
LDS-MP100

Moving Light Control System

User Manual



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PanCommand LDS-MP100 – User Manual

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Covers LDS software revision 21Y.

This manual cover the LDS-MP100 moving light controller only, and should be read in conjunction with the ProSpot manual and the relevant documentation for any other fixtures being controlled by the console.

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Section

1

Introduction

The LDS-MP100
This Manual
Typographic conventions

Introduction

The LDS-MP100

The LDS-MP100 lighting controller is a console designed specifically to control the PanCommand range of moving light fixtures, communicating with them through CD6 control boxes which actually store the cue information for the lights they control. In addition, the LDS can also control conventional lighting instruments and colour scrollers through SB24 and SB96 DMX-512 converter boxes. These boxes also generate the protocol to drive PanCommand's range of colour changers, and 24 or 96 analogue signals for driving other equipment.

The LDS console itself is merely a control surface linked through an interface card (called the LRT) to a standard MS-DOS '486 Personal Computer running custom-written software. The designs of both the console and the software have evolved through use by and feedback from active Lighting Designers, and the result is a console that is quick to program and versatile in operation while remaining accessible to first-time users. Several key features contribute to this versatility:

1. The console is kept flexible through the use of macro buttons. These can have specific functions assigned to them, enabling each operator to set up the console to suit their style of operation.
2. The LDS system allows a library of focus positions to be created, which can then be used to create cues or chase patterns. Alterations to focus positions are global throughout the show, wherever that focus position is used in cues or chases, enabling the focus of a show to be quickly 'touched up' or changed to suit different venues on a tour.
3. The console can retain libraries of chase patterns and colours, both 'stock' and operator-defined. These work in the same way as focus positions, but can be transferred from board to board and show to show independently of cue data.
4. A MIDI port is included, enabling the LDS to control, or be controlled by, a variety of other equipment.
5. The system uses a sophisticated 'time' program, where separate time parameters are assigned to each feature of the fixtures within each cue, allowing a single cue do the work of several cues on other consoles.

The system's control philosophy includes elements from both conventional fixture lighting controllers and moving fixture lighting controllers, and allows shows to be operated from a sequence of pre-recorded cues or 'busked' live as required. It should therefore be relatively easy for anyone with some experience of any other lighting control to pick up using the LDS quite quickly.

1.1 This Manual

This manual covers revision 21Y of the LDS-MP100 software and its use with ProSpots, ProSofts and conventional lighting equipment. It is divided into six major sections:

1. This introduction
2. Starting up – configuring the board with information about the rig.
3. Basic Control and Plotting – the bare essentials to create a show.
4. Advanced Techniques – a guide to some of the more advanced features for operators acquainted with the basic operations.
5. Diagnostics and Trouble shooting – when the board or lamps don't do as they're told

Appendices Quick reference guides with information such as command key equivalents from the PC keyboard, colour information and so on.

Using the Manual

The manual is intended to cover the specific features and operation of the LDS-MP100 rather than serve as a general introduction to either moving lights or computers. It thus assumes some familiarity with MS-DOS and the use of floppy disks with PCs, and with the use of a trackball to progress through menu-controlled programs. It does not provide in-depth technical coverage of the ProSpot or ProSoft moving fixtures, which is available elsewhere.

However, the manual is designed to enable someone who has never used an LDS-MP100 before to set it up and make lights move for the first time while at the same time covering more advanced functions for users who are more experienced with moving lights.. Given that there is no set moving light rig, the manual does not give specific examples, but instead gives a more general explanation of each of the board's functions, along with suggestions as to when the function would normally be used.

While you could read the manual from beginning-to-end away from the console, and such a reading would provide a good background knowledge of the console's features, it is probably more useful to have it around while actively 'playing' with some moving lights – following it step-by-step when setting up a rig for the first time and then using it to answer specific questions as they arise rather than testing each button individually.

When controlling fixtures, care should be taken at all times to ensure that the movement does not pose a hazard to staff or other equipment.

Getting out of trouble If you do get stuck at any time, pressing [CLEAR] (bottom-left of the numeric keypad on the right of the console) will remove the last command string, [CLEAR][CLEAR] will release all current commands, and [ESCAPE] (on the right-hand end of the keys above the trackball) will return you to the base screen.

1.2 Typographic Conventions

This manual uses a number of standard typographic conventions.

Any reference to a key on the console will be shown as:

[KEY]

or, if several keys have to be pressed together:

[KEY 1]+[KEY 2]

Control wheels will be shown as:

(WHEEL NAME)

Any reference to an on-screen menu option will be shown as:

{ MENU OPTION }

Anything that has to be typed on the keyboard will be shown as:

TYPE THIS

Anything that will appear on the monitor will be shown as:

READ THIS

References to the different modes available in the console will be shown as:

THIS MODE

Information which you should read because it is likely to be useful or save you time is shown as:

useful information

Information which you must read because you could otherwise lose show information is shown as:

vital information

Section

2

Starting Up

Connecting the desk
General Operating Principles
The Plot Screen
Allocate Bars
Copy Bars
Fixture Types
Move/Rotate
Resize screen
Bar addresses
Fixture names
Peek zoom
Redraw screen
Updating
Killing and awakening
Trackball orientation

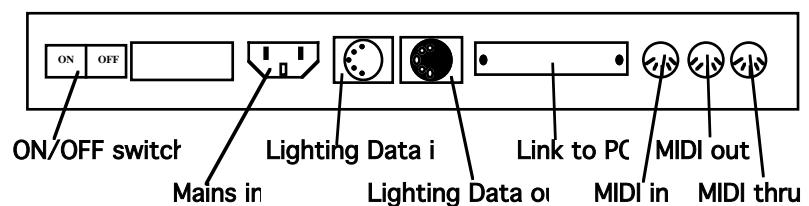
Starting Up

To control moving lights using the LDS-MP100, the LDS console has to be connected to its PC and to the moving lights. The PC should be set-up with the appropriate software when it arrives, and this section assumes that this is the case. If the software is not installed, or if you need to re-install it in an emergency, see Appendix E, Backup.

2.1 Connecting the Desk

The LDS-MP100 requires three connections to operate: connection to a suitable mains supply, connection to its companion PC, and connection to a ProSpot or ProSoft moving light system.

The console's connectors run along the rear of the desk, as follows:



The mains supply should be at 240V, 50Hz. If possible the mains supply to both the console and the PC should be run through a mains conditioner to minimise the risk of data loss through crashes caused by noisy mains.

The console and PC should be connected using the cable supplied, and the console should then be connected to either a CD6 box for controlling moving lights, or SB24 or SB96 boxes for running other DMX or analogue devices. Two goose-neck lamps can also be connected to the two XLR connectors on the top surface of the console. With the desk switched on, the brightness of each lamp can be controlled using the buttons below the connectors.

Once all of the connections have been made, the system can be switched on, using the switch mounted on the rear panel next to the mains connector, and then the on/off switch on the PC. You should always switch the LDS-MP100 on before switching on the PC. Also, there must not be a disk in the PC's floppy disk drive when it is switched on. The system will go through a start-up routine and will either run the LDS program directly, or display a C> prompt, depending on the software installed. In the latter case, type either

LDS [RETURN]

or

GO [RETURN]

This will run the LDS program and display a copyright message. Pressing any key on the LDS-MP100 will bring up the PLOT screen.

2.2 General Operating Principles

The LDS-MP100 console operates in a manner somewhere between a conventional fixed-instrument lighting controller and a moving-fixture controller, using features from each area to try to give the best of both worlds.

Controls

The system is normally operated through the LDS console rather than the PC it is attached to. The LDS is essentially a “button board”, however, and practically every command can be duplicated using a key combination on the PC’s conventional keyboard. Details of these key combinations are given in Appendix A. This also allows some back-up in case of a failure of the LDS console; if the LDS keyboard locks up but it is still receiving power, cues can be triggered from the PC keyboard.

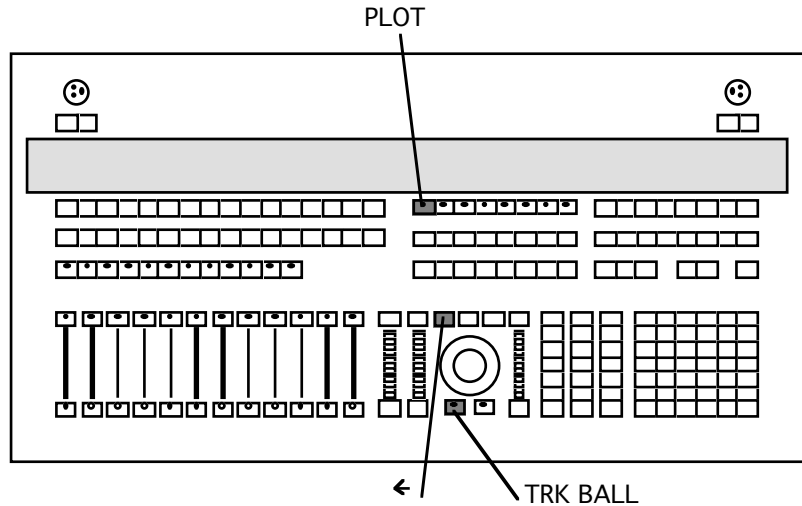
The controls on the LDS console are divided into logical groups of switches according to function. Switches which have a latching action - ie. remain active until they are pressed again or until another key is pressed, generally contain a red LED which lights to indicate they are in use.

There are two groups of black, unmarked switches. These are macro buttons, and can have any function you choose assigned to them. For details of programming macros, see section 4.3.

The other keys generally lead to a specific function or set of menu options. The operation of most of the keys can be duplicated by selecting items using the cursor controlled using the trackball (having first turned the trackball on using the [TRK BL] switch immediately below it). With the cursor positioned above a menu option, pressing the left arrow button above the trackball will select that option. Pressing the [ESCAPE] key will generally abandon whatever has been selected and return to the main menu.

You can also generally move around using the arrow keys in the main numeric keypad. These can also be used to move through information. For example, when a cue information box is being displayed, the arrow keys will move the cursor around that box, while [SHIFT]+arrow keys will move through the cues, displaying the data for each in turn.

2.3 The Plot Screen



In order to control the fixtures on your rig, you must first tell the LDS what type of fixtures they are and how it should address them. This is done from the PLOT screen; once set up, this will display a graphical representation of the rig allowing easy access to any fixture.

However, when you first reach the PLOT screen, it will be blank except for the screen menu:

PLOT	DISK	FOCUS	UPDATE	KILL	DIAGS	CONFIG
-------------	-------------	--------------	---------------	-------------	--------------	---------------

There are two ways of accessing these individual menus - press the [TRK BL] button to switch the trackball on, and use it to move the cursor to the menu strip. Using the left-hand button above the trackball, click on {PLOT} to reveal the PLOT menu. Alternatively, press the [PLOT] button.

The PLOT menu offers the following options:

PLOT	DISK
Fixture Names	
Bar Addresses	
Allocate Bars	
Fixture Type	
Move/Rotate	
Copy Bars	
Resize Screen	
Peek Zoom	
Redraw Screen	

2.4 Allocate Bars

In order to configure the LDS with the number of moving lights, conventional dimmers and channels on your rig, move the cursor to {allocate bars} and click again, to reveal two sub-menus:



Positioning Fixtures

To configure ProSpots or ProSofts, click on {CD6 sect}. Fixtures can then be positioned on the screen by moving the cursor around - a symbol will appear wherever the left-hand button is clicked. Similarly, conventional dimmers, channels or colour changers can be positioned after selecting either {SB24 sect} or {SB96 sect}, depending upon which device is being used to interface with them. How the fixtures are positioned on the screen is entirely down to the operator, and will not affect the ability of the LDS to control them.

Deleting Fixtures

If you make a mistake, selecting {delete} and clicking the cursor on an unwanted fixture will remove the fixture.

Multiple Fixtures

To create neat rows or columns of symbols, place one fixture on the screen, and then select {left of bar} from the menu. Clicking on the existing fixture will draw a new symbol exactly to the left of it. {Right of bar}, {above bar} and {below bar} work in the same way.

Multiple Fixtures problem

When adding fixtures using the left of bar/right of bar options, clicking once creates a new fixture symbol. Clicking twice appears to delete it again, but in reality there are two symbols drawn on top of each other cancelling each other out through an anomaly in the drawing package. If left like this, two blank columns will appear on the Cue Edit screen.

When placing fixtures on the screen, avoid the top corners where menus appear, as you may find your rig obscured by some of the larger sub-menu boxes! If this happens, refer to the section on troubleshooting.

For large rigs, it will often be quicker to create one bar and then create copies of it, as described below.

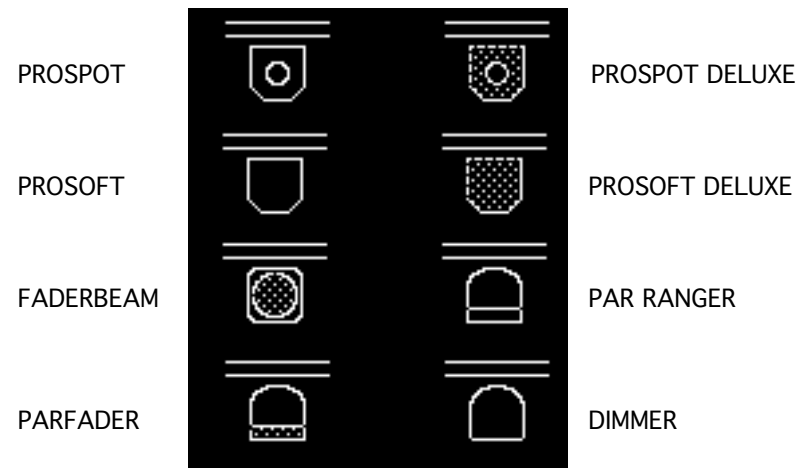
2.5 Copy Bars

When you have a large number of fixtures to place on the screen, you can save time by drawing some of them, and copying what you have drawn to other parts of the screen. Click on {copy bars} and select the fixtures to copy by clicking on them - the symbols will turn green (dark green if you select more than one). Now click on {copy bars}, move the cursor to the new position and click again to generate a copy of the selected fixtures. This can be done as many times as you need; use the right-hand button to deselect the fixture or fixtures when you have finished making copies.

2.6 Fixture Types

The LDS will initially assume that any fixture on a CD6 is a ProSpot, and any fixture on an SB24 is a Parfader (unless you change the system defaults - see CONFIG menu, section 4.8.). To tell the LDS what type of fixtures you have, click on the {*fixture type*} menu to reveal the menu of possible types in the top right corner. Clicking on a particular type and then clicking on an existing fixture will change that fixture symbol as follows:

REPLACE THIS SCREENSHOT



Moving and Deleting Fixtures

The move and delete options on this menu allow the operator to move previously configured fixtures around the rig from one bar computer to another whilst retaining the cue information specific to that fixture. This is only relevant after you have recorded cues; you can ignore this section when first setting the desk up.

Firstly, create a new symbol in the desired position in the usual way and give it a bar address for the relevant CD or SB box. Now delete it using the delete option on the |*FIXTURE TYPE*| menu. The symbol will not disappear, but change to a small circle, denoting an empty port on a bar computer. Now select {*MOVE LAMP*} and using the left hand button, click on the fixture to be moved. Move the cursor to the new position and click again to drop the fixture in place. The fixture must now be given a name, since it loses its Fixture name when moved. It does, however, retain all of its previous cue data.

The LDS automatically sends an update to each bar computer that has a changed fixture on it. Updates are sent individually; each time a new bar is modified, the last bar with a changed fixture is updated. When the *FIXTURE TYPE* window is closed, the final bar is updated. This has the effect of holding up the process of moving fixtures around whilst the updates are sent, especially if there is a lot of cue information.

Changing Fixture Types

It is possible to change an existing fixture to a new fixture type at any stage by simply selecting a new type from the list and clicking on the symbol. All fixture data is copied to the new fixture where possible (pan and tilt values are converted to allow for the respective ranges of each fixture type). When converting a fixture to a type with more channels, undefined channels become 0. Fixtures must be renamed after changing type.

Controlling scrollers

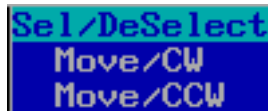
If you are controlling scrollers via the DMX output of the SB24 or SB96, rather than PanCommand colorchangers via the CC output,

you need two Dimmer symbols, one for the scroller channel and one for the dimmer controlling the fixture behind it.

Faderbeams For details of configuring a rig that includes Faderbeams, see Appendix F.

2.7 Move / Rotate

Having placed your fixtures on the screen, it is possible to move them or rotate them to indicate their physical position on the rig more accurately, vertically on a boom or drawn upside down to reflect FOH positions, for example. Click on the `{move/rotate}` option to reveal the sub-menu in the top right-hand corner.



Using the left-arrow button above the trackball click on the fixture or fixtures you wish to move - the symbol will turn green (dark green if you select more than one). Then click on `{move/cw}` and move the cursor to the new position, bearing in mind that the cursor will be treated as the top left-hand corner of the new position. Clicking again on the left-hand button will move the selected fixtures to the new cursor position. Alternatively, keep the left hand button depressed and use the trackball to drag the symbol(s) to their new position, releasing the button when in the correct place. Clicking the centre button will rotate the selected fixtures clockwise around the top left corner of the first fixture selected, ie. the whole bar will rotate. Clicking the right-hand button will deselect them. `{Move/ccw}` works in exactly the same way, but with fixtures rotating counter-clockwise.

2.8 Resize screen

It is sometimes useful to be able to make your plot drawing bigger (if only a few fixtures are in use) or smaller (if a large number of fixtures won't all fit on the screen). Clicking on `{Resize screen}` will reveal the sub-menu:



Making the display smaller

Clicking on `{Shrink bars}` will produce a red outline on the screen and reveal a further menu in the top right-hand corner:



Moving the cursor and clicking the left-hand button, or holding the button while moving the cursor, will alter the size of the red box – this denotes the size to shrink to. The LDS will redraw your plot to the new size when [ENTER] is pressed.

Making the display larger

Clicking on {Expand bars} will also produce the red outline and another sub-menu:



The left-hand button works as before, and the centre button shifts the red box around in combination with the cursor. After moving the red box to enclose your plot, pressing [ENTER] will expand it to fill the screen. Leaving any part of the plot outside the red line will prevent the LDS from expanding the display at all. Similarly if the rig is large and there is no room to expand it, it will not be expanded.

2.9 Bar addresses

In order to identify each CD or SB box, they are given an ADDRESS CODE, determined by the rotary switches on each box. CD6 boxes can have addresses from 501-599, SB24's from 601-699 and SB96's from 701-799.

Each CD6 can control up to six fixtures, and each fixture is given a number between 1 and 6 using the rotary switches on the fixture itself. Fixtures controlled via an SB box derive their numbers from 1-24 or 1-96 depending on which analogue channel of the SB box they are driven from, or from their DMX 512 address.

Thus each fixture on the rig has a five figure address code, eg 501.04 or 603.21. The LDS needs this address code to control the fixtures; to give it this information, click on the {bar addresses} option to reveal the sub-menu:



Clicking on any of the {Edit} options reveals a further menu and an *Assign Thumwhls* box:

NEW SCREEN GRAB

The {Set Thmwhls / Positions} option allows you to change individual fixture addresses, while the {Change Bar Thmwhls} option will change the addresses of all the fixtures on a CD or SB box in one operation.

In either case, the procedure is to enter the required address in the *Assign Thumwhls* box by simply typing them in on the keypad and then clicking on the relevant fixture using the trackball. The LDS will automatically prompt with the next available number, but you can type in whatever numbers you want. The LDS will not allow you to allocate the same address to more than one fixture.

2.10 Fixture names

Rather than having to call each fixture by its bar address, it is given a *FIXTURE NAME*, which can be any number between 1 and 9999.

For large rigs, alpha-numeric names can be used to good effect to save time and make life easier - see section 4.9.

This name is then used in the same way as a conventional channel number. The *FIXTURE NAMES* screen, accessed by clicking on the menu option, works rather like a conventional soft patch.



The screen operates in a similar way to the bar addresses screen – type a number and then click on the fixture you want to give that number to. The system will automatically display the next number, so all you have to do is move around the screen clicking on fixtures in the desired order.

Name problems

The system will prompt with 0 as the first number – this is not a valid fixture name.

It is possible to assign the same number to more than one fixture - the console will not give you any warning if you do this.

Displaying names

Having assigned fixture names, the display can be toggled between showing fixture names and symbols by pressing any of the menu buttons (except [DIAG]).

2.11 Peek zoom

On large rigs, the symbols can get so small it is impossible to read numbers and addresses. The {peek/zoom} option can be used to momentarily enlarge sections of the plot so that this information can be seen.

Clicking on the {menu} option reveals the sub-menu in the top right-hand corner. You can then select fixtures using the cursor and left-arrow key, as before. Selecting either of the display options will then enlarge the selected fixtures. The LDS will attempt to make the fixtures as large as possible while still fitting them on the screen, so the fewer fixtures you select the larger they will be.

2.12 Redraw screen

In the process of moving and deleting symbols or zooming and resizing the plot screen, unwanted scraps of symbols can be left behind. Clicking on the {redraw screen} option under the PLOT menu will re-generate the screen correctly.

2.13 Updating

Now that you have given the LDS the information it needs to control the fixtures on the rig, it is necessary to update both the CD6's and SB's with the details of the fixtures they control. Click on {UPDATE} on the main screen PLOT menu (or press the [UPDATE] button, in the top row of buttons above the trackball) to reveal the sub-menu:



Complete update

At this stage, since you have only just told the LDS about the rig, you need to perform a complete update on the whole rig by selecting {Complete Update}. The symbols on the display should turn purple, then yellow, then return to their normal state.

Partial update

It is also possible to select individual CD or SB boxes using the {Select Bars/Update} option and then clicking on any fixture connected to the appropriate CD or SB box using the left-button. Pressing the centre button initiates the update procedure, and the symbols should turn purple, then yellow before returning to their normal state.

Update error

If, instead of returning to their normal state, fixtures turn red, the system has been unable to find the CD or SB box. You should check that the physical connection to the box is intact, and that the box has the correct address before re-attempting the update.

Updating practice

You will need to perform an update on the bar computers whenever:

1. Bar addresses or fixture names are changed from the plot screen.
2. A bar computer is swapped out of the rig.
3. The LDS has been programmed whilst the bar computers are turned off or are off-line.

Although the bar computers have an internal battery to keep the memory intact, it is recommended that you initiate the AUTO DIAGS facility, by pressing the [SHIFT] + [DIAGS] keys together, every time you power the system up. This automatically clears error counters, updates the bar computers and sends a restore across the whole rig.(see section 5).

2.14 Killing and awakening

There are times when it may become necessary to shut down or KILL a fixture from the board, usually if the fixture is no longer responding correctly to cue information.

Killing a fixture

To do this, select the {Kill} screen from the plot screen menu with the left button or by pressing the [KILL] button, to reveal the KILL menu:



To kill a fixture, simply type in its fixture name and press [ENTER], or use the trackball to move to its symbol then click the left button. The symbol will turn red to indicate the fixture has been killed.

Awakening a fixture

To awaken a fixture, move the highlight down to the awaken option and enter the fixture name as before. Alternatively, use the trackball and left button to select a red symbol.

Restore

When awakened, a fixture will recalibrate, but sit with all its channel values at zero until a RESTORE command is sent. Pressing [RESTORE] will enable all its channels immediately and the fixture will take up its plotted values. This may cause the fixture to sweep across the existing state to get to its correct position, so you should consider this before using the [RESTORE] key during performance.

Warning

The RESTORE command is global – you cannot selectively send restore commands to individual fixtures.

The alternative way to re-start a fixture after awakening it is to press [SHIFT]+[RESTORE] together; this will delay the restore action until the next GO TO CUE command.

2.15 Trackball Orientation

This feature allows the operator to redefine the orientation of the trackball for each moving fixture. By rotating the axes of the trackball, lights that are hung in different orientations can be trackballed together to create the same general movement.

Trackball Editor

To enter the TRACKBALL EDITOR, select the {Focus Settings} option from the CONFIG menu. Click on the box labelled {Trackball Orientation Editor} to reveal the screen:

(new screen grab)

Using the arrow buttons, move around the screen selecting which of the four possible configurations are appropriate for each fixture. Press the [CONFIRM] button after each fixture before moving on to the next. To move to another fixture, either use the [PAGE FORWARD] button or type the fixture name and press [ENTER].

This package only offers four different orientation options at the moment. This is not sufficient to cope with floor-mounted fixtures. It is hoped that future software revisions will offer the remaining four possibilities. In addition, changing the orientation of a fixture only affects its movement when controlled by the trackball. Movement controlled using the encoder wheels remains unaffected.

Note

Because of the different ranges on Pan and Tilt, large movements along different axes will not track each other very well.

Section 3

Basic Control and Plotting

The Cue Edit screen
Controlling fixtures
Recording cues
Timeblock window
Cue playback
Designs
Autogroups
Plotting with faders
Design presets
Copying cues
Deleting cues
Focus positions
Recording blind
Linking cues
Stage picture
Disk functions

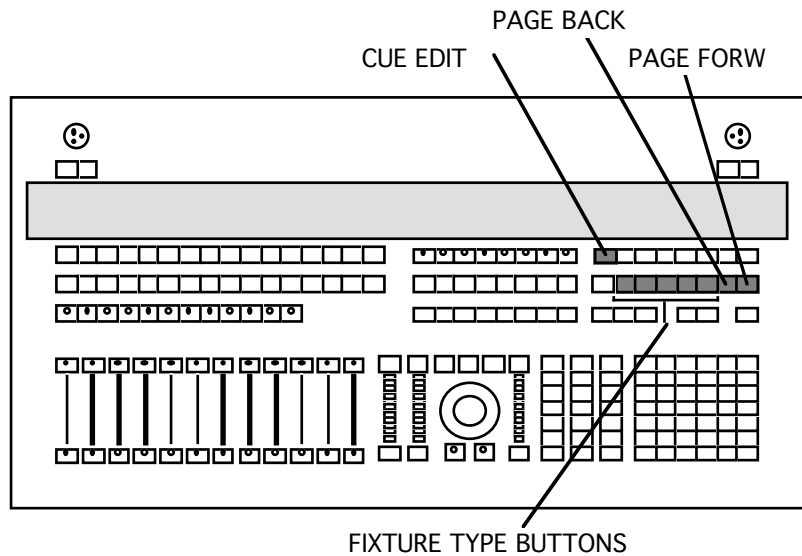
Basic Control and Plotting

Philosophy	The LDS is a moving light controller and so is aware of the various parameters associated with the different moving fixtures it can control - eg. colour, size, brightness, gobo and so on. The LDS refers to these parameters as CHANNELS. The graphical display allows fixtures, and their associated channels, to be accessed quickly.
Channels	The LDS operates a “grabbing” system with regard to making changes to any channel of a fixture. When a channel is manually altered, it will be grabbed and held at its new level, regardless of any cues being played, until it is specifically released using the [CLEAR] key. This is a useful plotting tool, but can cause some confusion if you are not used to the system. It is covered in section 3.1.
Cues	Unlike some other moving light control systems, the LDS does not make use of a stack playback philosophy. Cues do not have to be created and then loaded to an output stack to appear on the stage. Instead, a cue can be made live by selecting its numbers and running the cue to a pre-recorded time. They can also be made live using submasters and cue buttons. Cues are covered in section 3.3.
Fade times	Cues can also be given different fade and delay times for different channels so that, for example, a lamp could fade out slowly and then change colour quickly in one cue, rather than either having the fade and colour change happen together, or having to use two cues. This is covered in section 3.4.
Chases	Special cues, called MQs, are available. These are used to create chase type effects, but any MQ can then be applied to any channel of any fixture. A small number of chase effects can therefore be made to serve a wide variety of different purposes. MQ's are covered in section 4.2.
Focus libraries	The LDS system allows the creation of a library of focus positions. These carry Pan and Tilt information for fixtures recorded into them, and are used as the basis of cues and MQs. Whenever a focus position is altered, it is altered throughout the system in any cue or chase in which it is used. In practice, only a small number of focus positions are used even in the largest shows. This is useful for shows requiring regular changes of focus, such as shows adapting themselves to different-sized venues on tour. Focus positions are covered in section 3.13.

A wide variety of other plotting aids, including the ability to define focus libraries, the inclusion of a library of chases, and the capability of tracking channels into sequences of cues are also available and are covered in detail in this section and section 4.

The following sections all refer to the operation of ProSpots. ProSofts, dimmers, Colorfaders and ProBlasters all work in exactly the same way, but with fewer controllable features. For details of Faderbeams, see Appendix F.

3.1 The Cue Edit screen



Having configured the system with your rig, press the [CUE EDIT] button to move to the next screen display.

[NEW SCREEN GRAB TO COME]

	1	2	3	4	5	6
LEVEL	0	0	0	0	0	0
SIZE	0	0	0	0	0	0
POS	QF	QF	QF	QF	QF	QF
COLOR	0	0	0	0	0	0
GOBO	0	0	0	0	0	0
ROTATE	0	0	0	0	0	0
FRAME	0	0	0	0	0	0

DESIGN: 1	LINKTO	LEV	SIZ	POS	COL	GOB	SCR
CUE: 0	LINKTIM	0.0	0.0	0.0	0.0	0.0	0.0
NEXT: 1	ENCODE	0.0	0.0	0.0	0.0	0.0	0.0
BACK: 0	LOOPCNT	1.0	1.0	3.0	1.0	1.0	1.0
		MQ VAR	0	0	100	0	0

You can now start to control your rig, record cues and assign times. The LDS will display the fixtures you have configured on the cue edit screen in alphanumeric order according to their fixture name. Fixtures of different types will be separated onto different pages which can be accessed using the [PAGE FORW] and [PAGE BACK] buttons, or by using the fixture type buttons ([PROSPOT], [PAR] and so on). Each page will hold 20 ProSpots, 30 ProSofts or Faderbeams, 50 colour changers or 60 dimmers.

Display colours

Several colours are used to display fixture channel levels and other information on this screen. They are as follows:

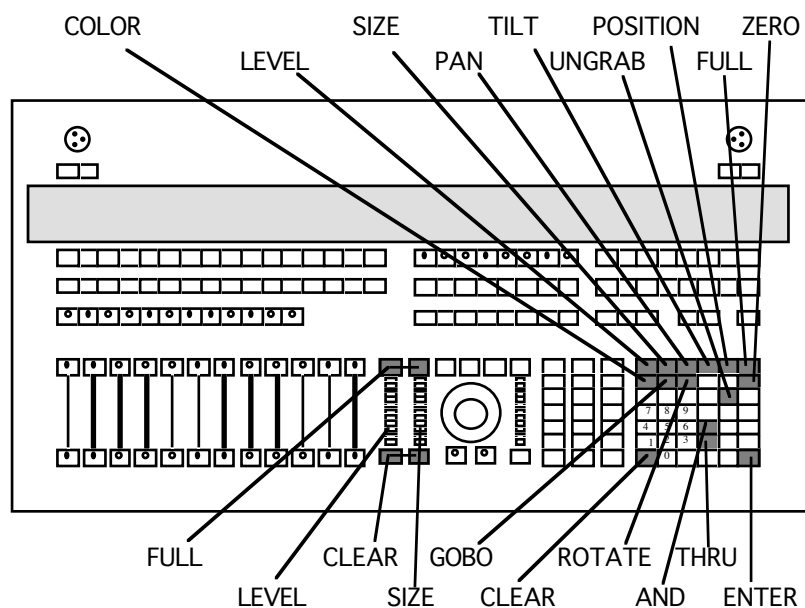
Grey Box

This channel of the fixture is LIVE, ie. it has been altered and not released. Pressing [CLEAR] twice will release all live features. A

live channel shown in grey in this way will not be altered by any cues until it is released.

Blue Box	This level is currently affected by fader levels. - ie. it is being controlled by the console's manual fader wing.
Red Figures	This fixture channel is running an MQ – see section 4.2.
Yellow Figures	These are fixture names.
Cyan Figures	These are values from the current cue.
White Figures	This fixture is currently held in the CONTROL BUFFER – this is covered in the next section.

3.2 Controlling fixtures



The first step in programming on the LDS is to select the fixture or fixtures you want to work with. This is done by keying in the fixture name and pressing [ENTER], whereupon the fixture name will be highlighted, and will remain 'grabbed' until you press [CLEAR]. This means you have direct control of that fixture.

More than one fixture can be grabbed using [AND] or [THRU] or a combination of both such as

```
1 [AND] 2 [AND] 5 [THRU] 1 0 [ENTER]
```

The cursor arrows can also be used. For example,

```
1 [AND] [UPARROW] [UPARROW] [AND] [UPARROW]
[UPARROW] [AND] [UPARROW] [UPARROW] [ENTER]
```

would grab the odd numbers 1,3,5 and 7, while

```
1 [AND] 11 [ENTER]
```

would only grab 1 and 11.

Note that the cursor arrows refer to the graphical layout of the Cue Edit screen, not numerical order.

For fast ways of grabbing fixtures, see section 3.7 on Autogroups or section 4.3 on Macros.

Having grabbed control of a fixture, its channels can be controlled directly using the encoder wheels and trackball.

- Level** Set a level by moving the (LEVEL) encoder wheel up or down, which will step the level through a range from 0-100 in single point increments. Alternatively the [FULL] and [CLEAR] buttons above and below the wheel can be used, or a specific level can be chosen by entering
[LEVEL] number [ENTER]
which will send the fixture directly to the specified level.
- Size** Adjust the beam size by moving the (SIZE) encoder wheel up or down, which will step the size through a range from 0-100 in single point increments. Alternatively the [FULL] and [CLEAR] buttons above and below the wheel can be used, or a specific size can be chosen by entering
[SIZE] number [ENTER]
which will send the fixture directly to the specified size.
- Position** The position of the beam on the stage is adjusted using the trackball. It is easier to position beams if all the fixtures are rigged the same way around so that they all travel in the same direction when you move the trackball. Alternatively use the TRACKBALL ORIENTATION EDITOR to alter the direction that fixtures move for a given trackball movement – this is covered in section 2.5. If you wish to change this, you must change it before you start plotting.
- The LDS will automatically send all of the fixtures to position 0 (50% pan, 50% tilt - the HOME position) when you configure the system. When you move a fixture, its position will be displayed as *QF* until the new position is recorded as a focus position (see section 3.13). Once some focus positions have been plotted, the fixtures can be moved to a given position by pressing
[POSITION] number [ENTER]
The LDS will display that position number (between 0 and 200) on the cue screen.
- Separate Pan and Tilt** If required, the Pan and Tilt of a fixture can be altered individually, by pressing either [PAN] or [TILT], and entering a number from 0-100, or using the (SELECT) encoder wheel. The position window will then show *QF*, rather than the value. To see absolute values for Pan and Tilt, use the Focus Editor, described in section 4.1.
- Colour** The colour of beams is adjusted by pressing [COLOR] and moving the (SELECT) wheel, which moves in increments of 4 points in a range from 0-200; holding the [SHIFT] button down at the same time allows single-point adjustment. The [FULL] and [CLEAR] buttons above and below this wheel step the colour up or down in 10-point increments, this option being designed for the 10 fixed colour option available in America. Colours can be accessed directly by pressing
[COLOR] number [ENTER].
- Appendix B contains details of the pre-programmed colour library.
- Gobo** Gobos are chosen by pressing [GOBO] and moving the (SELECT) wheel from 0 - 100. The [FULL] and [CLEAR] buttons above and below this wheel step the gobo up or down in 10-point increments, which causes a change from gobo to gobo. Gobos can be accessed directly by pressing

[GOBO] number [ENTER]

Rotate The Rotate option only affects ProSpots which have had the rotating gobo option installed.

Pressing the [ROTATE] button allows control via the (SELECT) wheel:

0 = full speed clockwise
 50 = stop
 100 = full speed anti-clockwise
 [FULL] = flips direction, same speed
 [CLEAR] = 0, ie. full speed clockwise

The wheel works in 4-point increments, but holding down the [SHIFT] button allows single-point adjustment if desired.

Scroll/Frame This control activates the single-shot frost or colour frame in the ProSpot. This frame is either in or out – it cannot fade. It is operated by pressing [SCROLL] and either moving the (SELECT) wheel or pressing [FULL]. Any value above zero will bring the frame into the beam.

MGobo This is a feature of PC Spots only – these are not currently available in the UK.

Other control methods Any of the functions above can also be controlled via the grey [FULL] and [CLEAR] buttons in the keypad area of the board. The black [FULL] and [CLEAR] buttons above and below each encoder wheel will also function without fully grabbing the fixture, for example:

1 [AND] 2 [FULL]
 instead of
 1 [AND] 2 [ENTER] [FULL]

Live channels Position and function values are held in the live box (shown by a grey highlight) until you clear them. As you build up looks, any fixture channels you have altered will be displayed in this grey highlighted box, while the fixture(s) currently grabbed will have its fixture name highlighted in blue. Pressing [CLEAR] once will ungrab the current fixture(s), leaving the channels set, but pressing [CLEAR] a second time will release all the grey highlights and the fixtures will return to the current cue state or the home position if there is no cue in the playback.

Freezing and Releasing individual channels

It is possible to ‘freeze’ fixture channel values, either singly or in groups, by grabbing the fixture(s) and pressing [SHIFT] and the appropriate channel button. This puts the channel’s value into a grey highlight box, thus holding that value during other operations.

As usual, this grey highlight will be released by pressing the [CLEAR] button twice, but it can be selectively released from individual channels of individual fixtures by grabbing the fixture(s) and, while pressing [UNGRAB], also pressing the required channel selection button such as [COLOR] or [LEVEL]. The grey highlight will then disappear and the fixture(s) will return to the previously plotted value.

Control Buffer The last fixture name to be grabbed is held in a ‘control buffer’. This fixture name is shown in white for easy reference. This is done to

save time – it is not necessary to re-enter this fixture name in order to grab it. For example, if fixture 11 is currently shown in white, then only

[THRU] 14 [ENTER]

is necessary to grab those four fixtures.

3.3 Recording cues

Because the LDS does not retain cue information on switch-off, cues should be stored to disk at regular intervals during plotting sessions to minimise the loss of work in the event of system failure. See section 3.17 for details of how to record shows to disk.

Having built up a state on stage using the functions described in the previous section, you will want to record it as a cue for later playback.

Press [RECORD ALL] to bring up the box:



Select the cue number you wish to use and press [ENTER]. Cue numbers can be whole numbers (cue 9, for example) or whole numbers plus one decimal place (cues 9.1 to 9.9, for example). If the cue you have selected has already been recorded, the cue number will flash as a warning. You can then press [CONFIRM] if you are sure you want to overwrite that cue, or [ESCAPE] to cancel the operation. If the cue is being recorded for the first time, the TIMEBLOCK window will appear to allow times to be set for the cue. This is explained in more detail in section 3.4, but to use default times, simply press [CONFIRM] again. The window will disappear and your cue will have been recorded.

If you are already in a cue, the RECORD ALL window will prompt with the number of the CURRENT cue.

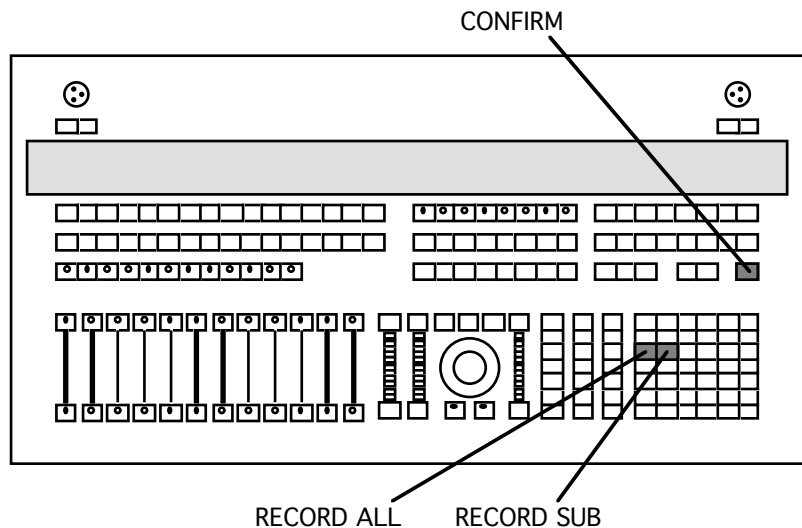
Plotting note

It is very important to make notes of the cues you have recorded, what they contain and their times as you go since there is no cue sheet display on the LDS system as yet, and there is little warning if you try to record over an existing cue.

Recording a cue does not clear the 'live' box; this allows you to sequentially build cues as you go.

The RECORD ALL function records the entire current screen status of ALL fixture channels – a snapshot cue. There are more selective and more elaborate ways of recording cues and these are described below.

3.4 Record sub



Whereas the [RECORD ALL] button is used to create ‘allfade’ or ‘crossfade’ type cues (where each cue is a “snapshot” of the output at the time [RECORD ALL] was pressed), the LDS can also create ‘move’ fades. ie. cues where only the fixtures or fixture channels which are affected by a cue are recorded in that cue.

RECORD SUBLOOK is used to create a move fade which only records those fixtures currently grabbed at the time of recording. It will, however, record all the channel values of those fixtures.

Recording a move cue

First grab the desired fixtures and then press [RECORD SUB] to display the box:

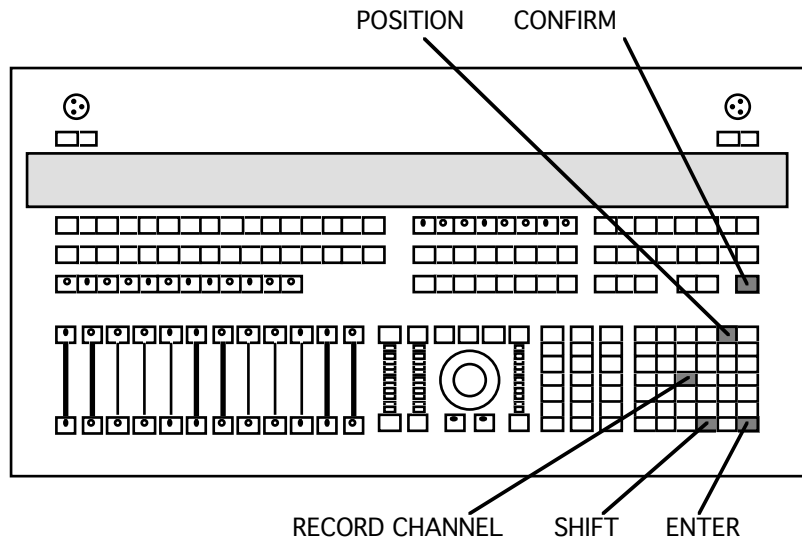


If you are working from an existing cue, the system will prompt with the current cue number in the highlighted box – press [CONFIRM] to record as this number, or type in another number as required then press [ENTER]. If the cue you have selected already exists, the cue number will flash as a warning. Press [CONFIRM] if you are sure you want to use that number, or [ESCAPE] to cancel.

The CUE EDIT screen only displays the information recorded in cues, so when using Sublook cues, use STAGE PICTURE (section 3.16) to see the active channel values of other fixtures.

TAKE CARE when replotting shows to re-record snapshot cues using [RECORD ALL] and sublook cues using [RECORD SUB]. Whilst it does not affect a snapshot cue to be re-recorded as a sublook cue (the cue already contains information for every feature of every unit), a sublook cue will behave very differently when re-recorded as a snapshot cue. To be completely safe, it is best to use [REC CHANNEL] whenever re-plotting existing cues - see next section.

3.5 Record channel



[RECORD CHANNEL] is used to create cues that only change certain channel values of particular fixtures. Channels that are not recorded in a CHANNEL cue stay at the values they were at before the CHANNEL cue was executed.

Make sure that the desired channels are held in the grey highlight and then press [RECORD CHANNEL] to reveal the box:



Type in the cue number you wish to use (the system will prompt with the existing cue number). If the cue you have selected already exists, the cue number will flash as a warning. Press [CONFIRM] if you are sure you want to use that number, or [ESCAPE] to cancel. As with Sublook cues, the cue edit screen will only display channel values affected by the cue – use STAGE PICTURE (section 3.16) to see the other channel values.

3.6 Timeblock window

The TIMEBLOCK window is used for allocating times to the cues you record. The different channels of the fixtures can all be given individual times and delay times, allowing multi-part cues to be constructed within one cue.

When recording a cue for the first time, this window will automatically appear, but it can be accessed at any time by pressing [CUE TIME].

CUE TIME EDITOR					
DESIGN	1	CUE	0	PROFILE UP	1
				PROFILE DOWN	1
MIDI					
	ALL	DELAY	FADE	MQTIME	MQ VAR
	LEV DOWN	0	0	100	0
LINKTO		LEV	SIZ	POS	COL
LINKTIM	****				
ENCODE	100			300	
LOOPCNT	****			100	
					GOB
					SCR

To enter values into the timeblock, move around the windows using the cursor arrows, and use the keypad to enter values as follows:

Design and Cue Number	This displays the design and cue number of the cue whose timeblock is being set (for more on Designs, see section 3.6). Initially, this will be the current design and cue, but you can access the timeblock for any cue in any design simply by moving the cursor to these windows and entering the relevant numbers. Alternatively, pressing [SHIFT] and the left or right cursor arrows will step through the cue numbers.
Profile Up and Profile Down	This allows you to determine the degree of ramping up and ramping down of a fixture's velocity during a position change. The feature only affects the POSITION feature. Separate fields allow values from 0 to 5 for both "profile up" and "profile down". A value of zero gives no ramping, although there is always a little ramping down which has been implemented to avoid overshoot. A value of 5 means that the fixtures will spend a great deal of the position fade ramping. This greatly improves the quality of movement within the system.
MIDI	This window is for MIDI command strings to be sent out by the system on a particular cue. As yet we have been unable to verify the operation of this feature.
The "ALL" Line	There are four windows on this line. These will initially show the default values, but you can change them as required. All the individual channels will use these times UNLESS a different value is entered for that feature in one of the lower windows.
Lev Down windows	The software does not yet support this feature, but it is intended that future revisions will allow for the LEVEL channel to have split times. Until then it is a simple matter to separate the different elements into different point cues and then link with no delay time.
Linkto	<p>This window is used to denote the cue number of the cue being linked to. The system assumes any link is to the next cue in numerical order, so you only need to enter a number here if you are linking to a cue out of sequence.</p> <p>The LDS can only link from a whole-number cue to any of the nine point cues associated with it, or between those point cues. Links cannot cross the ordinal boundaries – you cannot link from 15.8 to 16.2, for example. See section 3.17.</p>
Linktim	<p>This window specifies the time taken before the link happens, ie. the "wait" time. The window initially displays ***, (ie. infinity), and the required time can be entered in tenths of a second. A time of ten will cause a 1 second delay between the start of the main cue and the start of the linked cue, for example.</p> <p>Any plotted linktime can be removed using the [DELETE] button. This will stop the link and return the linked cue to being a separately triggered cue.</p>
Encode	When playing back cues, this denotes the percentage rate at which links will be executed, ie. a rate of 100 will keep the link as plotted. Rates over 100 will increase the link time and rates under 100 will decrease the link time. The rate is varied by holding down the [FREEZE TIMES] button and moving the (SELECT) wheel. This only affects the current link; the ENCODE value is reset to 100 whenever the [GO] or [ADVANCE] buttons are pressed.
Loopcnt	This window is used to control loops created by linking cues. If a loop is created, this window is used to specify a number of times the

loop will be performed. You can either enter a finite number or leave the control set to **** (infinity) for continuous looping.

You should only enter a loopcnt in the last cue of a sequence, and should always make it one less than the number of times you wish the loop to be performed.

Fade time This window allows you to enter fade times for each individual channel of the fixtures. Thus, for example, you could have the size changing quickly and the gobo changing more slowly. If no time is entered here, the channel will adopt the time entered in the ALL line. Times in these boxes are in tenths of a second.

You can move the cursor directly to the fade time box for a particular channel using the CHANNEL buttons, [POSITION], [COLOR] and so on.

Delay This line allows you to enter delay times for each individual channel, so that, for example, fixtures could delay the colour change until the level and position fades are complete. If no time is entered here, the channel will adopt whatever delay time appears in the ALL line. Delay times are in tenths of a second.

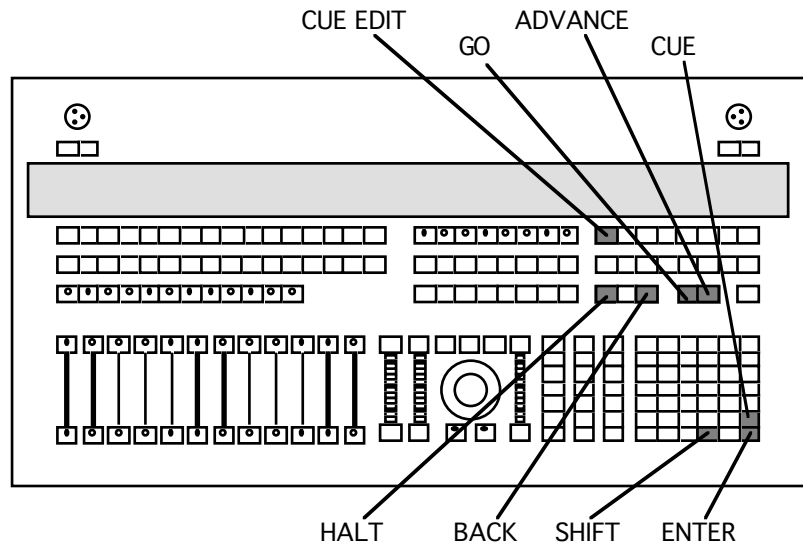
MQTIME and MQVAR These two lines control the speed of MQ's, which are described in section 4.2. Each channel can have a separate MQ and hence can have different times. The MQTIME is specified in hundredths of a second; the MQVAR is a percentage of the step time, or in the case of the library Position MQ's, the size of the MQ.

Recording times When values are entered in the Timeblock, they are shown in a grey highlight. When all the times are set, press [CONFIRM] to record them and lose the Timeblock window. If you wish to record the same settings for more than one cue, press [REC TRACK] while the values are still held in the grey highlight. The system then asks for the cues or range of cues to be given these values – only those held in the grey highlight will be recorded.

The maximum value that can be inserted in the Timeblock is 9999, ie. 999.9 seconds (or 99.99 seconds for MQs).

Active buttons In Timeblock mode the the [GO], [ADVANCE] and [CUE] buttons remain active. Cues can thus still be executed.

3.7 Cue playback



Having recorded a few cues, there are two basic ways of recalling them to the stage.

Jumping to cues

Entering [CUE] number [ENTER] from the keypad will play the chosen cue in the plotted time. This is also the way to play back memories out of sequence.

Playing cues in order

Alternatively, to play the cues in their plotted order, simply press the [GO] button. This will play the cue shown as NEXT in the cue status panel in the lower left-hand corner of the screen.

The time panel along the base of the Cue Edit screen has two modes. In the first, it displays the programmed times for the current cue, while in the second, it shows the current state of any fade in progress with timers counting down in tenths of seconds for all channels and links. Pressing [SHIFT]+[CUE EDIT] will toggle between the two modes.

The [PAUSE] button has no function with software version 16. Future software will provide the facility to pause the system, stopping cues and MQs at their current value.

Stopping links running

A cue can be prevented from running on into a link by pressing [HALT]. This is a latching button, and a red warning panel will appear on the screen when it is operational. When released, by pressing [HALT] again, any links will initiate.

Advancing through cues

The [ADVANCE] button works like the [GO] button, except that it ignores links. Pressing [ADVANCE] will trigger the next “unlinked” cue, whether a point-cue or a whole number cue. This is useful when plotting loops – the [ADVANCE] button will leave the loop and initiate the next cue.

Reversing cues

The [BACK] button will reverse the last GO or ADV command and return the system to the cue listed as LAST in the cue status panel (in its plotted time), whereupon it will initiate any links from that cue. This is not necessarily the previous cue in the cue list, but will be whatever cue you used last.

3.8 Designs

The LDS works on a basis of 40 designs. Each design can contain up to 999.1 cues from 0 to 999.9 (unless system memory limits are reached first), and carries a “patch” of fixtures to fader groups. Primarily intended for use on live shows, when a high level of hands-on operation is required, it can nevertheless be a useful tool, especially for larger shows. It is not necessary to plan ahead regarding the use of designs in your show as it is very straightforward to move cues between designs (see section 3.12) or even to copy whole designs. You may find that you only ever use one design, while other operators may prefer to use different designs for different scenes, or for different shows within the same repertoire.

Cue 0 Each Design has a cue 0. This is the stage picture to which the fixtures will go when a new Design is called up without specifying a cue in that design (see below). Cue 0 is special in that it is always a Snapshot Cue, but can otherwise be treated just like other cues. In particular it has a full Timeblock associated with it. If not changed, cue 0 will have the default values of all channels at 0 and all Pan/Tilts at 5.

Moving between designs

To move between designs, simply press
[DESIGN] number [ENTER]

The LDS will then go to cue 0 of the selected design (using whatever time is plotted in the timeblock for cue 0), the cue window will prompt with the first available cue and the faders will have control of fixtures according to the plotted Autogroups.

To go directly to a specific cue in another design, press
[DESIGN] number [CUE] number [ENTER]

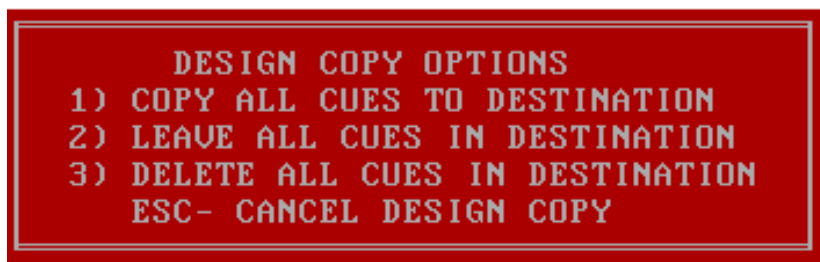
This will send the fixtures directly to the chosen cue, in whatever time is plotted for that cue.

Copying designs

To copy an existing design to another, press [COPY DESIGN]. This will reveal the box:



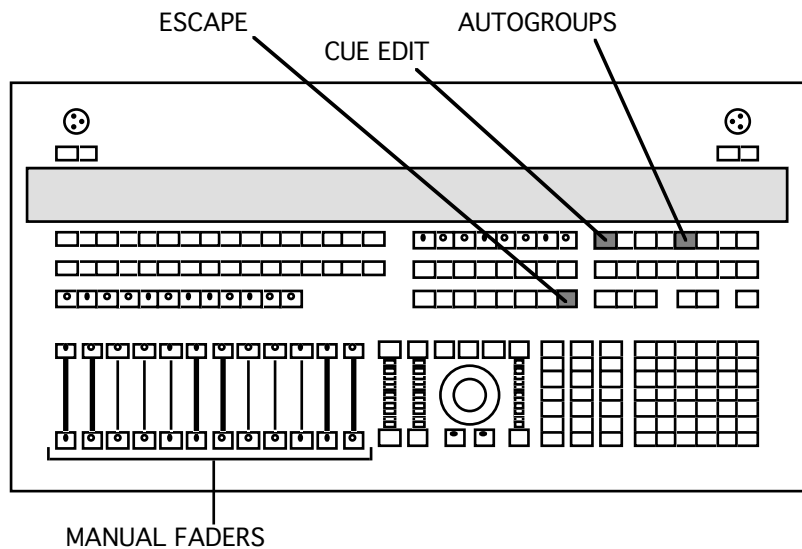
The system will prompt with the current design number in the first box, but this can be changed. Enter the desired numbers and press [ENTER]; this will reveal further options regarding the type of information to copy:



Option 1 will make the two designs identical, option 2 will simply copy the design preset to the new design but leave the existing cues, while option 3 will delete any existing cues so you can start from scratch.

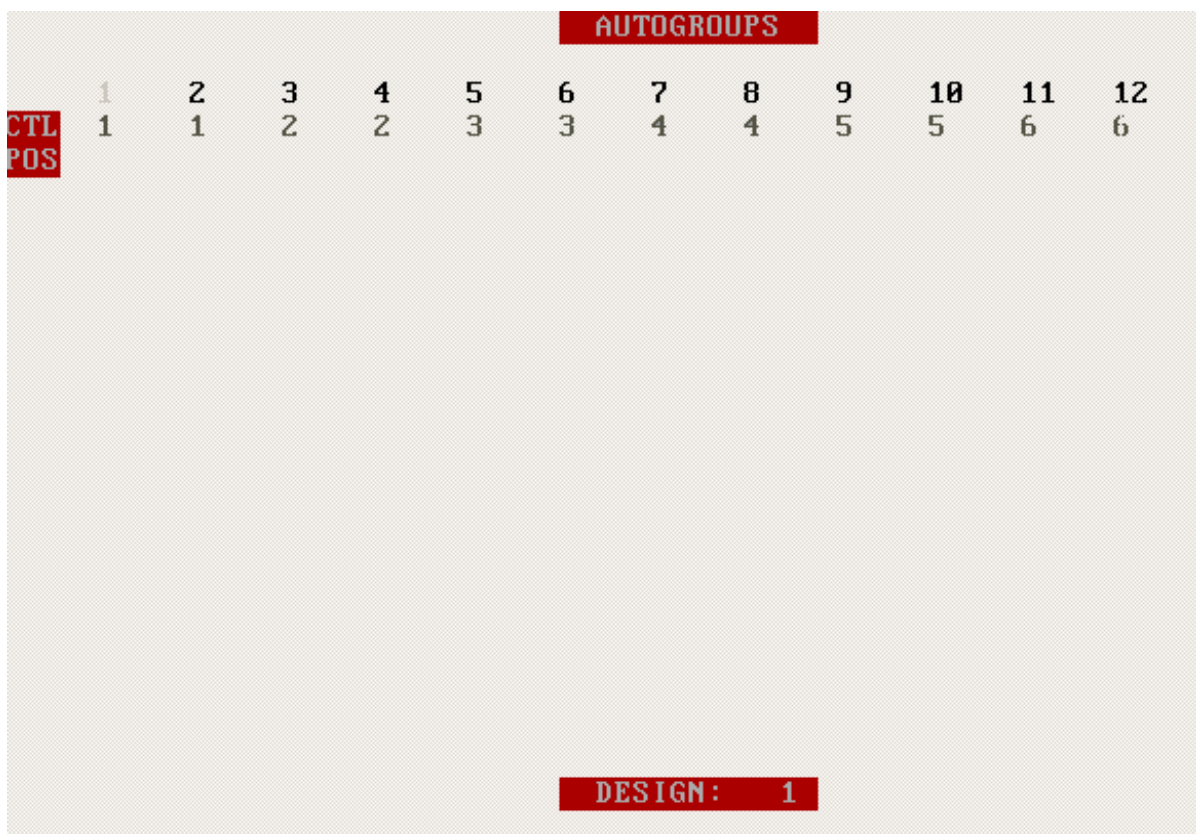
MQ's, colour library and focus positions are universal through all 40 designs.

3.9 Autogroups



Each design allows for a different assignment or patch of fixtures to the twelve fader groups, controlled by the twelve manual faders on the lower left-hand side of the LDS board. These are particularly useful when operating live shows, but also provide a fast method of grabbing fixtures and plotting levels for any show.

Press the [AUTOGROUPS] button to access this screen:

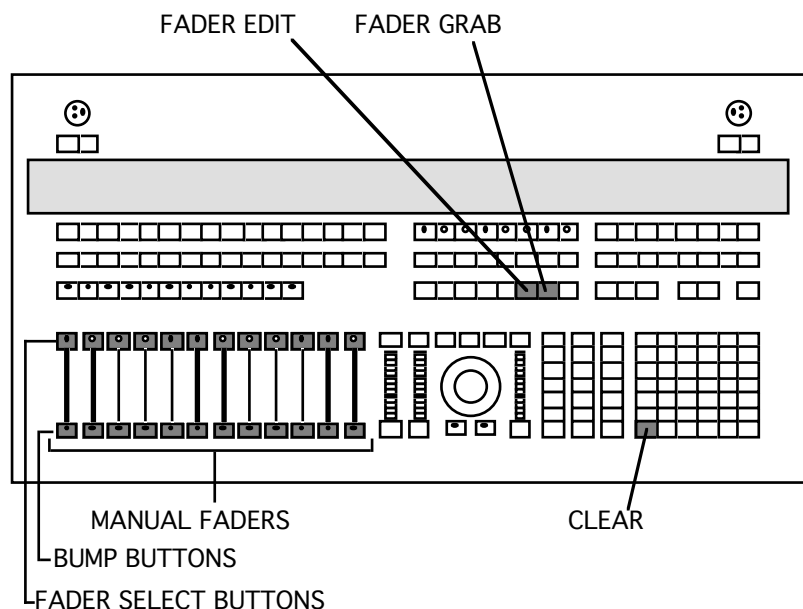


The fixtures you have configured will appear, with spaces for CTL (the fader number) and POS (the focus position) below each, on different pages according to type. Use the cursor arrows to move around the screen, inserting values as follows:

- CTL** This is the fader number, from 1-12, which you wish to use to control that fixture. Any number of fixtures can be controlled by one fader, but each fixture can only be controlled by one fader. For example, you might wish to make a fader control a whole bar of fixtures, or every fixture of a particular type, or have each fader control a single fixture.
- POS** This is the focus position number for that fixture in the preset for the design number displayed at the bottom of the screen, ie. the position the fixture will go to when you select that design (the preset levels for the other channels of the fixtures are set via the Quick Screen, described in section 3.9). If no number is assigned, it will go to focus position 0, ie. the home position.

To exit the Autogroup screen, simply press [ESCAPE] or [CUE EDIT].

3.10 Plotting with faders



Having assigned fixtures to the fader groups as described in section 3.7, the manual faders can now be used to speed up the plotting process, by working with the fader groups as single units.

Pressing the [FADER SELECT] button above any fader will grab the fixtures on that fader. Their names will be highlighted in blue, the LED above that fader will illuminate, and you can then control them using the encoder wheels or trackball just as if you had grabbed them in the usual way using the keypad.

The fader itself can be used to control the level of these fixtures (even without the [FADER SELECT] button being pressed), allowing groups of fixtures to be mixed without having to continually grab and ungrab the groups. The levels of fixtures are shown in blue highlight on the cue edit screen if a fader level is taking precedence over cue level.

The fader select buttons are latching – they must be pressed a second time, or [CLEAR] must be pressed, to ungrab the fixtures.

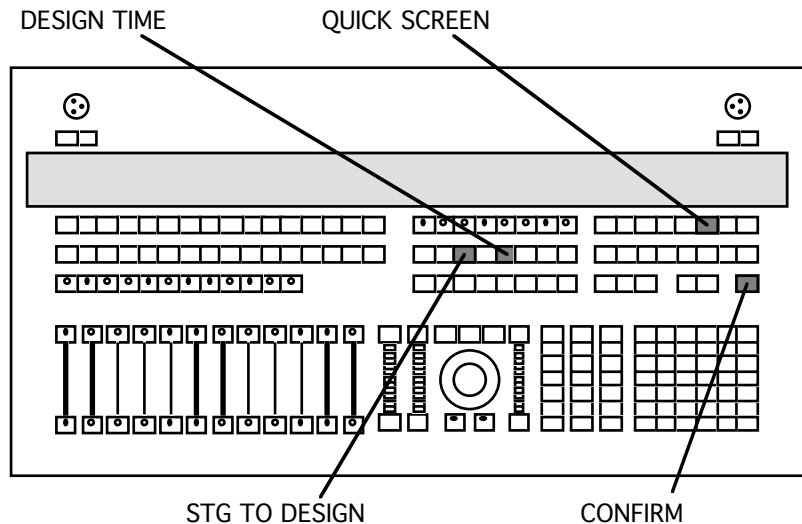
There are also bump buttons below each fader for manually flashing the fader groups.

FADER GRAB button When plotting using the manual faders, this [FADER GRAB] button will grab all fixtures in fader groups whose fader levels are up (ie. above zero). Their channel values can then be changed in the usual way.

FADER EDIT button Pressing [FADER EDIT] will bring up a red *EDIT* warning in the bottom left-hand corner of the screen to indicate that the system is in FADER EDIT mode. Existing fixture levels can then be altered using their manual faders: slowly raise the level of a manual fader until the blue highlight appears on the level display for those fixtures. You now have control on the fader, and can increase or decrease the level as required. This process can be repeated as many times for as many faders as required. The cue can then be re-recorded with these new levels.

You continue to have manual control until you press [FADER EDIT] again. The red *EDIT* warning will disappear and the levels of the fixtures will revert to their plotted level.

3.11 Design presets – Quick Screen



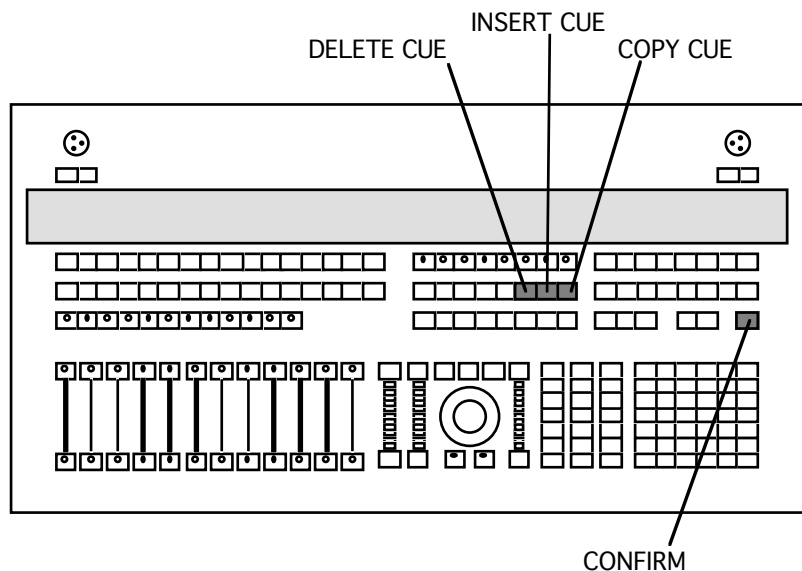
There are two ways to record the preset for a particular design. The first is to create the desired look on stage and then press [STG TO DESIGN] to record it as a design preset. Alternatively, to record a preset blind, the appropriate focus positions are set via the AUTOGROUPS screen (see section 3.7 above) while the remaining fixture channels are given values via the QUICK SCREEN, which is only available if you have not used [STG TO DESIGN] for that preset.

CTL	SIZE	COLOR	GOBO	ROTATE	MGOBO	SCROLL
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	0	0	0	0	0	0
6	0	0	0	0	0	0

This will only work when fader groups have been assigned using the AUTOGROUPS screen, and only for those fixtures assigned to faders. Fixture channel values are set for the fader, not the individual fixtures. Move the cursor around the screen setting values for the various channels; the changes will apply to that channel of every fixture assigned to that fader. Press [CONFIRM] to record when satisfied with the settings. To see the effect of your settings, go to the design and put the relevant faders up; changes in the quick screen can then be seen live on stage.

The design presets can all be given a fade time, which is altered via the DESIGN TIME screen, accessed by pressing the [DESIGN TIME] button. Move around the screen using the trackball in the usual fashion, entering the desired values.

3.12 Copying cues



To copy a cue or cues you have recorded to a different range of cues, copying all channel and time data, press [COPY CUE] to reveal:

COPY CUES			
DESIGN	1	CUE	THRU
		TO	
	DESIGN	1	CUE

Move around the box using the cursor arrows putting in the required values, then press [CONFIRM] when ready. To copy single cues, leave the THRU window empty.

Cues may be copied to any design, even to an overlapping region within the same design. The only destination ranges not allowed are those which would cause the copied cues to overlap the next whole cue number. For example, if you tried copying seven cues to a range starting at 3.8, the operation would not be allowed because seven cues can't fit between 3.8 and 4.0.

Cues that are copied over existing cues will always delete the existing cue information. The new cues will take the form of the source cue, ie. snapshot, sublook or channel cue, and extraneous data will be deleted. A warning occurs whenever there are cues that will be overwritten so that the operation can be cancelled.

Source cue ranges that have "holes" in them (ie. 1-1.9 where only 1, 1.3 and 1.5 exist) will cause the same holes to exist in the destination. In this example, if cues 2-2.9 exist and 1-1.9 are copied to 2, the result will be that cues 2.1, 2.2, 2.4 and 2.6-2.9 will be deleted. However, if the source range was specified as 1-1.5, only 2.1, 2.2 and 2.4 would be deleted and 2.6-2.9 would be left unchanged.

A warning occurs if there are no cues present in the source range specified; the console then takes no further action.

3.13 Deleting cues

You can delete cues from shows in three ways. All are accessed by pressing [DELETE CUE] to bring up:



- | | |
|----------------------------|--|
| 1. Delete snapshot cue | This deletes an entire cue or sequence of cues, leaving every other cue the same. |
| 2. Delete grabbed fixtures | This will delete all data for grabbed fixtures from a cue or sequence of cues, turning Snapshot cues into Sublook cues. Note that deleting all fixtures from a cue is not the same as deleting a cue because the timeblock will still exist. Only Delete Snapshot removes all evidence of a cue. |
| 3. Delete grabbed channels | This will delete any grabbed channels (ie. channels held in grey highlight) from a cue. This turns a Snapshot or Sublook cue into a channel cue. Deleting all the channels of a given fixture will remove that fixture from the cue, but again deleting all channels of all fixtures will not completely delete the cue. |

Once the type of Delete has been chosen, enter the relevant number to reveal a further box:



You can now enter a range of cues to delete, pressing [CONFIRM] when you have completed your selection. If the range includes a whole-number cue and that whole-number cue has point cues, you will be offered the chance to delete those point cues as well.

Note that deleting a fixture from a cue does not necessarily remove it from the Stage look, but maintains its channel data from the previous cue.

3.14 Focus positions

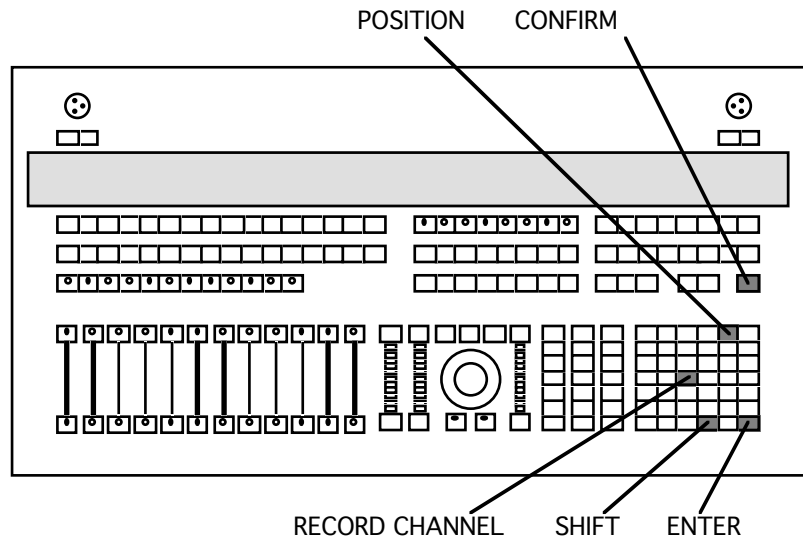
The LDS allows a library of 200 focus positions to be created and then used when creating cues. This feature allows positions to be created independently of cues, which is useful if:

1. a fixture is to be focused in the same place many times during a show
2. for checking the focus on a daily basis
3. for touring applications where set positions vary from date to date
4. when fixtures are changed over

When a focus position is changed, any cue or chase using that focus position will automatically use the modified version.

Creating focus positions

To create a focus position, simply select the fixtures you want included in that position and place them where they should be using the trackball. Then press [SHIFT]+[RECORD CHANNEL];



the system will prompt:



Enter the position number you wish to assign and then press [CONFIRM]. This will record the position, but none of the other channel values of the fixtures which are currently grabbed.

As with cues, remember to keep a written record of positions you store as there is no way of displaying this information on screen and it is very easy to write over existing focus positions.

Recalling focus positions

To recall a focus position, simply select a fixture or fixtures, press [POSITION] and the number of the position you require, then press [ENTER]. Different fixtures can be assigned to different focus positions within the same cue. Any fixture assigned to a focus position which doesn't contain stored information for that fixture will simply go to the home position. See New Focus Positions.

Retouching focus positions

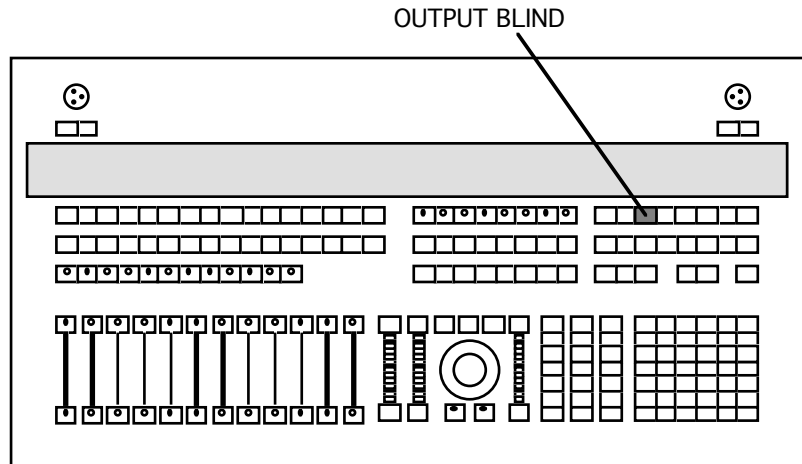
To retouch a focus position from the cue edit screen, simply move the fixture or fixtures to their new position and, while they are still grabbed, re-record the focus position as before. This will only change the stored position for grabbed fixtures; the focus position of all other fixtures will remain unchanged.

New focus areas

When creating looks on stage and recording cues, it is sometimes useful to be able to assign fixtures to focus positions which don't yet exist, postponing the sometimes lengthy process of creating these focus positions in order to make the best use of plotting time. Any fixture assigned to a focus position which doesn't exist, or doesn't include that fixture, will simply go to the home position.

To go back and find all the instances where fixtures are plotted in focus positions which don't exist, use the **{New Focus Areas}** command in the FOCUS menu - see section 4.1.

3.15 Recording blind



All the features of recording cues discussed so far can be performed in the BLIND screen, accessed by pressing [OUTPUT BLIND]. The BLIND screen works in the same way as the CUE EDIT screen – see section 3.1.

The [GO], [ADVANCE] and [CUE] buttons are all still active, so ‘live’ cues can still be executed whilst making changes in blind mode.

To exit blind mode, press [OUTPUT BLIND] again.

3.16 Linking cues

The LDS’ LINK function allows you to create multi-part cues or combine cues into sequences and loops. Each cue or part-cue has its own TIMEBLOCK window allowing individual delay times, while the links are given link times which cause the next cue or part-cue to start before, at, or after the end of the previous one.

The LDS can only link cues which have the same whole number suffix, ie. it can only link cue 15, say, to cues 15.1 through to 15.9. A linked sequence can thus be a maximum of ten cues long. More elaborate sequences and chases can be constructed using MQs, which are covered in section 4.2.

Creating sequences and loops

First, record the steps of your sequence as cues, making sure they are all point cues of the same number. Then call up the TIMEBLOCK window for the first cue in the sequence. In the LINKTIM box enter the delay time required between the two steps.

Using [SHIFT] and the cursor arrows, move to the next Timeblock and repeat this process for all the steps of the sequence.

The system will assume you wish to link to the next cue in numerical order. Only put a cue number in the LINKTO box if you wish to link out of sequence.

Multi-part cues

By entering a LINKTIME of zero, the two linked steps will start together – ie. a multi-part cue.

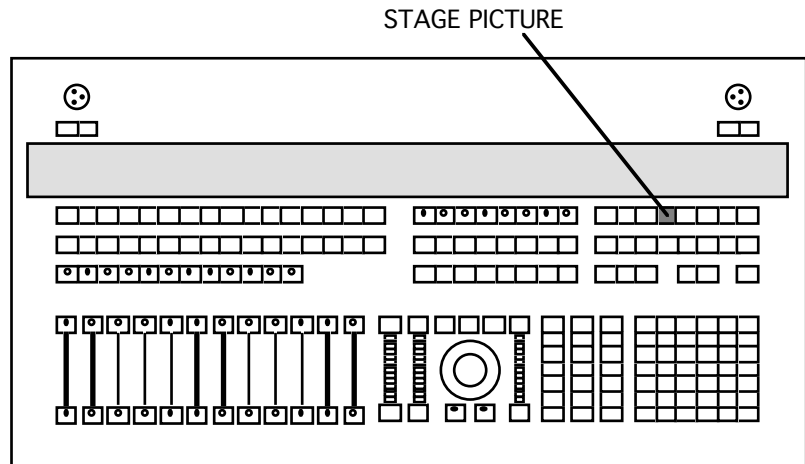
Loops

By linking the last step back to the first, you can create a loop. Loops will either run indefinitely or repeat the number of times entered in the LOOPCNT box.

Exiting loops and sequences

Loops and sequences can be exited at any stage by pressing the [ADVANCE] button. This will initiate the next unlinked cue.

3.17 Stage picture

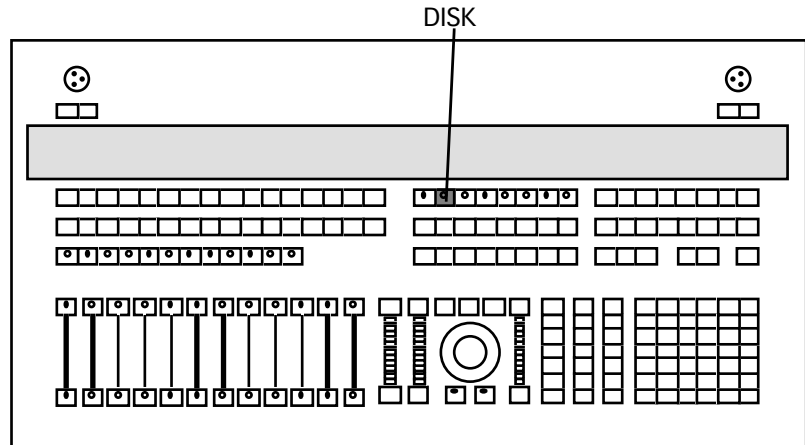


Since the CUE EDIT screen displays information contained in cues, it doesn't always show the system output. The two will be different if SUBLOOK cues or CHANNEL RECORD have been used to create move-type cues – these are described in sections 4.5 and 4.6.

To see a screen display of what is actually happening on stage, press [STAGE PICTURE]. To return to CUE EDIT, press [STAGE PICTURE] again.

However the system output, or STAGE PICTURE, will only be different to the CUE EDIT display if SUBLOOK cues or CHANNEL RECORD have been used (see sections 4.5 and 4.6). In this case the screen will only show the fixtures or fixture channels affected by the cue – SUBLOOK will only show the information for selected fixtures; CHANNEL RECORD will only show the information for selected channels.

3.18 Disk functions

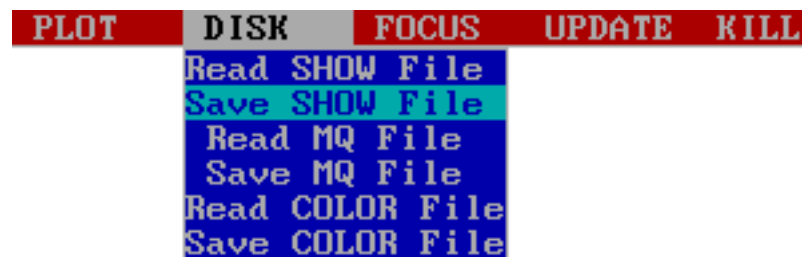


The disk drives on the system PC are used to store all recorded information in your show, including system parameters. The LDS has two disk drives - the hard disk within the PC and the floppy disk drive.

The LDS is currently unable to format discs – this has to be done from MS-DOS on the PC. Make sure you have several HD disks formatted before you start.

3.18.1 Saving to disk

To store your show to disc, press [DISK] to reveal the DISK menu:



Move the cursor to the {Save show file} option, and click to reveal the SAVE screen:

Filename	Size	Date	Time
DEMO.SHO	2867	8-16-94	2:11p
CARDIFF.SHO	243515	7-27-94	11:45a
NORTHAM.SHO	243515	7-23-94	9:37p
HULL.SHO	242725	7-7-94	6:40p
MANCHEST.SHO	242716	6-28-94	7:26p
OXFORD.SHO	242716	6-24-94	7:28p
NOTTINGH.SHO	243506	6-13-94	9:56p

If you are saving your show for the first time, click on the *FILENAME* box and type in the desired name. If you are simply updating an existing show, click on that show file in the library box; its name will appear in the filename box. By default, the system will

save the file to it's hard disk drive; it refers to this as drive C:. The floppy disk drive is referred to as drive A:. Drive B: does not exist.

Saving backups

To save to the floppy disk at the same time, click on **BACKUP** to put a cross in the box and make sure there is a formatted disk in the disk drive. This disk should not be write-protected – ie. the sliding write-lock tab on the disk should be closed.

It is generally good practice to make backups onto floppy disks in this way, and then to store the floppy disks away from the computer. It is also good practice to use two floppy disks and 'rotate' them so that one is always a version behind the other. This means that an old version of a show will still exist even if plotting errors occur.

Compressing files

Compressing is only necessary if you are storing to a floppy disk and your files are larger than 1.4M. Click on **compress** to put a cross in this box and enable compression.

Saving

Finally, press [ENTER] to save your show. The system will produce various 'pop-up' messages at this stage to warn you if you are using a filename that already exists, or if you are going to write over existing information, as well as when it is sending to floppy disk. The system will also prompt with error messages if there are problems with the disk or disk drive.

File types

The system automatically creates a SHOW file, an MQ file and a COLOR file under the chosen name. The MQ and COLOR files can be saved independently using the {SAVE} options on the main *Disk* menu.

You should then press [ESCAPE] to return to the PLOT screen, where you will see the name you have chosen highlighted in the bottom left-hand corner of the screen. If you have made a backup to floppy disk, extract the disk from the drive and slide the write protect tab to the open position, to protect your show from accidental erasure. Never leave floppy disks in the disk drive when you are not writing information to them or reading information from them. Store them in a completely separate location to the computer.

3.18.2 Reading shows from disk

Clicking on the {Read Show File} option will reveal the read screen:

READ SHOW FILE			
Filename	DEMO.SHO		
Pathname	C:\DATAN		
DEMO.SHO	2867	8-16-94	2:11p
CARD IFF.SHO	243515	7-27-94	11:45a
NORTHAM.SHO	243515	7-23-94	9:37p
HULL.SHO	242725	7-7-94	6:40p
MANCHEST.SHO	242716	6-28-94	7:26p
OXFORD.SHO	242716	6-24-94	7:28p
NOTTINGH.SHO	243506	6-13-94	9:56p

Loading into an empty system

Click on the show file you wish to read (move up and down the list in the library window using the [PAGE] buttons) and its name will

appear in the *filename* window. If the system memory is empty, pressing [ENTER] will read that show into the LDS system.

Overwriting an existing show

If there is already a show file loaded, pressing [ENTER] will produce a popup warning; pressing [CONFIRM] will then read the new show file into the LDS system. This process will also write over MQ and COLOR files. These can be independently read into the system in the same way, using the individual {read} options on the main DISK menu.

Once a showfile has loaded, its name will appear in the bottom left-hand corner of the PLOT screen.

3.19.3 File management

Computer disk drives are generally rugged, reliable devices which store data with little risk of loss. ‘Little risk’ is not the same as ‘No risk’, however, and you should follow a number of precautions to minimise the risk of losing data. You should also always make backup copies of show information to floppy disks, and store those disks away from the computer.

When old show files begin to clutter up the file list window, it may be desirable to delete them, taking care to ensure that they are no longer required.

To delete these files, return to MS-DOS by quitting the LDS program. Go to the root (..) directory by typing

```
cd \ [RETURN]
```

then move to the DATA directory, usually by typing

```
cd data [RETURN]
```

Files in this directory have the suffixes:

```
.SHO    for show files
```

```
.MQ      for MQ files
```

```
.COL    for colour files
```

You can delete unwanted files using standard MS-DOS commands. For example, to erase the file MYSHOW.SH0, type

```
erase myshow.sho [RETURN]
```

Once you have finished, return to the .. directory and then move to the LDS directory (cd LDS [RETURN]). Typing

```
GO [RETURN]
```

or

```
LDS [RETURN]
```

depending on the software version will tstart the LDS system.

General precautions

Write the show to disk every half hour during a plotting session. This will minimise the amount of work lost if the board crashes.

The system loses its memory on switch-off. Always store to disk before switching off.

Always label disks and add the time and date.

Don't load any extraneous software onto the PC linked to the LDS, or the backup PC. This will avoid the risk of programs clashing with each other, and also the risk of the PC becoming infected by a virus.

Use only reputable brands of floppy disks.

Use only double-sided, high-density (DDHD or 2HD) disks. Reputable disks should come clearly labelled with their type. Disks of this type also have a second notch like the write-protect notch, but on the opposite corner of the disk.

Don't open the protective shutter on floppy disks or touch the disk surface.

Don't damage the hub of floppy disks.

Store floppy disks away from sources of strong magnetic fields, such as mains conditioners. Such sources should also be located away from computers and monitors.

Store in dry conditions - humidity can damage discs.

Store away from direct sunlight and high temperatures.

Store in a clean box, away from dust and dirt.

Work using a rotating backup system, alternating the floppy disks on which you make backups. This means that if a fault does occur and 'garbage' gets written to one back-up floppy disk, you still have a second backup disk, albeit with a slightly older version of the show.

If disk problems occur

If problems do start to occur with disks, proceed with the utmost caution!

If the system reports any error with a floppy disk, and the cause of the problem is not immediately obvious (ie. after you have checked that it is correctly formatted and the write-protect tab is open if trying to record to the disk), you should immediately copy the contents of the disk to a new floppy disk and then throw the faulty disk away. You should then treat the contents of the new floppy disk with suspicion until you are able to verify that they are correct.

If the system reports any error with a hard disk, immediately copy your show files to a new floppy disk. Do not use any of your standard backup disks since the information on the hard disk may already be corrupted. You can then investigate the hard disk more thoroughly using commercial disk diagnostic and virus detection tools. If the problem persists, switch to a backup PC until the problem can be rectified.

Section 4

Advanced Techniques

Further use of focus positions
MQ's
Macros
Edit times
Record track
The Config menu
Cue buttons
Custom colour
Fixture names for large rigs
Customising the on-screen menus

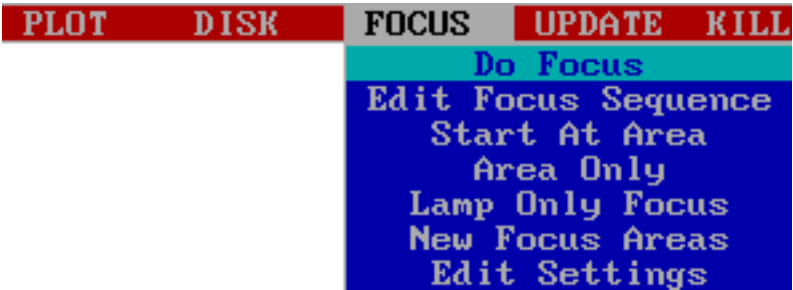
Advanced Techniques

This section covers some of the more advanced programming techniques available on the LDS. Use of these techniques will allow you to work with moving lights more efficiently, since they can simplify many of the operations commonly required of moving lights, such as re-focussing lights into different venues on a tour, or generating complex chase sequences.

You should have made yourself familiar with the basic operations of the LDS before moving on to the techniques described here.

4.1 Further use of focus positions

Having created focus positions and used them to plot your show, you will want to be able to retouch them and clean them up with the minimum of time and effort. All housekeeping of focus positions is done via the FOCUS menu (accessed by pressing [FOCUS], or clicking on { FOCUS } in the main PLOT menu):



This menu offers the operator several different ways of examining the focus positions – by individual areas, by individual fixtures, or as one sequence stepping through area by area, fixture by fixture.

Edit focus sequence

This screen allows you to determine the order in which the focus sequence will step through the individual focus positions. It also allows the operator to set whether each focus area should be treated as a WASH or an AREA. The first time the FOCUS menu is used, any menu selection will take the operator to this screen.

In WASH mode, the system will allow you to step through the areas altering each fixture, with all the fixtures that are used in that area live, so keeping the overall stage picture visible.

In AREA mode, the system will only make one fixture live at a time, enabling the operator to focus each fixture accurately to a particular area, without reference to the other fixtures.

During focussing, the LDS keeps track of which fixtures are used in which areas and only brings up fixtures in areas where they have been focussed.

Focus Sequence Editor										
	1	2	3	4	5	6	7	8	9	10
0+	1 W	2 W	3 W	4 W	5 W	6 W	7 W	8 W		
10+										
20+										
30+										
40+										
50+										
60+										
70+										
80+										

CTL-N for Natural Order Sequence. CTL-T for Partial Mode toggle
'W' or '.' to toggle Focus/Wash Area

Focus Areas not previously in sequence:																	
9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25	31	32

To set the order of focus positions, move around this screen using the cursor arrows, entering the position numbers as desired. To save time, pressing [CTRL]+[N] on the PC keyboard will arrange all of the positions in numerical order.

Focus positions default to being AREA positions. To make a WASH position, move the cursor to that position number and press [W] on the PC keyboard or [.] on the LDS console. A W will be displayed next to the number to indicate a wash. Pressing either of the keys again returns the focus position to being an area.

There are two pages to this option, allowing all 200 focus positions to be placed in order. Use the [PAGE UP] and [PAGE DN] buttons to move between them. Press [ESCAPE] to leave this screen.

Partial Mode

In the Focus Sequence editor, pressing [CTRL]+[T] will swap to the PARTIAL MODE screen. This allows the operator to create a temporary sub-sequence of focus positions for use in the other focus menu options, when using the entire sequence would be unnecessarily time-consuming. Areas are entered into this sequence using the cursor arrows to move around the screen, and will carry their 'type' (ie. wash or area) over from the main sequence.

This partial sequence is not saved to disk, and is lost when you exit the LDS program.

Do Focus

Clicking on the {Do Focus} option will begin the full focus edit routine. To escape at any time, press [CTRL]+[E] on the PC keyboard.

Upon starting this routine, the screen will display a large graphic of the first focus area number in the sequence, and the first fixture in that focus position will be under control of the trackball. The large graphics are designed to be visible from the stage when using the remote trackball, which is not yet available in this country.

You can now move through the focus positions, checking the focus of each individual fixture:

Move the trackball to alter the fixture focus.

Press the centre trackball button to move control to the next fixture.

Repeat for each fixture.

The left-hand button will move BACK one fixture instead.

The right-hand button will move forwards one fixture WITHOUT saving the changes made to the current fixture. The system will return to any fixtures skipped in this fashion at the end of that focus area.

At the end of each focus area there is a blank step, so that the operator can see the whole picture before proceeding to the next area.

[ESCAPE] will jump to the first fixture in the next focus position.

Start at area This allows you to begin the focus routine described above part way through the designated sequence, eg. if interrupted during the routine.

Clicking on this option will prompt with:

Start Focus at Area:

Type in the number of the focus position you wish to start with and press [ENTER]. If the position number you have selected is in the sequence, the blue box will disappear and when you select {do focus} or {lamp only focus} the sequence will start at the designated area. To escape from the sequence press [CTRL]+[E] on the PC keyboard.

If the position number you have selected is not in the sequence, a red warning panel will appear with the message:

Area Not in Current Sequence. Hit any Key.

Area only This allows you to retouch a single area. The trackball and buttons work as before, except that the right hand button does not release the changes. The screen displays accurate PAN and TILT values for each fixture, enabling precise duplication of these values from fixture to fixture or from one focus position to another. These values can only be changed using the trackball – it is not possible to enter values directly. The live fixture is highlighted in purple on the screen.

There appears to be a bug in the program that generates these figures. When they drop below 10,000 the tilt figure moves one digit to the left and stray digits remain at the right-hand side of the display.

Lamp only focus This option enables you to quickly move through the sequence of focus positions, looking at the focus of a single fixture in each position. The system goes straight into the first position in the sequence.

Use the centre trackball button to step to the next focus position.

The right trackball button makes the next fixture in the rig live, for

comparison. Pressing the right button again steps through the rig. The left button steps back through the rig.

In this mode, use [**ESCAPE**] to jump to the next focus position, and [**CTRL**]+[**E**] on the PC keyboard to escape from the sequence.

New focus areas

This allows the operator to record position information for fixtures which have been used in focus areas that have not yet been defined. The system will search for fixtures which have been allocated to focus positions in cues for which it has no position recorded.

As with the { **Do Focus** } option, the screen displays a large graphic for any such area it can find, and the fixture in question will come under the control of the trackball. The focus areas will retain their appropriate status (ie. wash or position) and the trackball buttons work as before.

Also as before, [**ESCAPE**] will jump to the next area, and [**CTRL**]+[**E**] will abort the routine.

Focus settings editor

This feature allows you to assign specific channel values to fixtures during the Focus procedure, to help with identification of the fixture being focussed. For example, you could have the fixture you are focussing in open white and the rest of the rig in blue to make focussing easier.

Focus Settings Editor		
	LAMP	SUBGROUP
LEV	100	100
SIZ	5	5
COL	0	99
GOB	0	0
ROT	0	0
MGB	0	0
SCR	0	0

In this screen, *LAMP* is the fixture being focused and *SUBGROUP* is the rest of the rig. Move around the screen using the cursor arrows and assign channel values as required. When you have finished, press [**ESCAPE**] to leave this screen.

Clearing unused focus areas

Once a show is programmed and is running on a regular basis, it is quite common to find that certain focus positions have not been used, or have only been used with some of the fixtures.

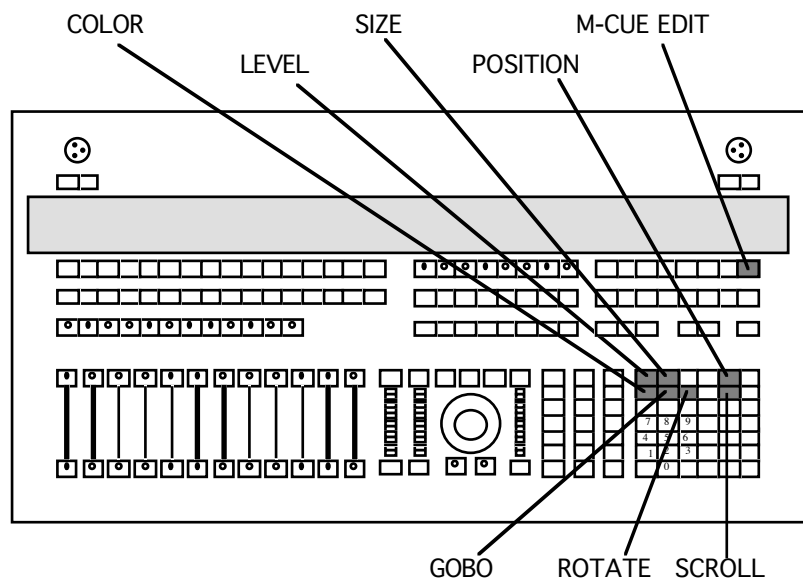
This means that in the Focus routine, you will be wasting time retouching these focus positions. By using the { **clear unused focus** } option on the CONFIG menu (see section 4.8) the system will determine which Focus data is used in your show and clear the rest. Obviously, this should only be used once no further changes are to be made to the cues.

4.2 MQ's

MQ's are user-definable, pre-programmed effects. Unlike many other consoles, where chase patterns and effects are plotted in discrete steps with reference to specific units, the LDS system records patterns as MQ's which can then be applied to any fixture. MQ's replace almost anything that you would normally program as a loop or chase.

Because MQ's have no time element recorded with them, you can re-use the same MQ in different cues to create chases that run at different speeds and crossfade rates. On a normal desk, this would require several different loops whereas MQ's can be a very flexible tool, saving much programming time as well as memory.

4.2.1 Creating MQ's



To create an MQ, press [M-CUE EDIT]; the screen will change to the MQ editor display, shown overleaf.

There are different screens for each channel, ie. there are seven screens for LEVEL, SIZE, POSITION, COLOR, GOBO, ROTATE and SCROLL/FRAME. To access the screen you want either press the desired channel button, or use the trackball to click on {channel} to reveal the different screen options, then click again to select the required channel.

The screen display shows four MQ's at a time, with the available numbers beginning at 201. As usual, you can use either the trackball or the cursor arrows to move around the boxes and can then insert values as required.

Creating a new MQ

First, select a free MQ number (between 201 and 999, or 201 and 900 for a POSITION MQ) and enter a brief description in the NAME box using the PC keyboard. Then select a number of steps and move to the STEPS window to enter values. For instance, to create a strobe effect select the LEVEL MQ editor, create a two-step MQ and enter step values of 0 and 100. Or to create a seven-step colour chase, select the COLOR MQ editor, enter 7 in the #STEPS box and then enter the seven colour numbers in the MQ STEPS box.

Although only six steps are displayed at any time, you can access other step boxes using the left and right cursor arrows. Up to 40 steps can be programmed into each MQ.

Position MQ's

Position MQ's can behave slightly differently to MQ's for other channels. MQ's on all other channels can be given any number between 200 and 999. Position MQ's can only be given numbers between 200 and 900. This is because the LDS uses the numbers above 900 to store a library of stock MQ's, designed to save time when programming standard moves. The effects available include a circle, a triangle and a star, amongst others. They are listed fully in Appendix C.

For these stock effects, MQTIME describes the length of time taken to describe the whole pattern, and MQVAR affects the size of the pattern.

Levels in MQ's

The value entered in the MQ boxes for LEVEL is a percentage - the Level value taken by the fixture when the MQ is running will be a product of this percentage multiplied by the Level value plotted in the Cue Edit screen.

Other MQ options

There are several other options that can be set from the MQ Editor screen:

Define time as

Using this box you can choose whether the time you set when applying the MQ to fixtures is a time per step or a time for the whole pattern. Most people find it less confusing to think of the time as a time per step, although when combining different MQ's on different channels it is very useful to define the time in terms of a whole pattern.

Build

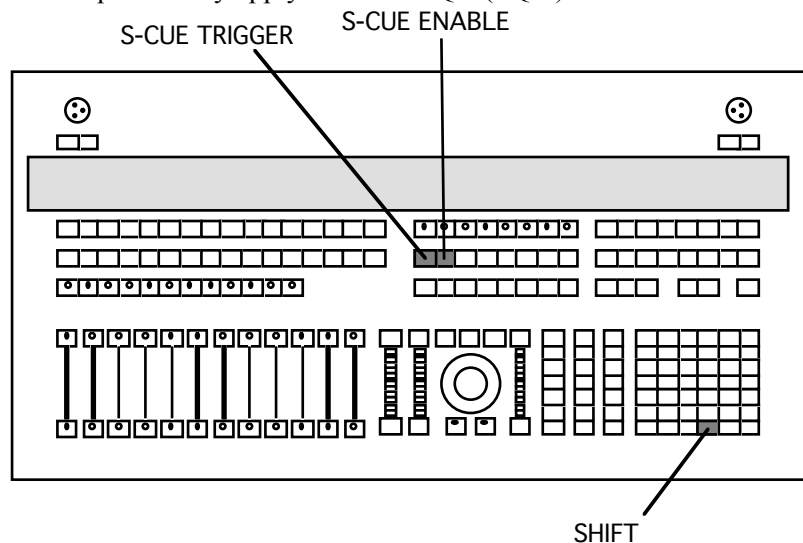
If the build option is selected, and the MQ has been 'staggered' over more than one fixture (see MQ's and multiple fixtures, below), then the start of the MQ will gradually build, fixture by fixture, rather than all the fixtures starting together. On step 1, only the first fixture entered will take the MQ. The next fixture will be added on step 2, the next on step 3, and so on. Thus if there are six steps to the MQ, it will take six steps before all the fixtures are chasing. After this first build, it will behave as a normal MQ. If there are more fixtures than steps, more than one fixture will be added at each step.

Snare

This allows MQ steps to be triggered by an event such as a MIDI signal from an instrument or other control device, or by the operator. An MQ that is denoted as a snare MQ (an SQ) will be displayed on the cue edit or MQ screens, but will not run by itself. When triggered, either locally from the LDS or remotely by an external device, an SQ will perform either a single step or a complete cycle for each trigger, depending on the setting in BURST (see below).

Local / Remote

These options only apply to snare MQ's (SQ's).



If LOCAL is selected, then it can be triggered manually by the operator via the [S-CUE TRIGGER] button. If REMOTE is selected, then it can be triggered by a remote device via a MIDI signal. The operator is able to imitate a remote trigger by pressing [SHIFT]+[S-CUE TRIGGER]. To prevent unwanted triggering of snare cues by remote devices, the [S-CUE ENABLE] button controls when the remote facility is enabled – this button has a toggle action but unfortunately there is no display of its current state. It is intended more as an SQ DISABLE button to prevent unwanted triggering from an outside source while the cue is still active. A snare cue can be both locally and remotely triggered at the same time.

Divide by

This option determines how often an S-Q is activated by a trigger. Designed for remote snare triggers, the SQ will react to every trigger

if this box is set to 1, to every other trigger if this box is set to 2, to every third trigger if this box is 3, and so on. This is useful if you are using a MIDI signal from a keyboard, for instance, to trigger SQs. It is also possible to have several SQ's triggered from the same remote event, but each taking different intervals.

The effect on an MQ is similar - because the MQ is only responding to every other, or every nth trigger, the overall effect is to introduce a "wait" time between each step.

Burst When an MQ has the SNARE option selected, BURST causes a whole cycle to be performed every time a trigger is received rather than just a single step.

Randomise Many MQ's can look mechanical and repetitive despite the best efforts of the programmer to introduce a random element. To overcome this problem, each MQ or SQ has a "randomise" option. When this option is used, each fixture to which the MQ is applied has a 50% chance at each step of not doing that step. Figures entered in this box are percentages and refer to the amount of the time that this 50% chance is applied. So:

0 = fixtures never miss a step.

25 = a quarter of the time, each fixture has a 50% chance of missing a step.

75 = three quarters of the time, each fixture has a 50% chance of missing a step.

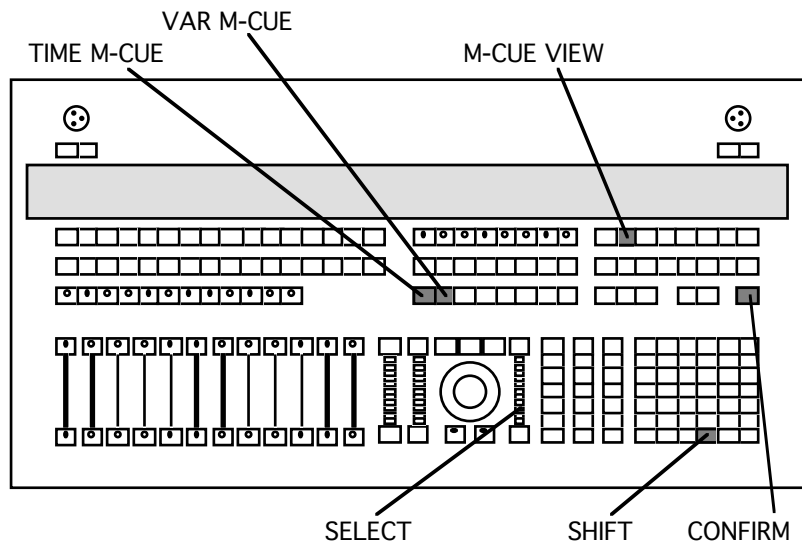
100 = each fixture will have a 50% chance of missing any given step.

Any figure from 0-100 is accepted, but since the chance of missing a step applies to each individual fixture, the results are unpredictable. You should experiment with this unorthodox feature to get the best results.

Confirming MQ options

Once you have selected the options you require, press [CONFIRM] to record your MQ. You can then exit the MQ editor using the [CUE EDIT] button and start using the cue you have recorded. It is recommended that you keep a written record of MQ's, to save time spent looking for them on the editor screen.

4.2.2. Applying MQ's



To apply an MQ to a fixture, grab the fixture in the normal way, select the channel and enter the MQ number, just as you would for a value from 0-100. eg.

1 [ENTER] [COLOR] 201 [ENTER]

The cue edit screen will then show the MQ number as a channel value with a suffix denoting the step number, or will show a red channel value if the channel is LEVEL, SIZE or POSITION. To see the MQ numbers for these channels, go to MQ VIEW. The fixture will now perform the MQ in the default time.

Altering MQ times

MQ times are altered by pressing and holding the [TIME M-CUE] button whilst wheeling the (SELECT) wheel. This alters the time taken per step or cycle, depending upon which option was selected in the MQ editor. MQTIME is in hundredths of seconds, and can take values up to 99.99 seconds. Wheeling upwards increases the time and slows the MQ down, wheeling downwards decreases the time and speeds up the MQ.

For library position MQ's, MQTIME governs the length of time taken to describe the whole pattern.

Pressing and holding the [VAR M-CUE] button whilst wheeling the (SELECT) wheel alters the PERCENTAGE of the step time that the fixture takes to change to the next step. ie. if MQVAR is 0, the fixture will snap to each step, while if the MQVAR is 100, the fixture will take the entire step time to reach the next step (though this is different for canned position MQ's – see Appendix D). MQVAR can be set at values over 100, up to 9999 – in such cases a step will not complete before the next step starts.

For library position MQ's, MQVAR governs the size of the pattern.

By changing the MQTIME and MQVAR in this way, you can see the effect on the fixtures directly. To see a numerical indication of the speeds, have the MQ Editor on the screen while you move the (SELECT) wheel.

Alternatively, MQTIME and MQVAR can be adjusted by entering values (in hundredths of seconds) directly into the Timeblock window and pressing [CONFIRM]. This is useful if you have already found the required time by experimenting with other MQ's,

or as a starting point for the (SELECT) wheel. The (SELECT) wheel does not function whilst in the Timeblock display.

Running multiple MQ's

It is of course possible to have more than one MQ running at the same time. All MQ's that apply to the same channel will have the same MQTIME and MQVAR, but different MQ's on different fixture channels can run with different MQTIME and MQVAR. The (SELECT) wheel will alter whichever channel is currently in the MQ editor.

MQ's and multiple fixtures

MQ's can also be applied to more than one fixture simply by grabbing as many fixtures as you want before entering the MQ as a channel value. You will see that each fixture has the same step number, and every fixture will perform the same step at the same time. However, MQ's can be "staggered" across a rig by pressing [SHIFT] when entering the MQ number.

For example, if MQ 201 is a six step colour chase, then
 1 [THRU] 6 [ENTER] [COLOR] 201 [SHIFT]+[ENTER]
 will make fixtures 1 to 6 perform the colour chase, but with each unit on a different step. On the cue edit screen, each unit is shown as being on a different step. When there are more units than there are steps in the MQ, ie. if there are 6 units and only 3 steps, then unit 4 will begin on step 1 and so on.

To get the MQ in the example above to run backwards over the fixtures, it would seem natural to press

6 [THRU] 1 [ENTER] [COLOR] 201 [SHIFT]+[ENTER]

Due to a quirk in the way that the LDS grabs fixtures, however, this will not work. You must either grab each unit individually:

6 [AND] 5 [AND] 4 [AND] 3

and so on, or use:

6 [AND] -- [AND] --

and so on.

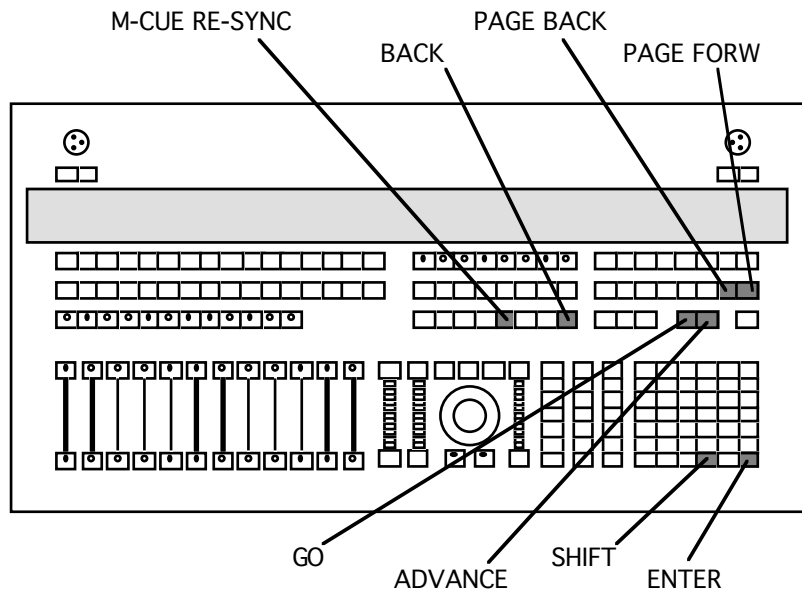
Step numbers

When a fixture has an MQ running on a particular channel, that channel value will show the MQ number, followed by a step number. This step number does not correlate to the step numbers on the MQ editor screen, but is the step of the MQ on which that fixture will have the first programmed step value. Thus in a six-step MQ, the fixture showing step no 5 will start in the third programmed value on the first trigger, so that it reaches the first programmed value on the 5th trigger.

4.2.3. Editing MQ's

MQ's can be changed very easily even while they are running live on stage. Go to the MQ editor screen, enter the new values as required and press [CONFIRM]. You should see the effect of the changes immediately, and can even alter the time whilst in this screen.

Sometimes when you edit the channels of fixtures with MQ's running or have several MQ's running simultaneously, the MQ's can get confused when changes are made. In this case press [M-CUE RE-SYNCH] to synchronise all of the MQ's.



There are several ways to move quickly around the MQ editor screen to find the MQ you are looking for:

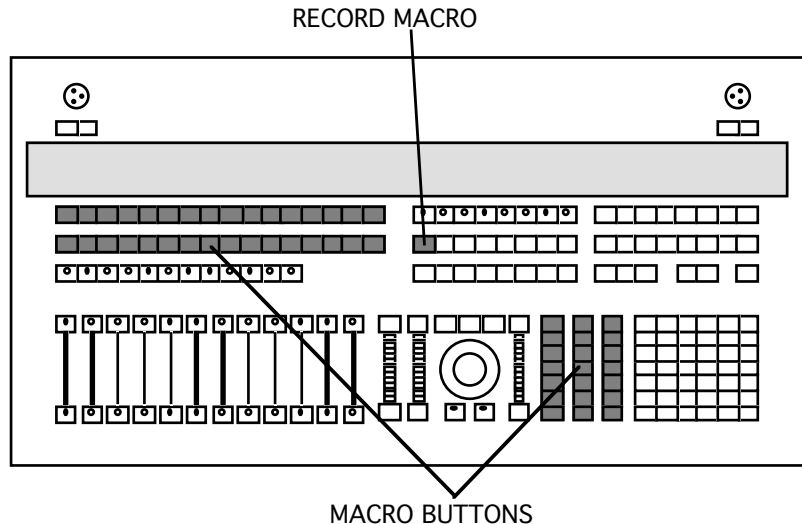
1. Use the [PAGE FORW] and [PAGE BACK] buttons to page forwards and backwards through the list, MQ by MQ.
2. Click on the MQ number box, enter the number you require and press [ENTER]. The screen will then jump to the MQ you selected.
3. Pressing [SHIFT]+[GO] moves you to the next available unprogrammed MQ number.
4. Pressing [SHIFT]+[ADV] will move you to the next programmed MQ.
5. Pressing [SHIFT]+[BACK] will take you back to the previous programmed MQ.

4.2.4. Reading and saving MQ files

When a show is saved to disk, the system automatically creates a separate MQ file. The MQ file can be read independently of the show it was created in, and MQ files can also be saved independently of shows using the {Save MQ File} option from the DISK menu. You can thus take all the MQ's you have created in one show to any other show as a basis to work from.

If you read in an MQ file from disk, all of the existing MQ's will be overwritten. You cannot merge MQ files.

4.3 Macros



The LDS has 53 Macro buttons, all directly available on the console. Each macro button is programmable with any number of button pushes, and these button pushes can be ANY button on the board, including other macros. The only exception is that you can't program a macro button with itself.

Creating a macro

To create a Macro, press [RECORD MACRO]. The system will prompt with:

```
-- Editing Macro --
Enter desired keystrokes. Press
MACRO to close macro.
```

Now press the sequence of buttons you wish to record, finishing with [RECORD MACRO] again. The system will now show:

```
-- Closing Macro --
Press a MACRO KEY to Save.
Press ESCAPE to Cancel.
```

Press the Macro button you wish to use for this sequence, and your Macro is recorded.

Example macro

For example, to program a Macro to grab fixtures 1 and 2, press:

```
[REC MACRO] [CLEAR] 1 [AND] 2 [ENTER] [REC MACRO]
[MACRO BUTTON]
```

It is sometimes a good idea when using macros to grab fixtures to make [CLEAR] the first button push, to ensure that previously selected fixtures are not affected by the new operation. However, if a rig is labelled with combinations of letters and numbers, the [CLEAR] could clear the currently selected letter - see section 4.9 for more details of labelling rigs in this way. You therefore have to be very strict about how you grab lanterns using macros, and the

approach will change depending on how the rig is labelled and the function the macro is intended to carry out.

Using macros

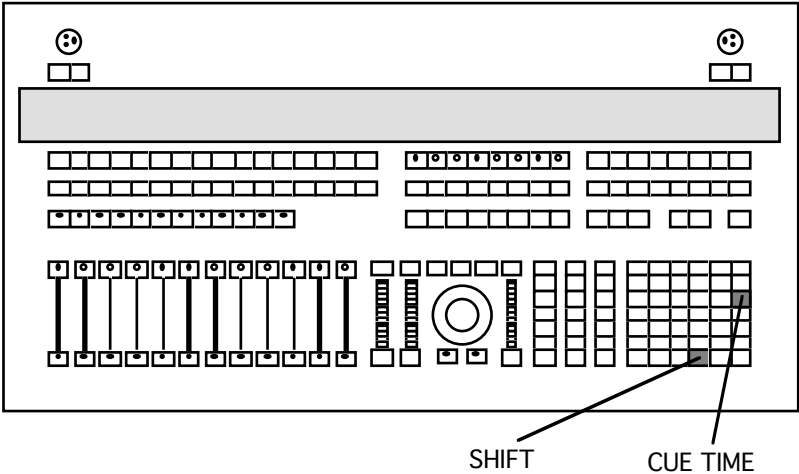
Macros can be used to select commonly used colours, gobos (useful for closing the iris at the same time to eliminate edge spill from gobos) and positions, to run commonly used cues, or even as blackout buttons.

The LDS does not have a macro button editor or display, so it is vital to label the macro buttons as you record them, and it is helpful to make a note of the button sequences you record. The LDS will give no warning if you record over an existing macro.

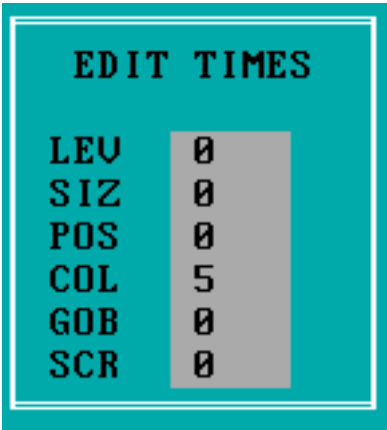
Macros can also be programmed with keys from the PC keyboard, enabling alphanumeric sequences to be recorded. Thus if you have included letters in fixture names, macros on the LDS can act as those letter keys.

If you attempt to record a recursive macro (ie. one whose button presses include itself), the system will display a warning panel.

4.4 Edit times



The EDIT TIMES window is accessed by pressing [SHIFT] + [CUE TIME]. It is mainly used during editing to allocate times for fixture changes which would otherwise all happen as “snaps”.



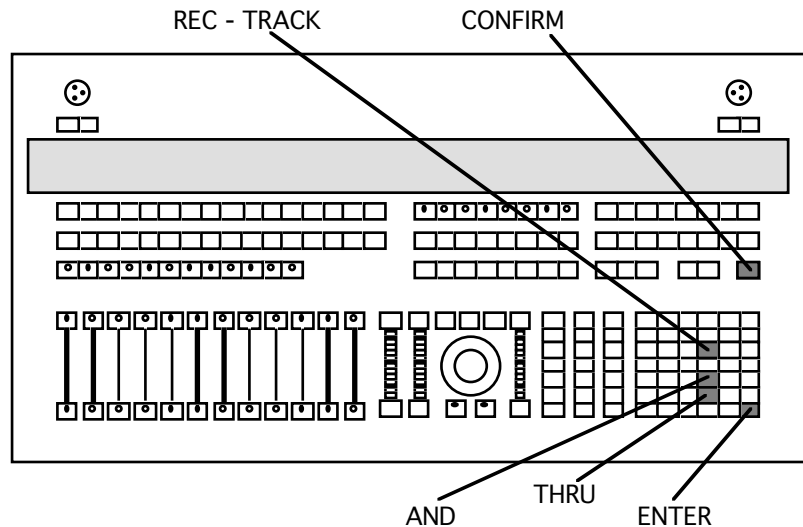
Different times can be entered for each channel of the fixtures, all in tenths of seconds.

It cannot be emphasised enough how much damage can be caused to

a rig during plotting sessions by leaving these settings at 0. By entering times of 1-2 seconds, wear and tear on the rig will be kept to a minimum.

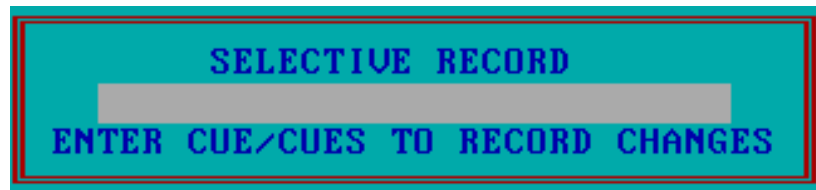
Also, during live performances, these times can be set to larger values, so that live edited changes happen slowly and subtly. Note however that these settings do not affect the encoders or trackball.

4.5 Record track



Normally, using [RECORD ALL] or [RECORD SUB], you are able to modify one or all of the fixtures in any given cue. To make these modifications to a number of cues in one operation, use [REC-TRACK].

Having made changes to channel values in an existing cue, keep them in the grey highlight and press [REC-TRACK]:



If the current cue is part of a loop, the range defaults to that loop and the window comes up with that range entered automatically. Otherwise the window comes up with the current cue number entered in the window.

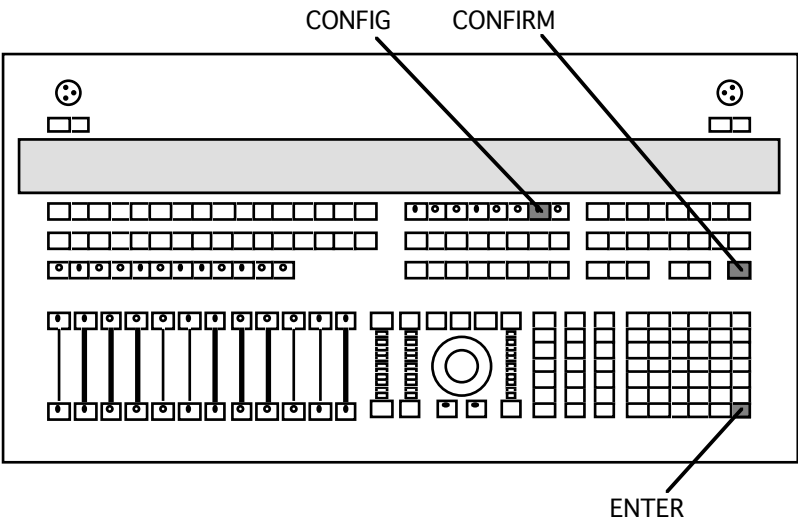
Select the cue or range of cues required, using [AND] and [THRU] as necessary, then press [ENTER]. Cue numbers in the specified range that have not been previously recorded are not created.

However if the cue does exist for some fixtures (ie. a sublook cue), it will be created for any fixtures with edited values that were not previously in the cue. This newly created cue will only have the edited channels recorded – unedited channels will be blank (ie. a channel cue).

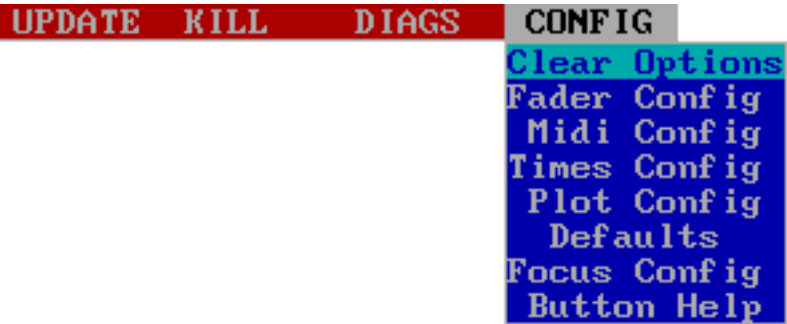
This feature can be a great timesaver, as well as helping to avoid errors such as a fixture being missed out of changes to a sequence of cues. It is also a fast way of plotting extra fixtures into a previously plotted show.

The [REC-TRACK] button is also used in the timeblock window for recording time data into ranges of cues.

4.6 The Config menu



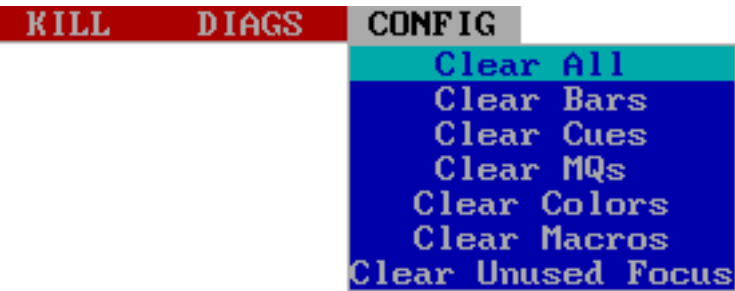
There are many system settings which can be changed in order to configure the LDS to suit a particular operator, rig or MIDI link etc.. This is done via the CONFIG menu, accessed by pressing [CONFIG]:



Any setting changed using this menu will be saved on the show disk with the rest of the data, and will thus change when a new show is read into the system.

Clear options

This is used to remove or clear sections of the system memory. Clicking on this option reveals the sub-menu:



Simply move the highlight to the desired option and press [ENTER] – the system will prompt with a warning if data is being deleted and a press of the [CONFIRM] button completes the process.

The {Clear Unused Focus} option is particularly useful. It removes any focus positions which haven't been used in any cues from memory. This could save valuable time retouching the focus positions every day.

FADER BOARD CONFIGURATION			
INPUT BOARD	ACTIVE CHANNELS	RECORD STATUS	THRESHOLD
1) MPX BOARD	36	YES	3
2) DMX INPUT A	90	YES	9
3) DMX INPUT B	512	NO	9
3) MIDI BOARD	100	YES	3

Fader config

The LDS system is designed to be capable of controlling mixed rigs of both moving and static fixtures. It does this via CD6 boxes for the moving fixtures and SB boxes for the conventional rig and colour changers.

Many lighting designers like to have control over the LEVEL feature of their fixtures from a manual fader system. On the LDS MP100 there are 12 such faders. On the larger MP500 console there are 36. For large rigs, the LDS can accept inputs from various types of lighting desks, giving access to more manual faders if required.

The FADER CONFIG section allows you to tell the LDS what sort of input to expect, and patching fixtures to the various faders in each of the 40 designs is done via the AUTOGROUPS screen, just as described for the 12 faders on the MP100. You can choose whether or not levels of fixtures controlled by submasters or other inputs are indicated on the LDS with a blue highlight, and whether or not these levels are automatically recorded into cues.

There are four input device types allowed with the current software.

MPX Board

MPX Board refers to the submaster section of the MP100. The number of active channels defaults to 36, since this is the number of submasters available on the larger MP500 console.

DMX Input A/B

DMX Input A is reserved for input from an analogue lighting desk through an analogue to digital converter. It can take up to 90 channels. Input B is a normal DMX512 input, and the last input is for MIDI signals.

Record Status

The RECORD STATUS box determines whether or not the levels set by the submasters (or faders) are recorded into cues. To make an entry in this box, press [Y] on the PC keyboard for yes, or [N] for no. If you make record status active, the value in the Level Channel for any fixture that is being controlled by a submaster or fader will be displayed in a blue highlight on the cue edit screen. If you record a cue in this condition, the level will go to that value when you play the cue back.

Cues, submasters and other input sources interact on a highest wins basis.

Threshold

Threshold is used to clean up input from a source that fluctuates when channels are set at zero. The LDS sends data whenever a change is detected in the state of the console or its various inputs. When a 'dirty' input fluctuates constantly, the system can get bogged down in sending unwanted data. The values in this column are expressed in hexadecimal (0-FF) and indicate that any value below the specified level is ignored.

MIDI config

This is used to define MIDI channels, voices and command types for the LDS to communicate with other control devices:

MIDI CONFIGURE

MIDI IN

Voice In (1 - 16)16

Octaves Up (0 - 8)3

Sequencer's Program-Change Range Is

1 to 128

0 to 127

Disable Message Types:

NOTE-ON/OFF

PROGRAM CHANGE

CONTINUOUS CONTROLLER

MIDI OUT CHANNELS -- Enter 1 - 16

Voice A1

Voice B16

For the software currently used by The Moving Light Company to link the LDS to other consoles via. a Macintosh MIDI control program the following settings need to be used:

Voice in

16

Octaves up

3

Change range

1-128

Continuous controller

Selected (X in the selection box)

Note on/off

Deselected (no X in the selection box)

Program change

Deselected (no X in the selection box)

Times config

This menu allows the operator to enter default values for most of the boxes within the Timeblock window, to suit the particular show.

CONFIGURE DEFAULT TIMES

DEFAULT CUE TIMES

Link Time

Loop Cnt

Profile Up1

Profile Down1

Delay

Fade

MQTime

MQ Var

ALL001000

LEV DN

LEV UP

SIZ

POS300100

COL

GOB

SCR

Design Time Default10

Move around the screen using the cursor arrows, entering the desired values for each parameter. The delay and fade times are in tenths of

seconds, the MQ time is in hundredths of a second and the MQ var is a percentage. You can also enter default values for Linktime, Loopcount and profiles.

When the box is complete, press [ENTER] again, whereupon the system will give you an option to save your data before leaving the screen.

Plot config

When entering fixture symbols on the PLOT screen (see section 2.2) the system will automatically draw ProSpot Deluxes for fixtures connected to a CD6 box and ParFaders for fixtures connected to an SB24 box. Obviously, for large rigs you could save a lot of time changing the symbols if you altered the symbol that the system produces to the type of fixture you are actually using. This is done via the {plot config} option:

CD6	SB24
ProSpot <input type="checkbox"/>	ParFader <input checked="" type="checkbox"/>
ProSpot Deluxe <input checked="" type="checkbox"/>	ParRanger <input type="checkbox"/>
ProSoft <input type="checkbox"/>	Dimmer <input type="checkbox"/>
ProSoft Deluxe <input type="checkbox"/>	
FaderBeam <input type="checkbox"/>	

Move between the boxes using the up and down cursor arrows, then use the left and right cursor arrows to move the X up or down to the appropriate type of fixture – ProSpot Deluxe's have the dichroic colour system, ProSpot's the colour wheel. When you have finished setting the default, press [ENTER] again to store the changes.

Defaults

There are two system settings controlled via the {Defaults} menu option:

SCREEN DEFAULTS	
Display Fixture	Type <input type="checkbox"/> Name <input checked="" type="checkbox"/>
Start Design	1

The {Display Fixture} option is intended to change the plot screen to display either fixture names or symbols, according to choice.

With the current software, this does not appear to function.

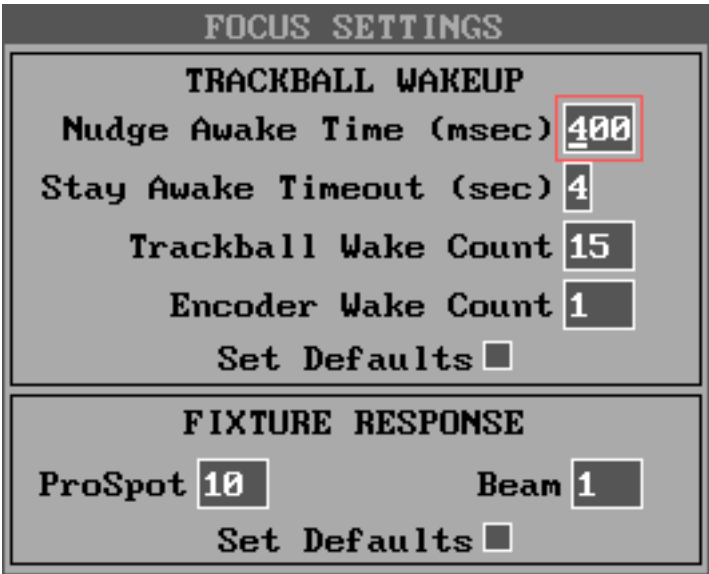
Fixture names can be shown on the plot screen simply by pressing any of the plot menu buttons twice.

The {Start Design} option allows you to determine which design number the system will go to when the show file is read in. For example, if your show is all on design 10, you can tell the LDS to always go to design 10, saving time and possible errors.

You move from option to option in this box using the cursor arrow keys, then press [ESCAPE] once you have finished making changes.

Focus settings

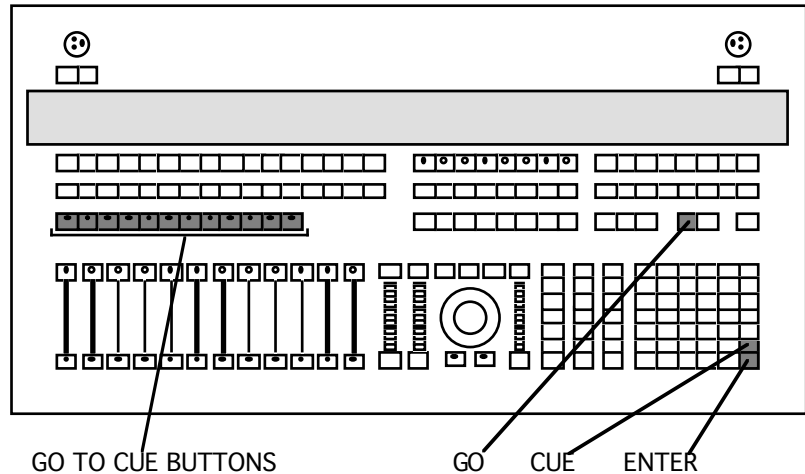
Problems have arisen with the trackball and encoder wheels being too sensitive to loud sound, especially bass. To help overcome this, the console has timers which start to count as soon as the trackball or encoders become inactive. After a specified time (the *Stay Awake Timeout*) they ‘fall asleep’.



REPLACE THIS SCREEN GRAB

Nudge awake time	This is the time the trackball has to be moved for before it ‘wakes up’ and starts to respond, in milliseconds.								
Stay awake timeout	This is the length of time that the trackball and encoder wheels will stay awake if they are not moved.								
Trackball wake count	This is the distance the trackball has to be moved within the Nudge Awake Time before it starts to respond.								
Encoder wake count	This is the time it takes for the encoder wheels to awaken when moved.								
Set Defaults	<p>This replaces any values for the settings above with the system default values. These are:</p> <table><tr><td>Nudge awake time</td><td>400 (milliseconds)</td></tr><tr><td>Stay awake timeout</td><td>4 (seconds)</td></tr><tr><td>Trackball wake count</td><td>15</td></tr><tr><td>Encoder wake count</td><td>1</td></tr></table>	Nudge awake time	400 (milliseconds)	Stay awake timeout	4 (seconds)	Trackball wake count	15	Encoder wake count	1
Nudge awake time	400 (milliseconds)								
Stay awake timeout	4 (seconds)								
Trackball wake count	15								
Encoder wake count	1								
Trackball orientation editor	Clicking on this box gives access to the Trackball orientation editor screen – this is covered in section 2.15.								
Fixture response	This alters the sensitivity of the trackball and encoders. Separate figures can be entered for ProSpots, ProBlasters and Faderbeams. Again, the <i>set defaults</i> option will replace any existing values with the system defaults of 10 and 1.								
Button help	<p>Selecting the {Button Help} option simply gives an on-screen display of the button quick reference in Section 6 of this manual.</p> <p>The on-screen button help has not been updated since software version 16 and is therefore inaccurate – refer to Section 6 for the updated information.</p>								

4.7 Cue buttons

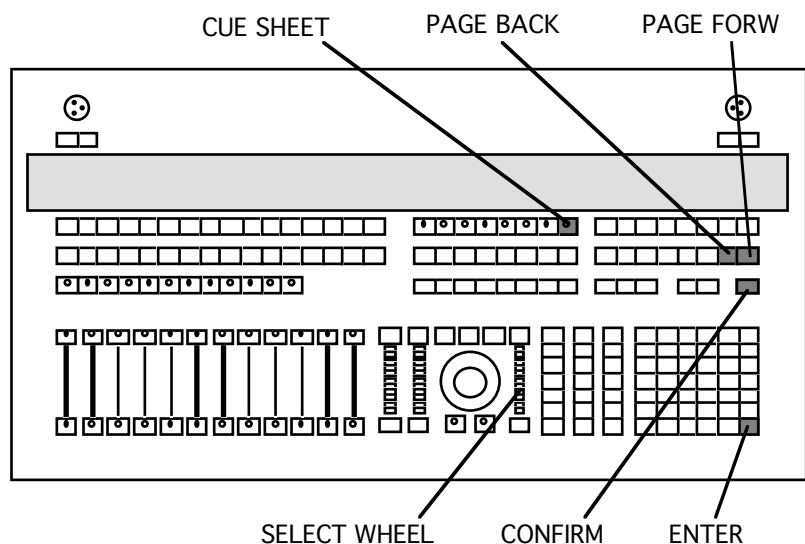


The twelve blue buttons above the manual faders are [GO TO CUE] buttons, for fast access to recorded cues. Initially, buttons 1-12 will access cues 1-12, running them in in their plotted times. If any of those cues do not exist the relevant cue button will do nothing. The buttons all have LEDs to indicate which cue number is live on stage.

Having progressed through to cue 12, pressing the [GO] button will now change the page on the cue buttons so that they act as buttons for cues 13-24. This can be repeated, with the cue buttons jumping in pages of twelve cues, until the last recorded cue is reached (up to a maximum of 400 cues). Alternatively, the page can be changed simply by going to any cue on the desired page using [CUE] number [ENTER]

The main advantage of these buttons is that cues can be used out of sequence, with just a single button push, which is especially useful for a 'hands-on' approach to concert-style shows.

4.8 Custom colour



The LDS can create and store up to 104 operator-defined colours, which are numbered from 97-200. To create a new colour, select a fixture or fixtures, select a colour close to the desired colour, and press [CUE SHEET] to enter the CUSTOM COLOR screen.

Custom Color Editor

Lamps Grabbed **1,2,3,4,5,...**

Lamp Type: ProSpot

Starting Color **67**

Custom Color **102**

Description

Programmed Custom Colors

- 97
- 98
- 99 COLOUR BLACK
- 100
- 101 NICE BLUE

Predefined Gel Colors

- 53
- 54
- 55
- 56
- 57
- 58
- 59
- 60
- 61
- 62
- 63
- 64
- 65
- 66
- 67**

The screen displays the proportion of each dichroic filter used to create the colour, expressed as a number from 0-2047.

To create a new colour, click on the Custom Color box, select a number for your new colour, (or the number of the colour you wish to change), and press [ENTER]. Then move to the individual colour boxes, clicking on each in turn and adjusting the intensity of each by means of the (SELECT) wheel, until the desired colour is achieved. At this point, enter any description you wish before pressing [CONFIRM] to record your changes, which should then add your new colour to the list of programmed colours.

Note that once a custom colour has been created it cannot be deleted, only changed.

Note also that although you can record over the pre-defined colours stored as colour numbers below 97, this is not recommended since the only way to recover the original colour is to re-set the entire desk. You should check that you have not accidentally entered a colour number below 97 before pressing [CONFIRM].

Once you have finished creating colours, press [CUE EDIT] to leave this screen.

Changing the starting colour

To change the starting colour from the CUSTOM COLOR screen, move the cursor to the desired colour, whether standard (in the bottom-right hand box) or custom (in the bottom-left hand box), and double click. [PAGE FORW] and [PAGE BACK] move you up and down the lists.

It is helpful to keep a note of any new colours you create – it is quicker than going to the CUSTOM COLOR screen every time you need to read the descriptions!

4.9 Fixture names for large rigs

Fixture names become very unwieldy on large rigs. It is often easier to give each bar or rigging area a code letter, and each fixture on that bar an alpha-numeric fixture name incorporating the bar letter and a shorter number. For example, the twenty fixtures on bar A would be A1 to A20, or the six fixtures on boom X would be X1 to X6. Alternatively, the ProSpots could all have the prefix P, the ProSofts the prefix S and so on.

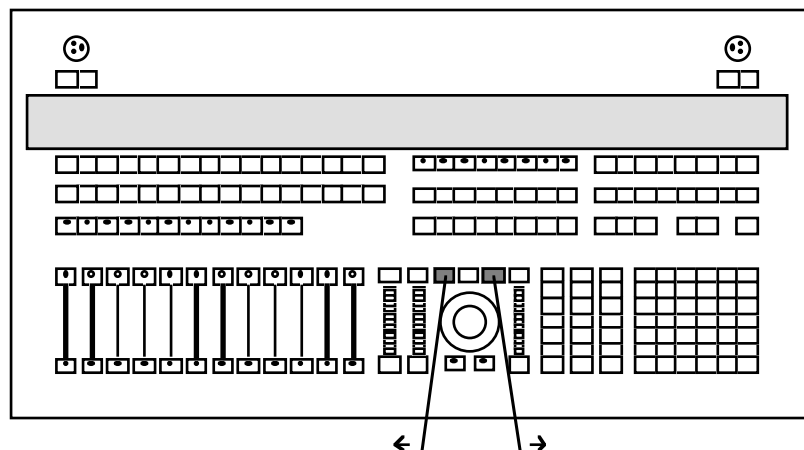
The LDS will accept alpha-numeric fixture names of one letter followed by up to three digits. Macro buttons near the keypad can be programmed to be the required letters to save constant use of the keyboard.

Although at first sight this would appear to increase the number of button pushes needed to manipulate the rig, the LDS carries a “memory” or buffer of which letter is current. For instance, if you are already controlling a fixture on bar A, you do not need to press A again to grab any other fixture on the same bar. Pressing the letter for any other rigging area will act as a “clear” button, reducing the need to keep pressing [CLEAR] as you move around the rig.

With practice, this is a very effective tool for coping with large rigs where fixture names would run into three figures, and it can be tailored to suit the tastes particular operators.

You should avoid mixing alpha-numeric and numerical fixture names within the same rig.

4.10 Customising the on-screen menus



It is possible that when working with large or unusually shaped rigs, you could find that the on-screen drop-down menu boxes are obscuring part of the rig. If this becomes a problem then the on-screen menu boxes can be re-positioned to more convenient locations.

To reposition a menu, move the cursor to the offending menu box and hit the left and right trackball buttons simultaneously. The box will disappear, leaving a small symbol. Now move the cursor to the preferred position and click on either button again to drop the box in

its new position. This does not affect the operation of the menu box, and can be done at any time with any of the menus on the plot screen.

Although this feature allows you to customise the screen display, we recommend that you do not make use of this feature unless you have to, since the screen display will then not match the examples shown in this manual, so making it harder to work out where you are if you hit a problem. Unconventional screen displays will also make it harder for another operator to take over a show.

Section 5

Troubleshooting and Diagnostics

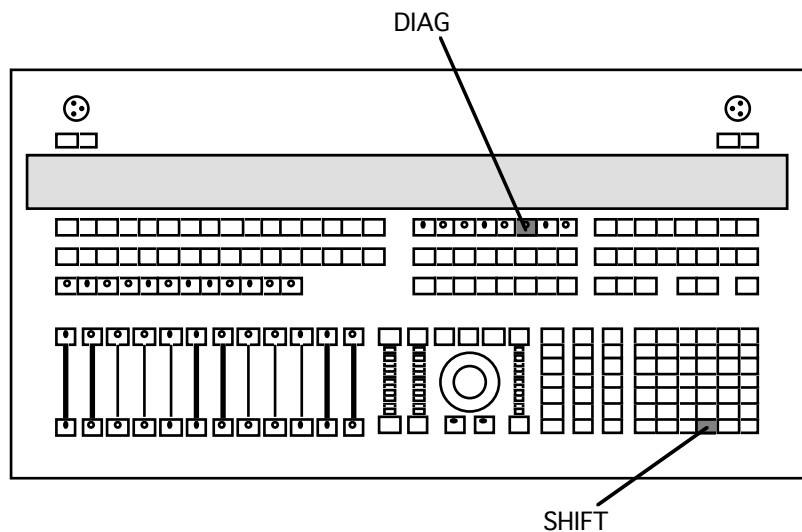
The Diagnostics screen
Troubleshooting

Troubleshooting and Diagnostics

This section contains information on carrying out on-site troubleshooting of the LDS console and system, and gives details of how to retrieve diagnostic information from the system.

The diagnostic information allows the system to be checked to ensure that, for example, all of the fixtures are running with up-to-date, compatible software versions loaded. The diagnostics can also be useful for troubleshooting more complex problems with the CD6 bar computers.

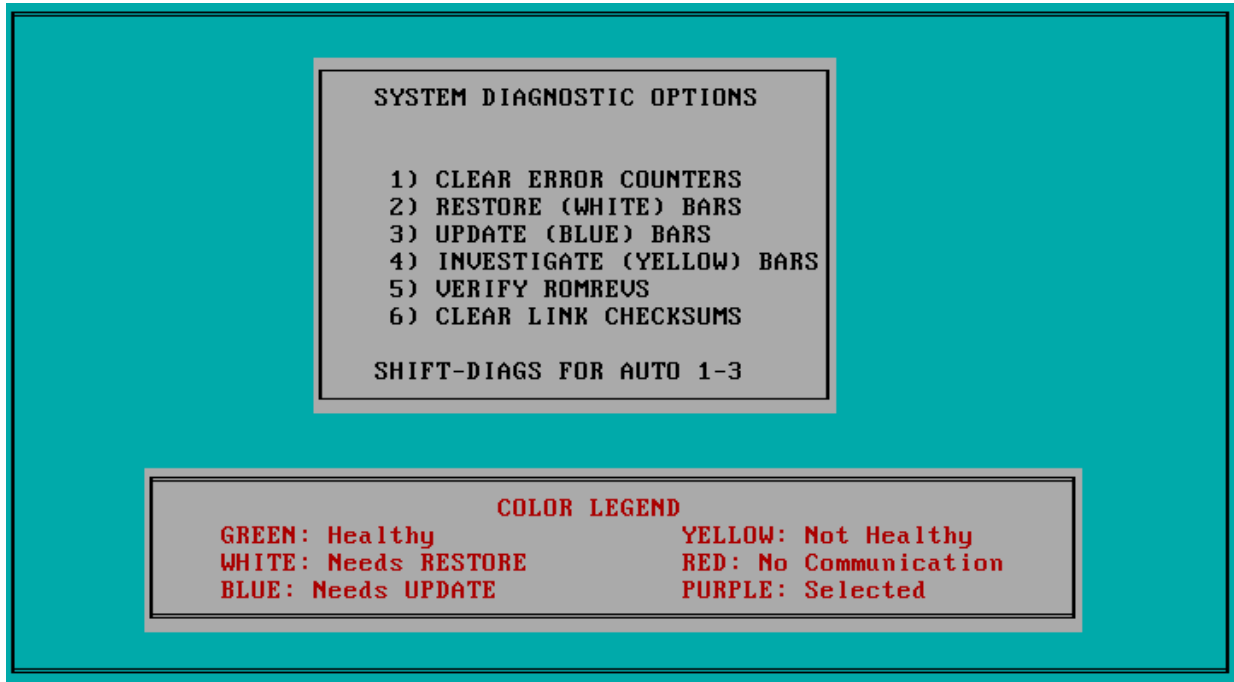
5.1 The Diagnostics screen



Pressing [DIAG] will bring up the diagnostic screen display. When in this mode, paging forwards and backwards will toggle between the menu screen and the rig screen, where the various fixture symbols are colour-coded according to the state of the bar computers.

Throughout the menu selections, you are given the choice of performing the various options on certain colour-coded bar computers, or a selected group, via a selection window. This window appears not to work, but in reality it has been written for the two-screen graphics option (see Appendix F) and its effects can therefore only be seen by paging to the rig screen to see the selected bar computers turn purple.

There are six menu options in the Diagnostics system:



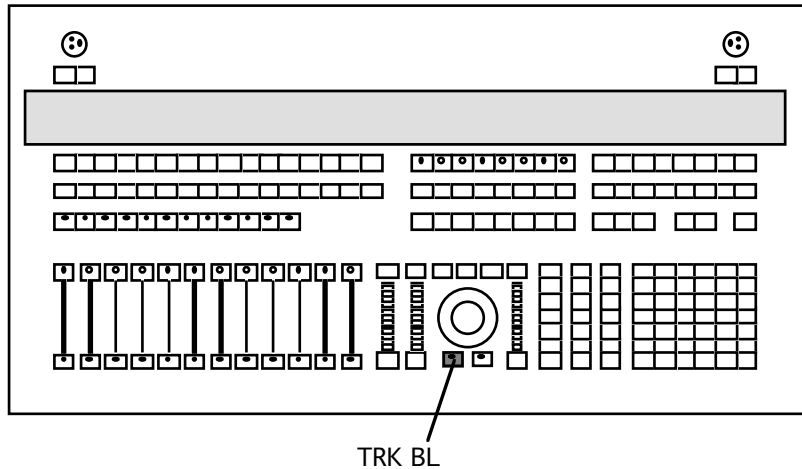
Clear error counters	This allows you to clear the error counters in the bar computers; three options are provided – clear the errors on the IPROC, the 68K, or both. Performing this operation causes the symbols of the fixtures affected to turn green.
Restore (white) bars	Selecting this simply sends a RESTORE command to any bar computers (CD6 box) currently showing a white symbol on the plot screen (or to a selected group). The DIAGS screen indicates a RESTORE command with a blue window. Performing this operation causes the symbols of the fixtures affected to turn green.
Update (blue) bars	Pressing this simply sends an UPDATE to any bar computers showing blue symbols (or to a selected group).
Investigate (yellow) bars	Selecting this option brings up a further submenu headed <i>INVESTIGATION OPTIONS</i> .
IPROC Error Status	This investigates the health of all (or a selected group) of the bar computers connected to the system. The down arrow steps through the bar computers, giving readouts of health status, data return, error counters and battery status.
68K Error Status	As for the IPROC, this allows you to look at error counters and error codes for all (or a selected group) of the bar computers. A third option on the submenu allows you to select which error types are listed.
Loopback test	This test can again be applied to all of the bar computers (or a selected group). It produces the same screen display as the IPROC Error Status test but pressing the down arrow key will perform a loopback test to the bar computer. This checks the data links out to and back from the bar computers. If these are OK, each line of the loopback test will be identical. Pressing the down arrow again will stop the test and give a readout of the error counters to check for errors produced by the test. The screen steps through the bar computers as before. You are also given the option to override the default loops from the SUBMENU screen.

Verify Link Checksum	This test will give numerical readouts of link checksums for all, (or a selected group) of the bar computers. It will show any current difference against the previous difference. As before return codes will be displayed, and the down arrow key can be used to step through the bar computers.
Invoke Cold Restart	This sends a cold restart command to all (or a selected group) of the bar computers. The screen displays a blue window message during the process and all cue information is wiped from the bar computers. You will then need to send update and restore commands before continuing.
Check memory usage	This gives a display of the percentage of memory remaining of all (or a selected group) of the bar computers.
Verify Romrevs	This brings up a screen display showing the EPROM software revision details for both the IPROC and the 68K. The down arrow key steps through the bar computers, allowing the operator to check that software versions are compatible. If the bar computer is not connected or powered, the system will read <i>timeout on receiving any bytes</i>
Clear link checksums	Selecting this option simply clears the checksum totalisers for all of the bar computers. The DIAGS screen will display a blue window whilst this is in progress.
Multiple tests	Pressing [SHIFT]+[DIAGS] will automatically perform the first three diagnostic options on the whole rig.

5.2 Troubleshooting

Trackball not working?

The trackball has an on/off switch marked [TRK BL] and located immediately below the trackball, which should be switched on.



Occasionally, however, the trackball locks up – the only way to fix this is to save the show to disk, switch the processor off, and re-start the system.

Cue doesn't look right?

Are you in the right design, with the right cue selected as live on the stage? Have any of the channels in the cue been grabbed by another action, and so are being held at a strange level?

Cue doesn't exist?

Are you in the right design?

Fixture doing cues incorrectly?

Have you sent a RESTORE since the last update?

Fixture not following trackball?

Is the fixture in a position MQ which uses focus positions that don't apply to that unit?

Fixtures/boxes not responding?

Check the physical connections or refer to the ProSpot manual.

Fader levels not recording into cues?

Check fader config options – has this been disabled? See Fader Config in section 4.6, the Config Menu.

Fixtures not going to recorded levels?

If fixtures allow manual alterations from the LDS, but fail to go to plotted values in cues, check in DIAGS to establish the compatibility of the software version in the bar computer (see section 5.1).

Menu box obscuring part of the rig on the plot screen?

The drop-down menu boxes can be moved around the screen to suit your preferences, if desired. See section 4.10, Customising the On-Screen Menus.

Blank columns on Cue Edit screen?

This is because there are extra symbols on the plot screen which are directly on top of each other, and hence cancelling out to be invisible. Blank columns therefore only happen in pairs. To remove

them, go to the plot screen, select {delete} from the ALLOCATE BARS menu, and move around the screen clicking on blank parts of the screen until another symbol appears. The most likely places are directly around existing symbols. When a symbol appears, click again to remove it, and you will now find that two of the blank columns have been removed from the Cue edit screen.

LRT Communication error? The Cue Editor detects any interface errors between the console and the LRT (the PC card that links the console to its PC) that prevent the console from transmitting data to the bar computers - this could be caused by a crashed LRT or a noisy external board that is forcing the LRT to spend all its time handling these commands. When this happens, the console will prompt the operator with a message about the error and the option of retrying the command ([SHIFT]+1) or disabling the transmit function to permit the operator to save file and reboot ([SHIFT]+2). If the operator picks the second option and then goes to the Cue Editor, a *TX OFF* message will remind the operator that the console is no longer trying to transmit any data to the bars. The console needs to be rebooted to get out of this mode. (This has not yet been tested).

One or more units not responding properly at the end of the calibration routine?

Avoid sending data from the LDS until fixtures have finished their calibration routine.

Bar computer crashing when updated?

The bar computer's memory is probably full. Use the DIAGS screen to check on memory usage in the bar computers

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Appendices

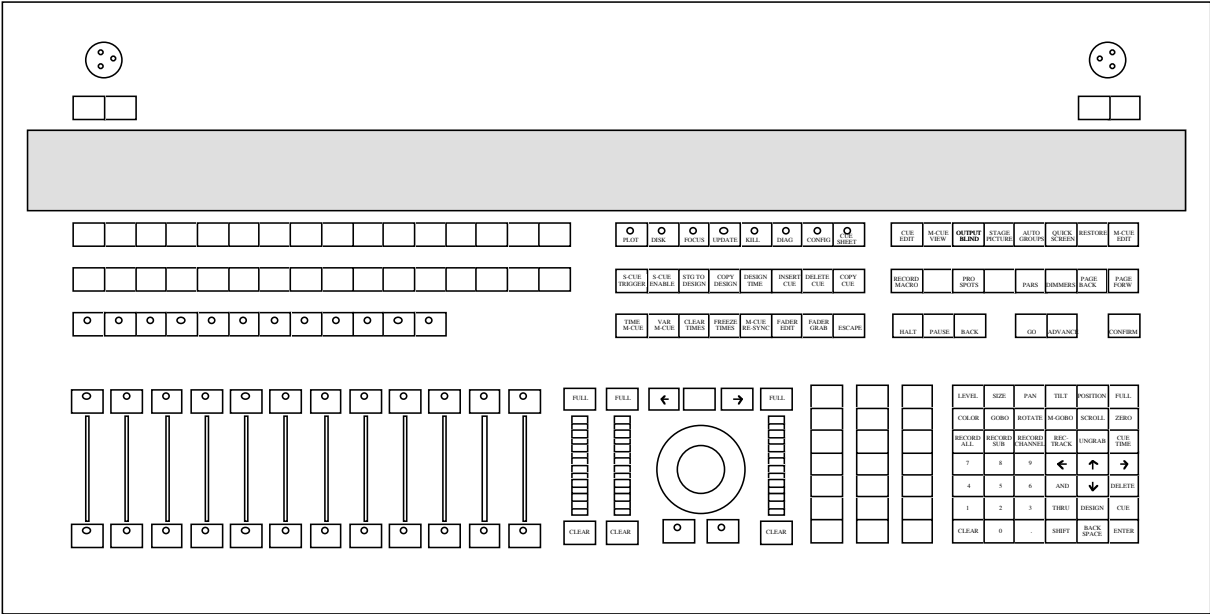
- Appendix A: Button Quick Reference
- Appendix B: Colour Library
- Appendix C: MQ Library
- Appendix D: MIDI
- Appendix E: Back Up

Appendix A: Button Quick Reference

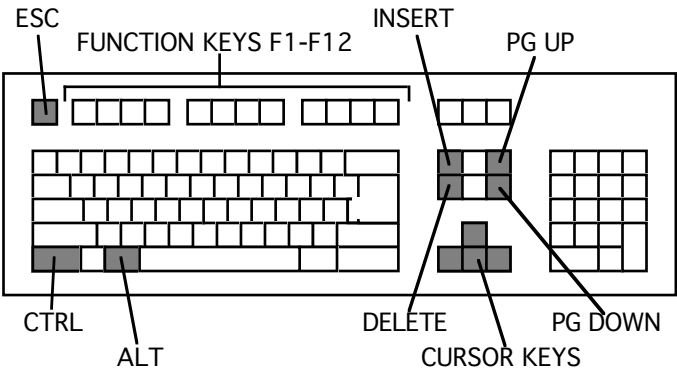
This section contains a list of every button on the LDS console and a description of the action it performs, divided up into the separate keypad areas. Also included are the section number you should refer to for more details on the use of a button, and the equivalent key combination for the button on the PC keyboard. These provide direct equivalents for the LDS console operations and may be preferred by some operators.

If the LDS console fails but still has power connected to it, and the PC is still running, certain operations, including [GO] can still be performed from the PC keyboard. However, if the power supply within the LDS console fails no further running of cues will be possible since the LDS sends data to the bar computers.

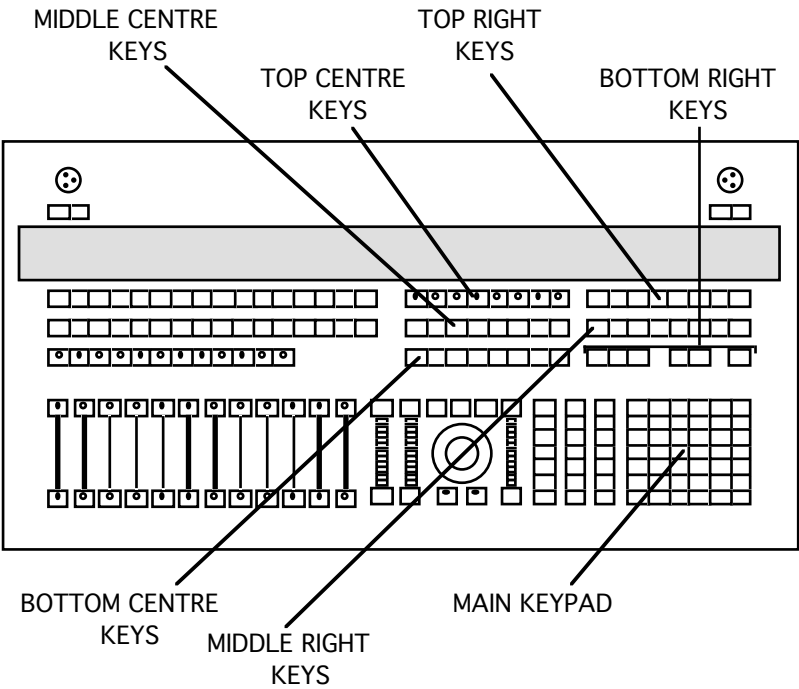
The LDS-MP100 Console



PC Keyboard equivalents



This is the layout of a typical PC keyboard. Precise key positions may vary from manufacturer to manufacturer.



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BUTTON	PC EQUIVALENT	DESCRIPTION OF USE	SECTION
Top-Centre keys			
[PLOT]	CTRL+F1	System picture. Set up Bars, Fixtures, Names, Thmwhls	
[DISK]	CTRL+F9	Get and save files for show, MQ's, and Custom Colors	
[FOCUS]	F6	Trackball through any Focus Areas for system or lamp	
[UPDATE]	CTRL+F10	Send full program to any or all bar computers	
[KILL]	CTRL+K	Disable or re-awaken/recalibrate any fixture	
[DIAG]	CTRL+W	Poll bars for errors. Do detailed queries eg. Rom Revs	
[CONFIG]	CTRL+I	Set operating parameters for system	
[CUE SHEET]		Custom colors: direct control of Yellow, Magenta, Cyan	
Top-Right keys			
[CUE EDIT]	F9	Program, Record and run any or all cues	
[MQ VIEW]	CTRL+V	Mode: View MQ values in LEVEL, SIZE or POSITION	
[OUTPUT BLIND]	ALT+F7	Mode: View and edit cues without affecting stage ([GO], [ADV] & [CUE] buttons still provide stage control)	
[STAGE PICTURE]	SHIFT+6	Mode: Display fixtures' values for all cues combined on stage. Only different if [REC SUB] or [CHANNEL] used.	
[AUTO GROUPS]	F8	Assign fixtures to manual faders.	
[QUICK SCREEN]	F4	Does nothing.	
[RESTORE]	CTRL+D	Enable LEVEL and other actions for re-awakened fixtures.	
[M-CUE EDIT]	ALT+U	Program MQ sequences for any fixture channel. Creates user values above 200 (201-899 for POS, 201-999 for others).	
Middle-centre keys			
[S-CUE TRIGGER]		Operator's trigger for 'local' type Snare cues. Use [SHIFT] to fake a 'Remote' trigger.	
[S-CUE ENABLE]		Enables remote MQ triggering by external devices.	
[STG TO DESIGN]	ALT+Y	Does nothing.	
[COPY DESIGN]	ALT+W	Copy Design preset, plus optional cues, to another Design.	

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BUTTON	PC EQUIVALENT	DESCRIPTION OF USE	SECTION
Middle-centre keys...			
[DESIGN TIME]	F7	Does nothing.	
[INSERT CUE]	CTRL+F	Does nothing.	
[DELETE CUE]	CTRL+G	Delete, or partially delete, cue(s).	
[COPY CUE]	ALT+Q	Copy one or more cues to a different range of cues or a different design.	
Middle-right keys			
[RECORD MACRO]	CTRL+Z	Press to begin recording of a sequence of button strokes. Press again to finish recording.	
[SPOTS] / [DIMMERS]		These buttons move screen display to first cue edit page displaying this fixture type.	
[PAGE BACK] / [PAGE FORW]		Move display back or forward one page. Sequence through file, color or MQ lists.	
Bottom-centre keys			
[MQ TIME] / [MQ VAR]		Hold down while using (SELECT) wheel for live adjustment of MQ speed or MQ 'var' (size or fade time) values.	
[CLEAR TIMES]		Does nothing	
[FREEZE TIMES]		Hold down while using (SELECT) wheel to encode link times.	
[MQ SYNCH]		Press to restart and synchronize MQs running on fixtures you have been editing.	
[FADER EDIT]		Mode: In EDIT mode you can grab programmed levels with manual faders and alter them	
[FADER GRAB]	ALT+G	Select and edit groups of fixtures whose fader levels are up.	
[ESCAPE]	ESC	To exit most windows. Sometimes doesn't save data.	
Bottom-right keys			
[HALT]		Stops automatic linking of linked cues.	
[PAUSE]		Does nothing.	
[BACK]		Goes to the previously run cue. SHIFT+BACK goes to one less.	
[GO]	CTRL+PgUp	Goes to the next cue, following links.	
[ADVANCE]		Goes to the next manual cue, not obeying loop links.	
[CONFIRM]	CTRL+N or CTRL+Y	Confirms data to be stored in Cues, Timeblock, etc.	

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BUTTON	PC EQUIV- ALENT	DESCRIPTION OF USE	SECTION
Main keypad			
[LEVEL]	ALT+L	Select LEVEL channel of fixtures currently grabbed.	
[SIZE]	ALT+I	Select SIZE channel.	
[PAN]	ALT+F3	Select PAN channel, enter number.	
[TILT]	ALT+F4	Select TILT channel, enter number.	
[POSITION]	ALT+P	Select POSITION channel, to enter focus position number	
[COLOR]	ALT+D	Select COLOR channel.	
[GOBO]	ALT+F	Select GOBO channel.	
[ROTATE]	ALT+C	Select ROTATE effect for moving GOBO.	
[MGOBO]	ALT+T	Select Moving GOBO channel.	
[SCROLL]	ALT+S	Select SCROLL channel, also FRAME, FOCUS, depending on type.	
[FULL]	ALT+F5	Set grabbed channel at Full On (usually 100)	
[ZERO]	ALT+F6	Set grabbed channel at 0.	
[RECORD ALL]	INSERT	Record the stage picture into a cue.	
[RECORD SUBLOOK]		Record fixtures with new data into a cue.	
[RECORD CHANNEL]		Record only channels with new data into a cue.	
[RECORD TRACK]	ALT+E	Prompts for set of cues into which you want to store data.	
[UNGRAB]		Hold down and press channel key to clear programmed data in that channel for fixtures that are grabbed.	
[CUE TIME]	F3	In Cue Edit, brings up the Cue time and MIDI out window.	
ARROWS [L] & [R]		Move fixture selection, move around windows.	
ARROWS [up] & [down]		Change window items.	
[AND]	, (comma)	Use when entering fixture names or groups to select more.	
[THRU]	-	Use between fixture names to select a group.	
[DELETE]	DEL	Deletes an entry in any window.	
[DESIGN]	F1	Press, then type Design number., then either [ENTER] or [CUE].	
[CUE]	F2	Press, then type cue number to go to, followed by [ENTER].	
[CLEAR]	—	First press deselects all fixtures. Second press releases all 'live' fixture channels.	
[BACKSPACE]		For editing, back up one character.	
[ENTER]		Enter, finishing data from entry field.	

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Shift Key Functions in CUE EDIT

Key Combination	Action
[SHIFT]+[FUNCTION]	Freeze data of selected fixtures into grey highlight box for this function.
[SHIFT]+[ENTER]	Distributes MQ step numbers over selected fixtures.
[SHIFT]+[REC CHAN]	Record POSITION channel 'QF' as Focus position.
[SHIFT]+[CUE TIME]	Edit times for fixture movement while editing.
[SHIFT]+[BACK]	Find previous programmed cue.
[SHIFT]+[CUE EDIT]	Toggles function of time panel on CUE EDIT screen.

Shift Key Functions in CUE TIME WINDOW

Key Combination	Action
[SHIFT]+[ARROWS]	Steps through cues.

Shift Key Functions in MQ EDITOR

Key Combination	Action
[SHIFT]+[GO]	Advances to next unprogrammed MQ number.
[SHIFT]+[ADVANCE]	Find next programmed MQ.
[SHIFT]+[BACK]	Find previous programmed MQ.

Shift Key Functions AT ANY TIME

Key Combination	Action
[SHIFT]+[DIAGS]	Auto all preparatory diagnostics: clear errors, restore, update.
[SHIFT]+[RESTORE]	Delayed restore - action for awoken lamps begins next cue.
[SHIFT]+[SCUE TRIGGER]	Emulate a Remote snare trigger event.

Appendix B: Colour Library

The LDS has a library of 96 pre-programmed colours. It can store an additional 104 customized colours created by the operator (see section 4.10). The programmed colours are as follows:

Filter equivalents by colour

Straw/Yellow		Salmon/Rose		Blues	
1.	LEE103	31.	LEE 153	61.	LUX 60
2.	LUX 11	32.	LEE 109	62.	LUX 62
3.	LUX 14	33.	LUX 31	63.	LEE 161
4.	LEE 104	34.	LUX 34	64.	LUX 64A
5.	LUX 15	35.	LEE 110	65.	LUX 67
6.	CUSTOM	36.	LUX 36	66.	LUX 68
7.	GAM 460	37.	LEE 111	67.	LUX 79
8.	LUX 12	38.	GAM 180	68.	LUX 83
9.	LEE 101	39.	LEE 113	69.	GAM905
10.	CUSTOM	40.	LUX 46	70.	CUSTOM
Amber/Orange		Pink/Magenta		Blue/Greens	
11.	LUX 02	41.	LUX 33	71.	LUX 73
12.	LUX 03	42.	LUX 35	72.	LEE 115
13.	LEE 176	43.	LUX 37	73.	LEE 116
14.	LUX 18	44.	LUX 38	74.	LUX 95
15.	LEE 147	45.	LUX 44	75.	LEE 117
16.	LUX 21	46.	LEE 128	76.	LEE 144
17.	CUSTOM	47.	GAM 140	77.	LUX 71
18.	LUX 22	48.	LEE 126	78.	LUX 69
19.	LUX 19	49.	GAM 995	79.	LUX 76
20.	LUX 25	50.	CUSTOM	80.	CUSTOM
Reds		Lavenders		Greens	
21.	LUX 41	51.	LUX 51	81.	GAM540
22.	LUX 24	52.	LUX 52	82.	LEE 138
23.	LEE 182	53.	LUX 54	83.	LEE 121
24.	LEE 106	54.	LEE 137	84.	LEE 122
25.	CUSTOM	55.	LEE 142	85.	LUX 89
26.	CUSTOM	56.	LUX 57A	86.	LEE 124
27.	GAM 235	57.	LUX 58A	87.	GAM655
28.	LUX 26	58.	LEE 180	88.	LUX 90
29.	GAM 250	59.	LUX 59	89.	LUX 91
30.	LUX 27	60.	LEE 181	90.	LEE 139

Custom Colours

Once created, custom colours are assigned to color numbers 97-200. For details on creating custom colours, see section 4.10.

Filter equivalents by manufacturer

GAM	LDS	Lux	LDS
140	47	02	11
180	38	03	12
235	27	11	2
250	29	12	8
460	7	14	3
540	81	15	5
655	87	18	14
905	69	19	19
995	49	21	16
		22	18
		24	22
Lee	LDS	25	20
101	9	26	28
103	1	27	30
104	4	31	33
106	24	33	41
109	32	34	34
110	35	35	42
111	37	36	36
113	39	37	43
115	72	38	44
116	73	41	21
117	75	44	45
121	83	46	40
122	84	51	51
124	86	52	52
126	48	54	53
128	46	57A	56
137	54	58A	57
138	82	59	59
139	90	60	61
142	55	62	62
144	76	64A	64
147	15	67	65
153	31	68	66
161	63	69	78
176	13	71	77
180	58	73	71
181	60	76	79
182	23	79	67
		83	68
		89	85
		90	88
		91	89
		95	74

Appendix C: Position MQ Library

Listed here are the LDS's pre-programmed POSITION MQ's. For more details see section 4.2.1.

For these pre-programmed effects, the MQTIME describes the length of time taken to describe the whole pattern, while MQVAR affects the size of the pattern.

Where programmerd MQ's have programmable options (MQ TIME=POINT/CUE/BUILD-IN), these MQ's must be assigned default behaviour. KICKS are inherently BUILD-IN in nature, so they are given the BUILD-IN attribute. All other MQ's are 'shapes', and are not BUILD-IN, ie. they start at the appropriate point of the shape immediately upon the MQ's opening.

CW=clockwise. CCW=counter-clockwise. N/A=not applicable.

MQ	Description	Direction	No. of points	Notes
901	Circle	CW	2	Start at top or bottom
902	Circle	CCW	2	Start at top or bottom
903	Tilt kick	Start UP	4	Build in
904	Tilt kick	Start DOWN	4	Build in
905	Pan kick	Start RIGHT	4	Build in
906	Pan kick	Start LEFT	4	Build in
907	Square	CW	4	
908	Square	CCW	4	
909	Up triangle	CW	3	
910	Up triangle	CCW	3	
911	Down triangle	CW	3	
912	Down triangle	CCW	3	
913	Random 1	N/A	5	
914	Random 2	N/A	8	
915	Random 3	N/A	8	
916	Random 4	N/A	7	
917	Random 5	N/A	9	
918	Random 6	N/A	10	
919	Random 1	N/A	5	$\frac{1}{3}$ speed
920	Random 2	N/A	8	$\frac{1}{3}$ speed
921	Random 3	N/A	8	$\frac{1}{3}$ speed
922	Random 4	N/A	7	$\frac{1}{3}$ speed
923	Random 5	N/A	9	$\frac{1}{3}$ speed
924	Random 6	N/A	10	$\frac{1}{3}$ speed
925	Diamond	CW	4	
926	Diamond	CCW	4	
927	Pentagon	CW	5	
928	Pentagon	CCW	5	
929	Star	CW	5	
930	Star	CCW	5	
931	Horizontal zigzag	Start left top	20	
932	Horizontal zigzag	Start right top	20	

933	Horizontal zigzag	Start left bottom	20	
934	Horizontal zigzag	Start right bottom	20	
935	Lazy eight	CW	16	
936	Lazy eight	CCW	16	
937	360°	CW	N/A	
938	360°	CCW	N/A	

Appendix D: MIDI

This section deals with the use of MIDI, the Musical Instrument Digital Interface, with the LDS system.

MIDI may be used in various ways with lighting consoles like the LDS:

1. You can use MIDI to synchronise lighting effects with live music by having an electronic instrument send MIDI cues at certain points in the music.
2. MIDI is a simple way of interfacing the LDS with SMPTE timecode, converting the SMPTE to MIDI via a MIDI sequencer or a suitable program running on a PC.
3. For large multi-media shows, MIDI can be used to link a wide array of different control devices together, either directly from the MIDI signal or via relays triggered by the LDS through the analogue connections on its SB interfaces.
4. MIDI permits two or more lighting consoles to be linked together so that show control can be brought down to single button operation, again by using a suitable program running on a PC.

MIDI CONFIGURE

MIDI IN

Voice In (1 - 16) **16** Octaves Up (0 - 8) **3**

Sequencer's Program-Change Range Is **1 to 128** ☒ **0 to 127** ☐

Disable Message Types:

NOTE-ON/OFF ☐ PROGRAM CHANGE ☐ CONTINUOUS CONTROLLER ☒

MIDI OUT CHANNELS -- Enter 1 - 16

Voice A **1** Voice B **16**

For more details on MIDI, please contact The Moving Light Company.

Appendix E: Back Up

The system is supplied with two processors, two VDUs and two keyboards. Both systems should be powered up whenever the system is in use and the operator should ensure that both systems have the same show files on their hard disks.

In the event of a processor failure, the LDS board should be replugged to the stand-by processor to continue. This process should be practised to ensure that it is possible, ie that cables will reach etc.

In the event of a button board failure, certain operations, including [GO], can still be performed from the keyboard of the PC – see section 6 for the keyboard equivalents. Since the fixture data is sent from the LDS, this backup method will only work if the LDS is still receiving power.

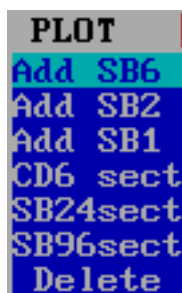
Appendix F: Faderbeams and the MP200 Software

Although the existing MP100 software will control Faderbeams, it will not allow you to configure a rig to include them on the PLOT screen. To do this, you need to use MP200 software, which is written specifically for the larger boards available in the USA with two-screen graphics capabilities. The Moving Light Company has a limited quantity of these boards with this software.

Faderbeams are rigged in conjunction with a 'Smart Bar'. Smart Bars come in single, 2-way or 6-way versions, known as SB1s, SB2s and SB6s. The Smart Bar mates with the Faderbeam, providing the rigging hardware, the bar computer and the dimmer. A Faderbeam cannot operate without a Smart Bar.

A Faderbeam has four channels – level, size, position and colour – and is controlled in the same way as a ProSpot.

Faderbeams in the PLOT screen In the MP200 software, there are three further options on the |Allocate Bars| menu:

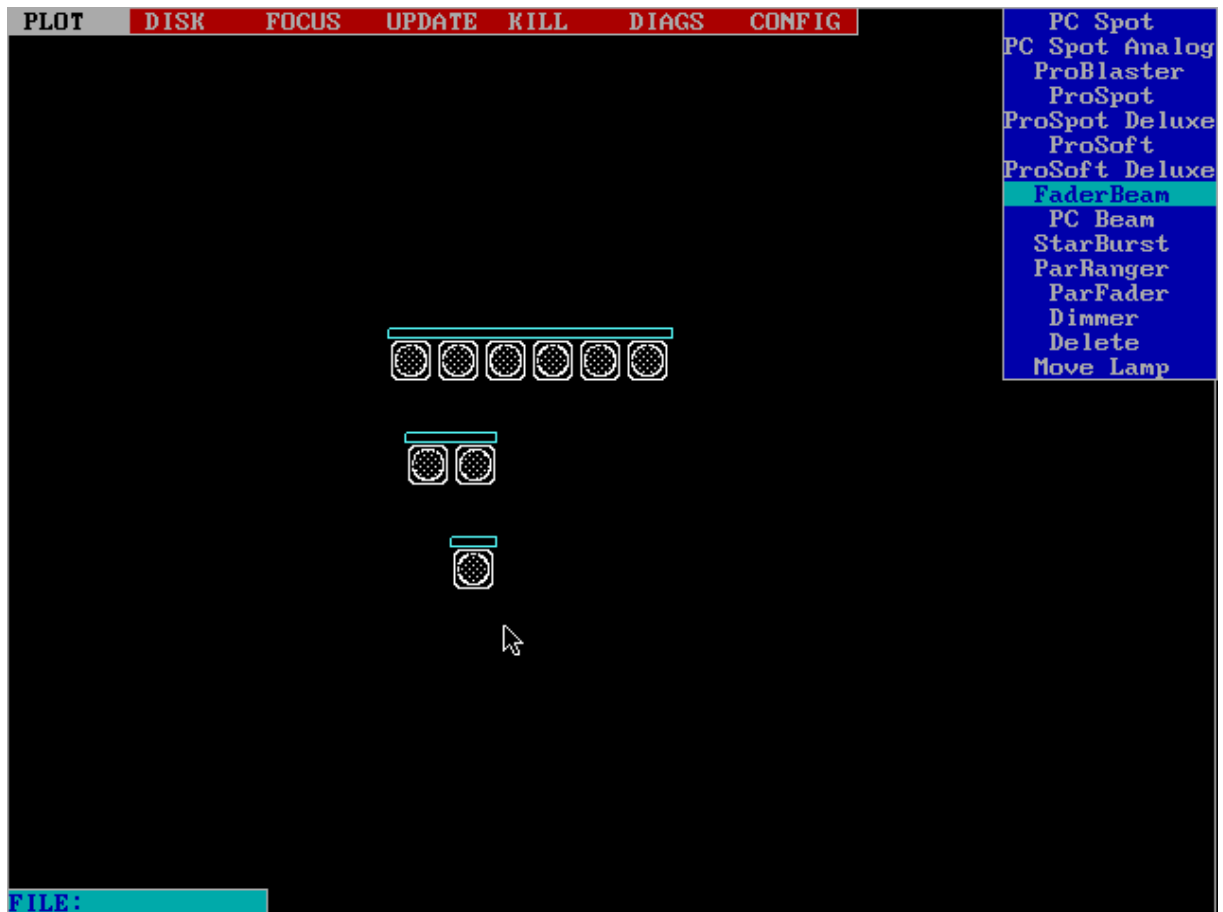


These produce three new symbols:

SYMOBLS

SCREEN GRAB OF NEW BARS WITH PCSPOT

These are actually the symbol for bars rigged with PC Spots, because the software defaults to that. You can change the symbols to Faderbeams using the (expanded) |Fixture Type| menu, (shown below) or change the PLOT DEFAULTS in the |Config| menu:



Addressing Faderbeams

This works as before, using the new {Edit Regular} option on the menu – SBs are allowed addresses from 1 to 599. Note that an SB6 only has one address since the address refers to the bar computer, not the fixtures.

Naming Faderbeams

Faderbeams are allowed the same range of fixture names as any other fixture type.

Please note that although the MP200 software provides many other options on the Fixture type menu, the Focus settings menu and on the Plot Defaults menu, The Moving Light Company currently only has ProSpots, ProSofts and Faderbeams available.

The CUE EDIT screen

Faderbeams will appear on a page of their own, after ProSofts and before colour changers or dimmers.

Once you have used the MP200 software to configure your Faderbeams, programming and show-running can be performed from the MP100 software on a single VDU system.

The Two-Screen System

When in CUE EDIT mode using MP200 software, the second screen will display the PLOT screen, which is a useful, if expensive quick-reference. When in PLOT mode, the second screen will revert to an LDS title page.