of the chase to be edited.

2> Press B [Set Cue Times] then the Swop button of the cue you want to edit.

3> Set up the timing options as required. The options are described below.

4> Press Up when you have finished editing the times for the cue, or you can select a different cue to edit by pressing I [Select Cue] and J [Next Cue].

5> Press Unfold to get out of unfold mode.

Initially all the timing options are set to Global. You can cancel any individual timings and set the time back to global timings by pressing the softkey for the option then pressing B [Global].

- To set the delay time (wait before the fade starts) press B [Delay Time]. To set the fade in time press C [Fade time].
- The Delay Out time is normally zero and the Fade Out time is normally set to be the same as the Fade in time. You can set them to different times by pressing E [Out Time]. In the Out Time menu, C [Clear times] will reset the delay to zero and the Fade Out to be the same as fade in. D [Use Global times] will set the delay and fade times to be the same as the global times for the chase.
- The Cue Overlap and Fixture Overlap functions are set as described in the previous section.
- The Attribute Overlap function is replaced by fade times for IPCGBES attribute groups and for individual attributes, the same as for stand-alone cues. See page 189 in the previous chapter for details of attribute fade times.
- You can unlink the cue from the previous cue (so that the cue will wait for you to press Go). Press F [Advanced Options] then B [Link] so that the option shows [Link=Off].
- Also in the advanced options menu, you can set a legend or a text note for the cue using options F [Set Legend] and G [Set notes]. The cue legend is displayed above the playback fader and the text

note above the playback wheel. Legends and notes can be useful to explain things to the user if your chase needs human interaction using the Go button (see page 206 for a picture of how the cue legend and note appears). You can also set a fade curve for the cue (see page 234) and you can change the fixture order for the Overlap functions (see next section).

9.7.3 Setting fixture order for Overlap functions

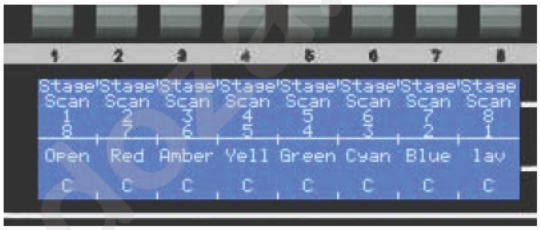
Normally the order in which the fixtures respond when using Overlap functions is set by the order in which you selected them. However you can change this:

1> *Unfold the chase.*

2> *Press B [Set Cue Times] and press the Swop button of the cue you want to edit.*

3> *Press F [Advanced Options] then I [Set Fixture Order]*

4> *The display below the fixture presets changes to show h order on the bottom line.*



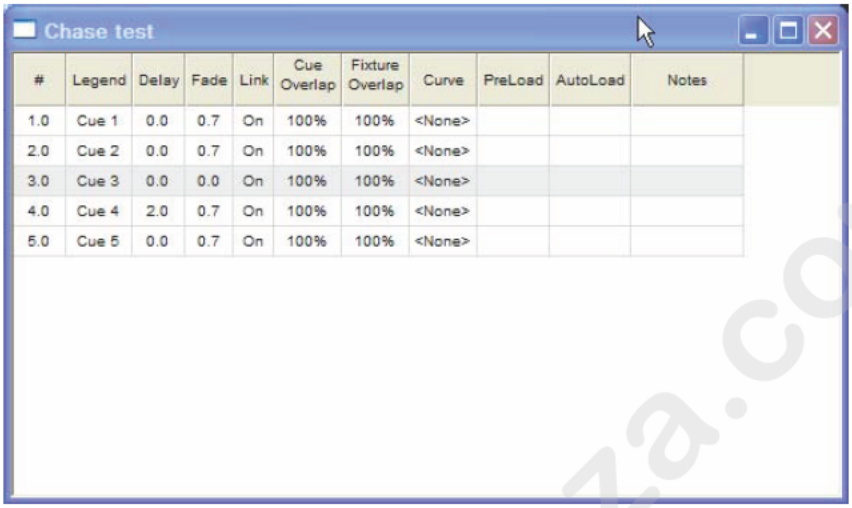
5> *Reorder the fixtures by typing the start number on the numeric keys, then pressing the Select buttons in the order you want them. For example, to set the order of 8 fixtures, press 1 on the keyp d th n press the Select button of the fixture to be first, then he Select button for the second, and so on. This display shows th first 8 fixtures in reversed order.*

6> *You can set multiple fixtures to the same number if you want them to change at he same time.*

7> *Press Up to finish etting the fixture order.*

9.7.4 Viewing timing information

You can view the timing settings of a connected chase or cue list by pressing the View button on the Chase Controller; alternatively press View (below Softkey B) then the Connect/View button of the playback.



#	Legend	Delay	Fade	Link	Cue Overlap	Fixture Overlap	Curve	PreLoad	AutoLoad	Notes
1.0	Cue 1	0.0	0.7	On	100%	100%	<None>			
2.0	Cue 2	0.0	0.7	On	100%	100%	<None>			
3.0	Cue 3	0.0	0.0	On	100%	100%	<None>			
4.0	Cue 4	2.0	0.7	On	100%	100%	<None>			
5.0	Cue 5	0.0	0.7	On	100%	100%	<None>			

A window opens on the display showing the d tai of the chase or cue list. A black bar indicates the current cue and f des in and out as the cue fades occur. The delay and fade tim rs also count down as the cues are fired.

9.8 Advanced options

9.8.1 Playback Options

You can enter the pl yba k options menu by doing the following

1> Press Softk y B "Playback Options".

2> Press th blu Swop key for the playback you wish to edit.

Or by

1> C nnect a list or chase to a controller.

2> Press the 'Options' key on the controller panel.

This menu presents you with the following options:

A [Release Settings]

- A [Freeze all attributes] The Fixtures LTP channels will stay in the same position when the playback is Killed.
- B [Release all attributes] All LTP attributes will return to the Power On position with the dimmer turned off.(The position they were in when initially patched)
- C [Release all but pan/tilt] Pan and Tilt will stay in position, all other LTP attributes will return to the Power On position.

- B [Stop On Last Cue = Off] Set the chase be non-stop (loops back to cue 1) or to stop on the last cue. **
- C [Bounce = Off] You can make the chase bounce (i.e. run forwards

and backwards repeatedly) **

- D [Play Order = Forward] Set the chase direction to be Forward or Reverse. *
- E [Random = Off] Set the chase to play the cues in a random order **
- F [Global Link =Not Used] Set the Chase to use global or individual cue link settings, the 3 options are:
    - Not Used: Uses the individual Step Settings for the Chase, which by default will run normally.
    - ON: The Chase will always run normally and ignore individual Step Link settings.
    - OFF: The Chase will ignore individual step setting and Halt at each step like a list.
- G [Renumber Cues] Select this option and enter in a numbe between 1 and 99. Then press enter. Each step in the chase will be renumbered with the first step being the user input d number, the second step being the user inputted number multiplied by 2, the third step being the user inputted number mu tiplied by 3 etc. If the cue legends for each step in the chase have n t been edited then these will be updated to reflect the new chase numbers. If they have been edited they will remain t e s me This option is particularly useful if you have inse ted many steps in the middle of the chase and want to return the hase steps to a fixed interval.

* The chase must be restarted for Fo ward/Reverse to take effect in 1.5, however you can also press t e 'Reverse' button on the chase controller to temporarily reverse the direction of the chase instantly.*

** [Random], [Bounce] & [Stop on Last=On] are all Mutex, and will not work concurrently, so b careful which ones you have selected.**

The existing chase option [Cue 1 Use Fade Time] has moved to the 'Set Times' menu s ftkey F.

CHAPTER TEN

10. Cue Lists

This chapter contains: Programming a cue list; running a cue list; editing, copying and deleting cue lists; setting fade times; cue list options.

Cue Lists are ideal for running theatrical shows. Each cue can have its own timings, can be triggered by the Go button and can be configured to start other cues and chases on the console.

Cue lists differ from chases in the way the console handles changes between cues. Chases will crossfade between cues whereas a cue list will track changes.

For example: You record dimmer 1 in cue 1, press clear, record dimmer 2 in cue 2, press clear, record dimmer 3 in cue 3. If this we e a chase, when you play it back each cue will fade out the dimmer fr m the previous cue, as it is not in that cue. Therefore once you get to cue 3, you will only have dimmer 3 active.

Cue lists on the other hand track the cues. This ean that it only knows about the changes, so in going from cue 1 to 2 it won't change dimmer 1 as there is no data about dimme 1 n c e 2. This means that once you get to cue 3, it will have acc mu ted the data from all the cues and the output will consist of dimm rs 1, 2 and 3 together.

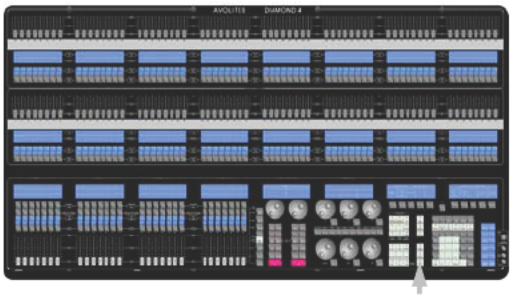
If you wanted cue 2 to turn off dimme 1 you would have to explicitly set the level of dimmer 1 at zero (by selecting it and setting the Intensity to 0); or you can miss out pressing Clear in between saving each cue.

The upshot of all this is that y u need to be mindful of what is actually being saved in each cu wh n you record your cue list.

10.1 Create

10.1.1 Programming a cue-list

You need to set up the look on the stage for each cue and then add it to the cue list. If you want to set fade times, you can either set them while saving the cues or later.



Rec Cue List button

1> *Press the Rec Cue List button (below softkey D).*

2> *Press the Go/Swop button of the playback where you want to store the Cue List.*

3> *Select the Record Mode of the console: by Fixture, Channel, Mask or Stage using softkeys G-J. J [Record Stage Hard Cue] is safest as you are sure to record the whole console output. See page 187 for a description of these modes.*

4> *Set the default Delay and Fade times using softkey D. These times*

will be allocated to all cues until you change them.

5> *Set up the look for the first cue, either manually or by using "Include" on existing cues.*

6> *Press the Go/Swop button of the playback or A [Append Cue] to store the programmer contents as Cue 1 of the cue list.*

7> *If you want to change the timings for the cue you just saved, press B [Set times] (see page 211 for details of Times).*

8> *Repeat from step 5 for the next cue. Do not press Clear in between cues, unless you want levels to track through from previous cues, as any faders moving to zero will not be stored. If you do press clear, you must make sure that all channels you want to record are selected or in the programmer (inverted display).*

9> *Press Exit to finish when you have stored all the cues you want*

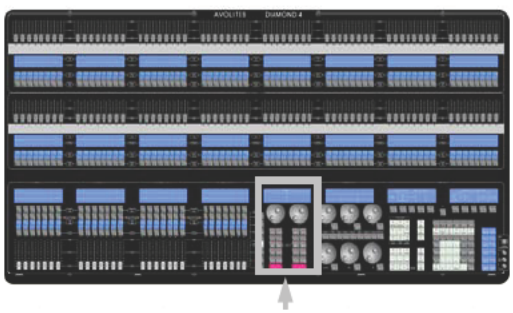
You can reopen the cue list for editing by repeating the pro edu e above; this does not affect any cues already stored in the cu list. While the cue list is open for editing:

- To add more cues to the end of the existing cues p ess A [Append cue].
- You can change or overwrite a cue by ssi g C [Insert Cue], then entering the cue number you want to change. You can then choose A [Merge] or B [Replace]. u c n insert a new cue by entering a number in between t o ex sting cues, for example enter 2.5 to insert a cue between 2 and 3.
- You can set a legend for ea h cue which is displayed above the playback fader. Press B [Set times] then E [Advanced options] then F [Set legend]. Y u can also set a text note using G [Set notes]; this is displayed above the Chase Controller.
- If you need to run chase as part of a cue, you can do this using an Autoload See page 213.
- There is no lim to the number of cues in a cue list.

10.2 Playback

10.2.1 Connecting a cue list to a Controller

To run a Cue List, you need to manually connect it to a controller.

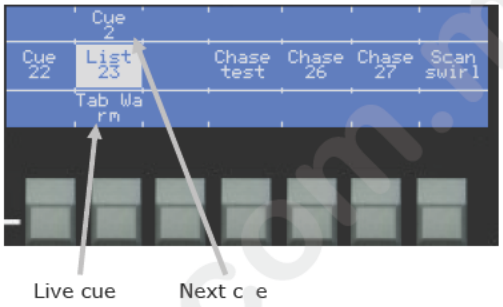


Chase controllers

- Press the Connect button (below chase control A or B wheel) then the Connect/View or Swop button above the cue list you want to control.
- The display above the controller shows the cue list name, current cue number or legend and % progress of fades (WFG means "Waiting for Go"). If you have programmed any text notes they

are displayed in the central area as shown in the picture on the right.

- The display above the playback fader shows the current and next cue legends.
- Disconnect a cue list from the controller by double pressing the controller's Connect button.
- You can run a cue list without a controller, if you don't need any of the controller displays or functions, by raising the fader and using the Go/Swop button above the fader to fire the cues.
- Autoconnect does not operate on cue lists.



10.2.2 Running a cue list

Having connected the cue list to a chase controller, r ise the fader and press the Go button to run the first cue.

- The HTP levels of cues in the cue list re ma tered by the fader level.
- You can pause a fade by pressin th Pause button on the controller (not the Pause/Preload button above the playback). Press the Go button to resume he fade. If you press the Pause button again while the cue is paused, it will snap to the next cue.
- You can reverse a fade and go back to the previous cue by pressing the Reverse button on the controller. The previous fade will be reversed turn ng the output to the previous cue. This is useful if you pr ss Go accidentally or for repeated curtain calls.
- When runn ng cue list the flash button for that particular playback will stop the list running then will fade the list back a step when pressed again.
- Whe you lower the fader for a cue list, the HTP channels will fade ut, but the cue list will remain active. You need to kill it by pr ssing Shift and the Go/Swop button for the playback.

Ther are many options you can set to determine the way the chase runs and these are described in the rest of this chapter.

To view an individual cue from a cue list do the following:

1> Press the grey Cue button.
2> Press the Swop button for the cue list that the cue is in.
3> Type in the number of the cue you want to recall.
4> Press Enter.

10.2.3 Viewing Cue List steps on the VDU

You can view the contents of a cue list on the VDU.

1> Press the Connect/View button of the cue list to view.
2> A window will open on the VDU showing the steps.

- The current cue is shown in red and the next cue is shown in grey.
- The cue list does not have to be connected or running, but if the cue list is connected, you can also show this window by pressing the View button on the controller the cue list is connected to.

10.3 Edit

10.3.1 Opening a cue list for editing

You can open a cue list for editing by pressing Rec Cue List, the the Go/Swop button of the playback. This does not affect any ex sting cues in the cue list. You can then save new cues at the end usin the A [Append] option, or you can insert/overwrite cues using the C [Insert] button.

10.3.2 Editing a cue list using Unfold

The Diamond has a powerful editing system for c e lists. The Unfold button places each cue of the cue list on o e o the playback faders. This allows you to fire and edit each step individually as if it was a stand-alone cue.

1> Press Unfold (top left of nume ic keys), then the Go/Swop button of the cue list to be edited.

2> The first 28 cues are load d into the playback faders (14 for the Diamond Elite). The di la s show the cue numbers and legends.

3> Raise a playback fader to output the contents of that cue (fade times will operate s programmed).

4> Various Unfold options are available, the details are below.

5> Press Unfo d again to get out of unfold mode.

- To ed the contents of a cue: Press Clear to empty the pro rammer, raise the fader to output the cue, make the changes, press A [Record], then the Go/Swop button for the cue number.
- To change the times for the cue, press B [Set Cue Times], then he Go/Swop button for the cue (or type the cue number), then set the times (see Timing on the following page)

  To Insert a new cue, set up the look for the new cue, press C [Insert], then type the cue number for the new cue (such as 1.5 to go between 1 and 2) and press Enter. If this cue number already exists you are given the option to A [Merge] or B [Replace] the cue. Otherwise a new cue is inserted.
- To Delete a cue, press D [Delete] or the blue Delete button then the Go/Swop button for the cue you want to delete.
- To copy a cue, press E [Copy]. . Select whether the legend is to be copied with the cue using option A. Press the Go/Swop button of the cue to copy, then select whether the new cue is to be inserted A [Before] or B [After] the destination cue. You can also C [Merge] and D [Replace] an existing cue. Finally press the Go/Swop button of the destination cue.

- If the cue list has more cues than there are playback faders, you can swap to the next page using the Playback Page-1 and Page+1 buttons.

10.3.3 Editing a cue list which is running

You can also edit cues in a cue list while you are running it without using Unfold. This uses the Rec Step button of the controller.

1> Connect the cue list to a controller by pressing Connect on the controller then the Connect/View button of the cue list.

2> Raise the fader of the cue list.

2> Keep pressing the Pause button on the controller to step on to the cue you want, or press Goto and enter the cue number you want The live cue number is shown on the bottom line of the display above the controller wheel.

3> Press Clear to make sure the programmer is empty.

4> Make the changes that you want to the current step.

5> Press Rec. Step, then Enter, to save the changes o the step. (You can change the Record by Fixture/Channel/Mask S age mode using softkeys G-J if you need to).

6> Press the Pause button to jump on to the next step.

- You can also use Shift+Rec Step to r cord into the Next step rather than the current one.
- You can type in a different ue number after pressing Rec Step if you want to save to a diff rent cue.

You can edit the time for a cue using the Rec Times button of the controller as follows:

1> Connect the u list to a Controller and run the first cue.

2> Press the Re Times button to set the times for the current step, o Sh ft+R c Times for the next step. The Live and Next step numbers are shown on the display above the controller wheel.

3> Use the softkeys to set the times you want (see page 187 for description of the times)

4> Press the Pause button to jump to the next cue, the Reverse button to go back one, or the Goto button to jump to a different cue.

- You can also use Unfold to set the times as described in the Unfold section above.

10.4 Copy

10.4.1 Copying cue lists

You can copy a cue list in exactly the same way as a cue.

1> *Press the blue Copy button (bottom right).*

2> *Press the Go/Swop button of the playback you want to copy.*

3> *Press the Go/Swop button of the playback where you want to store the copy.*

Press E [Press to latch menu] to keep the copy mode active. You can keep copying using steps 2 and 3 without having to keep pressing the Copy button. Press Up to leave latched copy mode.

Press B [Copy Legend] to set whether or not the legend is copied with the cue list.

To copy a cue within the cue list, you use the Unfold function (see section 10.3.2).

10.5 Delete

10.5.1 Deleting a cue list

To delete a cue list:

1> *Press the blue Delete button (bottom right).*

2> *Press the Go/Swop button of the playback you want to delete.*

3> *Press the Go/Swop button again to confi m the delete.*

Press E [Press to latch menu] to keep the delete mode active. You can keep deleting using steps 2 and 3 w thout having to keep pressing the Delete button. Press Up to leave atched delete mode.

10.5.2 Deleting a step from a cue list

You can delete a step from a cue list like this:

1> *Open the cue list for editing by pressing Rec Cue List then the Go/Swop button for the cue list.*

2> *Press the blue Delete button (bottom right).*

3> *Type he cue number you want to delete and press Enter.*

Altern tiv ly you can Unfold the chase or cue list, and press D [Delete]. Eithe type the cue number and press Enter, or press the Go/Swop but n of the cue you want to delete twice.

10.6 Moving

To move a cue list:

1> *Press the blue Move button (bottom right of console).*

2> *Press the Go/Swop button of the cue to be Moved.*

3> *Press the Go/Swop button of the playback (or the Select/Swop button of the preset fader) you want to Move it to.*

4> *E [Press to latch menu] keeps the Move mode active, so you can keep Moving things without having to keep pressing the Move button. Press Up to leave Move mode.*

10.7 Timing

10.7.1 Time and fade options for Cue Lists

Time settings are independent for each cue in the cue list. The top line of the display above softkeys A-E shows which cue you are working with. You can select which cue is active using the Go, Pause, Reverse and Goto buttons of the controller, or softkey I of the Set Times menu.

See the diagrams on pages 187 and 200 for more information about overlaps and fade times.

1> Press Options if you have a chase controller connected, or press A [Set Times] from the top level menu then the Go/Swop but on of the Cue List.

2> To change which cue you are editing, press I [Select Cue] then type the cue number you want to edit and press Enter

- To set the delay time before the cue starts once he G button has been pressed, press B [Delay time] then type t m in seconds and press Enter.
- To set the fade-in time of the cue, press C [ade time] then type a time in seconds and press Enter. Both HTP and LTP channels are affected by the fade.
- The fade-out time of the cue is et b default to be the same as the fade in time. You can ch ge t e Fade-Out time by pressing E [Advanced options] then E [Set Out Time]. You can then set the delay out time by pressi A [Delay] or the fade out time by pressing B [Fade]. If you w nt to set the fade out time to be the same as the fade in tim press A [As In] from the fade out menu.
- You can set a di fe ent fade curve for the cue. For example this could allow you o start the fade slowly, then speed up, then slow down again at the end. See the advanced options section on page 213 for details
- Y u c n set default Delay and Fade times which are used for new cue using D [Default Delay/fade] at the main Rec Cue List menu. Chang ng the default times does not affect existing cues.
- Yo can set up a cue list to be triggered automatically by external timecode. See section 9 on page 226.

10.7.2 Individual attribute fade times

You can set individual fade times for each IPCGBES attribute group. You can also select which fixtures this is applied to. For example you can make the position change take 2 seconds, but the colour change take 10 seconds.

Additionally you can set individual times for each attribute so you could make the pan fade over a different time to the tilt.

To set times for an attribute group, first select the Set Times menu and go to the cue you want to set as described above.

1> Press F [Set IPCGBES times].

2> All fixtures in the cue will be selected. If you don't want to change

the times for any fixtures, deselect them now. You can press the ALL button (to the right of wheel 3) to select all fixtures in the cue or Shift+ALL to deselect all fixtures.

3> Press the softkey for the attribute group you want to change.

4> Press A [Set Delay] to set the delay time, or press B [Set Fade] to set the fade time. Press E [Clear Times] to remove the attribute group timing and go back to the normal delay/fade times for the cue.

Setting times for an individual attribute is very similar:

1> Press G [Set attribute times].

2> All fixtures in the cue will be selected. If you don't want to change the times for any fixtures, deselect them now. You can press he ALL button (to the right of wheel 3) to select all fixtures in the ue or Shift+ALL to deselect all fixtures.

3> Press the softkey for the attribute you want to change Th I and J buttons move between pages of attributes if there are more than 8.

4> Press A [Set Delay] to set the delay time, or press B [Set Fade] to set the fade time. Press E [Clear Times] t r move the attribute timing and go back to the normal delay/fade t mes for the cue.

10.7.3 Cue and fixture overlap

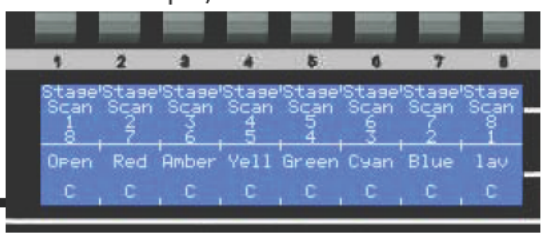
If you are running cues in an autom tic sequence (linked together) the Diamond allows you to overlap th cues such that the second cue will start to run before the first ne has finished.

- Press A [Start from ast Cue] to set the cue overlap from 0 to 100%. 100% me ns that the previous cue must be 100% complete befor the this cue starts (the normal setting). 50% means that his c e will start when the previous cue is half way complete.

You can also se fixture overlap, which causes the Diamond to apply the settings in t e cue to each fixture sequentially giving a "rolling" change across the fixtures in the cue. This can create some great effects witho t much programming on your part.

- Press D [Fixture Overlap] then enter 0-100 on the keypad to change how fixtures overlap in the cue. 100% means all fixtures fade together (the normal setting). 0% means that the first fixture will finish its fade before the next one starts. 50% means that the 2nd fixture will start fading when the first one is half way through its fade.

- To change the fixture order when using overlap, press H [Set Fixture Order]. Normally this is the order in which you selected the fixtures. The display below the fixture presets changes to show the order on the bottom line. You can reorder the fixtures by typing the start number on the numeric keys, then pressing the Select buttons in the order you want them. For example, to set the order of 8 fixtures, press 1 on the keypad, then press the Select button of the fixture to be first, then the Select button for the second, and so on. You can set



several fixtures to the same number if you want them to change simultaneously, or set them to 0 if you don't want them to take part in the overlap effect. This display shows the first 8 fixtures in reversed order.
Press Up to finish setting the fixture order.

10.7.4 Viewing timing information

You can view the timing settings of a connected cue list by pressing the View button on the Chase Controller, or you can just press the Connect/View button of the playback.

A window opens on the VDU showing the details of each cue in the cu list. The current cue is shown in red and the next cue is shown in gr y.

10.8 Advanced options

10.8.1 Playback Options

You can enter the playback options menu by do n the following

3> Press Softkey B "Playback Options".
4> Press the blue Swop key for the playback y u wish to edit.

Or by

3> Connect a list or chase to a contr ller.
4> Press the 'Options' key on he c ntroller panel.

This menu presents you with the following options:

- A [Link] if On, l ks t is cue to the previous one (in other words this cue will a tomatically start when the previous one finishes). If Off, the cons le waits for the Go button (WFG).
- B [Autoload] allows you to make this cue load another cue, cha e or cue list from the playback faders. Press C then press t e G /Swop button of the playback you want to load. Press C the A [Remove Autoload] to remove it.
- C [Preload] allows you to make this cue load the LTP values from another cue from within the cue list (for example Cue 2 could load the LTP values of Cue 4 which would pre-position some fixtures for an effect). Press D then A [Select a Cue Number] to set a Preload. Press D then C [Delete a preload] to remove it.
- D [Curve] allows you to set a different fade curve for the cue; this affects how the fade progresses from one cue to the other (for example you can select a fade which starts off slow, speeds up in the middle and then slows down at the end). Press H then select a new curve from the softkeys. The effect of the various curves is described on page 195.
- E [xFadeCue] if this is enabled all other previously loaded cues will be faded out as this cue is faded in. If this is disabled the cue will load as normal.
- F [Set Legend] allows you to set a legend for the cue which is displayed above the playback fader when the cue list runs.

- G [Set Notes] lets you enter a note for the cue ("Leaves stage pursued by bear" or "wake up spot operator"). This note is displayed above the Chase Controller.
- I [Select Cue] allows you to jump to a different cue to set the options for that cue.
- J [More Options] Moves Menu to the second page of options.

J [More Options] softkey presents you with the following options:

- A [Release Settings] Changing the Release Settings will alter the way in which the LTP channels on a Fixture behave when the playback is released.
    - A [Freeze all attributes] The Fixtures LTP channels will stay in the same position when the playback Killed
    - B [Release all attributes] All LTP attribut s w return to the Power On position with the dimmer rned off.(The position they were in when initially patched)
    - C [Release all but pan/tilt] Pan and Ti t will stay in position, all other LTP attribu e will return to the Power On position
- B [Stop on last cue = Disabled] Wh n e abled, the list will not wrap back to the beginning of th list after the last cue.
- C [Cue List fader control] Whe a cue list fader is lowered, the cue list will remain active un l you press shift + swop, or OFF / Switch off Playbacks. You can use the fader control, found in the set times menu, to change this. the three options are:
    - None : Th cue list will remain active when the fader is lowered. (The default setting)
    - Ki : The cue list will be released when the fader is lowe ed, the list will restart from the first cue next time it is played.
    - Manual: The next cue will be triggered, and the intensity will remain. this allows you to use the fader as a 'Manual' crossfader.

N e, when switching to 'Manual' control, the Fader Intensity of the layb ck will be locked at 100%, if it is at 50% when you switch it will bu p to 100% when you move it. A released list will fade in with the ader on the first cue, and stay at 100% thereafter.

- D [Omit Add/Swop] This setting retains the Play/Pause functions of a Cuelist playback buttons when in Add/Swop Mode, and the Cuelist will not 'Swop' or 'Flash' other playbacks, although it will still get 'Swopped'. this is the default. If turned off, the list will 'Swop' or 'Flash' normally like Cues and Chases, but you will not be able to advance the list unless it is 'Connected' to a controller.
- E [Renumber Cues] Select this option and enter in a number between 1 and 99. Then press enter. Each cue in the cue list will be renumbered with the first step being the user inputted number, the second step being the user inputted number multiplied by 2, the third step being the user inputted number multiplied by 3 etc. If the cue legends have not been edited then

these will be updated to reflect the new cue numbers. If they have been edited they will remain the same. This option is particularly useful if you have inserted many cues in the middle of the cue list and want to return the cue list cue numbers to a fixed interval.

- J [More Options] Moves Menu to the first page of options.

CHAPTER ELEVEN

11. Running the show

This chapter contains: Operating modes, master faders, manual control during a show, page shortcuts

11.1 Playback

11.1.1 Back up the show

At regular intervals while you are programming, and when you have finished programming (or you've run out of time) and it's showtime, the most important thing is to back up the show to floppy disk, USB pen drive or CD. Even saving it as a new file on the internal disk is better than nothing (see page 121 for instructions). For a compet live backup system see page 126

11.1.2 Operating modes

If your show is being operated by a lesser mor al turn the key to Safe and remove the key. This prevents anyone from a tering the programming of the console.

Expert users can run the console in "Ope ate mode to allow more flexibility in running the show and live updating of the programming.

11.1.3 Master faders

Master faders are used to c nt ol the maximum intensity output from selected areas of the consol

The Diamond does not ave dedicated Master faders, but allows you to assign one or more f th playback faders as Master faders. You only need to assign th ma ters you need, unassigned masters are fixed at 100%.

1> Press [U ils]
2> Pre s B [Set Masters].
3> elect type of master fader (Grand, Playback, Flash, Preset, Swop).
4> Press the Go/Swop button of a playback to assign that fader as a Master.
> To unassign a master, press A [Delete] then the swop button.
6> Repeat from 3 to assign other faders or press Shift+Up to leave Setup mode.

- **Grand** Master controls the output level of the entire console.
- **Playback** Master controls the overall level of playback/cue faders.
- **Flash** Master controls the level of cues turned on with the Flash buttons.
- **Preset** Master controls the overall level of the Preset faders.
- **Swop** master controls the level of cues turned on with the Swop buttons

11.1.4 Flash and swop buttons

The Flash and Swop buttons on the playback faders may be used at any time to flash and solo cues and chases. The Flash button adds the playback into the current output, the Swop button turns off all other output.

You can also flash and swop individual fixtures or dimmer channels using the Select/Swop and Palette/Flash buttons below the preset faders. To use them for this, you need to enable Add and Swop mode by pressing the Add/Swop button below softkey B. In Add/Swop mode you cannot select fixtures or palettes from the buttons.

Press the Fixture button above it to return the Add/Swop buttons to fixture and palette control.

11.1.5 Manual control during a show ("busking")

If you have not had as much programming time as you would have liked, you might need to make up some additional effe ts during the show. This is sometimes called "busking", and is where he fun starts!

You can create instant variations by recalling pale te values to modify your existing cues. The Diamond can fade to the alette values for added effect.

1> Select some fixtures which are al eady in use on stage..

2> Type "2" (or any time, in second) on the numeric keypad.

4> Press a Palette button to r call a palette.

5> The selected fixtures will change to the new palette over a time of 2 seconds.

When a fade is enter d, you can also change the "Fixture Overlap" using softkey A. This al ows you to create "roll" or "peel" effects when using a series of fixt res. With overlap=100%, all fixtures change at the same time. If overlap=50%, the second fixture will not start its fade until th fir t fixture is half way (50%) through fading. The order of the fixtures is set by the order in which you selected them.

The fade remains active while the Palette Fade menu is open. Press Up t l ve the menu to stop fading.

If y u apply a palette with a fade time, then it will be overridden by the ext cue (so if you fade to green using a palette, then fire a cue which sets those fixtures blue, they will go blue). If you apply a palette without a fade time, it will go into the programmer and override any subsequent cues (so if you use a green palette with no fade, the fixtures will be locked in green until you press Clear).

Having the palette overridden by the next cue is quite useful when "busking". If you need to "snap" a palette but still have it overridden by the next cue, set a fade time of 0 (leaving the Palette fade menu open).

When programming your palettes, group all the colour palettes in one area of the console, position palettes in another area, and so on. This helps you to find them when the show is running and the pressure is on.

If you are lighting a band, make position palettes for every person on stage so you can spotlight them for those unplanned solos.

You can use "Record by channel" or "Record by mask" mode when programming to set some cues to only affect position, and other cues to set colours, gobos, add shapes, and so on. By combining two or more cues you can produce a much wider range of effects than if all your cues set all the attributes. However, for this to work well you need to make sure you know what attribute is going to be affected by each cue; as if you fire two "colour only" cues then nothing is going to light up.

11.1.6 Page shortcuts

The Diamond allows you to make Shortcut keys which will set up the console with a specific Playback page, Fixture page and Pal tte page. You can also change the VDU desktop layout and store whi h playbacks are connected to the chase controllers. You could, for example, have a shortcut key for each song which would set the correct page for the playbacks and palettes for that song.

1> Press I [Edit Shortcut] from the top-level m nu

2> Set up the console with the Playback ag f xture page, palette page and desktop layout you wan and c nnect playbacks to the controllers if you wish to store th s

3> The shortcut can change any or ll of the above. Press softkeys A-D to select which of the above you want to include. The option is highlighted when it will be included in the shortcut. Use softkeys F and G to select if the con ected playbacks will be stored in the shortcut (see below).

4> Press a vacant Preset Select (blue) or Palette (grey) button to store the shortcut.

5> You can set a leg nd for the shortcut using the Set Legend button; the default legend shows which pages are programmed in the sho cut

- F [Whee A] and G [Wheel B] options can be set to either Playback, Clear o nothing. If set to Playback, the playback currently co nected to the wheel will be reconnected when the shortcut is sed If set to Clear, the wheel will be cleared (playbacks will be d sconnected from the wheel). If set to nothing, the wheel will not be affected by the shortcut.

This screen shows two shortcuts with set legends (Pb Page 0 and Pb Page 1) and two shortcuts with the default legends showing Playback, Fixture, Palette and Desktop settings.

11.2 View Menu

Pressing the grey View button take you into the VDU view options. From here you can set up the external monitors. The following options are available:

- A [Virtual Panel] This option brings up an on screen version of the console front panel. this allows the operator to perform on screen all of the functions accessed from the panel.
- B [Vis] The Diamond 4 runs Avolites Visualiser internally. This allows you to view the output of the console if you can't use the real lights, enabling you to make changes to your show at home or off stage. You can show or hide (minimise) Visualiser using Softkey G [Press to show/hide Vis] on the top level menu. You need to select the "Run" & "Simulator" option on Visualiser to make it read the output of the Diamond.

  The operation of Visualiser is not covered in this manual, pleas refer to the Visualiser manual.

  If you have two VDU screens connected, you can keep Vi ua ser permanently visible using the User Settings. If you only h ve one screen, the Diamond application may keep popp ng up over the top of Visualiser, and you have to click on it on t e taskbar to get it back.
- C [Intensity] The Intensity view shows you t e in ensity output of all patched fixtures. The brightness of the graphic shows the intensity of the fixture (White=Full intensity, dark grey=Off). The intensity is also shown as a perc tag By right clicking on this screen you can also enable or d sab e display of the Legend, control group, DMX address and dimmer curve of each fixture.

  Fixtures are highlighted in ligh blue if they are in the programmer (if their outp t as been changed by the user). They are highlighted in da k blue if they are currently selected (they are in the edito and the programmer).
- D [Stage] The Stage iew shows you the detail of all fixtures patched on the ons le. You select the fixture type to view using the tabs across the bottom of the screen.

  Again the light blue colour shows fixtures which are in the programmer nd dark blue shows fixtures selected to the editor. Any cha ged attributes are shown using Cyan.

  T e wi dow shows the output value of each attribute of each fixt re. If the fixtures are under control of a playback or palette, the display shows what last controlled each attribute.

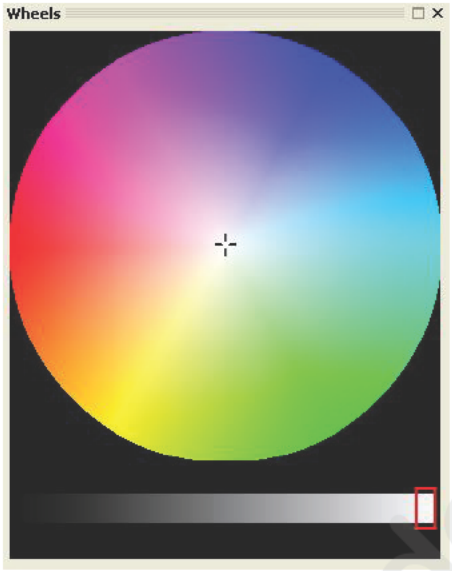
  You can sort the fixtures on the screen by any of the columns; just click on the column header. Click again to reverse the sort order. By right clicking on this screen you can enable or disable highlighting of changes, and display of playback/palette control of attributes.
- E [Wheels] The Wheels View displays the three top wheels on the VDU. if using a media server active fixture, such as the Hippotiser, the Wheels can display thumbnails of images and video clips.

  The wheel view can also show a visual representation of CMY colour mixing on screen. If you select a light with CMY colour mixing, then go to the C-Mix attribute bank and open the wheel view, you will see the colour picker. Shows you the current values for CMY and allows you to drag the crosshairs to set a colour using Hue, Saturation and Intensity.

The Hue is the colour and can be set around the edge of the circle

Saturation is the Amount of colour and is set by moving between the centre and the edge

The colour Intensity is set using the slider below the circle.



- F [Show Library] The Show Lib ary allows the operator to view any aspect of the recorde show(Playbacks), and edit times on screen in a spreadsheet-li e manner.
- G [DMX] The DMX v ew shows the output value of each DMX channel, and whi h fix re is patched to it.

  As with the stag view, you can sort the list on any of the columns by cl cking on the column header.

  The red alu s indicate values which are currently changing.
- H [Command Line] The Command Line window shows the mmands that the console is currently processing and provides useful feedback, and a status bar which shows what the on-board menu displays are currently showing.

11 2.1 Show Library

The Show Library allows you to view all the details about playbacks that have been recorded in your show. You can see timing for all elements of a Cue, Cue List or Chase allowing you to access both timing information and values for every attribute of each light in any Cue in a List or Chase. Timing and properties can also be directly edited through the show library.

1> Press the grey View button

2> Press the Swap key of the playback you wish to view

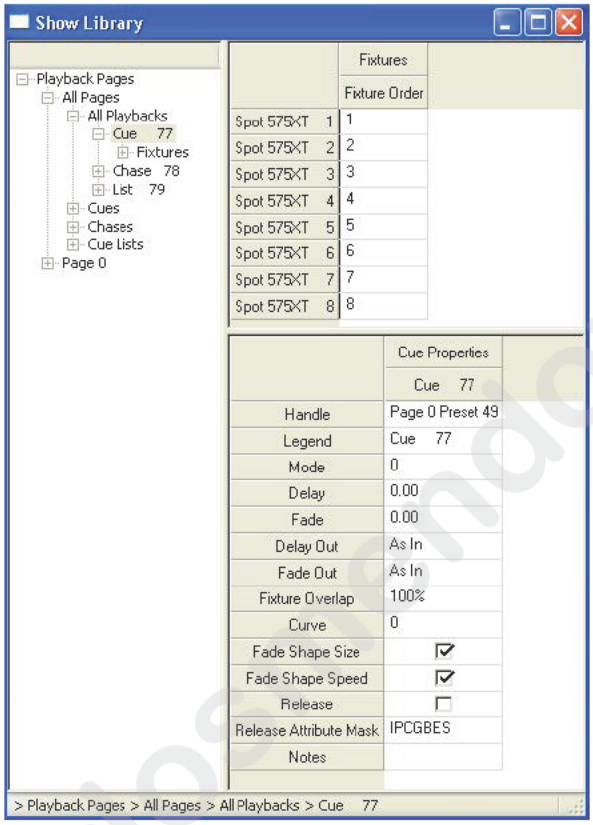
3> You can use the left and right arrows on the console to switch between tabs in the library

The Show Library View will appear on screen.

The left hand side shows a list view of your playback pages and playbacks, with the playback you selected highlighted.

The top right pane shows fixture information for the item you are currently viewing. In this case we can see the fixture order. If we selected the "Fixtures / All" sub node under cue 77 this pane would change to timing and value information (we shall see this in the next screenshot).

The bottom right hand pane shows the properties for the currently selected cue. these can be edited directly from this window as well as from the "Set Times" and "Playback Options" menus. Again, If we selected the "Fixtures / All" sub node under cue 77 this pane would change.



Moving down the list to "Fixtures / All" displays the values for each fixture n the Cue. This is the same view for a single cue, a cue in a cue l st o a cue in a chase.

Each fixture in the cue is shown, along with all of its attributes. You can isplay the fixtures values, fade times and delay times by changing the tabs at the bottom of the pane.

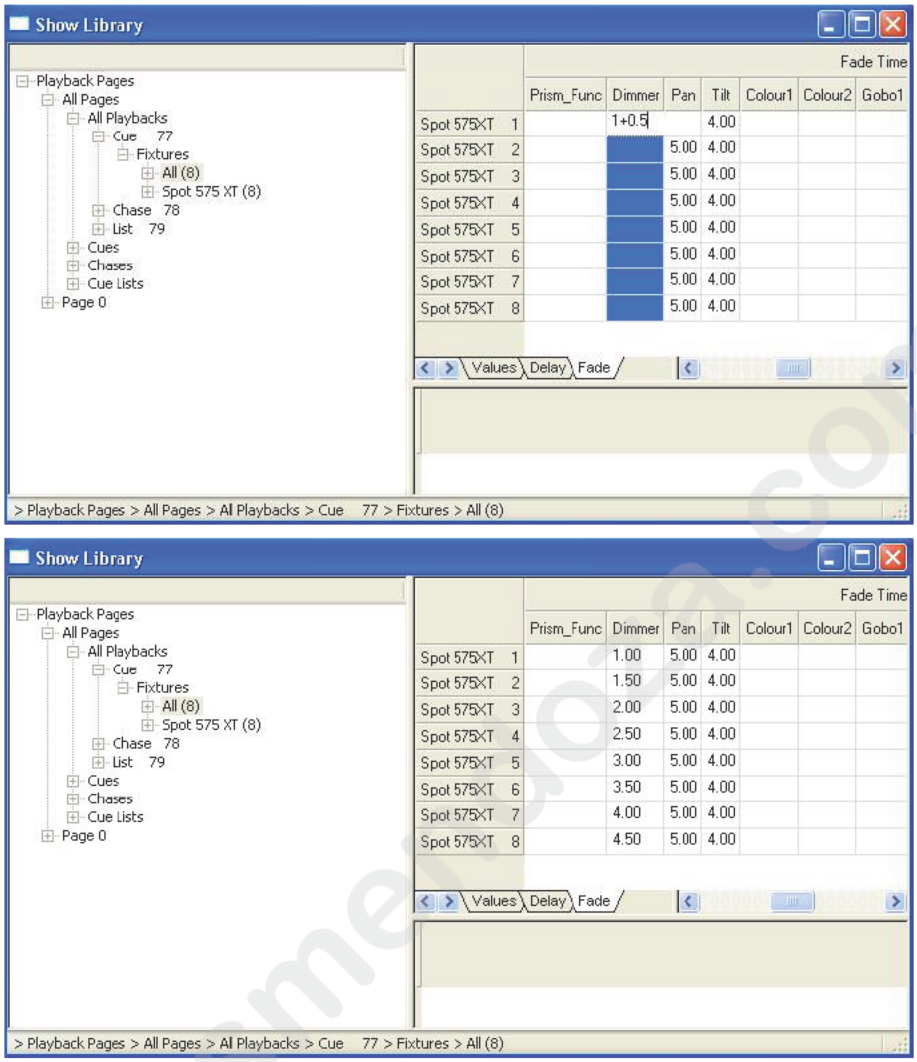
A really useful feature of this view is the ability to quickly input offset times.

1> Select an attribute column and number of fixtures you wish to set times for.

2> Enter the intial time, and a + sign, then enter the offset.

3> Press enter

4> The times will be incremented as shown below



If you need t yo can display the properties for an individual fixture by opening up the list view further. In the following example I have opened a cue in a chase and displayed the properties of the first fixture.

It is so possible to view the fixture by attribute group, or individual at ibut , giving a great amount of editing control when required.

11.3 Move

The blue button below the "Setup" key is the "Move" button. This brings up the utilities menu on the softkeys and can be used to move recorded items from one handle to another.

It can also be used to Swap pages, so you can move pages around within your show. It is currently possible to move Fixtures, Groups, Palettes, Playbacks and Shortcuts.

When an item is moved, all links to other recorded items are retained, enabling the user to alter a console layout easily and quickly.

11.3.1 Using the Move function for Fixtures/Palettes/Groups/Playbacks

1> Press the blue "Move" Button.

2> Press the blue Swap (or grey Flash) key of the item to move.

3> Press the blue Swap (or grey Flash) key of the destination

Or to move a range of item

1> Press the blue "Move" Button.

2> Select a range of items

3> Press the blue Swap (or grey Flash) key of the destination of the first item in the range.

When moving a range, it is possible to select a range containing different types of items, and there can be gaps between them. In this case, all of the gaps in the range will be removed

You can use shortcuts to cross pages whilst moving an item.

If there is not enough space, (there is an item in the way o the e is not enough space before the end of the page) then the action will not be completed.

11.3.2 Using the Move function for Short uts

1> Press the blue "Move" Button.

2> Press Softkey A [Move Shortcut].

3> Press the grey Flash key of the sho tc t to move.

4> Press the grey Flash key of the destination.

It is possible to move a shortcut n top of another item. The item will not be deleted and will be shown again when you move the shortcut somewhere else.

11.3.3 Using the Move function to swop pages

1> Press the blue "Move" Button.

2> Press Softkey B [Swop Pages].

3> Select the page type to move

4> Type in ou ce page.

5> Pr ss E ter.

6> Type in destination page.

> P ss Enter.

CHAPTER TWELVE

12. Timecode playback

This chapter contains: Enabling cue lists for timecode; assigning timecodes to cues; running a cue list to timecode; changing the timecode for a cue.

If you need to play back a sequence of cues synchronised to an external source, the Diamond can do this using a Cue List triggered by timecode. The timecode can come from MIDI, from the Windows Winamp audio player, from an internal clock or from the system clock. Effectively the console will press the "Go" button when the timecode matches the set time for a cue.

Timecode playback is useful when the lighting has to be repeated identically time after time or when it has to be tightly synch onised with a sound track, such as in exhibition shows, film sets, or complic ted musical sequences. It can also be useful to automatically run lighting when a lighting operator is not available.

12.1 Create

12.1.1 Enabling a cue list for timecode operation

First you need to program the cue lis which you want to operate from timecode. This is described in sectio 8 on page 205. If you want to use fade times and autoloads, config re them in the cue list as required.

Then you must enable the cue li t for timecode:

1> Press C [Timecode] f om the top-level menu.

2> Press B [Enable cu list for timecode].

3> All programmed uelists are listed on the softkeys. Press the key for the on y u want to use (I and J change pages).

4> Press Up o return to the timecode menu.

12.1.2 A signing timecodes to cues

Each ue in the cue list must have a timecode assigned to it. The con le will then activate the cue when the incoming timecode matches the t me set for the cue.

The best way to do this is to play the timecode source, and press E [Assign timecode to next cue] at the required cue point.

1> Connect the cue list to one of the playback controllers (press Connect below the wheel, then the Connect/View button of the cue list).

2> Push up the playback fader for the cue list.

3> Press F [Set Timer Source] to select which timer you require; MIDI, Winamp System Clock or Internal. If using Internal you can press J to set the start time.

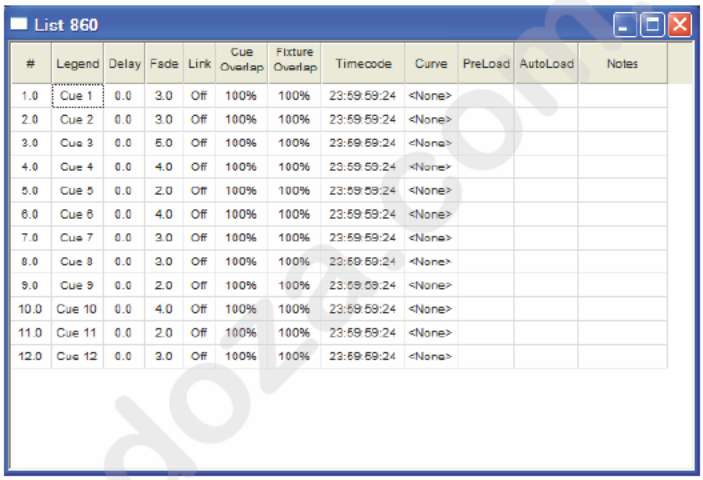
4> Start the timecode source, or press G [Play] if using the internal timer.

5> At the time when you want the cue to start, press E [Assign timecode to next cue]. The cue will run.

6> Repeat step 5 until all cues are assigned.

7> Press Up to return to the timecode menu.

- The Internal timer can be useful to test a sequence when the external source is not available.
- You can Pause the internal timecode and restart it from the beginning using softkeys H and I.
- If you select Winamp as timer source and Winamp is not running, the console will display a warning on the VDU. The console buttons will become inactive until you click "OK" on this warning.
- If you press View on the chase controller then the Connect/View button of the cue list, a window will open on the VDU showing the timecode for each cue.



12.2 Playback

12.2.1 Running a tim code cue list

Once a cue list has been enabled for timecode, you need to activate it. Whenever the timecode matches the time set for a cue, that cue will run. You do not need to put up the fader for the cue list or connect it to a controller.

1> P ess C [A tivate a Timecode Cuelist] from the timecode menu (press C [Timecode] from the main menu to get this).

2> Select the source for the timecode by pressing F [Set timer source].

3> If the display shows timer=Disconnected, Press A [Connect Timer].

> Start the timecode source, or press G [Play] if using the internal timer.

- You need to reset the cue list back to cue 1 before it will run again. The easiest way to do this is to release the cue list from its playback by pressing Shift and the Swop button for the playback. If the timecode source is then restarted, the cue list will run again.

12.2.2 Timecode viewer

Press J [Open timecode viewer] to display a window on the VDU showing the current timecode. The window also shows which timecode source is selected.

12.3 Edit

12.3.1 Changing timecode for a cue

You can change the timecode for a cue either by reassigning the timecode, or by directly editing the time using the keyboard.

Reassigning the timecode:

1> Connect the cue list to one of the chase controllers (press Connect below the wheel, then the Connect/View button of the cue list).

2> Push up the playback fader for the cue list.

3> Press Goto on the chase controller, then type the number of the cue you want to change, then press A [Press to cut cue liv].

4> Run the timecode source.

5> Press E [Assign timecode to next cue] at the correct t me.

Editing the time on the keyboard:

1> Connect the cue list to one of the chase con rollers (press Connect below the wheel, then the Connect/View but n of the cue list).

2> Press View on the chase controlle A win ow opens on the VDU showing details of the cue list.

3> Using the trackball, click on the imecode you want to edit and press Enter on the keyboard.

4> Type the new time on the keyboard. You can use the keyboard cursor keys to select which digit to change.

5> Press Enter to store the time.

CHAPTER THIRTEEN

13. User Settings and other options

This chapter contains: Setting the Diamond options using the VDU menu; dimmer & fade curves; upgrading the software.

All the "system" options on the Diamond are set from the Tools menu on the VDU screen.

13.1.1 User settings

If the console has different users, each user can have their own option settings. You create new users or select from a list of existing users by clicking the user Change button at the top of the screen. You can also use the File → Change User menu command.

To add a new user, click the Add User button in the Change User dialog and type a user name. To select an existing user, click the username in the list then click OK.

The user settings menu has the following tabs:

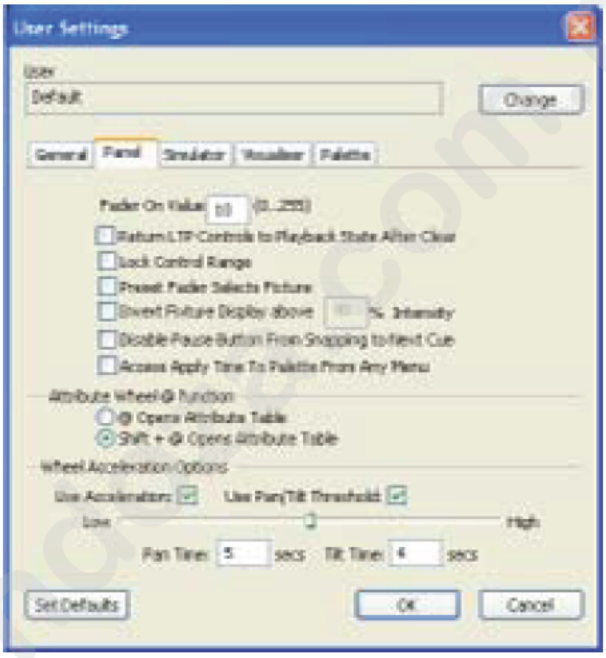
General tab

- *Autosave show* enables disables the autosave option and allows y u to set how often the sho is saved.
- *Employ speed and storage optimisation* w l speed up loading and saving by not saving information for the "On" function (s e p ge 185)
- *Save show file* if set to Binary Format only makes loading and s ving much quicker. XML format is for future compatibility and slows down loading and saving of shows, so only use it if you need to.

  Compress show file will cause the Diamond to compress the file before saving.
- *Autoconnect chase* will connect a chase to Chase Controller A when the fader is raised. If this is not enabled you have to connect the chase manually using the Connect button.
- *Display chase speed* allows you to select BPM or Seconds for the speed display.
- *Flash button used …* allows you to configure the flash button of chases to set the chase speed (by tapping it in time with the music) or to be used for flashing.
- *External Midi timecode* options allow you to determine what the console will do if it has problems with MIDI timecode. The "Ignore Glitches" setting will discard wildly wrong timecodes which might

be caused by a reception error. The "Resynchronise after" setting sets the time after which the console synchronises with the timecode.

Panel tab



- *Fader On value* sets where a playback fader needs to get to before the LTP channels are turned on (sometimes called the Fader trigger point).
- *Return LTP controls to playback state after clear*: If a playback is turned on, and you manually change some fixtures, then press Clear, the LTP channels (position etc) would normally stay where you left them after your manual changes. Turning this option on will cause LTP channels to return to the settings programmed in the playback.
- *Lock control range* prevents you from crossing control ranges using the wheel; you have to use the wheel @ button to select a different range. For example, if a control channel has two ranges such as gobo rotation speed from 0-50% and gobo positioning from 51%-100 you would be locked into one of the two ranges when using the wheel. This can be useful if a fixture has lots of different control ranges on one channel.
- *Preset fader selects fixture* will cause a fixture to be automatically selected if you fade up the fader.
- *Invert fixture display above xx intensity*: sets the fixture display to invert if the intensity is above a certain value. This can be useful so you can see from a quick glance at the console which fixtures are lit up on stage.

- *Attribute wheel @ function*: Lets you configure the @ button to directly open the "Select from table" function. Normally Shift+@ has this function.
- *Wheel acceleration options* let you determine how the wheels will control attributes when you spin them quickly. *Use*

acceleration will cause the rate of change to increase as the wheel spins faster. The slider bar sets how much acceleration is used. *Use pan tilt threshold* limits the maximum speed for pan and tilt. The times in the boxes are the minimum time for pan/tilt to go from 0 to 100%.

Simulator tab:

Sets how the Virtual Panel operates. The Virtual Panel is used when running the Diamond application on an external PC. It enables you to program or edit a show when you can't use the real console. See page 114 for details of the simulator.

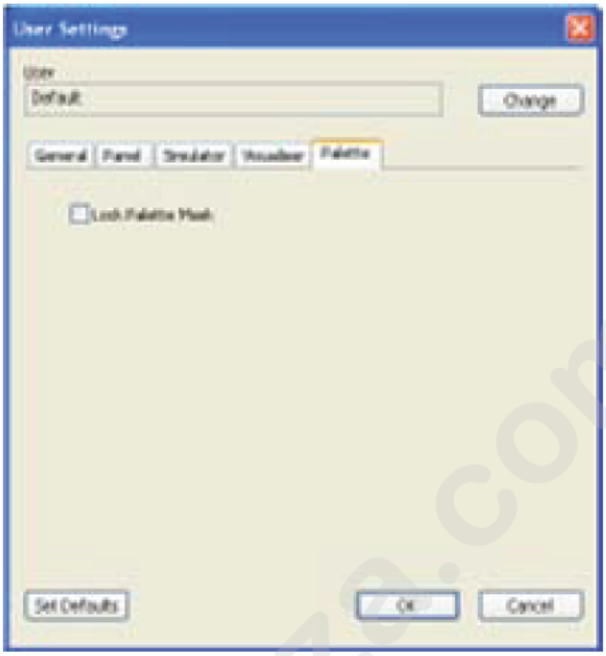
- The Use Mouse to Control Pan/Tilt option allows you to set pan/t lt by clicking and dragging the x/y position of the mouse.
- The Use Left/Right Mouse Button To Turn Wheels option al ows you to spin the wheels up or down by clicking the mous ove the wheel (normally you have to simulate spinning the wheel by moving the mouse)

Visualiser Tab

This lets you set an option which keeps Visualiser on top. This can be useful if you've only got one VDU screen, as you can shrink the visualiser window to only use part of the screen and this function will stop it disappearing behind the Diamond application.

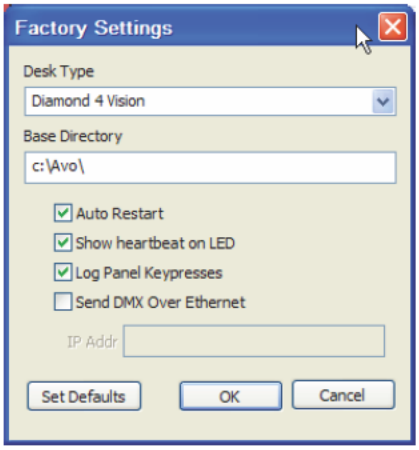
Palette Tab

This lets you set an option that locks the palette mask on palettes that have already stored. This prevents any further attributes being added to palettes



13.1.2 Factory settings

The factory settings menu sets low-leve ope ation of the console.



- The top drop-down box allows y u to set what type of console hardware is fitted. You would nly change this selection on the simulator, to simulate the correct ty e o console.
- The *base directory* allows ou to change where the operating f les and show files are stored.
- *Auto restart* will automatically reload the D4 app icat on if it stops for any reason (s stem crash, user clicks on C se utt n)
- *Show heartbeat on LED*: Normally a eartbeat" is displayed on the LED next to the back light control to indicate that the console is alive. You can turn this off if you want.
- *Log panel keypresses*: All keypresses are logged to a file on the hard disk. This enables Avolites to reconstruct what you've done, should a problem occur.
- *Send DMX over ethernet*: Allows you to enable the DMX over ethernet mode and specify the IP address to send the DMX to.

13.1.3 Hotkeys

It is now possible to assign panel function keys to keys on the QWERTY keyboard. To set or view hotkeys, click Tools, Set Hotkeys. Switch on scroll lock on the keyboard to enable the hotkeys feature.

13.1.4 eDmx Configuration

eDmx is Avolites' wireless DMX system. The Diamond has built in

software to connect to the eDmx system, and this is where you set it up.

The eDmx system consists of "tubes" which listen to a wireless Ethernet network and produce the DMX.

Each eDmx tube has an IP address and a universe address. You can either set individual IP addresses and use the same eDmx universe, or broadcast to all IP addresses from the transmitter and give each tube its own universe address. The eDmx tube manual explains how to do this.

Then you need to set up the wireless network using a WAP (Wireless Access Point). This is also explained in detail in the eDmx tube manual.

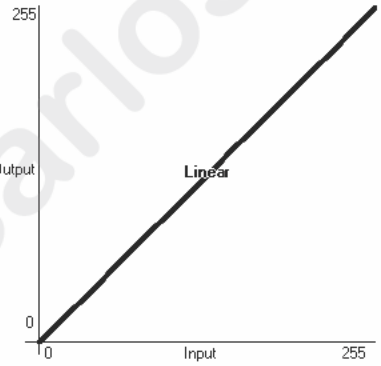
To add an eDmx node, click the Add button. You can then select which console universe (which DMX output line) you want to send to t e eDmx node. Also you need to change the IP address to eithe ma h the setting of the eDmx tube (such as 192.168.1.1), or to roadcast (such as 192.168.1.255) by clicking on the IP Address windo and pressing Enter. The actual IP address range will depend on how the wireless network has been set up. The eDmx unive se s ting is normally printed on the eDmx tube.

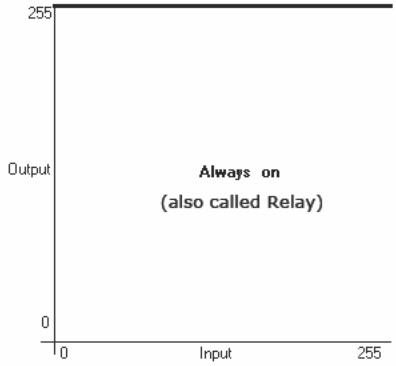
Tick the Enable Wireless DMX box to start sendin data to the wireless network.

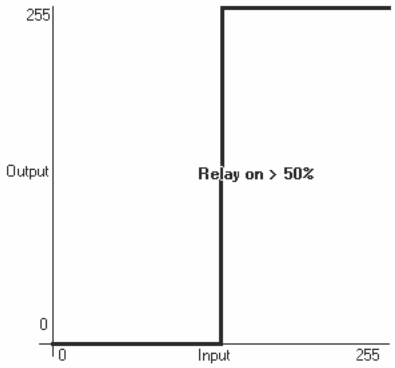
13.1.5 Dimmer & fade curves

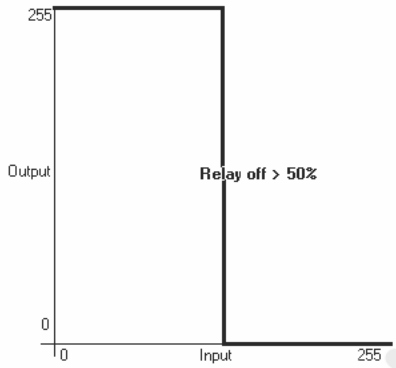
The Diamond provides a variety of cur e which can be used for fading and also for dimmer response. The c rve sets how the console tracks the fade; either the same speed a l the way (linear), or starting and ending gently but faster in the middle, and various other options.

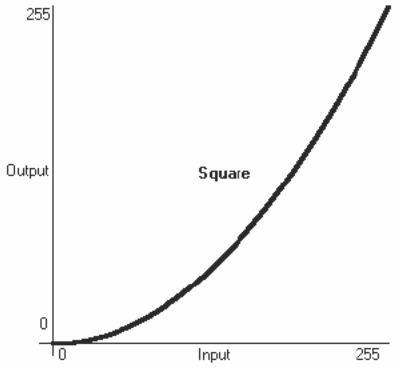
The curves are used when fading between cues (page 187), in chases (p 200) and in cue lis (p 2 1). They may also be applied to dimmers (page 161) which ca be seful to set channels to Relay to make them snap on and off.

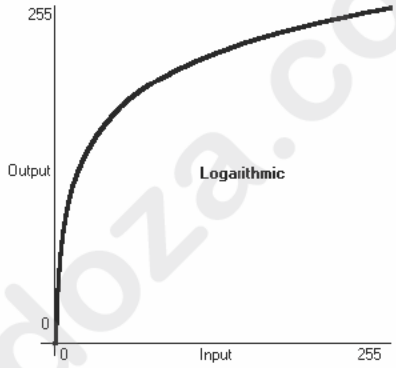


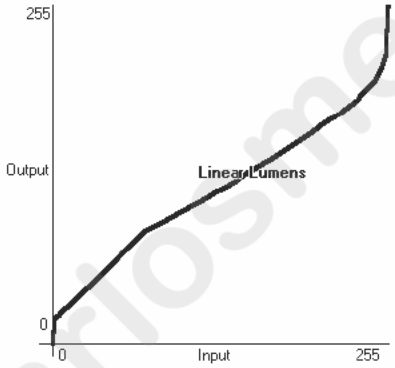


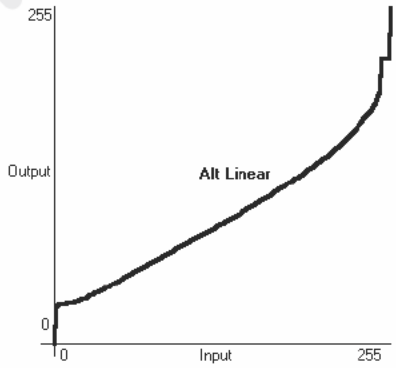


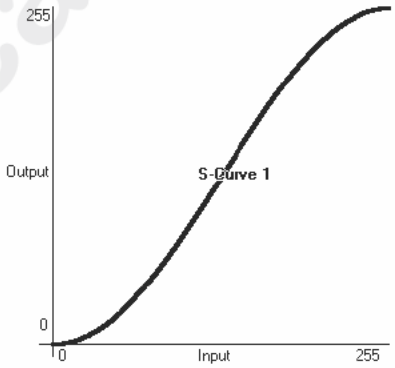


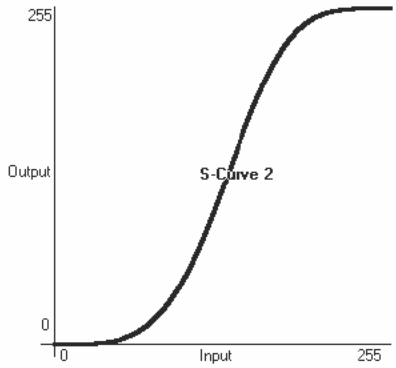


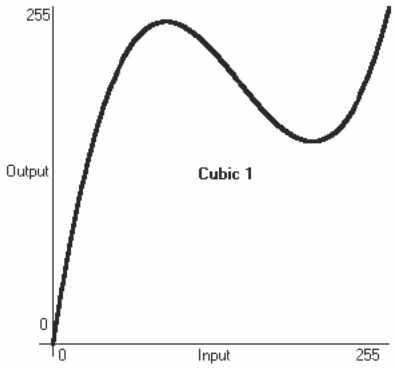


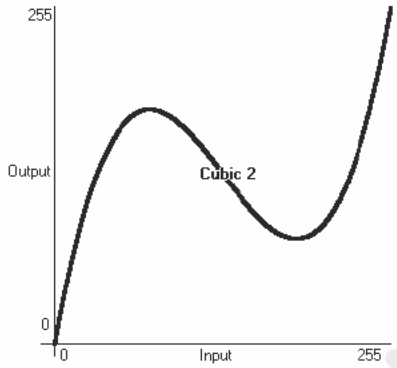


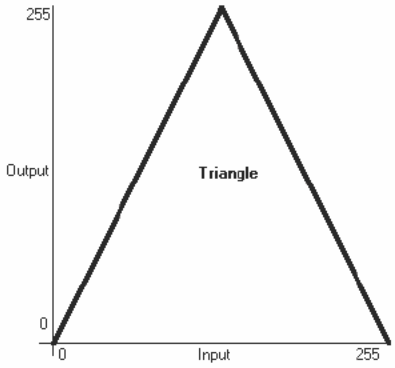


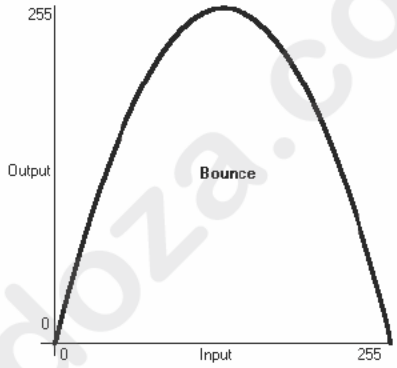


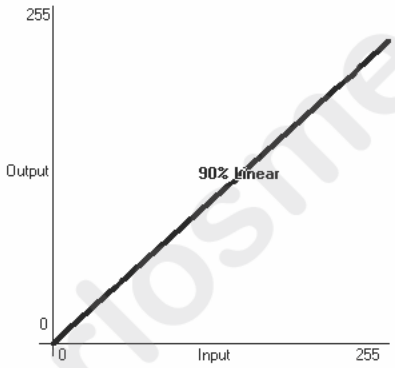


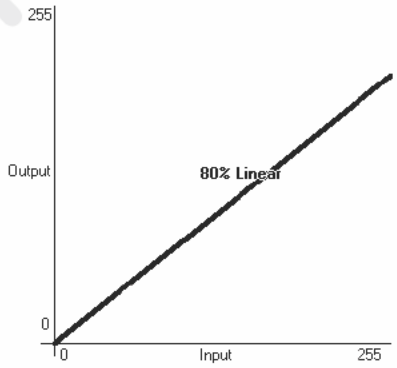












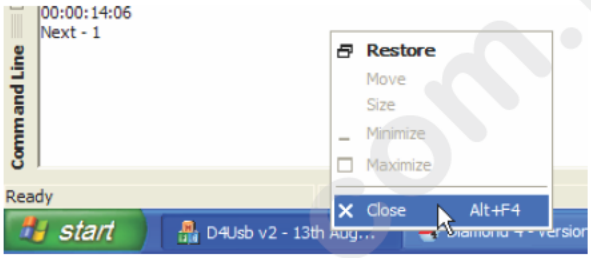
13.1.6 Upgrading the software

The Diamond 4 operating software is under constant revision by the Avolites team. You can always download the latest version of the software from the Avolites website: http://www.avolitesdownload.com

Having downloaded a new version of software, copy it to a CD Rom or a USB pen disk and install it on the console like this:

1> Copy the install file to a CD Rom or a USB pen disk.

2> On the console desktop, close the applications D4Usb and Diamond4 by right-clicking on their buttons on the taskbar at the bottom of the screen and selecting Close. (You must close d4usb.exe first)



3> On the Start menu, click My Computer.

4> Open the drive where the install file is locat d, n double click on the file to run it.

5> The installer program will update the of wa .

4> Shut down the console by pressing th power switch and then restart it.

CHAPTER FOURTEEN

14. Working with Fixture Personalities

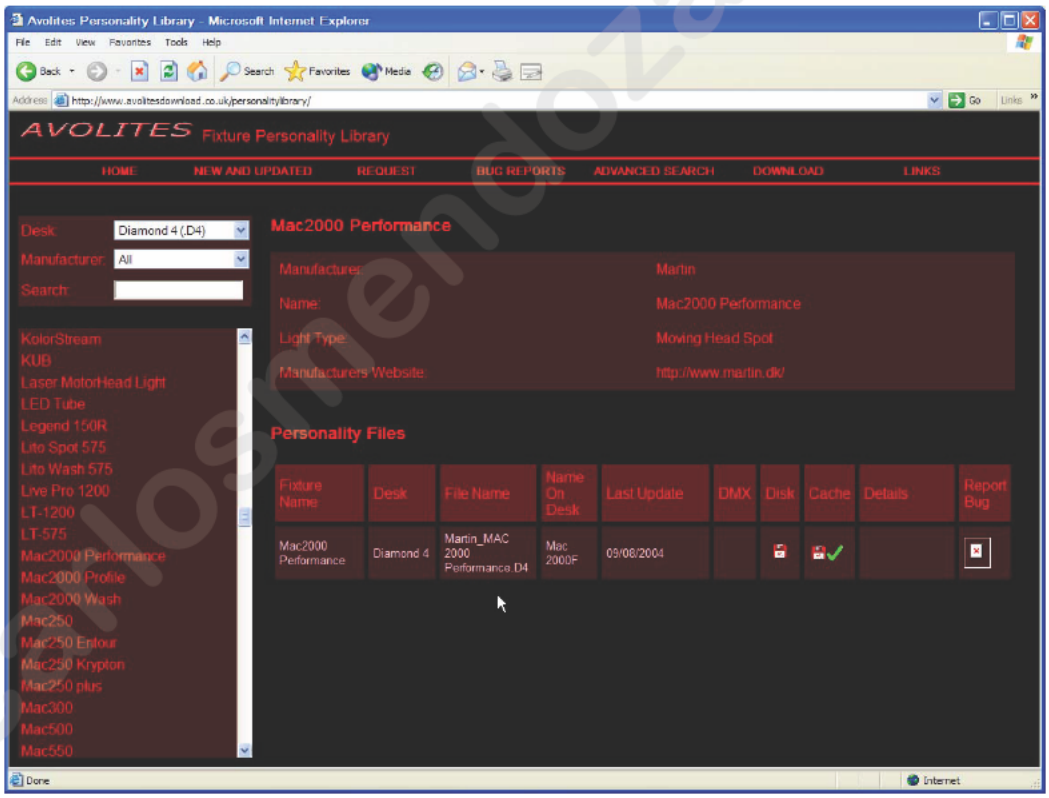
For each type of fixture, the Diamond has a "personality" file which tells it how to control the fixture, which channel is the dimmer (HTP) channel, and a large amount of other fixture-specific information. When you patch each fixture, you tell the Diamond which personality to use for it.

The Diamond holds a wide range of fixture personalities internally in the "personality cache", but you might find a fixture it doesn't know about This section explains what you do when this happens.

14.1.1 Downloading fixture personalities from Avolit s

The Avolites website lists all fixtures for which personalities have been created. You should look here first if the console does not conta n a personality for your fixture. The address is

http://www.avolitesdownload.com/personalitylibrary



All available fixture personalities are listed down the left side of the screen. You can use the boxes on the top left to filter the list to show fixtures from specific manufacturers, or fixtures available for a certain console, or to search for a specific fixture name.

Click on the fixture name to open the details in the right hand window. This shows all the personalities available for that fixture type (if you have entered the console type on the top left, only personalities for that console will be displayed).

If there is a personality listed for your fixture on the Diamond 4, download it by clicking on the Disk icon. This will download a copy of

the complete personality cache.

14.1.2 Updating the personality cache on the console

Download the current Diamond 4 personality cache by clicking on the disk icon in the Cache column for any fixture. Alternatively you can get this file by clicking on the Download link at the top of the screen, then clicking on Diamond 4.

Then use the following procedure.

1> *Copy the downloaded file d4personalities.exe onto a floppy disk or CD.*

2> *On the VDU, click on the Start button and select My Computer.*

3> *Double click on Local Disk (C:).*

4> *Double click on the Avo folder.*

5> *Locate the FixtureLibrary folder and click once on the older name. Add the current date to the end of the folder name (e.g "FixtureLibrary190105"). This stores the current fixture library as a backup in case you have any custom fixture e sonalities.*

6> *Click the VDU start button and select My Compute again.*

7> *Locate the d4personalities.exe file either on CD or floppy disk and double click on it to run it. Click "Ok" on the warning box.*

8> *If you have any custom fixture personalit es, copy them from your backup folder to the FixtureLibra y f lder.*

9> *Shut down and then restart the onsole.*

- The Diamond 4 caches the ixtureLibrary folder when the Patch option is used. You theref re eed to restart the console to ensure new fixture personaliti s are loaded (restarting the Diamond 4 application is suffic nt).
- Once a fixture is p tched, its personality is embedded in the show file. Any change to the fixture library will not affect fixtures patched in the show.

14.1.3 Reque ting a new fixture personality

If a pers nality does not exist for your fixture, Avolites will create one for you. Cli k on the "Request" link on the above web page to submit your r quest. A list of current requests is shown. Please allow 5 days for c eation of the personality.

To nstall the personality, copy the personality file to the :\Avo\FixtureLibrary folder on the console. Then restart the console.

14.1.4 Reporting a personality bug to Avolites

If you find a problem with a fixture personality, Avolites would like to know about it so it can be fixed. Click on the Bug Reports tab at the top of the window to report your problem. A list is shown of currently outstanding problems, so you can check if someone else has already reported the problem.

14.1.5 In an emergency

The Diamond contains a selection of "Unknown (Generic)" fixtures which you can use in an emergency if you need to operate a fixture with no personality. When patching, go through the manufacturer list until you find Unknown (Generic). In this section (among other fixtures)

are the following:

Multi-DMX: Has up to 10 DMX channels, all channels are LTP. You can select from 1-10 channels on the Mode screen. When patched, you control channels 1-3 on wheels 1-3, and the other channels on wheels 4-6 using the Attribute buttons to select channels 4-6, 7-9 or 10.

Generic RGB: Allows you to control an RGB fixture such as LED colour changers. This offers 3 modes: 1=R 2=G 3=B; 1=DIM 2=R 3=G 4=B; or RGB 4 times.

CHAPTER FIFTEEN

15. The Diamond 4 Pilot

15.1.1 What is it?

The Pilot is a hardware extension of the Diamond 4 PC and is used alongside a computer running the Diamond 4 software and an EzDMX DMX output box.

It provides the user with a familiar interface of faders and control buttons to help speed up both programming and playback of shows.

15.1.2 Connecting Up

The Pilot connects to your PC via a USB cable. Note that the is a USB hub built into the Pilot, so if you are short of USB connections, you can connect to the EzDMX box through the Pilot.

Please note that you will also need to have the Avoli es D4 USB Software Dongle installed.

Ensure you are running Version 1.5 of the Diamo d Software.

With the Boxes connected, turn on the pilo and follow the on-screen instructions. If you installed earlier versions of the Diamond software, you may be asked to choose between diff rent drivers. If this is the case, please select the most recent dr ver

15.1.3 Layout

On the left hand side of the Pilot are eight "flying" faders, each with Go, Flash and Swop buttons Eac f these buttons also has a Shift function. The Go buttons c n act as "Connect" buttons, the Flash as "Back" and the Swop as "Release" buttons.

To the right of the fade s is the control area. At the top is the "Set Button Mode" key. This has 2 functions. Firstly, by holding the button down, the fade controls can be used to change fader bank. Second, if pressed in onj ction with the "Shift" button, it toggles the D4 between Fixture and Add/Swop mode.

The w eel directly controls the 1st cue list control wheel. Next to this a e he page buttons. The LEDs indicate which type of page is selected (P eset, Palette or Cue) and they can be used to step through pages as required.

Finally, below the wheel are Cue List/Chase control buttons that control the currently connected playback, and the Shift/Connect key.

15.1.4 Operating

When the system starts up initially, the faders will be set to control the first bank of Playback faders, (Playbacks 1 - 7). Raising a fader on the Pilot will cause the same fader on the virtual panel to move, and vice versa. If you have any Cues, Lists or Chases recorded to these faders, you will be able to immediately control them from the Pilot.

It is easy to assign the faders to any bank of faders on either a D4 Vision or Elite virtual panel. The banks are selected using the special "Set Button Mode" in combination with the Go, Flash and Swop keys on the Pilot.

These are the 3 rows of buttons above and below the faders. The top row corresponds to the top row of presets, the middle row to the bottom row of presets and the bottom row, below the faders, corresponds to the Playbacks. So to select the second bank of playbacks, you would press and hold the "Set Button Mode" key then press the second fader's "Go" button.

To change the fader bank:

1> *Press and hold the blue "Set Button Mode" key.*

2> *Press the Go, Flash or Swop button that corresponds to the required bank.*

To change the page that you are currently working from, First select whether you wish to change the Cue, Palette or Preset page. Thi i done by holding down the shift key, then pressing the relevant page button on the right hand side of the Pilot. The LED of the cu rently selected page type will light up. You can then use the buttons a + and - buttons to step through the pages.

To change page:

1> *Press and hold the blue Shift key.*

2> *Press the Preset, Palette or Cue button that co responds to the required page type*

3> *Use the + and – buttons to step through the pages.*

To change between Fixture and Add/Swop Mode, Press and hold the "Shift" key and press the "Set Butto Mode" key

To connect and control a Cue List r Chase from the wheel and associated controls, press a d h ld the Shift (Connect) Button, then press the "Go" button of a fad that has a Cue List/Chase recorded to it. You can then control the chase speed from the Wheel, and use the Go, Pause and reve e b ttons as you would on the console itself.

To release a Cue Chase or Cue List

Hold the "Shift" k y and press the Blue "Swop" key above the fader you wish to release. This will release the playback in the same way as pressing Shif Swop on the console

CHAPTER SIXTEEN

16. Networking

This chapter contains; IP addressing.

As lighting fixtures become more complicated and lighting desks support new features networking is becoming a larger and larger part of a setup. This chapter aims to cover the basics of IP addressing which is essential for various features on the Diamond such as Tracking backup and ArtNet.

Note: This entire chapter simplifies a lot of technical networking information. It is by no means definitive and is designed for those who want a basic introduction to networking.

16.1 IP Addressing

IP addresses will normally come in the format "w.x.y z where w, x, y and z are numbers between 0 and 255. For example "298.23.46.166". Every object (or node or device) on a network sh uld have a unique IP address. This is the same concept as DMX as eac fixture requires a unique DMX address, for IP addresses the am is required.

16.1.1 Setting your IP address

On the Diamond you can set your IP add ess in the same you would on a Windows XP computer. This is one in the following way:

1> Go to the control pane (Start >Control Panel)

2> Double Click on Network Connections

3> You will now be confronted with various network adaptors. It is likely that you will nly have one or two of importance. The "Local Area Connection" and "Wireless Network Connection". These names my slig tly differ but the icons are likely to look like these:

The Local Area Connection (icon on the left) refers to your wired connection and your Wireless Network connection (icon on the right shown disconnected) refers to your wireless connection.

4> At this point you need to decide which connection you are using and therefore which connection you want to set the IP address for. Select this connection, right click on it and click on Properties.

5> The Dialogue box you have should have at least three tabs, "General", "Authentication" and "Advanced". It should already be on the General tab which is the only tab where you should need to change settings.

6> In the middle of the box there is a selection box labelled "This connection uses the following items:" You need to select the item called "Internet Protocol (TCP/IP)" ensure this is ticked and click on "Properties" just below the selection box.

7> You are now presented with a box which allows you to select whether you want to "Obtain an IP address automatically" or "Use the following IP address". By selecting "Use the following IP

address" it is possible to enter in a new IP address and Subnet Mask. The Default gateway, Preferred DNS server and Alternate DNS server and not important in this situation as they are only required if you are connecting to the internet, therefore they can be left blank.

8> Once you have entered in the new IP address and Subnet mask press Ok on all the dialogue boxes that have been opened. After a few moments your new IP address should be set.

There is a strong possibility that if you set the IP address on one network device you will have to set it on all of them, therefore if you manually set your IP address on the Diamond 4 you will have to do it on any tracking backup you are using and any ArtNet fixtures

16.1.2 Subnet Masks

These are best kept simple. All devices or nodes on a netwo k who wish to communicate with each other must have the same subn t m sk. The mask determines which parts of the IP address are unique in that network to each node. If the part of the subnet mask i a 0 then the corresponding digit in an IP address must be unique for each fixture. If the part in a subnet mask is 255 then this part f the IP address needs to be the same for each node.

16.1.3 Choosing an IP address a d Subnet Mask

This is the hardest part of setting up ne work as your IP address totally depends on what you are using on the network and what IP addresses you can and cannot chang Below are a number of different scenarios for standard lighting ne works using a Diamond and what IP addresses should be set. These aren't guaranteed to work but try them if the scenario matches your ne work:

Diamond 4 and Sho Safe all output is standard DMX.

	IP Address	Subnet Mask
Diamond 4	192.168.1.30	255.255.255.0
ShowSafe	192.168.1.31	255.255.255.0

Diam nd 4 outputting over ArtNet Fixtures (and DMX).

	IP Address	Subnet Mask
Diamond 4	2.100.100.100	255.0.0.0
ArtNet Fixtures	2.x.y.z	255.0.0.0

Or

	IP Address	Subnet Mark
Diamond 4	10.100.100.100	255.0.0.0
ArtNet Fixtures	10.x.y.z	255.0.0.0

Where a combination of x, y and z are unique for these fixtures.

Diamond 4 and ShowSafe outputting over ArtNet (and DMX).

	IP Address	Subnet Mask
Diamond 4	2.100.100.100	255.0.0.0

ShowSafe	2.100.100.101	255.0.0.0
ArtNet Fixtures	2.x.y.z	255.0.0.0

Or

	IP Address	Subnet Mark
Diamond 4	10.100.100.100	255.0.0.0
ShowSafe	10.100.100.101	255.0.0.0
ArtNet Fixtures	10.x.y.z	255.0.0.0

Where a combination of x, y and z are unique for these fixtures.

Note: Never set the last number of an IP address to be 255. This is special address which will not function how you expect it to.

16.1.4 Automatically assigning IP addresses (DCHP)

There is another way of assigning IP addresses via an automatic system called DCHP. For this you need one of the devices on the network to be a DCHP server. If you know none of your devices are a CHP server then this is irrelevant however, if you have a router on the network or some such similar device then it is likely that y u have a DCHP server. If you do then in the 8 step instructions on page 46 when you come to step 7 you should ensure that "Obtain and IP address automatically" is selected then press ok. When you are u ing DCHP all the devices on the network must be capable of obtaining an P address automatically. If one device cannot then you must manually set all the IP addresses.

16.1.5 Private IP address ranges

If you network is connected to the internet it is important to use a private IP address range The e are special IP addresses that will not be routed onto the intern . They are:

Start Address	Final Address	Subnet Mark
10.0.0.0	10.255.255.255	255.0.0.0
172.16.0.0	172.31.255.255	255.255.0.0
192 168.0.0	192.168.255.255	255.255.255.0

16.2 Repairing a Network Connection

If you are sure your network connection settings are correct or had them working but they are no longer working it may be necessary to repair the network connection. This is a simple windows function that can be accessed by doing the following:

1> Go to the control panel (Start->Control Panel)
2> Double Click on Network Connections
3> Double Click on the Network Connection you would like to repair
4> Click on the Support tab.
5> Click Repair.

Windows will complete a number of tasks and give you a message informing you it has finished repairing the connection. Click close then ok to all the open windows.

CHAPTER SEVENTEEN

17. Glossary of terms

ADDRESSES	The DMX Channels occupied by individual Fixtures. The first Channel occupied is usually encoded onto the Fixture somehow (often by switches or using a menu) and called its ADDRESS.
ALIGN	A means of copying Attribute characteristics from the first Fixture selected to other selected Fixtures, resulting in the Fixtures being aligned to each other
ATTRIBUTE	One Channel or function of an Intelligent Fixture, such as "Colour Wheel".
ATTRIBUTE GROUPS	see IPCGBES.
AUTOLOAD	A playback which is automatically fired b a cue in a cue list. Enables a chase to be fired by a cue list.
BACKUPS	Copies of a show stored to an extern l storage device for safety.
BPM	Beats Per Minute. 60BPM is eq ivalent to one step per second.
BUSKING	Operating the consol liv (usually for live music) when you have ins ffic nt programming and need to make up stunning ffects as you go along using palettes etc.
CHASE	A sequenc f o e or more pre recorded steps which automati ally un one after the other.
CHASE STEPS	Indiv du l cues within a Chase. See above
COLOUR CHANGER	A mec anical Fixture for changing the colour of a ligh source, usually by scrolling through a roll of di ferent coloured gels or by moving special filters into the light beam.
COLOUR MIX / CMY	A system of three filters that can each crossfade from white to a colour, or one colour to another. It is a feature of some Intelligent Fixtures, which enables thousands of different colours to be created.
CONNECTED CHASE	A Chase which has been brought under control of a chase Controller by pressing the CONNECT button.
UE	A single stage look programmed onto a Playback button or fader. Also known as MEMORY, STATE, SCENE, LOOK.
CUE LIST	A sequence of cues programmed onto a Playback button or fader. Each cue can have its own delay and fade times and can also start other cues or playbacks. Also known as a CUE STACK or STACK.
CUE MODE	A playback format programmed into a Cue. There are Cue Modes 0 - 3.
DEVICE	See FIXTURE.
DIMMER	Device used to control the intensity of an individual light.

DMX	DMX512(1990) a specification for communication between control desks and Fixtures, Originally for Dimmers it has been adopted as a control protocol for most Intelligent Fixtures. It can carry 512 different Channels of data.
FADE	A continuous transition from one level to another.
FIXTURE	Any lighting instrument that is patched using a Personality. Generally refers to a moving light or colour changer, not an individual Dimmer channel. Also called Intelligent Fixture, Device, Instrument, Moving Light.
FLASH	Pushbutton which adds a playback into the existing output of the console. Historically called the ADD button. See also SWOP.
FLIP	A function for use with Moving Head Fixt res They have two possible Pan and Tilt positions fo each point on stage, and FLIP will alternate between them.
FOCUS	What Palettes are called on other Avo ites consoles. See PALETTE. May also be used in connection with moving fixtures to focus (set the sharpn ss) of a gobo projection.
FUNCTION WHEEL	A wheel which does n t directly control an Attribute channel on a fixtur , ra er it controls only part of an attribute and an the function wheel may control other parts. For ex mple a rotating gobo attribute may have one f nction wheel to control continuous or indexed mode, and another function wheel to control ro tion speed or position, though the actual fixture o ly uses one DMX channel to control both these functions.
GENERIC	Term used to indicate a Dimmer channel. See also FIXTURE.
GROUP	A GROUP is a pre-programmed collection of Fixtures that can be selected with a single button press.
HANDLE	The preset fader and flash/swop buttons which are used to control an individual fixture or dimmer channel.
HTP	Highest Takes Precedence, a mechanism for determining the output level of a channel being controlled by more than one Playback. The Playback outputting the Highest value at any given time will determine the level of the channel. Also see LTP.
INCLUDE	A means of transferring the contents of a Cue or Chase Step into the Programmer.
INSTRUMENT	See FIXTURE.
INTELLIGENT FIXTURE	See FIXTURE.
IPCGBES	The Attribute Groups, used by the console to conveniently group together similar attributes. For example the P(osition) group includes Pan and Tilt attributes.

LCD	Refers to the console's on-board displays (stands for Liquid Crystal Display).
LED	Refers to the small red lights within the buttons on the console (stands for Light Emitting Diode).
LINKS	Connections between cues in a Cue List or Chase enabling them to run on from one to another automatically.
LOCATE	A feature of the console that makes it easy to find your selected Fixtures by putting them in Open White. Pressing Shift+Locate additionally sets the Pan and Tilt at 50%.
LTP	Latest Takes Precedence, a mechanism for pas i g control of a channel from one Playback to another on the basis that the latest Playback Fader to be m ved has control, providing that Playback Fad r ha moved past the Trigger point. (See TRIGGER POINT). Also see HTP.
MACROS	Macros allow functions programmed i to an Intelligent Fixture by the manu acturer to be executed by sending a DMX command sequence from the console. They can allow ou to reset the Fixture for example. The DMX c mmand sequences are defined within the Pers nality File.
MEMORY	The name for a Cue other Avolites consoles.
MIDI	Stands for Musical Instrument Digital Interface. It is the estabi shed hardware and software specification enabling he exchange of data between digital musi a instruments (such as keyboards) and other de i es such as computers, sequencers and sound and lighting consoles.
ML MENU	P ovides functions for control of Moving Lights (Moving Light Menu).
ON and OFF	Any channel stored in a playback can be On or Off. A channel which is ON is changed by the playback when it is fired. A channel which is OFF is stored in the playback for future re-use but has no effect when the playback is fired.
OVERLAP	Sets how the Diamond allocates new values to a group of fixtures. 100% means that all fixtures are updated simultaneously. 0% means that the fixtures will be updated one after the other.
PALETTE	A term used to describe a referenced pre-defined state for an Attribute that can be recalled whenever required during programming. Each Fixture may be set to a different value in the Palette, the entries can be named, and recalled with a single button press.
PARK	A Parked fixture is one which is patched to a handle but has no DMX address set. This happens to a fixture when its DMX address is taken by another fixture during a later patching session; the Repatch function is used to give it a new DMX address.

PERSONALITY	A description of what Attributes a particular Intelligent Fixture has and how the console will patch and use these. It also determines which Attribute Wheel will control which Attribute.
PLAYBACK	Area of the console that can replay recorded Cues or Chases using Playback Faders.
PRELOAD	A playback button which sets the LTP channels in a cue but not the HTP channels. Used to pre-position fixtures before firing a cue. Also a cue list function which allows one cue to preload the LTP channels in another cue.
PRESET FADERS	The faders across the top of the console which are used for controlling individual fixtures or dimmer channels.
PRESET FOCUS	What Palettes are called on other Avolite consoles. See PALETTE.
PROGRAMMER	The part of the console which contai s Channel information which has been changed by the user, prior to recording.
SAFE	Desk mode in which all Pl ybac functions are enabled, but all programmin functions disabled.
SELECTED	A Fixture that is under manual control.
SEQUENCE	See CHASE.
SHAPE	A preprogrammed effect available which is applied to an Attribute It can then be customised and stored in a Cue.
SHARED PALETTE	A Palette in which information is only stored for one Fixtur but is available to all Fixtures of that type.
SOFTKEY	Butt ns marked A-J, with different functions which are shown on the LCD screen above.
STACK	See CUE LIST.
SWOP	Type of flash button which turns on the output being flashed and turns off all other output while the button is pressed. Sometimes called "Solo". Also used for selecting fixtures or playbacks when programming. See also FLASH.
TABLE	List of pre-defined levels for an attribute allowing settings to be recalled by name (for example the colours available from a colour wheel may be found in a table).
TIMECODE	An electronic timer signal which allows cue list playback to be synchronised to a soundtrack or other events. The console can read MIDI timecode or can take a timecode from the Windows sound player application "Winamp". An internal free-running timer is also provided.
TRACKING	A mode in which Moving Lights can move around an area all pointing at the same spot.
TRAINING	The process of recording points on a stage so that

	the console can work out the TRACKING for Moving Lights.
TRIGGER POINT	The level set in the User Settings which determines at which point a Playback Fader triggers the LTP Channels programmed onto it.
UNFOLD	A function that allows Chase Steps to be laid out onto Playback Faders for easy editing.
USER SETTINGS	User definable desk settings. Found in the Tools menu on the VDU.
VDU	A computer monitor plugged into the VDU socket on the Diamond giving further information about the operation of the console.
VIRTUAL DIMMER	Used with LED RGB (red-green-blue) colour m xing fixtures, these add an intensity function to the fixture which masters the RGB controls on the fi ture when it does not actually have an intensity control channel.
WIPEALL	A process which clears all the previou programming out of the desk, but does not t uch the System Software.
WHEEL	Wheels are used on the Diamond to set Fixture Attributes and to control chases and cue lists (see FUNCTION WHEEL)

CHAPTER EIGHTEEN

18. Index

Softkey Menu items are indicated with capital letters (for example "Activate A Timecode Cuelist")

D

E

F

G

H

I

K

L

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