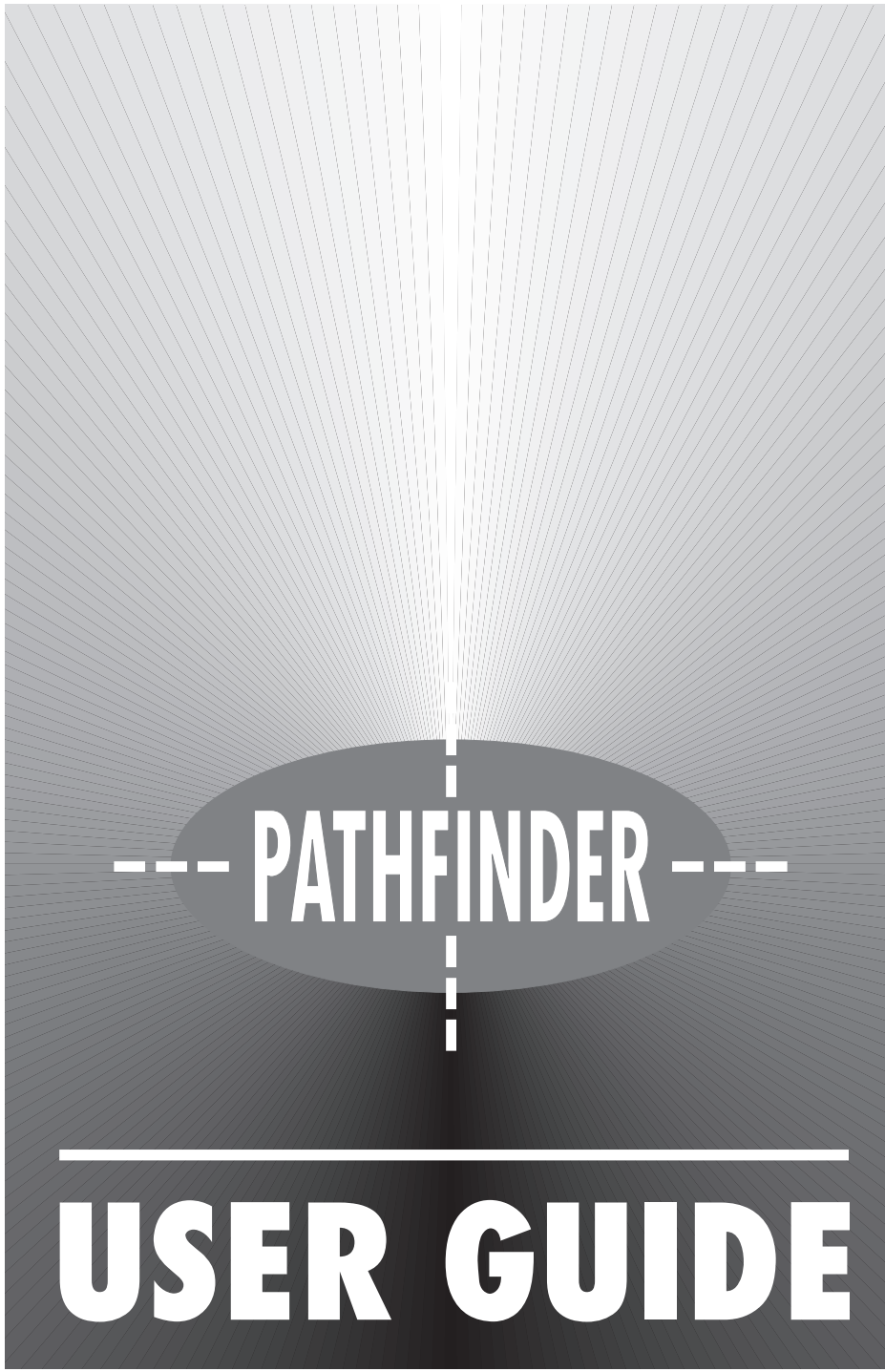

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Celco PATHFINDR Console User Guide
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Preface

Welcome to the Celco PATHFINDER!

The PATHFINDER is a compact and versatile Lighting Control Console featuring state-of-the-art microprocessor technology. It is designed to provide a full range of lighting control from simple manual operation up to complex pre-programmed sequences and is equally ‘at home’ in theatre, discotheque or concert environments

If you've never used a Lighting Console before, you may find the large array of faders and buttons on the PATHFINDER console a little daunting. But, please be assured that it's not as confusing as it looks!

About this User Guide

The PATHFINDER's User Guide is arranged in convenient sections, each dealing with a specific topic or range of associated topics. A full list of sections and their contents follows this preface, and a comprehensive Index is provided at the back

We recommend that you spend a few minutes reading through Section 1, which is designed to provide you with an overview of the console layout, control names and functions. It also introduces some basic concepts about how the PATHFINDER is used.

Section 2 provides some basic concepts of ‘Channels’ which are important to understand if you are unfamiliar with lighting desks. It also explains the principles of Channel level control employed by the PATHFINDER which will be helpful to all users.

Sections 3 to 9 cover the actual operation and programming of the console, whilst Section 10 describes the various facilities of the Head-Up Display.

Towards the back of the Guide are various Appendices which provide details on Troubleshooting, Technical Data and a quick-reference guide to the various LCD Display Menus.

Warranty Registration Card

Be sure to fill-in and return the enclosed Registration Card. This will enable us to provide you with full technical support, such as news of any firmware enhancements to the PATHFINDER or details of new products and accessories.

Trade Marks

The name **CELCO**, the distinctive **CELCO** logo, and the **PATHFINDER** logo are trade marks of CELCO, the live entertainments division of ELECTROSONIC Ltd.

CE

This product conforms with the protection requirements of EC Directive 89/336/EEC, relating to Electromagnetic Compatibility, by application of the following standards:
EN 50081-1:1992, **EN 50082-1:1992**, **EN 60950:1992**, provided that:

- The product is used in accordance with the manufacturer's instructions.
- The product is used in conjunction with a CE marked power supply unit.
- The product is not connected to any peripheral equipment that is not CE marked.

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Section 1:
Overview of the Console

This section provides an overview of the console layout, control names and functions. In addition, it covers the principles of using the PATHFINDER's Menu System, basic installation and gives details of optional accessories.

Standard & EPX Versions

There are two versions of the PATHFINDER Console:

- **ESC2297 — Standard Model**
- **ESC2797 — EPX Model**

The operation of both versions is identical. However, the EPX Model is fitted with two Expansion Ports for use with a Head-Up Display System and / or a 3.5 inch Floppy Disk Drive.

If required, the Standard Model can be converted into an EPX Model by using the ESC2297 / EPX Upgrade Kit.

Definition of 'Page' and 'page'

Each of the LCD displays within an PATHFINDER menu is referred to as a 'Page'. To avoid confusion, whenever this word appears in the User Guide with a capital 'P' (*i.e.* Page), this means a Menu Page; whenever it appears with a lower case 'p' (*i.e.* page), this means a User Guide page.

Console Main Features

Main Control Area *Refer to pages 1-4 and 1-5 for further details.*

Channel Faders These are used to set the level of individual channels. Movement of the sliding knob allows the level to be set to any level between zero (fader fully down) and 100% (fader fully up).

These are arranged in two banks or 'Presets' with 24 faders in each.

Channel Flash Buttons These are located below the bottom row of Channel Faders, and are used to briefly switch a channel to its maximum level — these can be used for checking which lights are controlled by a particular channel or for flashing the lights to create special effects.

At the top of each button is a small indicator which lights-up whenever the associated channel is at any level above zero (*i.e.* 1 to 100%).

Q-Card Slot This connector slot is used to insert a 'credit-card-size' memory card called a Q-Card. A Q-Card is used to store various pre-programmed settings from the PATHFINDER's internal memory. Information stored on a Q-Card can also be 'read' into the internal memory.

Work-Light Connector These allow the fitting of optional 'gooseneck' work-lights to assist console operation in low-light conditions.

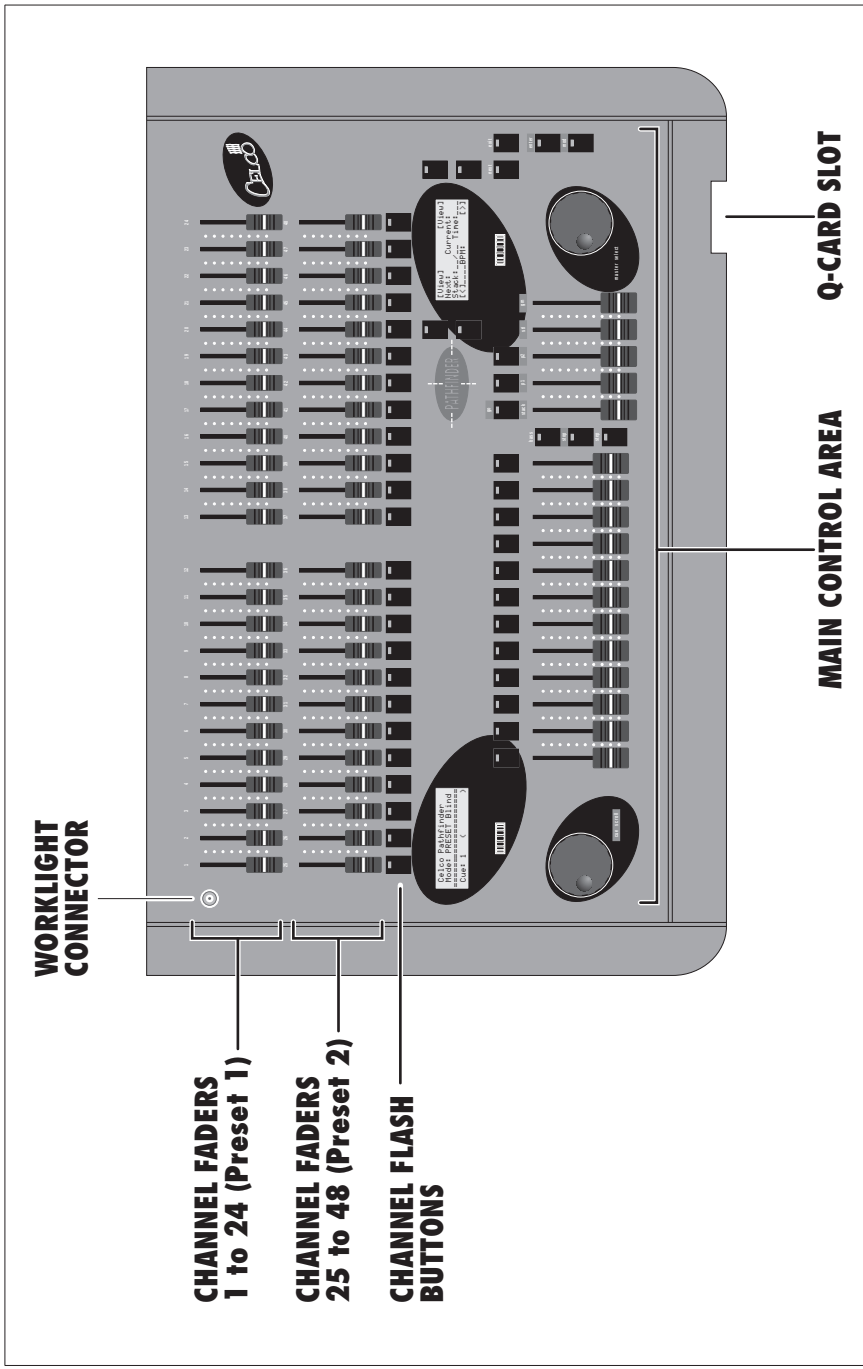

Fig.1-1: Layout of the PATHFINDER console.

Main Control Area

Menu Control Area	*Refer to page 1-6 for details.*
LCD Panels	Used for displaying status / set-up information for the console. Immediately below each Panel is a small rotary edge-wheel (not to be confused with the larger rotary wheels) which is used to adjust the display contrast. Simply turn the wheel left or right to obtain optimum difference between the background and text colours.
Cue Faders & Flash Buttons	Used to fade-in or fade-out a lighting 'scene' held in a pre-programmed Cue. Pressing the button above the fader 'flashes' the Cue to maximum (as if the fader was fully up). The button indicator lights-up when the button is pressed or when the fader level is above zero.
Cue Scroll Wheel	Used to select which Cues are assigned to the Cue Faders.
Preset Master Faders & Flash Buttons	Used to fade-in or fade-out a lighting 'scene' set-up on the Channel Faders. Pressing the Button above the Fader 'flashes' the scene to maximum (as if the fader was fully up). The button indicator lights-up when the button is pressed or when the fader level is above zero.
Stack Fader	Used to cross-fade between Cues held in a Stack.
Stack Go Button	Used to recall the next Cue from a Stack.
Sequence Control Buttons	These three buttons are used to control the basic operation of Sequences. For further details, refer to page 6-41.
STL Level Fader	If a Cue or Sequence is using 'sound-to-light' control, this fader varies the level of the effect. When the fader is fully down, all sound-to-light effects are disabled.
Grand Master	This controls the overall output level of all HTP channels on the PATHFINDER console.
Master Select Wheel	Used to select and adjust the console's operating parameters within the PATHFINDER's Menu System.

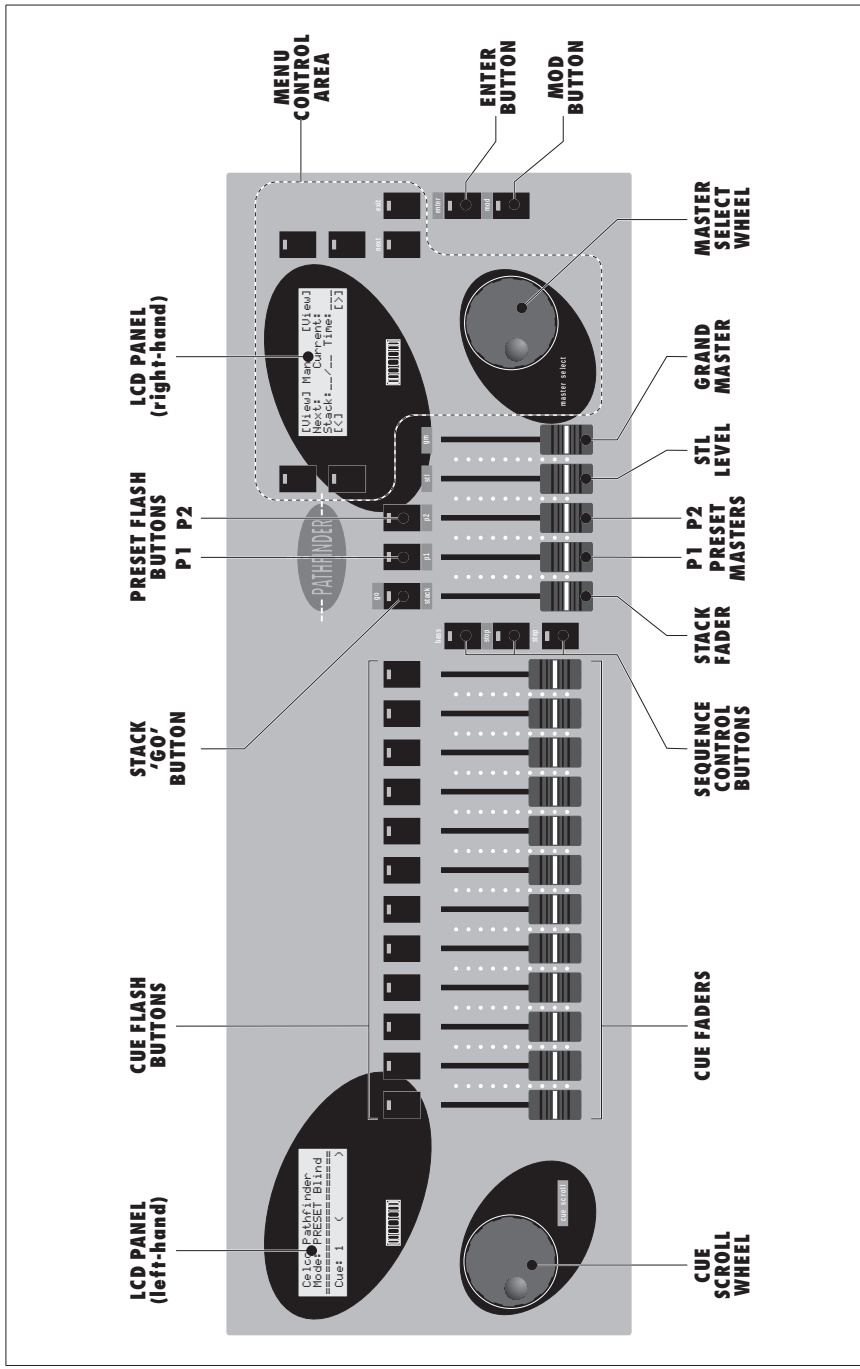

Fig.1-2: Layout of the PATHFINDER's Main Control Area.

Menu Control Area

The right-hand LCD Panel is used to display the various parameters which control the operation of the PATHFINDER console. The surrounding controls (shown in Fig.1-3) are used to select and alter the displayed settings.

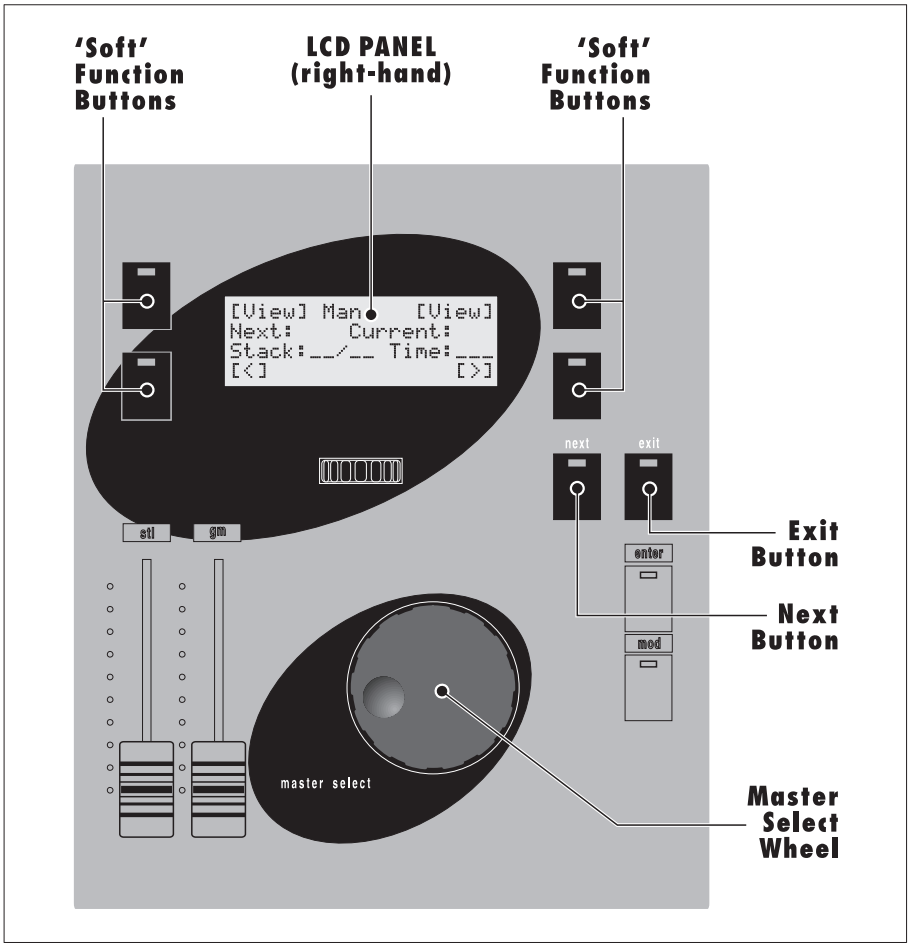

Fig.1-3: Controls associated with the Menu System.

The Menu System

The various internal parameters and set-up options are accessed in a series of 'Menus' and 'Pages'.

When the PATHFINDER is powered-up, the display defaults to a start-up or 'Root' Menu which comprises four Pages — in turn, the last page of the Root Menu provides access to other Menus / Pages as shown in Fig.1-4.

The structure of these Menus and Pages is called a menu 'tree'. A full diagram of the PATHFINDER's Menu Tree is provided in the Quick Reference Guide supplied separately.

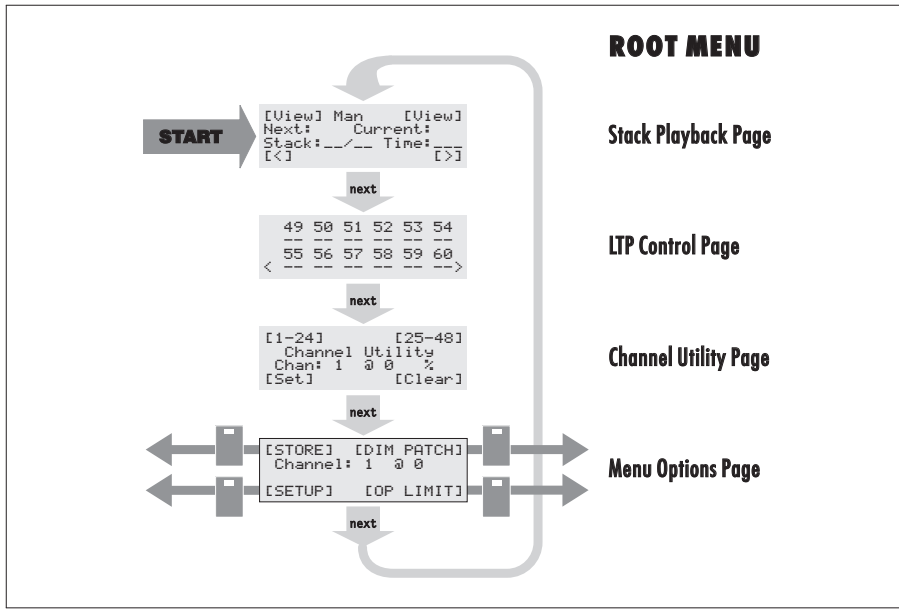

Fig.1-4: The four Pages of the Root Menu.

Moving Around The Menu Tree

Movement around the PATHFINDER's Menu Tree is achieved with:

- the **next** button which moves the display to the next Page in the current Menu,
- the **exit** button which moves the display to the first Page of the current menu or back to the previous menu level,
- the four 'soft' function buttons (on either side of the display) which are used to move to different menus and also to select particular functions.

> ***USEFUL TIPS***
> *The indicators in the* **next** *and* **exit** *buttons will be illumintated when the button can be used. If you ever loose track of where you are in the menu tree, press the* **exit** *button repeatedly — this will progressively step the display back to the first Page of the Root Menu (at which point the* **exit** *button indicator will go out.*

The Soft Function Buttons

The purpose of these four buttons varies according to which Menu or Page is currently displayed — hence the description 'soft' function. Whenever one of these buttons is 'active' (*i.e.* it has a function) this is shown in two ways:

- the button's LED Indicator is illuminated, and
- a function name appears on the display next to the button.

The function name is displayed in one of two ways:

- in 'upper case', *e.g.* `[STORE]`
  which indicates that the button is used to access another Menu or Page,
- in 'lower case', *e.g.* `[Delete]`
  which indicates that the button performs a specific task or function (*e.g.* to insert or delete something).

Selecting and Changing Parameters

Most of the Menu Pages allow the displayed parameters to be changed. Pages which contain alterable parameters have a 'cursor, which can be moved around the display — generally, a 'flashing' parameter value / setting indicates the present position of the cursor.

When more than one parameter appears on the display, the bottom two soft function buttons are marked with [<] and [>] — these buttons are used to move the cursor to the required position the screen.

The parameter at the cursor position is changed by rotating the **master select** wheel — numeric values are increased by clockwise rotation and decreased by anti-clockwise rotation.

> ***IMPORTANT NOTE***
> *All of the PATHFINDER's parameters are 'interactive' — i.e. changing the value of a parameter will instantly invoke that new setting.*

Rear Panel Features

Power Supply Input	The connecting point for the PATHFINDER's low-voltage power supply unit.
MIDI Control	These connectors are used in conjunction with the MSC facility to allow the PATHFINDER console to be linked to another console or other MIDI devices.
External 'go' Input	A connecting point for an external 'go' button (or signal) to allow the remote control of Cue Stacks.
DMX Control Output	This connector provides the main data output of the PATHFINDER console. All of the channel levels are encoded using the USITT DMX512/1990 protocol.
Sound-to-Light Inputs	These two connectors are used to provide an audio input to the PATHFINDER console for the various Sound-to-Light functions.
Expansion Ports	These are fitted to the ESC2797 EPX Model only. On the ESC2297 Standard Model, these positions are covered by two removable blanking plates. **Port 1** is used for connecting a Monitor and Keyboard for the Head-Up Display System (see Section 10). **Port 2** is used for connecting a 3.5 inch Floppy Disk Drive.

For further technical data and connection details for the above connectors, please refer to Appendix E.

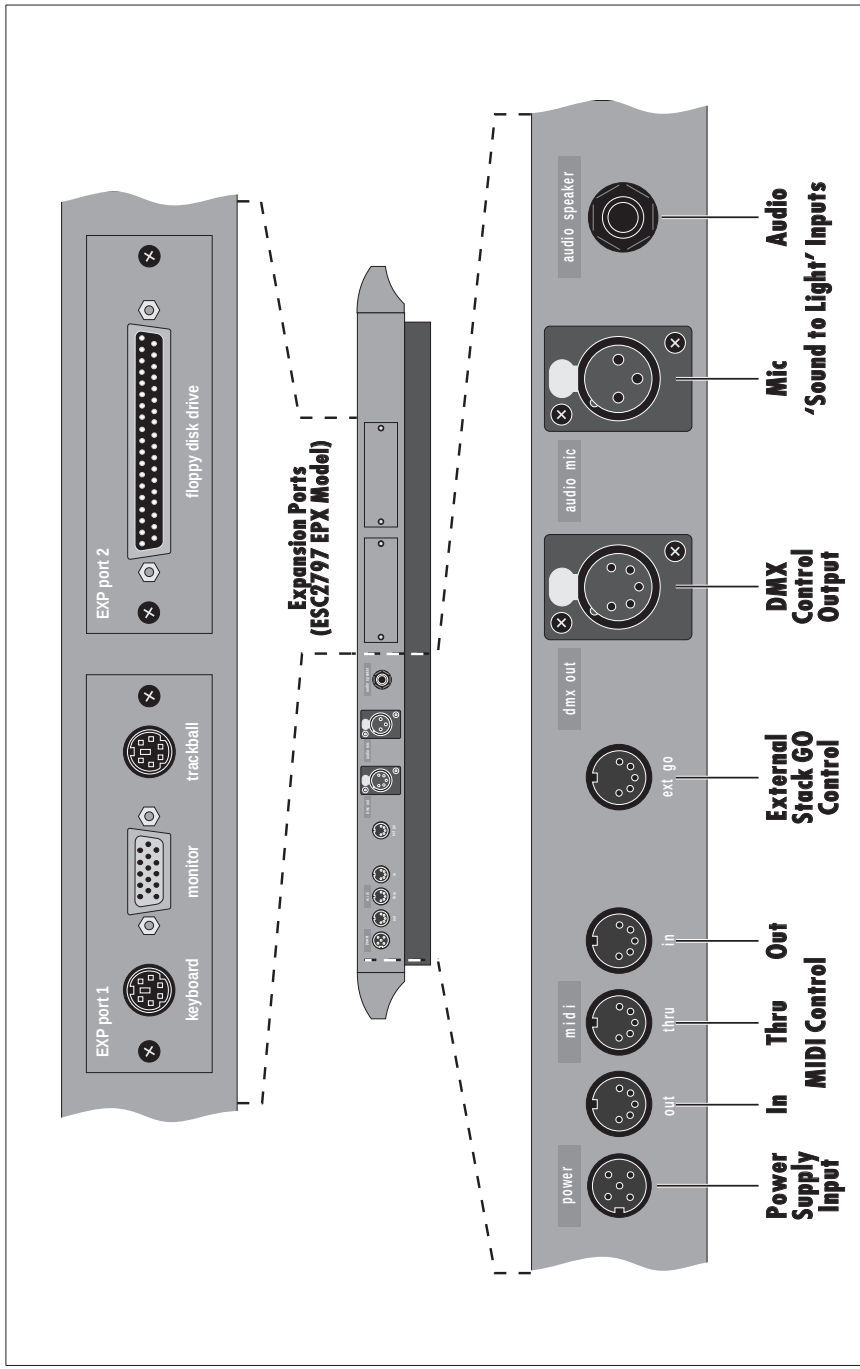

Fig.1-5: Layout of the PATHFINDER's rear panel.

Installing the PATHFINDER Console

To use the PATHFINDER console you will require:

- an external Power Supply Unit,
- one Celco DMX dtr Unit for every 36 Channels of analogue dimmers that you wish to control

These are connected to the PATHFINDER console, together with any other DMX-compatible devices (*e.g.* moving lights or scrollers) as shown in Fig.1-6.

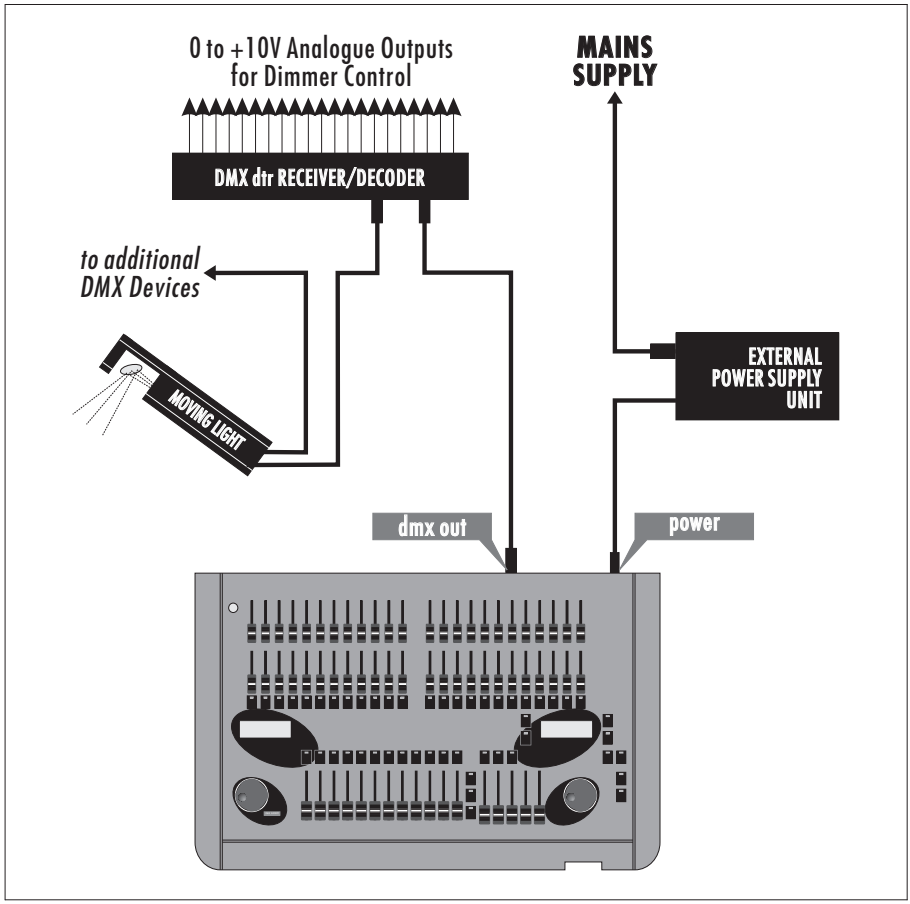

Fig.1-6: Basic installation set-up for the PATHFINDER.

External Power Supply Unit (ESC2296/P)

The power supply unit (PSU) supplied with your console is of an 'auto-sensing' type — *i.e.* it will automatically adjust to any mains supply voltage or frequency within the following ranges:

Mains Voltage: 100 to 240V a.c.
Mains Frequency: 50 to 60Hz.

A mains lead is provided which is fitted with an IEC / Europlug — this connects to the socket on the PSU.

Because there are many different types of mains connectors, the other end of the mains lead is 'bare-ended'. Connect a suitable mains plug in accordance with the following details:

Wire Colour	Connect to Terminal
Brown	'L' or 'Live' (*or coloured red or brown*)
Blue	'N' or 'Neutral' (*or coloured blue or black*)
Green & Yellow	'E' or 'Earth' (*or coloured green or green & yellow*)

WARNING
If you are unsure of the connections or the markings in your plug do not match those given above, consult a qualified electrician.

If the plug has provision for an internal fuse, a 5 Amp fuse must be fitted. If not, the supply must be protected by an external 5 Amp fuse or circuit breaker.

THIS APPLIANCE MUST BE EARTHED.

Connect the 'flying lead' of the PSU (fitted with a 5-pin DIN plug) to the **power** socket of the PATHFINDER console.

Operate the rocker switch on the PSU to turn the console On or Off.

When the supply is On, the red indicator on the PSU will be lit, and the LCD Panel backlights on the console will also be lit. ***On 100V or 110V supplies, there may be a short delay before the indicator illuminates.***

Internal Memory Back-up

The PATHFINDER console contains a rechargeable battery which is used to preserve the settings and data held in the internal memory. The battery receives a slow charge whenever the console is powered and switched on.

When fully charged, the battery will maintain the memory contents for up to 12 months without the desk being powered.

> ***IMPORTANT NOTE***
> *To avoid loss of data, ensure that the battery is fully charged by powering the console for 24 hours before using it for the first time and also after prolonged periods of storage.*

Digital Transmitter Receiver (*DMX dtr*)

The PATHFINDER console outputs a DMX signal which must be decoded in order to control analogue dimmers or motors, etc.

The Celco Digital Transmitter / Receiver Unit (***DMX dtr***) is recommended for this purpose (*order as* ESC2259 / 1). Each ***DMX dtr*** able to decode up to 36 channels from the DMX signal and convert them into 0 to +10V analogue signals. Any number of ***DMX dtr*** units can be 'daisy-chained' together to enable all 512 channels to be utilised.

For full operation and connection details, refer to the User Guide supplied with the DMX dtr unit, but please note the following important points:

- The Tx–Rx slider switch on the back panel must be set to the Rx (receive) position.
- The Address Select dials on the front panel must be set to the first Channel number in a block of 36 that the unit is to decode. For example, the first unit should be set to address 001 (channels 1 to 36), the second unit to address 037 (Channels 37 to 72), *etc.*

Connect the PATHFINDER's **dmx out** connector (see page E-5) to the DMX In connector on the ***DMX dtr*** unit.

General Care of the Console

- **Never place drinks or any liquid, on or near the console.**

  An accidental spillage could cause liquid entering the console which may result in damage to the faders, buttons and internal electronics.

- **Always protect the console from direct sunlight, rain, dusty environments and excessive vibration.**

- **When transporting the console, ensure that it is not dropped or subjected to severe shocks, and do not place heavy items on the console.**

  Whenever possible, transport the console in the specially designed flight case (*order as* ESC2297 / F).

- **Never use detergents, solvents or abrasive cleaners as these may damage the console paint finish or plastic components.**

  Keep the console clean by wiping with a lightly dampened cloth — excessive dust should first be removed with a soft-haired brush or vacuum cleaner.

Optional Accessories

The following optional accessories are available for use with the PATHFINDER:

Flight Case — *Order as* **ESC2297/F**

A stylish and rugged flight case constructed in rigidized aluminium with engineered plastazote insert an finished in black nylon. The flight case has space for the PATHFINDER console and its Power Supply Unit.

Dust Cover — *Order as* **ESC2297/C**

A soft PVC dust cover, screened with the Celco and PATHFINDER logos.

Work-Light — *Order as* **ESC2296/L**

A small 'gooseneck' lamp that connects to the console to provide illumination in low-light conditions.

Magnetic Label Strip — *Order as* **ESC2296/W**

A magnetic strip which can be fitted above the Cue Faders for identification. It is suitable for use with most write-on / wipe-off pens and crayons.

Q-Card (no. 6) — *Order as* **ESC2226**

For storing and retrieving show data. For more details, refer to Section 7.

Floppy Disk Drive — *Order as* **ESC2000/FDD**

For storing and retrieving show data using standard PC-compatible 3.5inch pre-formatted floppy disks. Suitable for the EPX version of PATHFINDER only.

EPX Upgrade Kit — *Order as* **ESC2297/EPX**

For upgrading the standard PATHFINDER console to an EPX version in order to provide Head-Up Display and Floppy Disk Drive capabilities.

Section 2:
An Overview of 'Channels'

Channel Types

The Celco PATHFINDER console is capable of controlling up to 60 channels which are arranged as follows:

- Channels 1 to 48 are configured as Highest Takes Precedence (HTP) for controlling lamp levels (via dimmers), and
- Channels 49 to 60 are configured as Latest Takes Precedence (LTP) for controlling colour changers, lamp positioning, etc.

HTP Channels (Highest Takes Precedence)

Channels 1 to 48 can be set to a specific control level ranging from zero up to 100 %. This control level is set by one of three methods:

- the position of a **Channel Fader**,
- a stored level in a **Cue**,
- a stored level in a **Sequence**.

Any or all of these methods may be applied to a channel at the same time, but only the *highest* requested level is used to set the channel, hence the definition of Highest Takes Precedence.

For example, if a Channel Fader is set at 75% and a Cue for the same HTP channel specifies 50%, the actual channel level will be the highest of these, *i.e.* 75%. If the Channel Fader is now slowly reduced to 25%, the level of the channel will also reduce but will not drop below 50% as this becomes the highest level.

LTP Channels (Latest Takes Precedence)

Channels 49 to 60 can be set to a specific control level ranging from zero up to 100 %. This control level is set by one of three methods:

- the setting of an **LTP Level** via the LCD Panel,
- a stored level in a **Cue**,
- a stored level in a **Sequence**.

With LTP channels, only the *last* requested level is used to set the channel, hence the definition of Latest Takes Precedence. However, it is important to note that the first method listed above is 'absolute' and, whilst it is active, will override any other level request.

For example, if a Cue specifies a level of 75% for an LTP channel, that channel will be set to 75%. If a Sequence subsequently specifies a level of 50%, the channel will now be set to 50% as this becomes the latest level.

> ***IMPORTANT NOTE***
> *LTP channel levels are not varied by either of the Preset Masters (***p1** *or* **p2***) or the Grand Master (***gm***). However, LTP Channels are not updated whilst the console in Blind mode.*

Basics of HTP Level Control

The 'final' output of an HTP Channel (*i.e.* the output used to actually set the level of a dimmer) can be varied between 0 and 100%, corresponding to 'no light' and 'maximum light' respectively.

There are many ways in which this final output level for an HTP Channel can be controlled; the diagram in Fig.2-4 shows the complete control path:

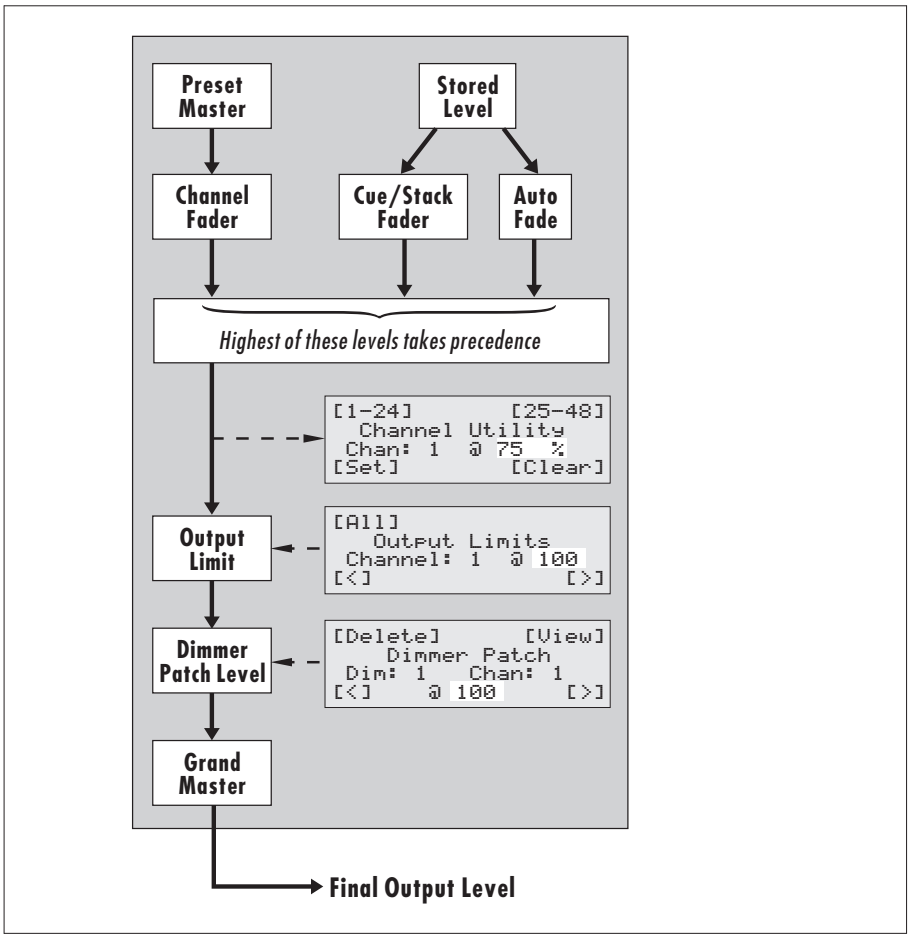

Fig.2-1: Control level path for a single HTP Channel.

Basic Channel Level

The basic level of an HTP Channel is set between 0 and 100% by either:

- a **Channel Fader**, or
- a stored level in a **Cue** or **Sequence**

The basic level set by a Channel Fader is proportionally controlled or 'mastered' by one of the Preset Master Faders (identified as **p1** and **p2**).

A stored level is proportionally controlled or 'mastered' by one of the Cue Faders. Both the Preset Master Faders and Cue Faders affect the basic Channel levels using 'Proportional' Mastering (ses Fig.2-2 on page 2-7.).

NOTE *A stored level in a Cue can also be recalled using the* **Stack Fader** *or the* **AutoRun** *function. Both of these methods provide cross-fades between different Channel levels.*

As already established, if more than one control level is present, the highest level will be used. The basic control level of a Channel can be viewed as a percentage value on the Channel Utility Page of the Root, Cue and Sequence Menus:

```
[1-24]        [25-48]
  Channel Utility
 Chan: 1  @ 75  %
[Set]          [Clear]
```

This Page displays the last channel set (via a Channel Fader). Moving a Channel Fader or pressing a Flash Button will cause the display to update and show the level of *that* Channel.

Output & Dimmer Patch Limiting

Two 'limiting' parameters are available to restrict the available range of the channel output. These are:

- **Output Limit** which sets a limit for the 'console' Channel, and
- **Dimmer Patch** which sets the relationship between the console Channel and its associated DMX Channel (used to control a dimmer)

Both of these limits operate 'proportionally' and are normally set to 100% by default (*i.e.* no limiting).

Grand Master

The final control stage is the Grand Master Fader (identified as **gm**). Unlike the other faders and limiting parameters, this control operates using 'Broomstick' Mastering (as shown in Fig.2-2.).

This fader is normally left fully-up; when fully-down, *all* HTP Channels will be at zero level. The principle purpose of this control is to provide a quick manual 'blackout' of all HTP Channels.

Principles of Mastering & Limiting

There are two methods of mastering or limiting used by the PATHFINDER console — Proportional and Broomstick. The effect of both methods on a basic set of Channel levels is demonstrated in Fig.2-2 below.

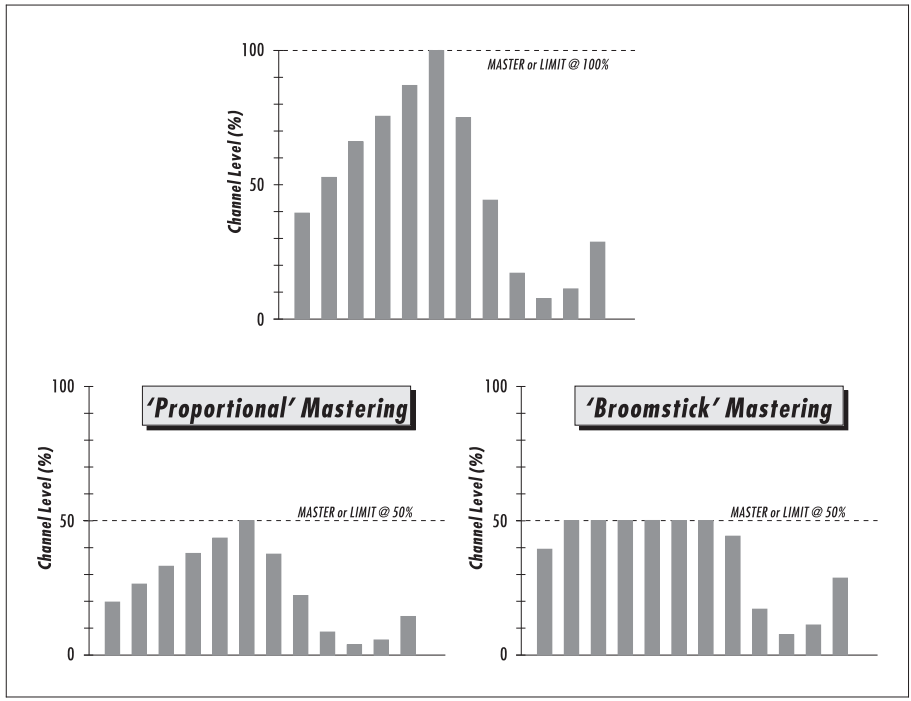

Fig.2-2: Proportional & Broomstick Mastering.

The Preset Master Faders (**p1** and **p2**), Cue and Stack Faders all use Proportional mastering. The Grand Master Fader (**gm**) uses Broomstick mastering.

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Section 3:
Manual ‘Preset’ Control

The simplest way to use the PATHFINDER console is by manually setting each HTP channel level using the 48 Channel Faders. This can be achieved using one of two modes, according to the number of channels required:

- 24-Channel Mode, or
- 48-Channel Mode.

The process of manually setting channel levels also forms the basis of programming Cues and Sequences, which are explained in later sections of this User Guide.

Selecting 24- or 48-Channel Mode

The mode in which you choose to operate the PATHFINDER Console will depend on the following requirements:

- **How many HTP channels do you need to control?**

  If it's between 1 and 24, then use 24-Channel Mode;
  If it's between 25 and 48, then use 48-Channel Mode.

- **Do you need to use the console as a conventional manual 'two preset' lighting desk (*i.e.* to crossfade between 'scenes')?**

  If you do, then use 24-Channel Mode.
  If you don't, then use either Mode.

☞ To select the required mode, call-up the Primary Page of the Defaults Menu on the right-hand LCD Panel:

```
 Chan Mode: 24
 Preset Invert: Off
 Cue Block: 12
[<]   Fade: Off   [>]
```

☞ Ensure that the cursor is on the **Chan Mode** field; if not, use the **[<]** or **[>]** soft buttons to move the cursor.

☞ Rotate the **master select** wheel left or right to obtain the desired setting:

- `24` = 24-Channel Mode,
- `48` = 48-Channel Mode.

Setting HTP Levels

The PATHFINDER has 48 Channel Faders located on the top half of the console; these are arranged in two banks or ‘Presets’ of 24. The function of each Preset depends on whether 24- or 48-Channel mode is selected; this is explained in more detail later on in this section.

The basic level of a Channel is adjusted by simply moving its corresponding fader up or down. When the fader is fully-down, the Channel level is at zero; when the fader is fully-up, the Channel level is at maximum.

The maximum control level for each Channel Fader is 100%. The level range set by a Channel Fader can be further modified by the Preset Masters and Grand Master. Each channel also has an Output Limit parameter. Refer to page 2-4 to 2-7 for further information of level control.

Channel Flash Buttons

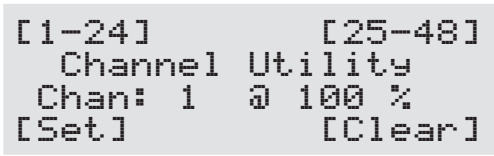
Pressing a Channel Flash Button will take the level of that Channel immediately to maximum — as if the Channel Fader were moved fully-up. This has the effect of ‘flashing’ the Channel output and is a useful aid for identifying the lights controlled by a particular Channel or for creating ‘lightning’ effects .

In 24-Channel Mode, the buttons correspond directly to Channels 1 to 24. However, in 48-Channel Mode, the Flash Buttons will either correspond to Channels 1 to 24 or 25 to 48 — as indicated on the top line of the left-hand LCD Panel.

To change the Flash Button range, see ‘Viewing HTP Channel Levels’ on the next page.

Viewing HTP Channel Levels

To view the actual 'numeric' level of a Channel or to change the Flash Button range in 48-Channel Mode, call-up the Channel Utility Page of the Root Menu on the right-hand LCD Panel:



The display will show the *last* Channel number (and its level) to be affected by either:

- moving a Channel Fader, or
- pressing a Channel Flash Button.

To change the Flash Button range (when using 48-Channel Mode) press one of the top soft buttons, next to the desired range, *i.e.* **[1-24]** or **[25-48]**.

> ***HELPFUL HINT***
> *Active channels (i.e. those with any level above zero) are shown by the indicators of the Channel Flash Buttons.*

Using 24-Channel Mode

The function of the Channel Faders, Flash Buttons, Preset Masters in 24-Channel Mode is summarised in Fig.3-1, but the key points are:

Console Control	**Function**
Top row of Channel Faders — 'Preset 1'	Set the levels of Channels 1 to 24
Bottom row of Channel Faders — 'Preset 2'	Set the levels of Channels 1 to 24
Preset Master Fader **p1**	Masters the levels of 'Preset 1'
Preset Master Fader **p2**	Masters the levels of 'Preset 2'
Channel Flash Buttons	'Flash' Channels 1 to 24
24-Channel Mode is most often used to mimic the 'A & B Preset' operation of traditional lighting consoles. *Remember that in this mode, only the first 24 channels can be controlled by the Channel Faders. However, the level of Channels 25 to 48 can still be set by pre-programmed Cues or Sequences.*	

☞ To start, ensure that both Preset Masters (**p1** & **p2**) are fully down and that the Grand Master (**gm**) is fully up.

☞ Set-up the first lighting scene on the top row of Channel Faders (Preset 1), then *open* the **p1** Preset Master to *fade-in* this scene.

☞ Now set-up the next scene on the bottom row of Channel Faders (Preset 2). To change scenes, *close* **p1** and *open* **p2**.

To simplify 'cross-fades' between scenes, refer to 'Preset Inversion' on page 3-7.

☞ Once **P1** is fully down, set-up the next lighting scene on Preset 1, and so on.

24-Channel Mode

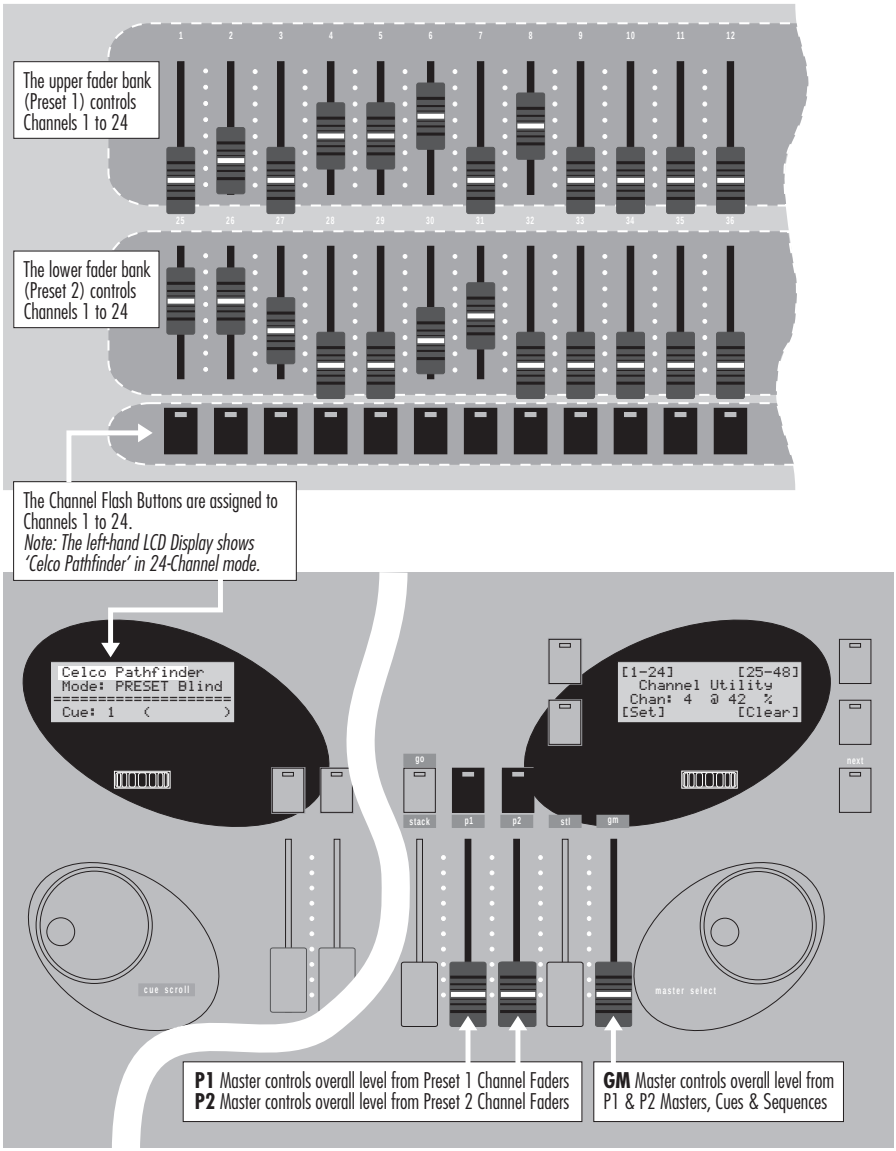


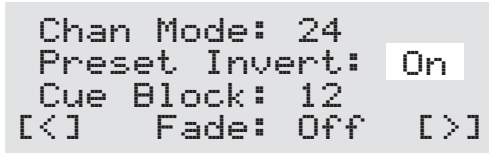
Fig.3-1: Operational summary for 24-Channel Mode.

Preset Inversion

By default, the Preset Masters are both configured to be at zero when fully down and at 100% when fully up. Thus, to perform a cross-fade between the two Presets, the Preset Masters need to be moved in opposite directions.

However, the PATHFINDER allows the operation of Preset Master **p1** to be reversed or 'inverted' with respect to **p2**. This greatly eases cross-fades since both faders can now be moved in the same direction.

☞ Call-up the Primary Page of the Defaults Menu on the right-hand LCD Panel:



☞ Position the cursor on the **Preset Invert** field using the **[<]** or **[>]** soft buttons.

☞ Rotate the **master select** wheel left or right to turn the function On or Off.

Using 48-Channel Mode

The function of the Channel Faders, Flash Buttons, Preset Masters in 48-Channel Mode is summarised in Fig.3-2.

Console Control	**Function**
Top row of Channel Faders	Set the levels of Channels 1 to 24
Bottom row of Channel Faders	Set the levels of Channels 25 to 48
Preset Master Fader **p1**	Masters the levels of Channels 1 to 48
Preset Master Fader **p2**	*Not used in this mode.*
Channel Flash Buttons	'Flash' Channels 1 to 24 or 25 to 48 as selected by Channel Utility Page.
Since 48-Channel Mode only has one 'Preset', cross-fades between two scenes are not possible. This means that this mode has limited practical use in manual lighting control; its principle use is for setting-up levels for programming into Cues or Sequences.	

☞ To start, ensure that Preset Master **p1** is fully down and that the Grand Master (**gm**) is fully up.

☞ Set-up a lighting scene using both rows of Channel Faders, then open the Preset Master **p1** to fade-in this scene.

☞ To change scenes, close **p1** and set-up the next lighting scene using the Channel Faders, and so on.

Channel Flash Buttons

These correspond either to Channels 1 to 24 or Channels 25 to 48 as indicated by the top line of the left-hand LCD Panel.

To change the button designation, call-up the Channel Utility Page of the Root Menu and select the required range using the top two 'soft' buttons.

48-Channel Mode

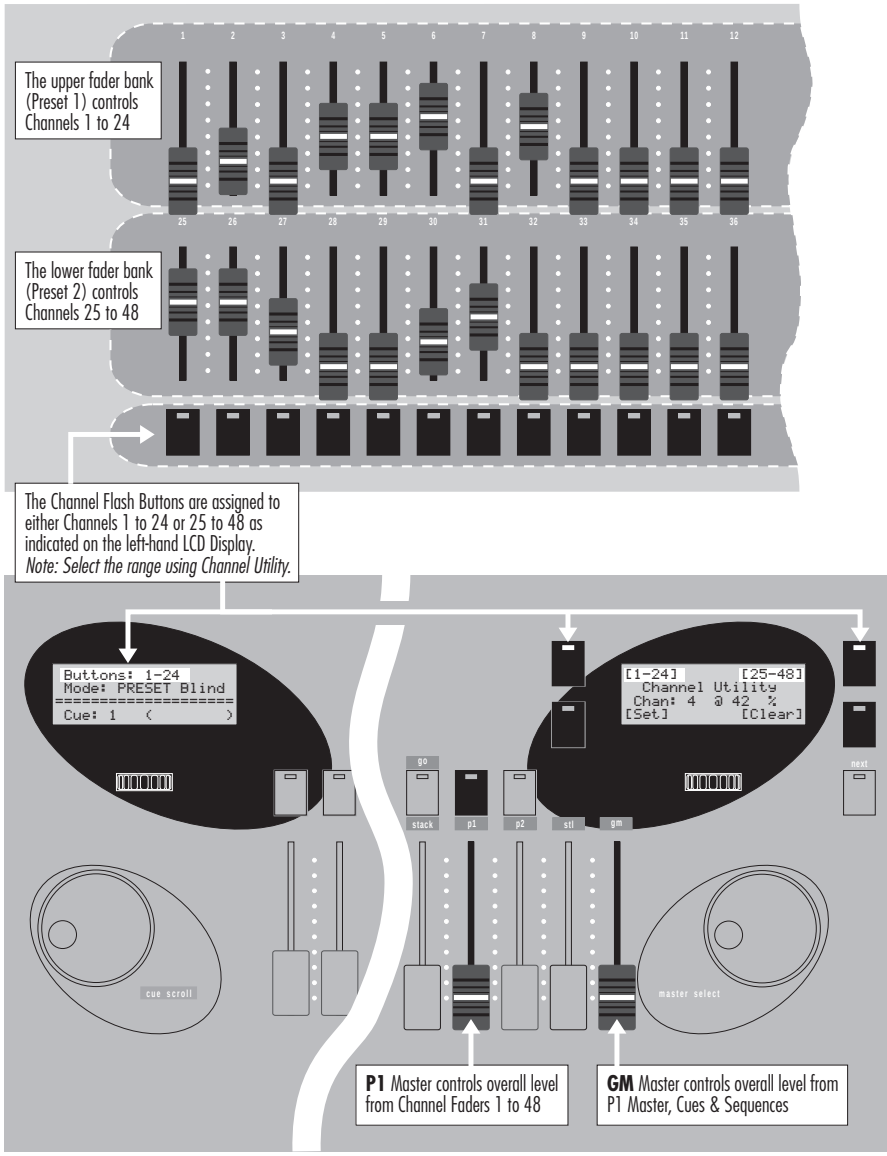


Fig.3-2: Operational summary for 48-Channel Mode.

Live or Blind Operation

The Preset Channel Faders can be operated in one of two modes:

- **Live** in which the levels set by the Channel Faders are sent directly to the console output. This mode is generally used for programming a show since this allows the operator or lighting designer to accurately monitor the current lighting set-up.
- **Blind** in which the levels set by the Channel Faders are not sent to the console output. This mode is generally used for making discrete changes to pre-programmed cues during a performance without affect the current lighting set-up.

The selection of Live / Blind operation is dependent upon the positions of the Preset Masters and whether the console is in 24- or 48-channel mode, as illustrated in Fig.3-3.

> ***HELPFUL HINT***
> *The use of Live or Blind operation is mainly relevent to programming Channel levels into Cues or Sequence.*

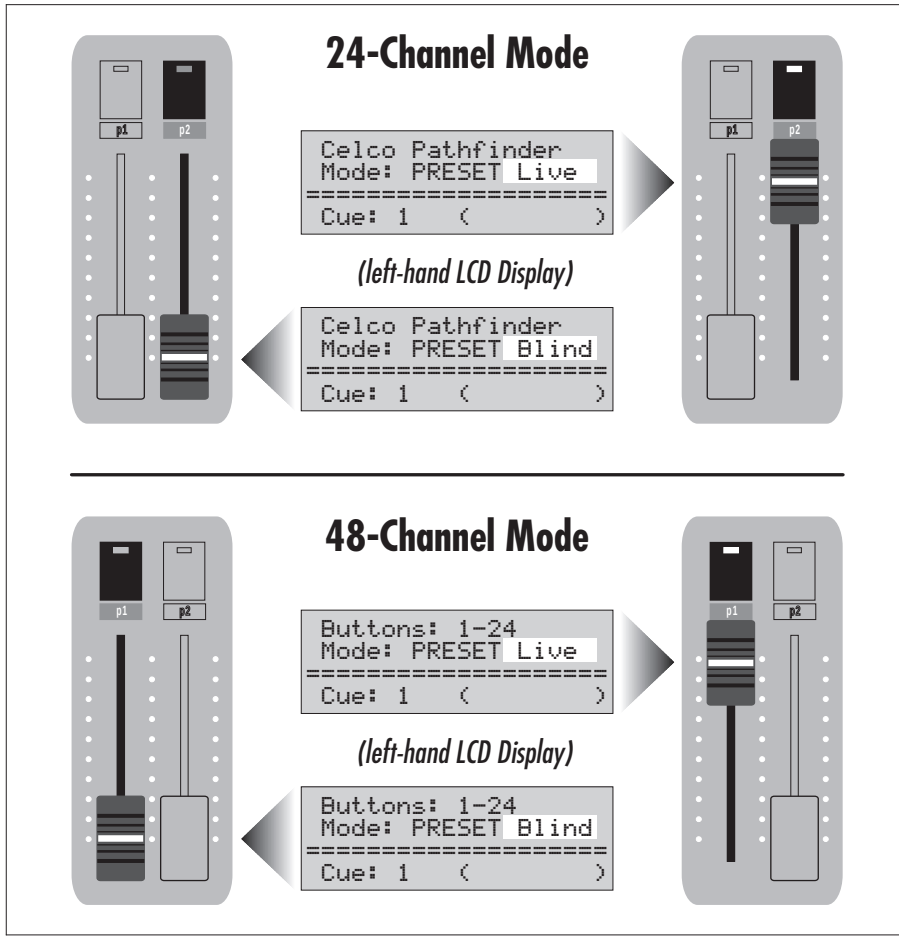


Fig.3-3: Select Live or Blind preset operation.

LTP Channel Levels

LTP Channel levels can either be set directly using the LTP Control Page of the Root Menu or be stored as part of a Cue or a Sequence.

An LTP channel has one of two states:

- **Selected** the channel is assigned a specfic value of 0 to 100%, (this may also be referred to as an 'active' channel).
- **Deselected** the channel has no value specified (this may also be referred to as a 'transparent' channel since the previously-set level is retained).

IMPORTANT NOTES

*With LTP channels **any** newly defined level (including zero) will override a previous value.*

Any LTP Channels levels which are left 'selected' on LTP Control Page of the Root Menu will override any new levels which are requested by Cues or Sequences.

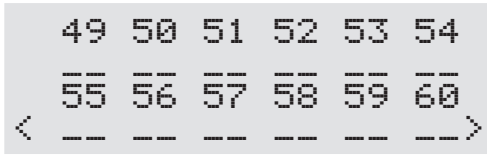
Unlike HTP Channels, the levels of LTP Channels are not varied by the Preset Master or Grand Master Faders. However, LTP Channel levels are not sent whilst the console is in Blind mode.

Setting LTP Channel Levels

☞ Select whether you want to set the levels using Live or Blind operation as follows:

24-Channel Mode		48-Channel Mode	
Blind	**Live**	**Blind**	**Live**
Put **P2** Master fully **down**	Put **P2** Master fully **up**	Put **P1** Master fully **down**	Put **P1** Master fully **up**
IMPORTANT NOTE *In Blind mode any levels set for LTP Channels will not take effect until the appropriate Preset Master is moved above zero or its Flash Button pressed.*			

☞ Call-up the LTP Control Page of the Root Menu on the right-hand LCD Panel.



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of an individual Channel, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

Section 4:
Cue Programming

What is a Cue?

In theatrical lighting, the term 'Cue' traditionally refers to a set lighting pattern or scene.

The PATHFINDER has the ability to memorize the levels of its 48 HTP Channels and 24 LTP Channels as a Cue. Up to 240 Cues can be held in the PATHFINDER's memory at one time.

Each Cue can then be recalled by using one of the Cue Faders. In addition, Cues can be assigned to a Stack (see Section 5) which allows them to be recalled in a pre-defined order, either manually or automatically at specific intervals.

> ***HELPFUL HINT***
> *You may find it helpful to understand the principles of recalling and previewing Cues before starting to learn about a Cue programming. Please read 'Recalling A Cue' from page 4-18 onwards.*

Cue Numbering

Cues in the PATHFINDER's memory are held in a sequential 'list' with each 'position' in the list being identified by the numbers 1 to 240.

> ***IMPORTANT NOTE***
> *A very important point to remember is that Cue numbers identify a Cue's 'position' in memory and* **not** *the Cue itself.*

The Cue Menu Pages

Cue programming is largely achieved via the Cue Menu. Fig.4-1 below shows how to reach the Cue Menu Pages from the Root Menu.

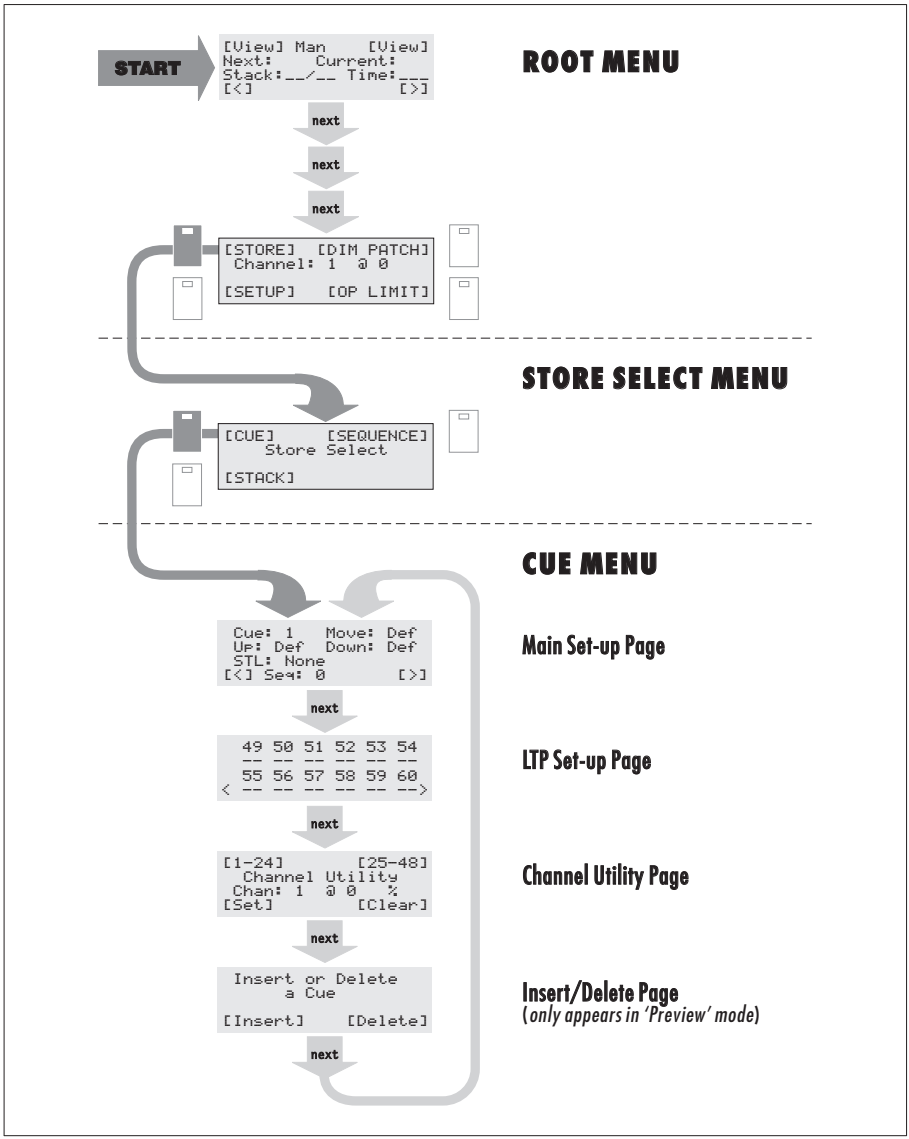


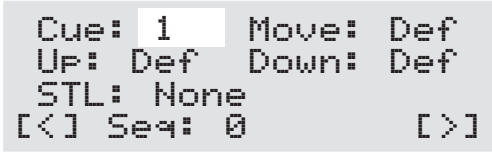
Fig.4-1: How to access the Cue Menu.

Programming Channel Levels

> ***IMPORTANT NOTE***
> *Before programming a new set of Cues, it is recommended that you delete any existing Cues from the PATHFINDER's memory – see page 4-17.*

1 Selecting a Cue

☞ Call-up the Main Set-up Page of the Cue Menu:



☞ With the cursor on the Cue field, rotate the master select wheel to specify the number of the Cue that you wish to program.

2 Setting-up the HTP Channel Levels

☞ Select whether you want to set the levels using Live or Blind operation as follows:

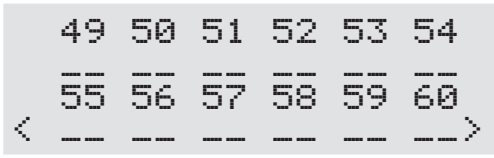
24-Channel Mode		**48-Channel Mode**	
Blind	**Live**	**Blind**	**Live**
Put **P2** Master fully **down**	Put **P2** Master fully **up**	Put **P1** Master fully **down**	Put **P1** Master fully **up**

☞ Then set each Channel to the required level using the appropriate bank(s) of Channel Faders:

24-Channel Mode	**48-Channel Mode**
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

3 Setting-up the LTP Channel Levels

☞ Press the **next** button to move to the LTP Set-up Page of the Cue Menu:



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of an individual Channel, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

HELPFUL HINT

An LTP Channel must be 'selected' to be included in the Cue. You may find it helpful to select **all** *LTP Channels (by using the Set button on the Channel Utility Page) – this will ensure that the current state of all colour changers, etc. (being controlled by LTP Channels) will be stored in the Cue.*

IMPORTANT NOTE

Any LTP Channels which are currently 'selected' via the LTP Control Page of the ***Root Menu*** *will not be affected by any levels saved within a Cue. Any such Channels must be de-selected in the LTP Control Page to enable the Cue levels to take effect (see pages 3-12 to 3-14).*

4 Saving the HTP/LTP Channel Settings

☞ When all of the HTP and LTP Channels are set to their required levels, save the values to the Cue by pressing the **enter** button.

The **enter** *button's indicator will light briefly to show that the settings have been accepted.*

Programming Cue Parameters

AutoFade Time Settings

There are three time settings associated with each Cue:

- **Up** which defines the time taken for the HTP Channels in the Cue to fade in.
- **Down** which defines the time taken for the HTP Channels in the Cue to fade out.
- **Move** which defines the time taken for the LTP Channels to change to their new values (if selected).

These times are applied to all methods of Cue recall, whether by Cue Fader or Stack, but are only used when the Fade parameter in the Defaults Menu is set to On. To set or modify the Cue's AutoFade times, proceed as follows:

☞ Call-up the Main Set-up Page of the Cue Menu:

☞ Move the cursor to the appropriate parameter using the **[<]** or **[>]** soft buttons, then rotate the **master select** wheel to adjust the value to:

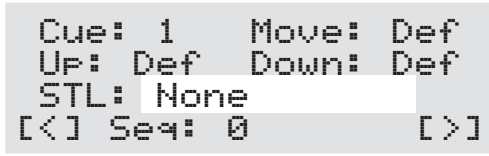
- `Def` the Cue will use the time specified within the Defaults Menu (see page 8-4),
- `0` *to* `60` a time (in seconds) to be used by this Cue only.

> ***HELPFUL HINT***
> *If most of your Cues don't need fade times, use the Defaults Menu to set a default time of zero — this will avoid the need to change the setting from* `Def` *to* `0` *for each of these Cues.*

Sound to Light Control

The overall level of the HTP Channels in a Cue can be modulated or 'mastered' by an audio signal. With no signal, the Channels will be at zero; an increasing signal level will raise the Channel levels towards their preset values.

☞ Call-up the Main Set-up Page of the Cue Menu:



☞ Move the cursor to the **STL** parameter using the **[<]** or **[>]** soft buttons, then rotate the **master select** wheel to adjust the value to one of the following:

- None — No Sound to Light control to be used,
- Hard Bass — Fast level changes using low frequencies,
- Hard Middle — Fast level changes using mid frequencies,
- Hard Top — Fast level changes using high frequencies,
- Soft Bass — Slow level changes using low frequencies,
- Soft Middle — Slow level changes using mid frequencies,
- Soft Top — Slow level changes using high frequencies,

Assigning a Sequence to a Cue

In order to use a Sequence, it must be assigned to a Cue. This may be *instead of* or *as well as* having preset HTP and LTP Channel levels.

Where both a Sequence and preset Channel levels are used, the preset HTP levels can be used to provide a 'constant' or 'background' lighting scene for the 'changing' pattern of the Sequence.

For instructions on programming a Sequence , please refer to Section 6.

☞ Call-up the Main Set-up Page of the Cue Menu:

☞ Move the cursor to the **Seq** parameter using the **[<]** or **[>]** soft buttons, then rotate the **master select** wheel to adjust the value to one of the following:

- 0 No Sequence is assigned,
- 1 *to* 30 Sequence number assigned to the cue.

Labelling a Cue

Each Cue can be given an identification label which can comprise up to eight alphanumeric characters.

☞ With the Main Set-up Page of the Cue Menu on the right-hand LCD Display, position the cursor on the **Seq** parameter.

☞ A further press of the **[>]** soft button will transfer the cursor to the label field of the left-hand LCD Display; the cursor position is indicated by a flashing 'underline' character:

HEAD-UP DISPLAY FEATURE
see page 10-4

☞ Rotate the **master select** wheel to step through the available letters, numbers and symbols.

☞ When the required character is displayed, press the **[>]** soft button to move the cursor to the next position.

☞ Repeat the last two instructions to enter the rest of the label.

To enter a 'space', simply move the cursor without selecting a character.

To edit a character, position the cursor on the character then rotate the **master select** *wheel to alter the character as required.*

☞ To return the cursor to the right-hand LCD Display, repeatedly press the **[<]** soft button.

Modifying Cue Settings

The following Cue parameters are interactive and can be altered at anytime simply by following the instructions on the indicated pages:

- **AutoFade Times** *(see page 4-6)*
- **Sound to Light Control** *(see page 4-7)*
- **Sequence Assignment** *(see page 4-8)*
- **Cue Label** *(see page 4-9)*

To modify the HTP or LTP Channel levels stored in a Cue, you need to use the PATHFINDER's Modify Mode as described on the next four pages.

Selecting 'Modify Mode'

☞ Before attempting to modify a Cue, ensure that all Channel Faders are at zero level.

Please note, however, that if you are using 24-Channel Mode you can still use the top fader bank (via the **P1** *Master) to manually set Channel Levels without affecting the Cue.*

☞ Select the Cue to be modified, either by:

Opening the appropriate Cue Fader (with no other Cues active),

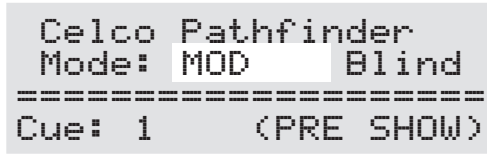
OR

Previewing the Cue (*i.e.* by pulling the appropriate Cue Fader back past its zero point — see page 4-22),

OR

Calling-up the Main Set-up Page of the Cue Menu and selecting the required Cue number with the Cue field (see page 4-3).

☞ Press the **mod** button to engage Modify Mode. The **mod** button indicator will illuminate to show that it is active and the left-hand LCD Display will change from showing PRESET to MOD:



Changing HTP Channel Levels

Whilst the Cue is in Modify Mode, the active Channels in the Cue are denoted by the corresponding Channel Flash Button indicators being lit.

Please note that when using 48-Channel Mode, the Flash Buttons will either correspond to Channels 1 to 24 or 25 to 48 — as indicated on the top line of the left-hand LCD Display. To change the button selection, call-up the Channel Utility Page on the right-hand LCD Display and select the range with the top two soft buttons.

☞ Select whether you want to adjust the levels using Live or Blind operation as follows:

24-Channel Mode		**48-Channel Mode**	
Blind	**Live**	**Blind**	**Live**
Put **P2** Master fully **down**	Put **P2** Master fully **up**	Put **P1** Master fully **down**	Put **P1** Master fully **up**

NOTE *To assist with HTP level adjustment when operating Blind, call-up the Channel Utility Page on the right-hand LCD Display.*

☞ Then adjust the levels of the required Channels using the appropriate bank(s) of Channel Faders:

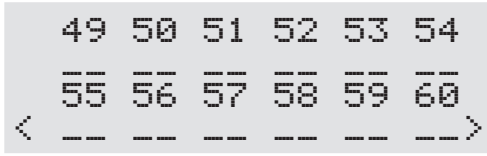
24-Channel Mode	**48-Channel Mode**
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

☞ To increase the level of an 'active' Channel or to set a level for an 'inactive' Channel, simply move the corresponding Channel Fader to the desired level.

☞ To reduce the level of an 'active' Channel, you must firstly move the Channel Fader to a level *equal to* or *above* that currently stored. Then reduce the level as desired.

Changing LTP Channel Levels

☞ Call-up the LTP Set-up Page of the Cue Menu:



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of an individual Channel, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

Saving or Abandoning Cue Level Changes

☞ To save the modified values to the Cue, press the **enter** button.

The **enter** *button's indicator will light briefly to show that the new settings have been accepted.*

☞ To abandon any changes (and retain the previous settings), press the **mod** button.

The **mod** *button's indicator will turn-off to show that Modify Mode has been disengaged.*

Inserting Extra Cues

☞ Preview the Cue number immediately ***prior to*** where you want to insert a new Cue (*i.e.* by pulling the appropriate Cue Fader back past its zero point — see page 4-22).

☞ Press the **next** button to step through the Cue Menu until the Insert / Delete Cue Page is displayed:

```
 Insert or Delete
       a Cue

[Insert]    [Delete]
```

☞ To insert a new Cue, press the **[Insert]** soft button.

> ***IMPORTANT NOTE***
> *When a Cue is inserted, any following Cues are shifted-up by one position. For example, if you have 10 Cues in memory and you insert a new Cue after Cue 5, Cues 6 to 10 will become Cues 7 to 11.*
> ***Please be aware of the disruption this may cause to the order and timing of Cues within Stacks!***

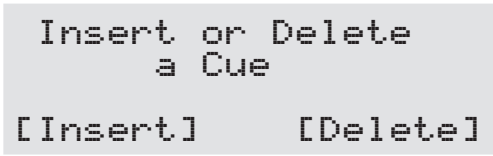
Deleting Cues

Please remember that a 'Delete Cue' action cannot be undone – IF IN DOUBT, DON'T DELETE!

Deleting a Single Cue

☞ Select the Cue that you wish to delete, by previewing it Cue (*i.e.* by pulling the appropriate Cue Fader back past its zero point — see page 4-22).

☞ Press the **next** button to step through the Cue Menu until the Insert / Delete Cue Page is displayed.



☞ To delete the currently previewed Cue, press the **[Delete]** soft button.

IMPORTANT NOTE
When a single Cue is deleted, any following Cues are shifted by one position to fill the space. For example, if you have 10 Cues in memory and you delete Cue 5, Cues 6 to 10 will become Cues 5 to 9.
Please be aware of the disruption this may cause to the order and timing of Cues within Stacks!

Deleting All Cues

☞ Call-up the Clear Menu on the right-hand LCD Display:

```
[CUES]   [SEQUENCES]
     Clear Menu

[STACKS]        [ALL]
```

☞ Press the **[CUES]** soft button; the following display will appear:

```
[Clear]       [Clear]
 Press ALL Four
 Buttons to Clear.
[Clear]       [Clear]
```

☞ To delete *all* Cues in memory, press all four 'soft' buttons at once.

The display will then revert to the 'root' menu.

Recalling a Cue

Cue Faders & Block Scrolling

A Cue is recalled manually by opening or closing one of the 12 Cue Faders located in the main control area.

Since there are only 12 faders and a possible 240 Cues, the faders need to be assigned to a specific 'block' of Cues. This is achieved by rotating the **cue scroll** wheel.

NOTE *By default, the number of Cues within each block is set to 12 to match the number of Cue Faders (e.g. Cues 1 to 12, 13 to 24, 25 to 36, etc.). If preferred, the block size can be changed by altering the Cue Block parameter in the Defaults Menu (see page 8-3).*

The number of the first Cue in the block is displayed on the left-hand LCD Display — this is the Cue assigned to the first Cue Fader, with the next 11 consecutive Cues being assigned to the remaining faders.

If the first Cue in the block has a name 'Label' this will also appear on the LCD Display. If another Cue is being previewed (see page 4-22), then *its* name label will be displayed in preference.

Cue Flash Buttons

Above each Cue Fader is a Flash Button which operates in a similar way to the Channel Flash Buttons.

Pressing a Cue Flash Button will take the associated Cue to maximum intensity (as if the fader where fully up).

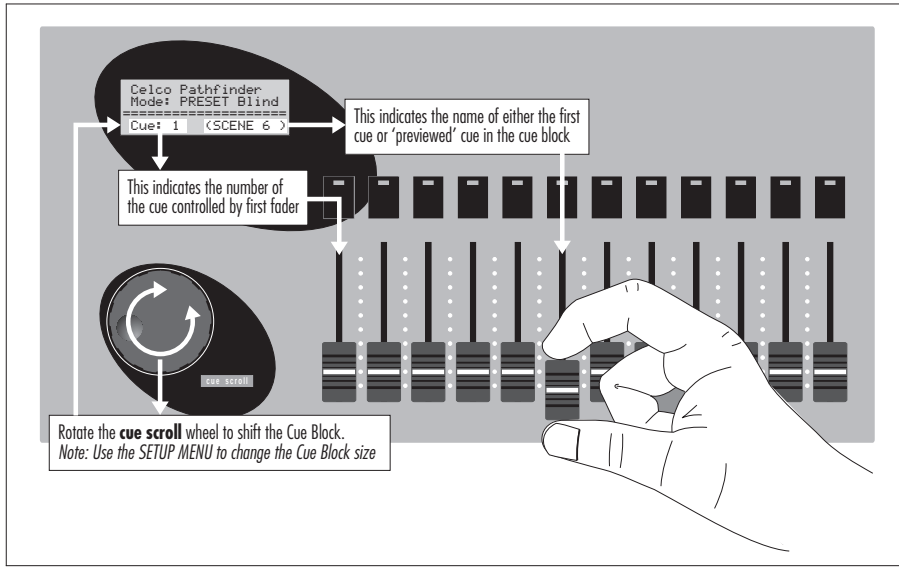


Fig.4-2: Cue scrolling and previewing.

Scrolling the Cue Block whilst a Cue is Active

When a Cue Fader is at any level above zero, the indicator in the associated Cue Flash Button will be fully illuminated to show that the Cue is active.

Scrolling the Cue Block will not disrupt a currently active Cue as long as the Cue Fader remains above zero. However, the button indicator will flash to show that the fader is about to be re-assigned. Re-assignment will occur as soon as the fader is returned to zero level.

For example, let's assume that Cues 1 to 12 are currently assigned to the faders and that the last fader (Cue 12) is above zero. If the **cue scroll** wheel is now rotated to select Cues 13 to 24, Cues 13 to 23 will immediately be assigned to the first eleven faders. Cue 12 will remain active on the last fader but the flash button indicator will start flashing. Returning the fader to its zero position will re-assign it to Cue 24.

Using a Cue Fader (with AutoFade Off or zero fade time)

☞ To fade-in the Cue, simply move the Cue Fader upwards; the rate at which you move the fader will determine the speed that the HTP Channels in the Cue will fade-in.

The Cue Fader proportionally 'masters' all of the pre-programmed HTP Channel levels; at the fader's maximum position, the Channels will be at their full pre-programmed levels.

LTP Channel levels are not transmitted until the Cue Fader level moves above 15%.

> ***HELPFUL HINT***
> *To achieve 'instant' recall, press and hold the Cue Flash Button, move the Cue Fader to its maximum position, then release the Flash Button.*

☞ To fade-out the Cue, simply move the Cue Fader downwards; the rate at which you move the fader will determine the speed that the HTP Channels in the Cue will fade-out.

The Flash Button indicator will turn-off when the Cue level reaches zero.

Using a Cue Fader (with AutoFade On or non-zero fade time)

☞ To fade-in the Cue, move the Cue Fader upwards to its maximum position; the Cue will fade-in using its pre-programmed Up time.

Auto fade-in will not start until the Cue Fader is at maximum (100%). LTP Channel levels are changed as soon as the Cue fade-in level moves above zero; the rate of change of level is determined by the pre-programmed Move time.

> ***HELPFUL HINT***
> *The Cue Flash Buttons are not affected by fade times. Thus, it is possible to override a fade to achieve 'instant' Cue recall. To do this, press and hold the Cue Flash Button, move the Cue Fader to its maximum position, then release the Flash Button.*

☞ To fade-out the Cue, move the Cue Fader downwards to its zero position; the Cue will fade-out using its pre-programmed Down time.

Auto fade-out will not start until the Cue Fader is at zero.
The Flash Button indicator will turn-off when the Cue level reaches zero.

Halting a Cue Fade

☞ To halt an auto fade-in, move the Cue fader down from its maximum position to less than 80%; the auto fade-in will stop at the level reached before the fader was moved.

To continue the fade-in, return the fader to its maximum position.
To abort the Cue recall, return the fader to its zero position.
To manually set the Cue level, move the fader to 'match' the present Cue level, then adjust the fader position as required.

☞ To halt an auto fade-out, move the Cue fader up from its zero position to greater than 20%; the auto fade-out will stop at its present level.

To continue the fade-out, return the fader to its zero position.
To take the Cue to full level, return the fader to its maximum position.
To manually set the Cue level, move the fader to 'match' the present Cue level, then adjust the fader position as required.

Previewing a Cue

The parameters and Channel levels of a Cue can be checked and by 'Previewing' it.

☞ To preview a Cue, move its associated Cue Fader down past the normal 'zero' position and hold it there; this will cause three things to happen:

- The name 'label' of the previewed Cue will appear on the left-hand LCD Display (*if it is the first cue in the block, the name will already be displayed*),
- The right-hand LCD Display will change to show the Main Set-up Page of the Cue Menu, and
- The Channel Flash Buttons will illuminate for those HTP Channels (if any) which have a level above zero stored for the previewed Cue.

Whilst the Cue is previewed, the other parameters of the Cue can be examined by pressing the **next** button to step through the other Pages of the Cue Menu.

NOTE *While in Cue Preview mode, an additional Page is available in the Cue Set-up Menu used for inserting and deleting Cues.*

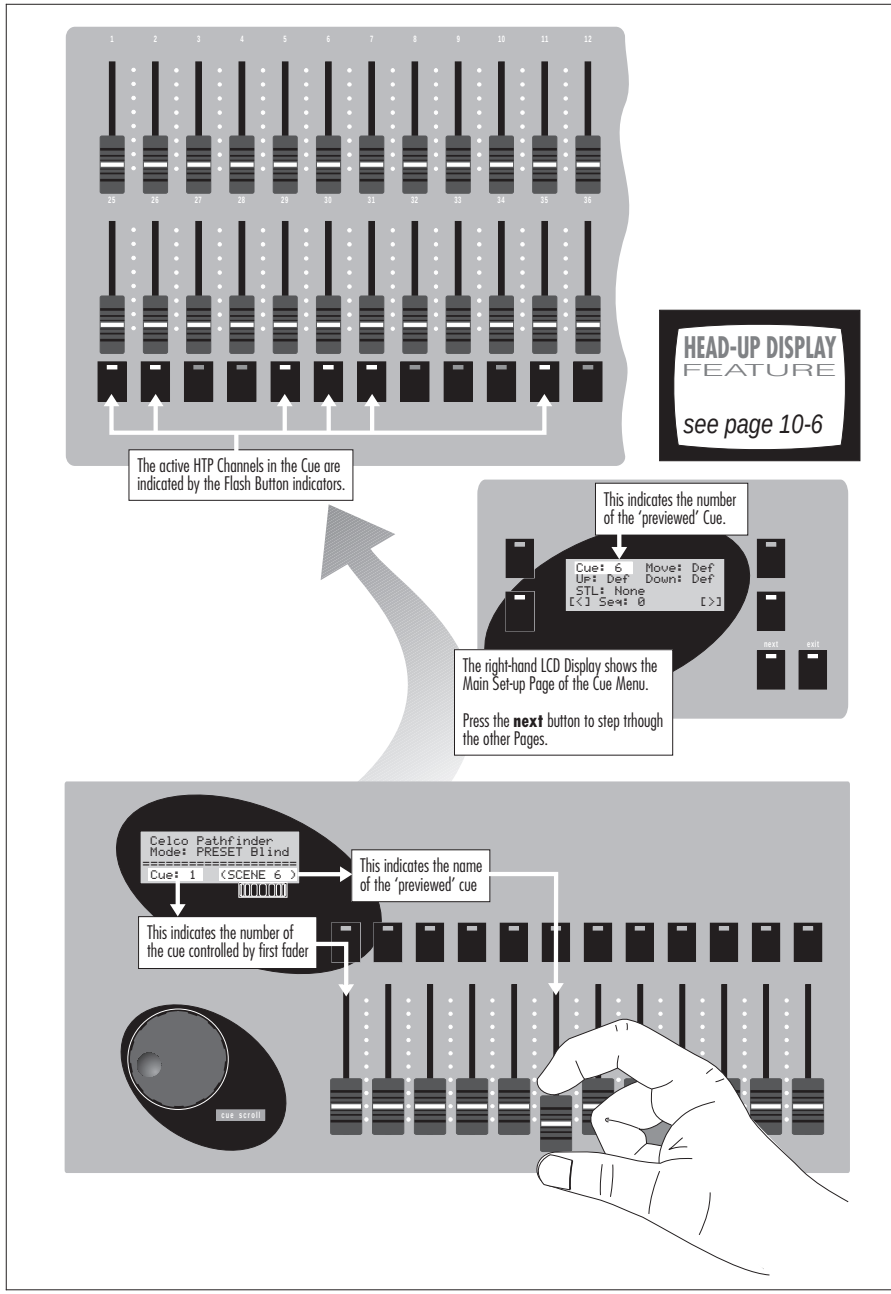


Fig.4-3: Previewing a Cue.

Recalling Cues Remotely or Automatically

Cues can be assigned to a Stack which allows them to be recalled manually by pressing a remote ‘go’ button or automatically at programmed intervals.

For details on programming and using Stacks, refer to section 5.

Section 5:
Cue Stack Programming

What is a Stack?

A Stack is simply a 'list' of Cues placed in a predefined order. Once a Stack has been created, the Cues listed in it can be recalled one after the other by one of the following methods:

- By moving the '**stack**' Fader,
- By pressing the '**go**' button,
- By activating the external '**go**' input,
- By using the AutoRun feature.

The PATHFINDER can store up to 10 Stacks in memory, each with up to 99 Cue 'entries'. However, please note that only one Stack can be in use at any one time.

Stacks are particularly useful for controlling theatre lighting since each pre-programmed Cue can be recalled at the correct moment during the performance using only the press of a single button. Also, in rock'n'roll and discotheque lighting the Stack can be used to provide a sophisticated 'sequence' by using AutoRun.

The Stack Menu Pages

Stack programming is achieved via the Stack Menu. Fig.5-1 below shows how to reach the Stack Menu Pages from the Root Menu.

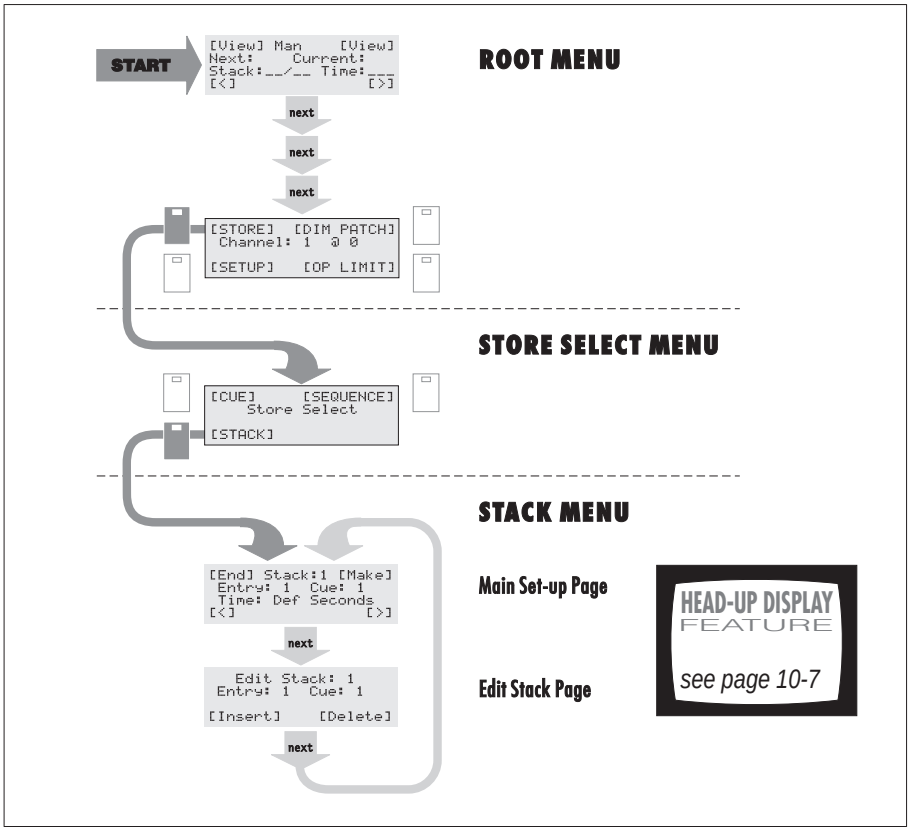


Fig.5-1: How to access the Stack Menu Pages.

Creating a Stack

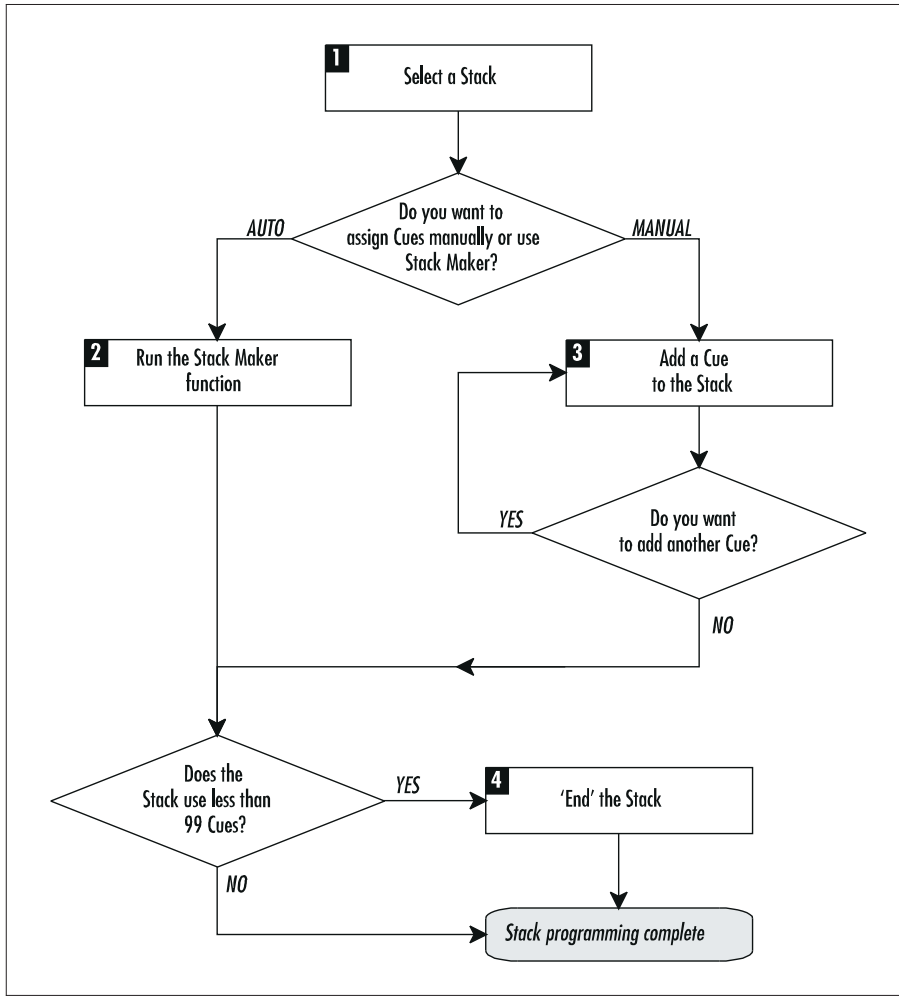


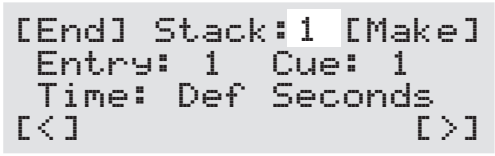
Fig.5-2: Flow diagram for Stack programming.

IMPORTANT NOTE

Before programming a new Stack, ensure that any previous entries for that Stack are deleted from the PATHFINDER's memory – see page 5-8.

1 Selecting a Stack

☞ Call-up the Main Set-up Page of the Stack Menu:



☞ With the cursor on the **Stack** field, rotate the **master select** wheel to choose the required Stack number (1 to 30).

☞ Check that the **Entry** parameter is showing '1' (*i.e.* the first entry). If not, move the cursor to this field and set it to 1 with the **master select** wheel.

2 Using the 'Stack Maker' Function

The PATHFINDER allows a Stack to be generated automatically on a '1 to 1' basis, *i.e.* a block of 99 consecutive Cues are assigned to Entries 1 to 99.

In addition, you can specify the default 'Wait Time' to be programmed for each Cue Entry. Individual entries can then be altered as required.

☞ Ensure that the **Entry** parameter is showing '1' (*i.e.* the first entry). If not, move the cursor to this field and set it to 1 with the **master select** wheel. Then, move to the **Cue** field and select the *first* Cue of the required block of 99, *e.g.* to create a Stack comprising Cues 101 to 199, select Cue 101.

☞ To determine the Wait Time to be programmed for each Cue entry, move the cursor to the **Time** field and rotate the master select wheel to select the required option (see stage 3 for the available options).

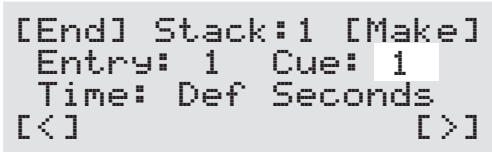
☞ To run Stack Maker and create the Stack, press the **[Make]** soft button.

> ***IMPORTANT NOTE***
> *If you don't intend using all 99 entries, you will need to mark the 'end' of the Stack as described in stage 4.*

3 Manually Adding a Cue

For each entry you need to specify a Cue number and an optional 'Wait Time'. The Wait Time is required only if you intend using the AutoRun feature and is the time for which the Cue will be 'in view'.

☞ Move the cursor to the **Cue** parameter and select the number of the Cue for the first entry by rotating the **master select** wheel. *You can also select a Cue by operating its associated Cue Fader or Flash Button.*



☞ To set a Wait Time, move the cursor to the **Time** field and rotate the **master select** wheel to select one of the following:

- `0` to `60` a time in seconds,
- `Def` uses the time defined within the console's Default Set-up (see page 8-4).
- `Man` no specific time; this causes the Stack to 'pause' during AutoRun

☞ When the desired Cue number and Wait Time is shown, press the **enter** button to store the entry.

The button indicator will light-up briefly to show that the Cue has been accepted, and the **Entry** *field will increment automatically ready for the next Cue.*

☞ Repeat this stage for each entry in the Stack.

> ***IMPORTANT NOTE***
> *If you have not used all 99 entries, you will need to mark the 'end' of the Stack as described in stage 4.*

4 Ending the Stack

If a Stack uses less than 99 entries, PATHFINDER needs to know which is the last programmed entry.

To mark the 'end' of a Stack, the **Entry** field must be set to the entry number immediately following the last 'used' entry. For example , if your Stack has 50 Cue entries, select Entry 51. If you have been entering Cues manually, the Entry counter will already be on the correct number.

☞ If necessary, move the cursor to the **Entry** field and, using the master select wheel, select the correct entry number.

☞ Press the **[End]** soft button to mark the end of the Stack.

Editing Stacks

Inserting an Extra Cue

☞ Call-up the Main Set-up Page of the Stack Menu on the right-hand LCD Panel:

```
[End] Stack:1 [Make]
 Entry: 5  Cue: 5
 Time: 10  Seconds
[<]               [>]
```

☞ Choose the required Stack number using the **Stack** parameter.

☞ Move the cursor to the **Entry** parameter and select the entry / Cue that you want to insert *before.*

☞ Press the **next** button to display the Edit Stack Page:

```
   Edit Stack: 1
 Entry: 5  Cue: 5

[Insert]    [Delete]
```

☞ To insert a new entry *before* the displayed Cue, press the **[Insert]** soft button.

PATHFINDER will insert a new entry and assign Cue 1 to it by default.

☞ Press the **next** button again to return to the Main Set-up Page.

☞ Move the cursor to the **Cue** parameter and alter the Cue number as required.

Deleting a Single Stack Entry

Please remember that a 'Delete Stack Entry' action cannot be undone – IF IN DOUBT, DON'T DELETE!

☞ Call-up the Main Set-up Page of the Stack Menu on the right-hand LCD Panel:

```
[End] Stack:1 [Make]
 Entry: 5  Cue: 5
 Time: 10  Seconds
[<]              [>]
```

☞ Choose the required Stack number using the **Stack** parameter.

☞ Move the cursor to the **Entry** parameter and select the entry / Cue that you want to delete.

☞ Press the **next** button to display the Edit Stack Page

```
   Edit Stack: 1
 Entry: 5  Cue: 5

[Insert]    [Delete]
```

☞ To delete the displayed entry, press the **[Delete]** soft button.

HELPFUL HINT
To delete all Entries for a Stack , select Entry 1 of the Stack, then repeatedly press the **[Delete]** *soft button until all of the Entries have been deleted.*

Deleting all Stacks

☞ Call-up the Clear Menu on the right-hand LCD Panel:

```
[CUES]   [SEQUENCES]
     Clear Menu

[STACKS]        [ALL]
```

☞ Press the **[STACKS]** soft button; the following display will appear:

```
[Clear]       [Clear]
 Press ALL Four
 Buttons to Clear.
[Clear]       [Clear]
```

☞ To delete *all* Stacks in memory, press all four 'soft' buttons at once.

The display will then revert to the Main Control Page of the Root Menu.

Replaying a Stack

A Stack can be replayed in the following ways:

- Manual Replay using the **stack** fader,
- Semi-Automatic Replay using the **go** button or **ext go** input,
- Automatic Replay using AutoRun.
- Via MIDI Show Control (see page 9-8 onwards for further details).

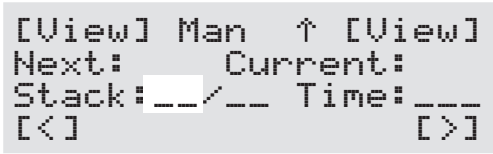
Before a Stack can be replayed, it must first be 'loaded'.

Loading a Stack

☞ Ensure that the **stack** fader is fully down (or up).

☞ Check that all Channel Faders, Cue Faders and Preset Masters are fully down (unless you specifically require them to be on) and that the Grand Master is fully up.

☞ Call-up the Stack Playback Page of the Root Menu:



☞ Move the cursor to the first part of the **Stack** field and rotate the **master select** wheel until the required Stack number (1 to 10) is displayed.

If the **Stack** *field is blank (___) then no Stack is loaded.*

Stack Autoload

The PATHFINDER has the ability to automatically load and run a Stack when the console is powered-up. This is achieved with the Autoload Stack parameter on the second Page of the Defaults Set-up Menu:

Unloading a Stack

☞ Call-up the Stack Playback Page of the Root Menu.

☞ Move the cursor to the first part of the **Stack** field and rotate the **master select** wheel until '__' (no Stack) is displayed.

☞ Move the **stack** fader to the opposite end of its travel to fade-out the currently active Cue.

Monitoring Stack Status

The Stack Playback Page of the Root Menu is used to monitor the progress or status of a Stack, either before or during playback. In addition, the top two soft function buttons are used to 'preview' the current or next Cues – see Fig.5-3.

HEAD-UP DISPLAY FEATURE
see page 10-5

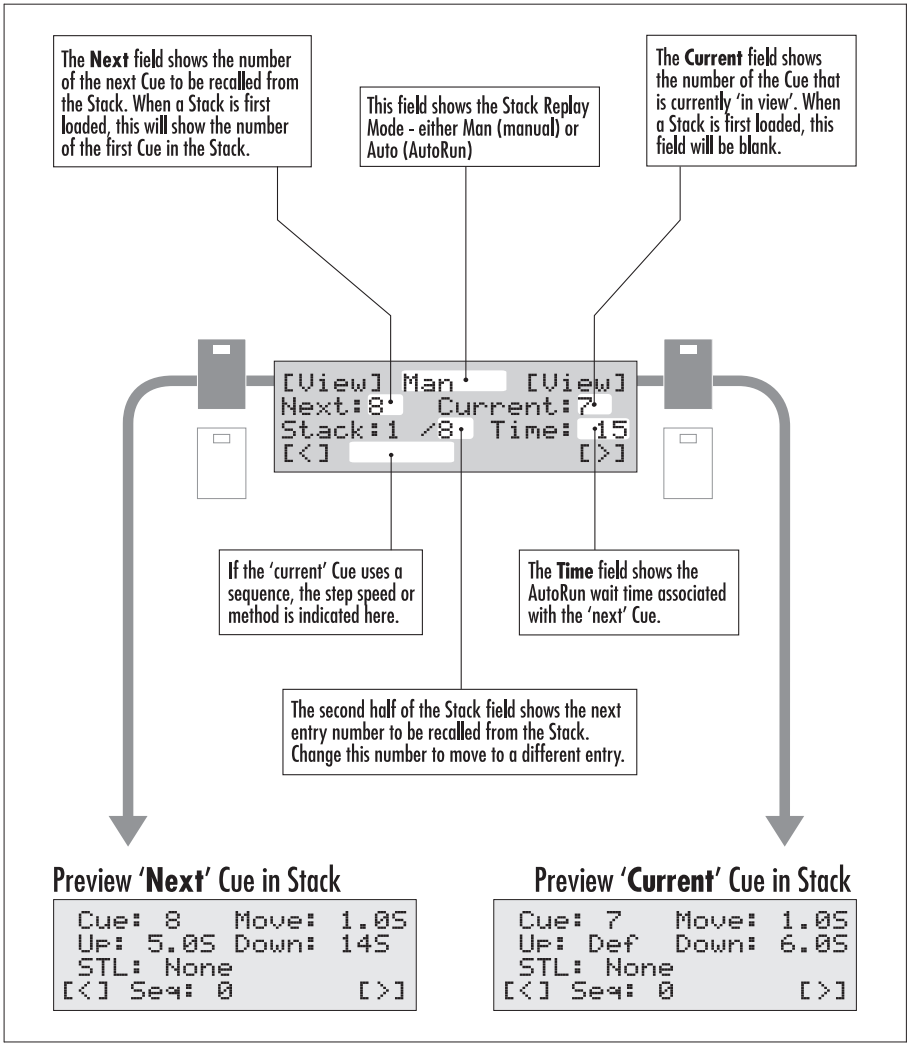


Fig.5-3: Stack Playback Page - monitoring features.

Manual Replay using the 'stack' Fader

In this method, Cues are recalled from the Stack by moving the **stack** fader.

☞ Load the required Stack (as described on page 5-10).

The number of the first Cue will be indicated by the **Next** *field.*

☞ To fade-in the first Cue, move the **stack** fader towards the opposite end of its travel, *i.e.* fully up (or down); the arrow symbol displayed next to the Replay Mode indicates which direction the fader needs to be moved.

The speed at which you move the fader will determine the fade-in speed — the HTP Up and Down fade-times are ignored. However, LTP Channels will respond according to the Move time associated with the next Cue

The first Cue number will now appear in the **Current** *field, and the second Cue will be indicated by the* **Next** *field.*

☞ To cross-fade between the 'current' and 'next' Cues, move the **stack** fader back again to its opposite end.

☞ Simply repeat this process to recall each of the remaining Cues.

IMPORTANT NOTES
The 'next' Cue will not become the 'current' Cue until the **stack** *fader reaches the opposite end of its travel.*

When the last Cue in the Stack is reached, the 'next' Cue will return to the first Cue (i.e. entry number 1).

Semi-Automatic Replay using the 'go' Button

In this method, each Cue is recalled by pressing the **go** button (situated above the **stack** fader). You can also use a remote push-button switch or trigger signal connected to the **ext go** input (see page E-4).

Unlike using the **stack** fader, cross-fades between Cues make use of the Up, Down and Move fade times associated with each Cue.

☞ Load the required Stack (as described on page 5-10) and ensure that the Replay Mode is set to Man.

The number of the first Cue will be indicated by the **Next** *field.*

☞ To fade-in the first Cue, press the **go** button.

The **go** *button indicator will illuminate to show that an automatic cross-fade is in progress. When the fade is complete, the indicator will go out; the first Cue number will now appear in the* **Current** *field, and the second Cue will be indicated by the* **Next** *field.*

☞ Press the **go** button to recall each of the remaining Cues.

IMPORTANT NOTES
Pressing the **go** *button whilst a cross-fade is in progress will cause the the fade to halt — press the button again to resume the cross-fade.*

When the last Cue in the Stack is reached, the 'next' Cue will return to the first Cue (i.e. entry number 1).

Automatic Replay using AutoRun

In this method, each Cue is recalled automatically at the end of the Wait Time specified for the previous Cue entry.

☞ Load the required Stack (as described on page 5-10) and ensure that the Replay Mode is set to Auto.

The number of the first Cue will be indicated by the **Next** *field.*

☞ To start the Stack AutoRun, press the **go** button.

The **go** *button indicator will illuminate to show that AutoRun is active; the indicator will blink each time the next Cue is triggered. The first Cue number will appear in the* **Current** *field, and the second Cue will be indicated by the* **Next** *field.*

The current Cue will remain in view for its specified wait time, after which the next Cue will be triggered.

Remember that if the wait time for a Cue is set to Man, the Stack AutoRun will pause. You can also pause AutoRun at any point by simply pressing the **go** button; the button indicator will go out to show that AutoRun is disabled.

You can also pause AutoRun and release the Stack to manual fader control by moving the **stack** fader, or setting the Replay Mode back to Man.

☞ To release a paused Cue and continue AutoRun, press the **go** button.

> ***IMPORTANT NOTE***
> *When the last Cue in the Stack is reached, the 'next' Cue will return to the first Cue (i.e. entry number 1). To ensure that a Stack 'pauses' at the end, program the last Cue entry with a zero or Man wait time.*

Changing the Replay Order

Whichever method of Stack Replay is used, Cues will always be recalled in entry order, commencing with entry 1.

There may, however, be occasions when you need to skip a Cue, jump to a specific Cue or return to an earlier Cue, (*e.g.* during a rehearsal). This is possible by altering the Stack's 'next entry number' which is displayed in the second part of the **Stack** field on the Main Control Page:

☞ If you are using AutoRun, you may wish to pause the Stack first by pressing the **go** button (the button indicator will go out).

☞ Move the cursor to the second part of the **Stack** field (see page 5-12).

This shows the number of the next Stack entry.

☞ Rotate the **master select** wheel to select a different entry number.

The **Next** *field shows the actual Cue number associated with the entry.*

☞ When the required entry number is displayed, resume Stack replay by the appropriate method:

- move the **stack** fader up or down, or
- press the **go** button.

Section 6: Sequence Programming

What is a Sequence?

A Sequence is a series of up to 25 pre-programmed 'Steps'. The PATHFINDER can store up to 30 Sequences in memory.

A Step can comprise a specific control level for one or more Channels (HTP and / or LTP) and each step within a Sequence is triggered either at specific time intervals or in response to an audio signal ('sound-to-light').

Thus, a Sequence is primarily used to create 'chase effects'.

The Sequence Menu Pages

Sequence programming is largely achieved via the Sequence Menu. Fig.6-1 below shows how to reach the Sequence Menu Pages from the Root Menu.

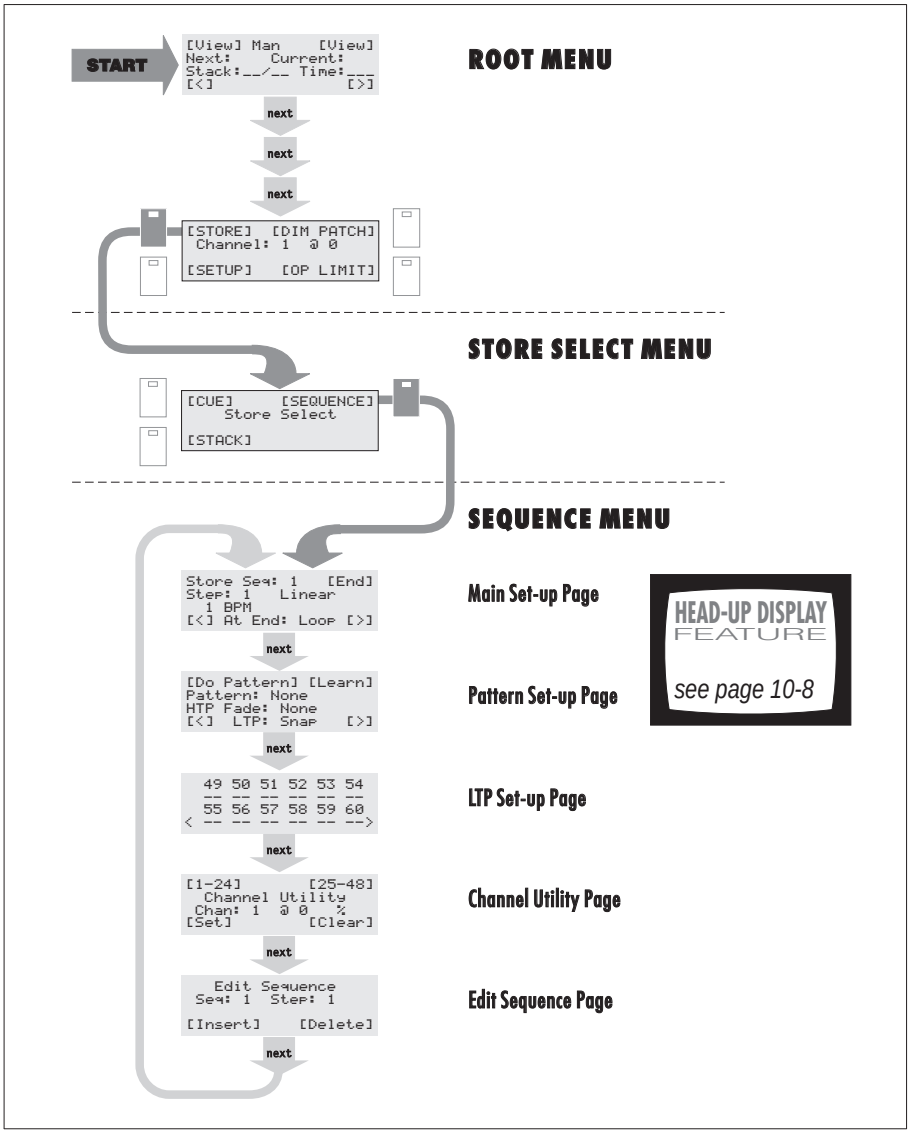


Fig.6-1: How to access the Sequence Menu Pages.

Using the 'Chase Maker' Facility

The PATHFINDER's Chase Maker facility allows various types of 'chase' and 'build-up' Sequences of up to 25 consecutive or non-consecutive HTP Channels to be created very quickly. However, if you prefer to programme a Sequence manually, please follow the instructions from page 6-9 onwards.

Creating a Basic Sequence

☞ Choose whether you want to select the Channels using Live or Blind operation as follows:

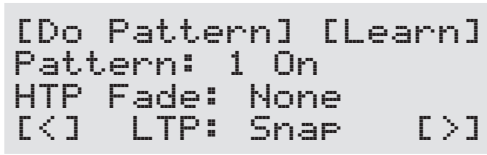
24-Channel Mode		48-Channel Mode	
Blind	**Live**	**Blind**	**Live**
Put **P2** Master fully **down**	Put **P2** Master fully **up**	Put **P1** Master fully **down**	Put **P1** Master fully **up**

☞ Then select up to 25 Channels by moving the corresponding Channel Fader to *any* position above zero:

24-Channel Mode	48-Channel Mode
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

The actual level set by each fader doesn't matter, since the Chase Maker will set each active Channel to maximum (100%).

☞ Call-up the Pattern Set-up Page of the Sequence Menu:



☞ Press the **[Learn]** soft button to run the Chase Maker. Then, ensure that all Channel Faders are returned to their zero position.

Applying a 'Pattern' to the Sequence

The basic Sequence created by the Chase Maker facility, will be a simple 'chase' with each Step having one Channel fully up. For example, if the faders for Channels 1 to 12 where above zero when the **[Learn]** button was pressed, a 12-Step Sequence will be created as shown in Fig.6-2.

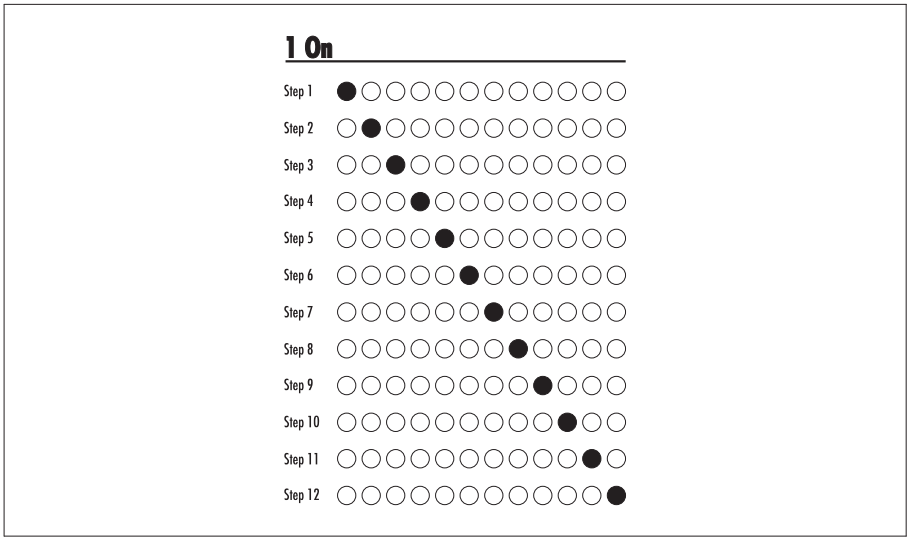


Fig.6-2: A basic '1-Channel On/12-Step' Sequence.

The Pattern facility allows a variety of chase, crawl and build-up effects, to be created from this basic chase Sequence or any other Sequence that has been programmed manually. Only the Channels which are currently in a Sequence will be used by the Pattern facility.

☞ With the Pattern Set-up Page of the Sequence Menu on the right-hand LCD Panel, move the cursor to the **Pattern** field:

```
[Do Pattern] [Learn]
Pattern: 1 On
HTP Fade: None
[<]  LTP: Snap
```

☞ Rotate the **master select** wheel to select the required option from the following list:

- None *(default 'safe' setting)*
- 1 On
- 2 On *Pattern Length = 2*
- 3 On *Pattern Length = 3*
- 4 On *Pattern Length = 4*
- 1 On 1 Off *Pattern Length = 2*
- 2 On 2 Off *Pattern Length = 4*
- 3 On 3 Off *Pattern Length = 6*
- 4 On 4 Off *Pattern Length = 8*
- 2 Crawl
- 3 Crawl
- 4 Crawl
- Build Up
- Negative

The effects created by each of these (using the example 12-Channel basic Sequence) are illustrated in Figs.6-3 and 6-4.

The Negative *option inverts the On/Off status of each Channel for the currently selected Sequence, even it was programmed manually.*

☞ To apply the selected Pattern option to the Sequence, press the **[Do Pattern]** soft button.

> ***IMPORTANT NOTE***
> *For certain Patterns to work predictably, the number of Steps/Channels in the basic Sequence must be a multiple of the Pattern Length shown in the above list. For example, in Fig.6-3, the 4 On 4 Off Pattern will not work with a 12-Channel basic Sequence; hence it is shown using a 16-Channel Sequence.*

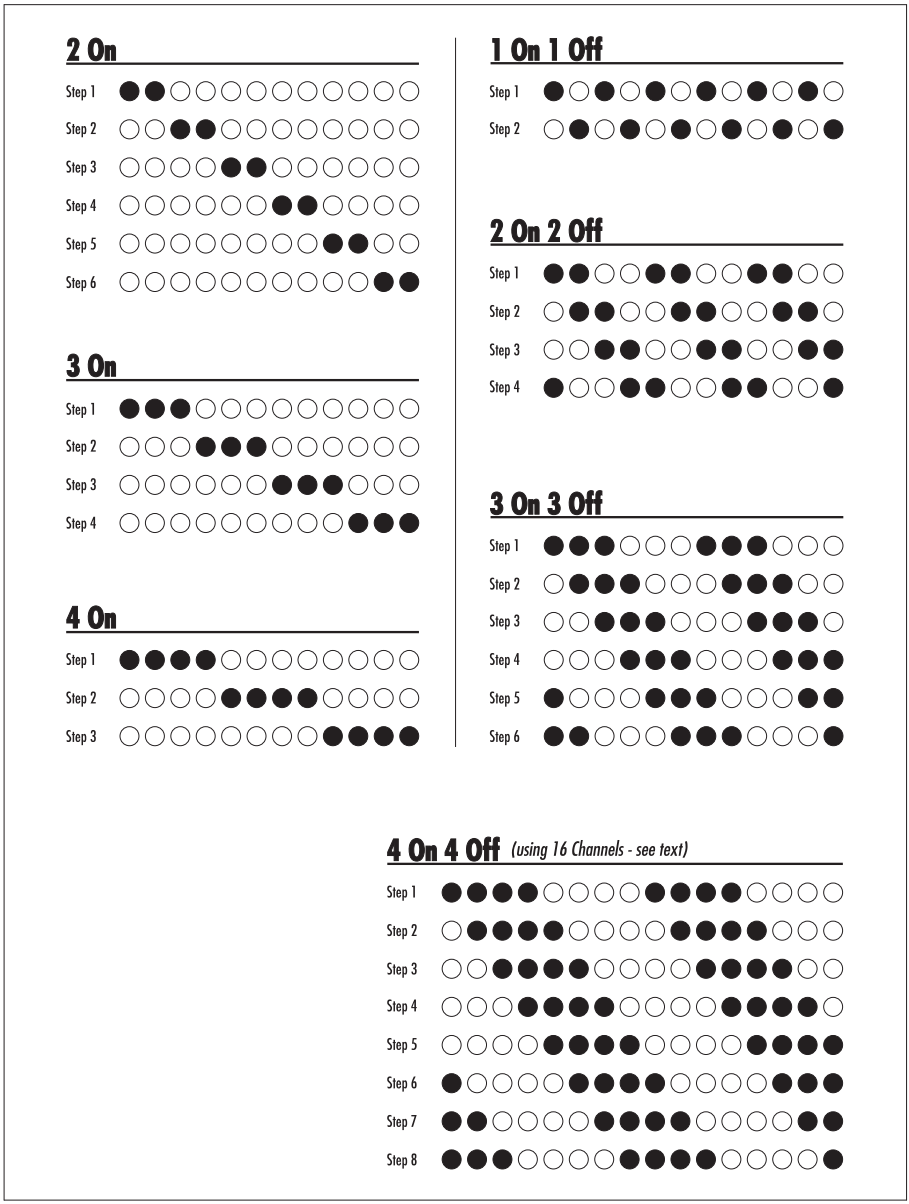


Fig.6-3: Examples of the Pattern facility.

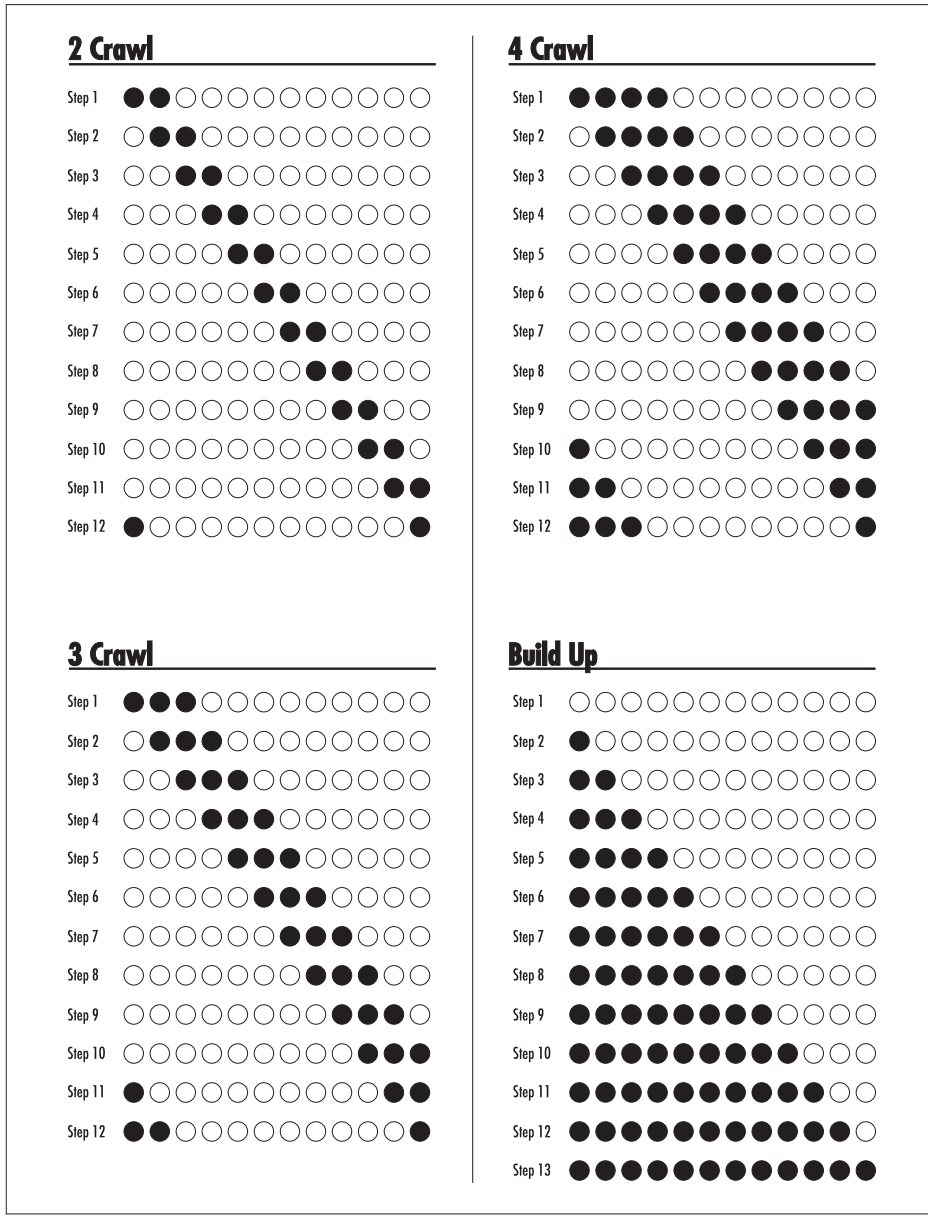


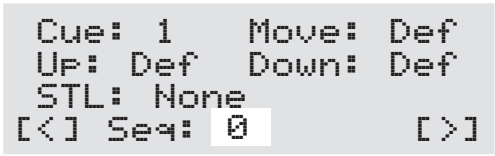
Fig.6-4: More examples of the Pattern facility.

Assigning the Sequence to a Cue

In order for a sequence to be 'seen', either for replay or editing purposes, it must be assigned to a Cue.

For the purpose of just checking or editing a Sequence, you may wish to assign it to a 'temporary' Cue, *i.e.* one which is well separated from any other pre-programmed Cues and not otherwise being used. For clarity, use a Cue which does not have any Channel levels programmed into it.

☞ Call-up the Main Set-up Page of the **Cue Menu**, or 'preview' the required Cue by pulling back the Cue Fader past the normal zero position:



☞ Move the cursor to the **Seq** parameter, then rotate the **master select** wheel to adjust the value to one of the following:

- `0` No Sequence is assigned,
- `1` *to* `30` Sequence number assigned to the Cue.

> *The basic Sequence has now been programmed and assigned to a Cue. The next operation is to set-up the various replay parameters — refer to page 6-15 onwards.*

Programming a Sequence Manually

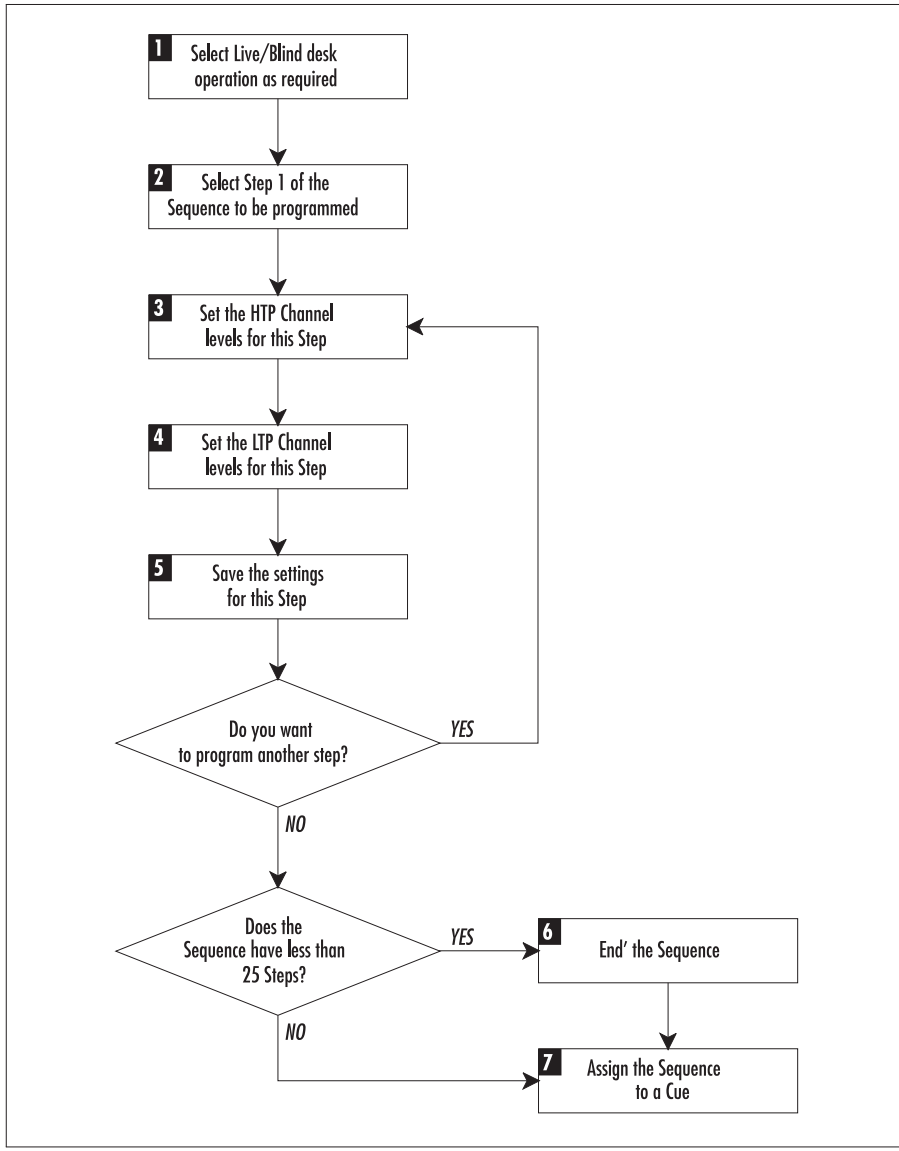


Fig.6-5: Flow diagram for Sequence programming.

IMPORTANT NOTE
Before programming a new Sequence, ensure that any previous Steps for that Sequence are deleted from the PATHFINDER's memory – see page 6-38.

1 Selecting Live/Blind Operation

☞ Select whether you want to program Channel levels using Live or Blind operation as follows:

24-Channel Mode		48-Channel Mode	
Blind	**Live**	**Blind**	**Live**
Put **P2** Master fully **down**	Put **P2** Master fully **up**	Put **P1** Master fully **down**	Put **P1** Master fully **up**

2 Selecting a Sequence

☞ Ensure that all Cue Faders are fully down and that no Stack is currently loaded (see page 5-11).

☞ Call-up the Main Set-up Page of the Sequence Menu:

```
Store Seq: 1    [End]
Step: 1    Linear
  1 BPM
[<] At End: Loop [>]
```

If not already on, the **stop** *button indicator will now light-up to show that the selected Sequence is disabled or 'stopped'. If for any reason the indicator is not lit, press the* **stop** *button.*

☞ Move the cursor to the **Seq** field and rotate the **master select** wheel to choose the required Sequence number (1 to 30).

☞ Check that the **Step** field is showing 1 (*i.e.* the first Step); if not, move the cursor to this field and set it to 1 with the **master select** wheel.

3 Setting-up the HTP Channel Levels

☞ Set one or more Channels to the required level using the appropriate bank(s) of Channel Faders:

24-Channel Mode	48-Channel Mode
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

4 Setting-up the LTP Channel Levels

☞ Move to the LTP Set-up Page of the Sequence Menu:

```
  49 50 51 52 53 54
  ‾‾ ‾‾ ‾‾ ‾‾ ‾‾ ‾‾
  55 56 57 58 59 60
< __ __ __ __ __ __>
```

The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of each Channel for the current Step, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

5 Saving a Sequence Step

☞ When all of the HTP and LTP Channels are set to their required levels, save the values to the Sequence Step by pressing the **enter** button.

The **enter** *button indicator will light-up briefly to show that the settings have been accepted, and the Step counter will increment ready for programming the next Step.*

☞ Repeat stages 3, 4 and 5 to program each Step in the Sequence.

Remember that a Sequence can comprise a maximum of 25 Steps.

☞ Once you have 'entered' the last Step in the Sequence, proceed to stage 6.

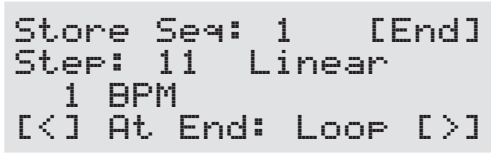
> ***IMPORTANT NOTE***
> *Remember to deselect all LTP Channels on the LTP Set-up Page once you have entered the final Sequence Step. Your programmed levels will not be altered by leaving Channels selected, but they will be overriden. Also, return all Channel Faders to zero.*

6 Ending the Sequence

If your Sequence uses *all* 25 Steps, go straight to stage 7.

However, if your Sequence has less than 25 Steps, you need to 'mark' the end of the Sequence as follows:

☞ After you have 'entered' the last Sequence Step, return to the Main Set-up Page of the Sequence Menu.



Note that the **Step** *number field will have incremented. For example if you have programmed 10 Steps, the Step counter will now be showing 11 — this is correct, so don't alter this value.*

☞ Press the **[End]** soft button to mark the end of the Sequence.

The **Step** *number field will now return to 1.*

7 Assigning the Sequence to a Cue

In order for a sequence to be 'seen', either for replay or editing purposes, it must be assigned to a Cue.

For the purpose of just checking or editing a Sequence, you may wish to assign it to a 'temporary' Cue, *i.e.* one which is well separated from any other pre-programmed Cues and not otherwise being used.

☞ Call-up the Main Set-up Page of the **Cue Menu**, or 'preview' the required Cue by pulling back the Cue Fader past the normal zero position:

☞ Move the cursor to the **Seq** parameter, then rotate the **master select** wheel to adjust the value to one of the following:

- `0` No Sequence is assigned,
- `1` *to* `30` Sequence number assigned to the Cue.

The basic Sequence is now programmed and assigned to a Cue. The next operation is to set-up the various replay parameters — see page 6-15.

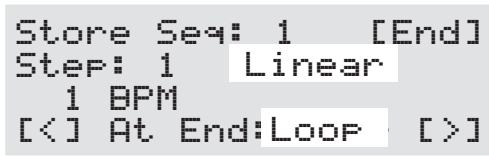
Sequence Parameters

Replay Options

There are two parameters which affect the way in which the Sequence Steps are replayed. These are:

- 'Stepping Order' which can have one of two settings:
  - `Linear` – Steps are replayed in 'number' order (*i.e.* Step1, 2, 3, *etc.*)
  - `Random` – Steps are replayed in a psuedo-random order.
- 'Repeat Option' which can have one of two settings:
  - `Stop` – the Sequence will run once and stop on the final Step,
  - `Loop` – the Sequence will replay continuously.

Both of these parameters are set using the Main Set-up Page of the Sequence Menu:



☞ Move the cursor to the appropriate field and set the required option by rotating the **master select** wheel.

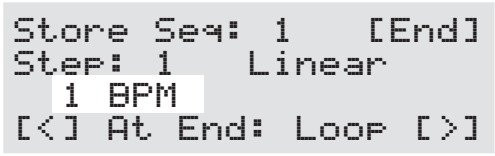
> ***HELPFUL HINT***
> *When using a 'Linear' Sequence with the 'Stop' option, you may wish to program the last Step with zero levels — in this way the Sequence will run once then 'go out'.*

Step Trigger Method & Speed

Each Step in a Sequence can be triggered in the following ways (for a full list of the available options, refer to page B-11.):

- at regular intervals from 1 BPM (beats per minute) up to 1200 BPM,
- at psuedo-random intervals,
- in response to the 'peaks' of an external audio signal.

This parameter is set using the Main Set-up Page of the Sequence Menu:



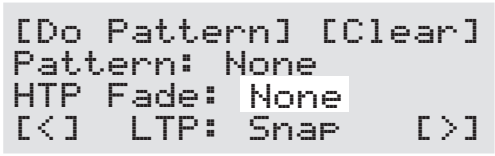
☞ Move the cursor to the appropriate field and set the required option by rotating the **master select** wheel.

HTP Channel Transition

This parameter affects the transition or 'fading' of HTP Channel levels between each Sequence Step. The options are:

- None — each Step instantaneously 'snaps' to the next,
- X Fade — the level(s) between each Step will cross fade,
- In/Out — each Step will fade-in then fade-out.

This parameter is set using the Pattern Set-up Page of the Sequence Menu:



☞ Move the cursor to the **HTP Fade** field and set the required option by rotating the **master select** wheel.

LTP Channel Transition

This parameter affects the transition or 'fading' of LTP Channel levels between each Sequence Step. There are three options which are explained below and Fig.6-17 shows the effect that each has on a 10-Step Sequence:

- Snap
  each Step instantly 'snaps' to the next; the level for each Step must be programmed.
- Fade
  the level(s) between each Step will cross-fade; the level for each Step must be programmed. The speed of the cross-fade is automatically calculated to match the duration of each Step.
- Step
  this is an automatic function, primarily for use with colour changers /scrollers. It is similar to the Snap option except that the levels are automatically calculated to create an ascending and descending ramp. To use this option you must have have a Sequence of the correct length (see next page). Also, when using a scroller, all gels must be of equal size.

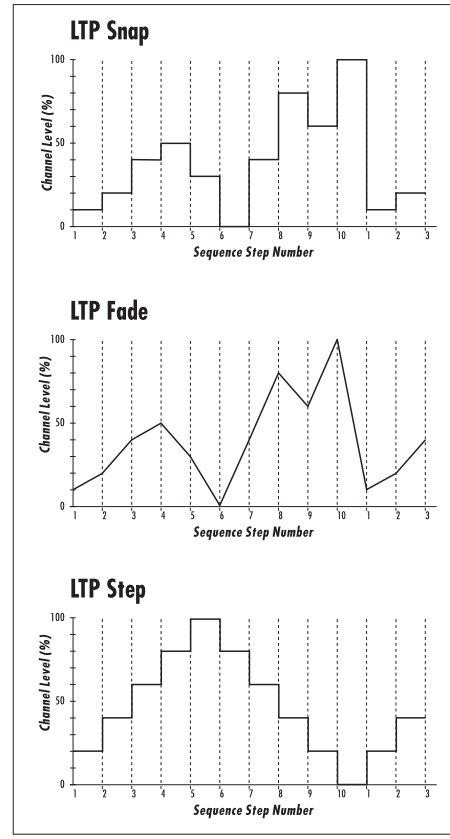
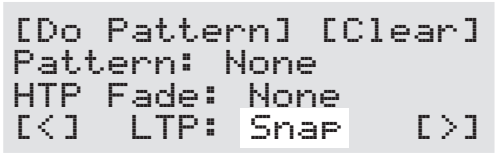


Fig.6-6: Examples of LTP Channel transition options.

The LTP Channel Transition parameter is set using the Pattern Set-up Page of the Sequence Menu:



☞ Move the cursor to the **LTP** field and set the required option by rotating the **master select** wheel.

Using the LTP Step Setting

☞ Select the LTP Channel(s) that you want to control — these can be at any level since PATHFINDER will automatically set the values.

☞ Store the number of Steps required ensuring that the same LTP Channel(s) remains selected for each Step. Calculate the number of Steps required using the following formula:

(the no. of gels in the changer ***x*** **2) – 1**

For example, using a 12 gel scroller, you will need 23 Steps.

Thus, when the Sequence is replayed, the changer / scroller is made to Step through each gel in one direction and then back in the other direction.

Previewing a Sequence

Before you can preview a Sequence, it must be assigned to a Cue.

Double Previewing

As discussed in the Section on Cues, pulling back a Cue Fader past its normal zero position will cause details about the Cue to be displayed on the right-hand LCD Panel — this is knowing as 'Previewing'.

When a Sequence is assigned to a Cue, details about this Sequence can be displayed by 'Double Previewing':

☞ Pull the Cue Fader back past its zero position to 'Preview' the Cue; the right-hand LCD Panel will show the Main Set-up Page of the Cue Menu:

```
 Cue: 1    Move: Def
 Up: Def   Down: Def
 STL None
[<] Seq: 2        [>]
```

The Sequence number (1 to 30) will be indicated by the **Seq** *parameter.*

☞ Release the Cue Fader, allowing it to return to its zero position, then immediately pull it back again;

```
Store Seq: 2    [End]
Step: 1    Linear
  60 BPM
[<] At End: Loop [>]
```

Whilst the Sequence is 'Double Previewed', the following features are available:

- The right-hand LCD Panel will change to show the Main Set-up Page of the Sequence Menu. *The other Pages can be accessed by pressing the* **next** *button.*
- the 'active' HTP Channels within each Step can be monitored by the indicators on the corresponding Channel Flash Buttons.
  Please note that when using 48-Channel Mode, the Flash Buttons will either correspond to Channels 1 to 24 or 25 to 96 — as indicated on the top line of the left-hand LCD Panel. To change the button range, call-up the Channel Utility Page on the right-hand LCD Panel and select the range with the top two soft buttons.
- If the **stop** button is 'Off' (*i.e.* its indicator is not lit), the Sequence will run according to the method / speed defined by the 'Step Trigger' parameter. If the **stop** button is 'On' (*i.e.* its indicator is lit), the Sequence will be halted. It can then be 'stepped' manually either by pressing the **step** button or by selecting a specific Step number.
  In any case, the active HTP Channels in each Step can be monitored on the Channel Flash Button indicators.

These features are summarised in Fig.6-19 on the next page.

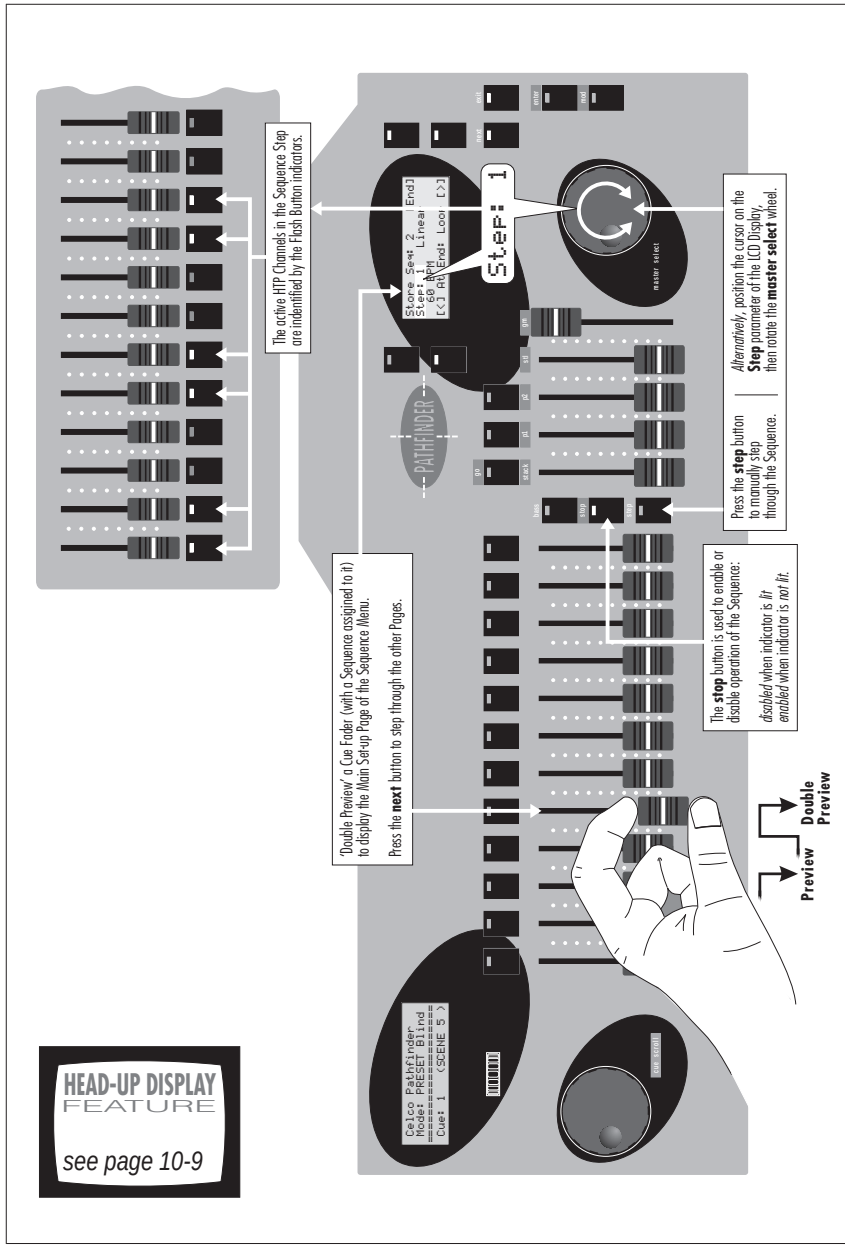


Fig.6-7: Checking a Sequence by 'Double Previewing'.

Advice on Sequence Editing

A Sequence can be edited using either Live or Blind Mode.

As with conventional Live/Blind operation, Live Mode allows you to monitor the effect of any changes directly and is, therefore, the easiest way of editing a Sequence.

Blind Mode editing is a little more difficult, but is useful for making 'unseen' changes to a Sequence during a show or performance.

The editing processes for Live and Blind editing are slightly different and, to avoid confusion, are described separately.

To edit a Sequence using Live Mode, refer to page 6-30 onwards.

To edit a Sequence using Blind Mode, refer to page 6-23 onwards.

Editing a Sequence (Blind Mode)

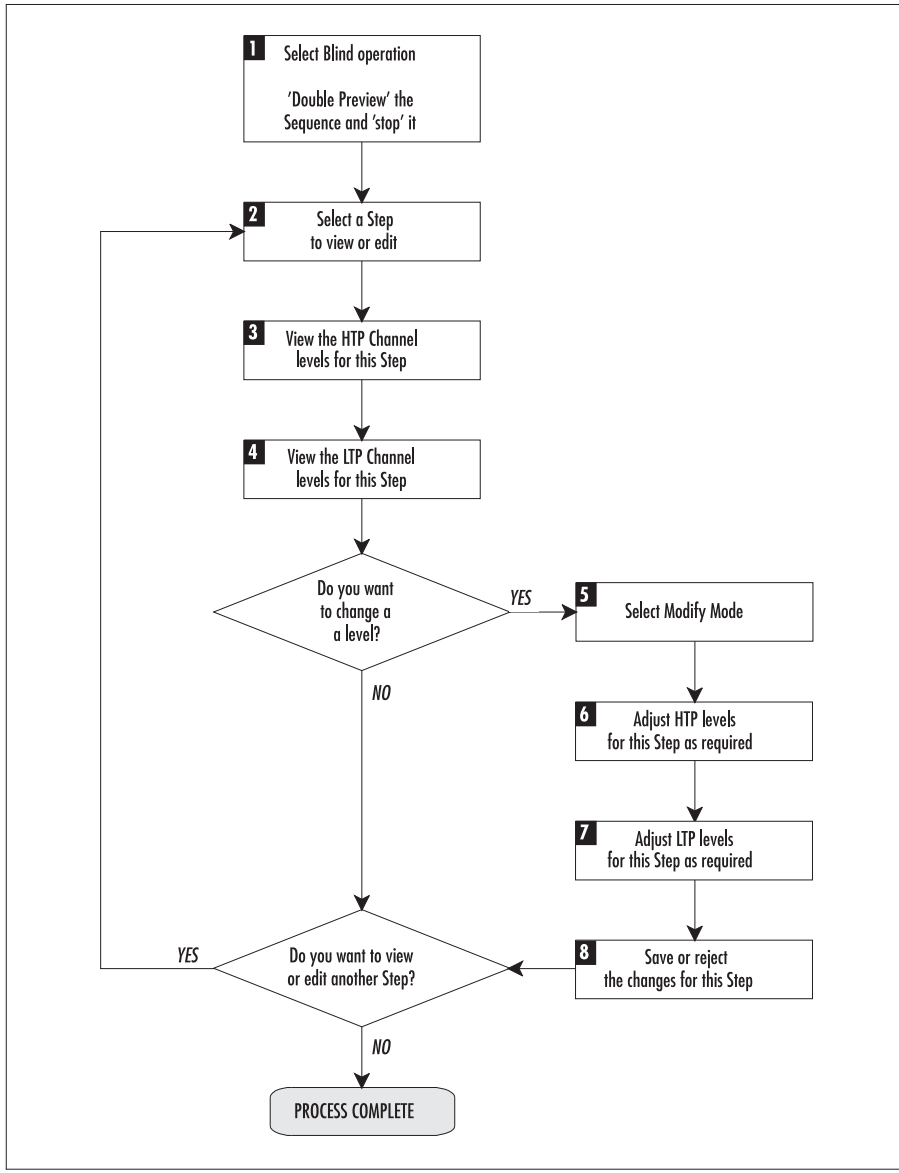


Fig.6-8: Flow diagram for Blind Sequence editing.

1 Selecting a Sequence for Blind Editing

☞ Ensure the desk is set-up for Blind operation as follows:

24-Channel Mode	48-Channel Mode
Put **P2** Master fully **down**	Put **P1** Master fully **down**

☞ 'Double Preview' the Sequence using the associated Cue Fader.

Pull the Cue Fader back past its normal zero position to 'Preview', then release it and immediately pull it back again to 'Double Preview'. (For a full description of 'Double Previewing', refer to page 6-19).

As soon as the Sequence is Double Previewed, it will begin stepping according to the method / speed defined by the 'Step Trigger' parameter (see page 6-16). The active HTP Channels for each Step will be indicated by the indicators in the Channel Flash Buttons.

☞ To stop the Sequence, press the **stop** button; the button indicator will light-up to show that the Sequence is 'stopped'.

YOU MUST 'STOP' A SEQUENCE BEFORE YOU CAN EDIT IT!

2 Stepping through the Sequence

Whilst a Sequence is 'stopped' you can manually recall each Step using the following methods:

☞ Press the **step** button — one 'press' for each Step.

OR

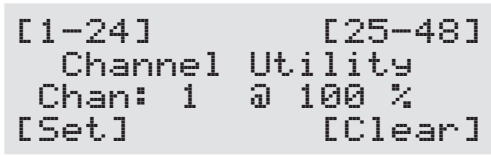
When (and *only* when) the Main Set-up Page of the Sequence Menu is displayed, position the cursor on the **Step** parameter and then rotate the **master select** wheel to select the required Step number.

3 Viewing HTP Channel Levels

Active Channels are indicated by the indicators of the Channel Flash Buttons. But, remember that when using 48-Channel Mode, the Flash Buttons will either correspond to Channels 1 to 24 or 25 to 48 — as indicated on the top line of the left-hand LCD Panel.

To view the actual 'numeric' level of a Channel or to select the Flash Button range:

☞ Move to the Channel Utility Page of the Sequence Menu:



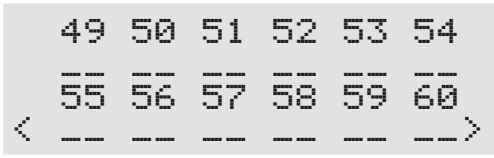
☞ To change the Flash Button range, press the soft button next to the desired range shown at the top of the display.

☞ To view the level of a particular Channel, briefly move the appropriate Channel Fader above zero; the **Chan** field will then update to show that Channel.

You can also update the display by pressing a Channel Flash Button. However, this will actually 'flash' the output level for that Channel.

4 Viewing LTP Channel Levels

☞ Move to the LTP Set-up Page of the Sequence Menu:

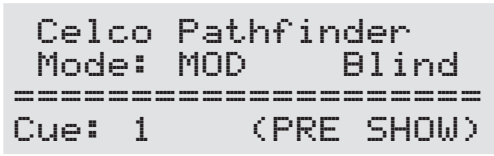


The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

5 Selecting Modify Mode

☞ To edit the current Step, press the **mod** button to engage Modify Mode.

The **mod** *button indicator will illuminate to show that it is active and the left-hand LCD Panel will change from showing* PRESET *to* MOD:



IMPORTANT NOTE
Whilst Modify Mode is engaged, the Step button is disabled.

HELPFUL HINT
Whilst Modify Mode is active, you can release the Cue Fader — 'Double Preview' will remain active. This frees both hands to make any changes.

6 Changing HTP Channel Levels

☞ Adjust the levels of the required Channel(s) using the appropriate bank(s) of Channel Faders:

24-Channel Mode	48-Channel Mode
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

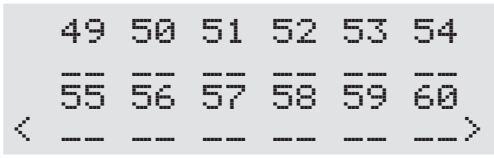
☞ To increase the level of an 'active' Channel or to set a level for an 'inactive' Channel, simply move the corresponding Channel Fader to the desired level.

☞ To reduce the level of an 'active' Channel, you must firstly move the Channel Fader to a level *equal to* or *above* that currently stored. Then reduce the level as desired.

> ***HELPFUL HINT***
> *To monitor the actual numeric level of each Channel as it is changed, ensure that the Channel Utility Page is displayed (see stage 3).*

7 Changing LTP Channel Levels

☞ Move to the LTP Set-up Page of the Sequence Menu:



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of each Channel for the current Step, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

8 Saving or Rejecting Level Changes

☞ If you have released the Cue Fader during editing and wish to keep the current Sequence 'Double Previewed' (*e.g.* to edit another Step), pull the appropriate Cue Fader back past its zero position again *now*.

☞ To save the modified HTP/LTP level(s) for the current Step, press the **enter** button. *The button indicator will light-up briefly to show that the settings have been accepted; Modify Mode will be terminated.*

☞ To reject the modified settings, press the **mod** button to terminate Modify Mode. *The button indicator will turn-off.*

☞ To view or edit another Step, return to stage 2.
Otherwise, release the Cue Fader to end 'Double Preview'.

Editing a Sequence (Live Mode)

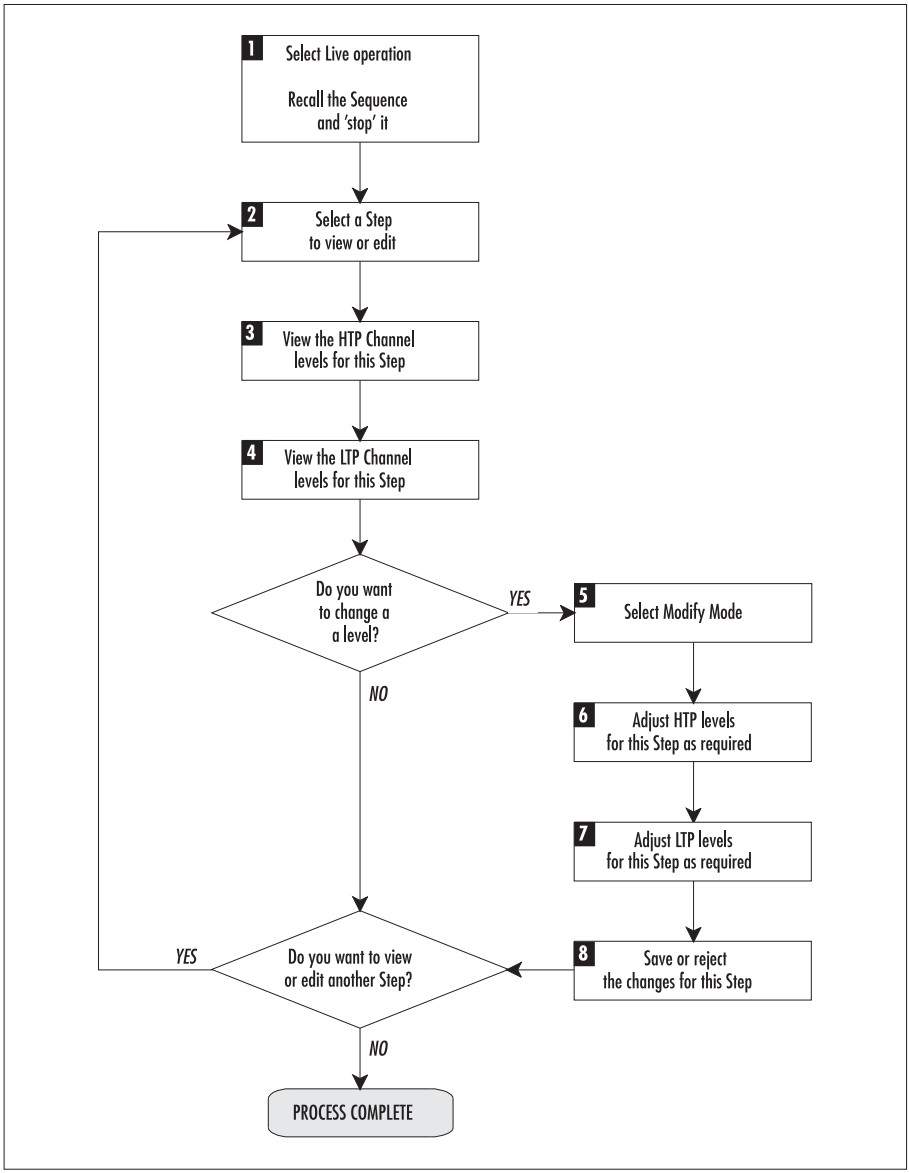


Fig.6-9: Flow diagram for Live Sequence editing.

1 Selecting a Sequence for Live Editing

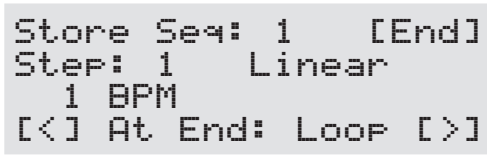
☞ Ensure the desk is set-up for Live operation as follows:

24-Channel Mode	48-Channel Mode
Put **P2** Master fully **up**	Put **P1** Master fully **up**

☞ Replay the Sequence by opening the associated Cue Fader.

As soon as the Sequence is recalled, it will begin stepping according to the method/speed defined by the 'Step Trigger' parameter (see page 6-16).

☞ Call-up the Main Set-up Page of the Sequence Menu:



If not already on, the **stop** *button indicator will now light-up to show that the selected Sequence is disabled or 'stopped'.*

THE SEQUENCE MUST BE 'STOPPED' BEFORE YOU CAN EDIT IT!

2 Stepping through the Sequence

Whilst a Sequence is 'stopped' you can manually recall each Step using the following methods:

☞ Press the **step** button — one 'press' for each Step.

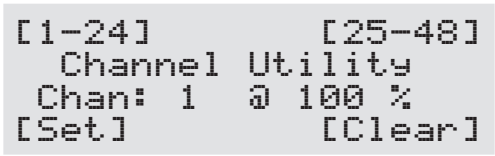
OR

When (and *only* when) the Main Set-up Page of the Sequence Menu is displayed, position the cursor on the **Step** parameter and then rotate the **master select** wheel to select the required Step number.

3 Viewing HTP Channel Levels

To view the actual 'numeric' level of a Channel or to select the Flash Button range:

☞ Move to the Channel Utility Page of the Sequence Menu:



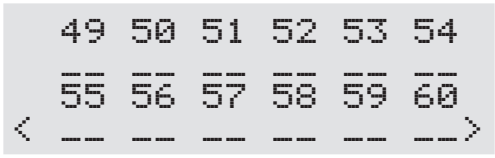
☞ To change the Flash Button range, press the soft button next to the desired range shown at the top of the display.

☞ To view the level of a particular Channel, briefly move the appropriate Channel Fader above zero; the **Chan** field will then update to show that Channel.

You can also update the display by pressing a Channel Flash Button. However, this will actually 'flash' the output level for that Channel.

4 Viewing LTP Channel Levels

☞ Move to the LTP Set-up Page of the Sequence Menu:



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

5 Selecting Modify Mode

> ***IMPORTANT NOTE***
> *The right-hand LCD Panel must be in the Sequence Menu before selecting Modify Mode, otherwise you will be modifying the Cue and not the Sequence.*

☞ To edit the current Step, press the **mod** button to engage Modify Mode.

The **mod** *button indicator will illuminate to show that it is active and the left-hand LCD Panel will change from showing* PRESET *to* MOD:

```
 Celco Pathfinder
 Mode: MOD    Blind
====================
Cue: 1    (PRE SHOW)
```

In addition, any Channels within the Cue which have 'background' levels (i.e. not set by the Sequence) will be extinguished to enable the Sequence Steps to be clearly identified.

> ***IMPORTANT NOTE***
> *Whilst Modify Mode is engaged, the Step button is disabled.*

6 Changing HTP Channel Levels

☞ Adjust the levels of the required Channel(s) using the appropriate bank(s) of Channel Faders:

24-Channel Mode	48-Channel Mode
Use **lower** fader bank only (Preset 2)	Use **both** fader banks (Preset 1 & 2)

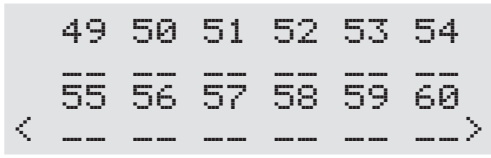
☞ To increase the level of an 'active' Channel or to set a level for an 'inactive' Channel, simply move the corresponding Channel Fader to the desired level.

☞ To reduce the level of an 'active' Channel, you must firstly move the Channel Fader to a level *equal to* or *above* that currently stored. Then reduce the level as desired.

HELPFUL HINT
To monitor the actual numeric level of each Channel as it is changed, ensure that the Channel Utility Page is displayed (see stage 3).

7 Changing LTP Channel Levels

☞ Move to the LTP Set-up Page of the Sequence Menu:



The Channel numbers (49, 50, 51 *etc*) appear on the first and third lines of the display; immediately beneath these are the levels for each Channel.

☞ To change the setting of each Channel for the current Step, move the cursor to the appropriate Channel with the **<** or **>** soft buttons, then rotate the **master select** wheel to set the level as required.

- `--` de-selected (*i.e.* current LTP level is unchanged),
- `0` to `99` corresponding to levels 0 to 99% respectively,
- `FF` corresponding to level of 100%.

☞ To deselect all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Clear]** soft button.

☞ To select all Channels, press the **next** button to move to the Channel Utility Page, then press the **[Set]** soft button. Return to the LTP Control Page and set the level for each Channel as required.

8 Saving or Rejecting Level Changes

☞ To save the modified HTP / LTP level(s) for the current Step, press the **enter** button. *The button indicator will light-up briefly to show that the settings have been accepted; Modify Mode will be terminated.*

☞ To reject the modified settings, press the **mod** button to terminate Modify Mode. *The button indicator will turn-off.*

☞ To view or edit another Step, return to stage 2.
Otherwise, close the Cue Fader.

Inserting/Deleting Sequence Steps

Inserting an Extra Step

☞ Call-up the Main Set-up Page of the Sequence Menu on the right-hand LCD Panel:

```
Store Seq: 3   [End]
Step: 5   Linear
  1 BPM
[<] At End: Loop [>]
```

☞ Choose the required Sequence number using the **Seq** field.

☞ Move the cursor to the **Step** field and select the Step that you want to insert *before*.

☞ Press the **next** button four times to display the Edit Sequence Page:

```
   Edit Sequence
 Seq: 3  Step: 5

[Insert]    [Delete]
```

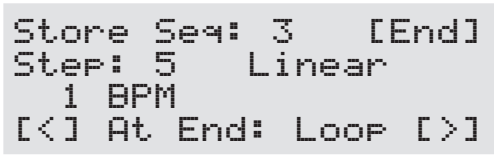
☞ To insert a new Step before the displayed Step number, press the **[Insert]** soft button.

A new 'blank' Step (i.e. with no levels) will be created and all subsequent Steps (including the 'End' marker) will be moved up one position.

Deleting a Single Step

Please remember that a 'Delete Step' action cannot be undone – IF IN DOUBT, DON'T DELETE!

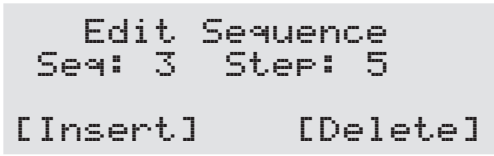
☞ Call-up the Main Set-up Page of the Sequence Menu on the right-hand LCD Panel:



☞ Choose the required Sequence number using the **Seq** field.

☞ Move the cursor to the **Step** field and select the Step that you want to delete.

☞ Press the **next** button to display the Edit Sequence Page:



☞ To delete the displayed entry, press the **[Delete]** soft button.

HELPFUL HINTS

To delete an entire Sequence, select Step 1 of the Sequence, then repeatedly press the **[Delete]** *soft button until all the Steps have been deleted.*

You can also overwrite an existing Sequence by reprogramming each Step — in this case it is not necessary to delete the Sequence first.

Deleting all Sequences

Please remember that a 'Delete Sequence' action cannot be undone – IF IN DOUBT, DON'T DELETE!

☞ Call-up the Clear Menu on the right-hand LCD Panel:

```
[CUES]   [SEQUENCES]
     Clear Menu

[STACKS]        [ALL]
```

☞ Press the **[SEQUENCES]** soft button; the following display will appear:

```
[Clear]       [Clear]
 Press ALL Four
 Buttons to Clear.
[Clear]       [Clear]
```

☞ To delete *all* Sequences in memory, press all four soft buttons at once.

The display will then revert to the Root Menu.

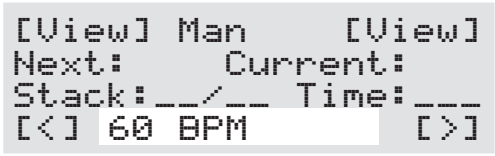
Replaying a Sequence

To replay a Sequence, it must be assigned to a Cue (see page 4-8).

Once assigned to a Cue, the Sequence is replayed simply by recalling the appropriate Cue (*i.e.* by opening a Cue Fader or using a Stack, *etc.*). The PATHFINDER allows up to 14 Sequences to be replayed at the same time.

As soon as the Cue fade level rises above zero the Sequence will start running from Step 1 using the method / speed defined by the 'Step Trigger' parameter (see page 6-16).

Whilst a Sequence is being replayed, its 'Step Trigger' setting will be displayed at the bottom of the Main Control Page of the Root Menu:



This allows the setting to be changed without having to call-up the Sequence Menu.

☞ Ensure that the cursor is positioned on the field (i.e. the present value will be flashing); if not, use the **[<]** and **[>]** to move the cursor.

☞ Rotate the **master select** wheel to alter the setting as required.

Sound-to-Light Control

If the Sequence is set-up for Sound-to-Light (STL) control, then:

☞ Ensure that an audio signal is connected to either the **audio mic** or **audio speaker** input.

☞ Open the Cue Fader and then adjust the level of the **stl** fader to set the step sensitivity relative to the incoming sound.

Stopping a Sequence during Replay

The **stop** button is used to enable or disable Sequence stepping. Under normal circumstances this button should be 'off', *i.e.* the button indicator is not lit.

It is important to remember that the **stop** button can be used to stop ***one*** Sequence only at a time as defined by the following table:

When...	the stop button controls...
...one Sequence only is being replayed	...that Sequence.
...more than one Sequence is being replayed	...the Sequence asigned to the Cue which is nearest Cue 1.
...a Sequence is being 'Double Previewed'	...that Sequence.

Manually Stepping a Sequence

The **step** button can be used at anytime (whether the Sequence is running or 'stopped') to manually trigger the next Step.

Bass Step Control

Even if a Sequence is not set-up for sound-to-light control, you can use the PATHFINDER's Bass Step function to trigger Steps in synchronisation with the bass component of the applied audio signal.

☞ Press the **bass** button to turn the Bass Step function ON (indicator lit) or OFF (indicator not lit).

The Bass Step function provides two effects depending on the state of the **stop** button:

- When **stop** is ON, the stepping speed is modulated by the bass level,
- When **stop** is OFF, the Sequence is stepped by the bass 'beat'.

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Section 7:
Q-Card & Disk Storage

The Celco Q-Card

The Celco Q-Card is a credit-card-size memory card on which can be stored the PATHFINDER's configuration, together with any programmed, Cues, Sequences and Stacks.

This allows the entire set-up for each show or performance to be stored for future use, or simply to keep a data back-up in case you should accidentally delete or change any settings.

In addition, the PATHFINDER allows you to swap its memory contents with those of a Q-Card. This is useful during long or complex shows since you can effectively double the number of Cues, Sequences and Stacks available.

Floppy Disk Drive

The EPX version of the PATHFINDER console has the facility to control a free-standing floppy disk drive (ESC2700/FDD). This allows up to five complete shows to be stored on a conventional pre-formatted 3.5 inch floppy disk.

The disk drive unit is connected to Port 2 on the rear panel of the PATHFINDER console.

The Store Menu Pages

Control of Q-Card and Disk storage operations is achieved via the Store Menu. Fig.7-2 shows how to reach the Store Menu Pages from the Root Menu.

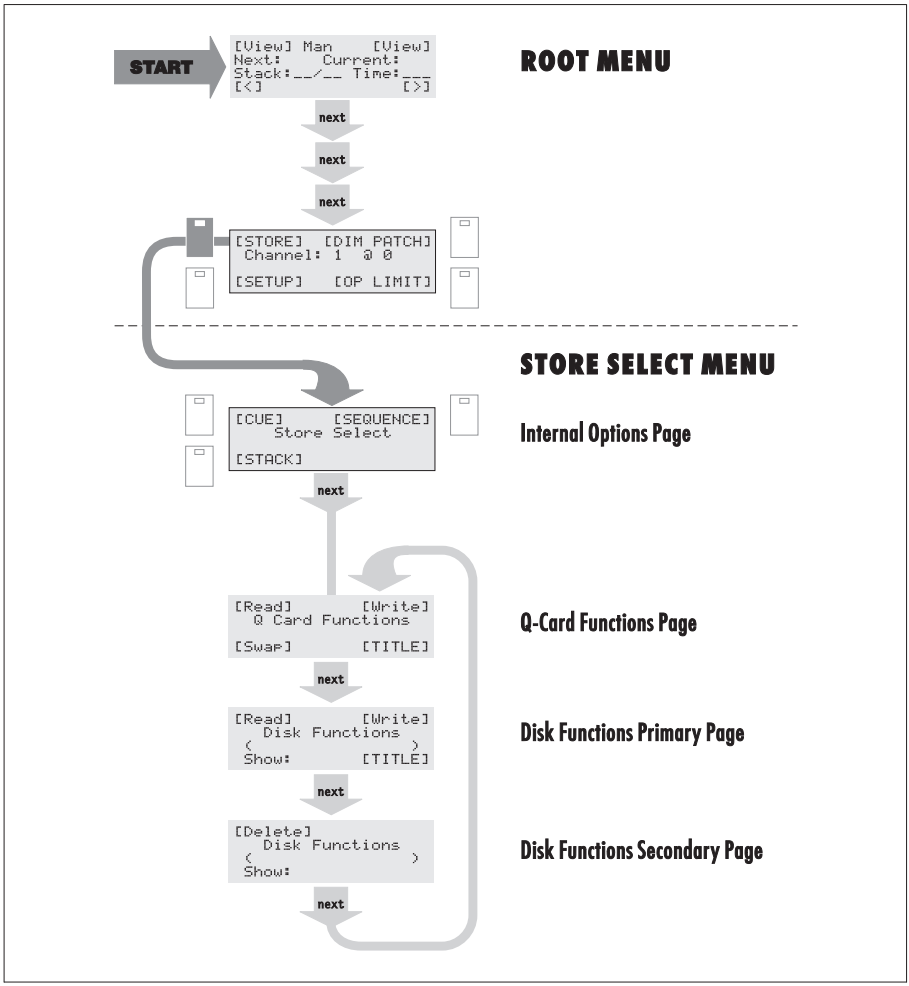


Fig.7-1: How to access the Store Menu.

Inserting/Removing a Q-Card

The PATHFINDER will only work correctly with the Type 6 Celco Q-Card.

☞ To insert a Q-Card, hold the card with the printed logo facing upwards and with its edge connector towards the slot in the PATHFINDER's front moulding.

☞ Now gently slide the card into the slot until it stops, then apply firm pressure to engage the connector.

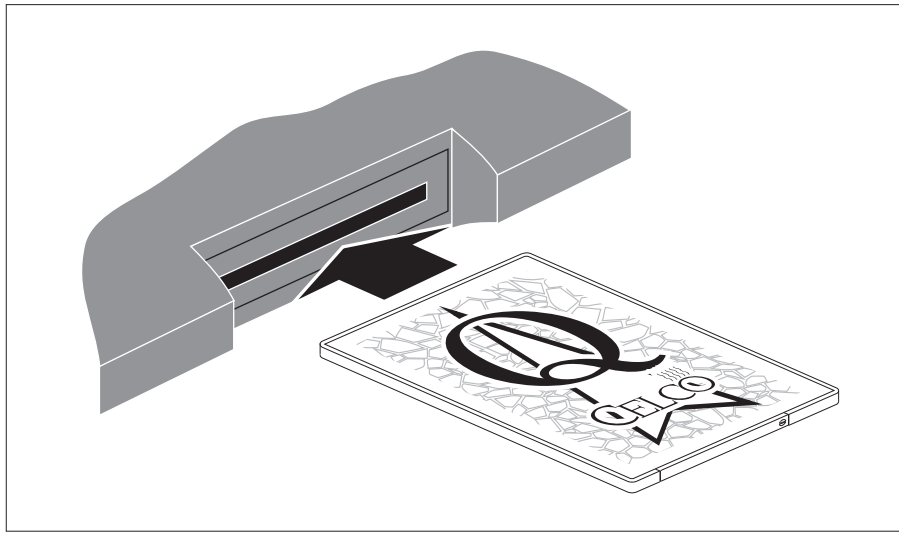


Fig.7-2: Inserting a Q-Card into the PATHFINDER.

☞ To remove the Q-Card, hold the end of the card and withdraw it from the slot.

> ***CAUTION***
> *To avoid data loss or corruption, either on the Q-Card or in the console's internal memory, do not remove (or insert) a card whilst attempting a Read, Write or Swap function.*

Saving a Show to a Q-Card

☞ Insert a blank Q-Card into the slot in the PATHFINDER's front moulding (see page 7-3). Ensure that the card is inserted with the printed logo facing upwards and with its edge connector towards the slot.

You may also use a Q-Card which already contains data.
But beware — this will be overwritten without any warning!

☞ Call-up the Q-Card Functions Page of the Store Menu:

```
[Read]        [Write]
  Q Card Functions

[Swap]        [TITLE]
```

If there is no Q-Card inserted or you are trying to use an invalid type of card, the message 'No Q Card Inserted' *will displayed.*

☞ To initiate the save process, press the **[Write]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Write Into Card

[Confirm]  [Confirm]
```

☞ Press the two lower soft buttons to confirm the save process, (or press the **exit** button to abort).

The save process will take about six seconds, during which time the display will show the message 'Writing Q Card'.

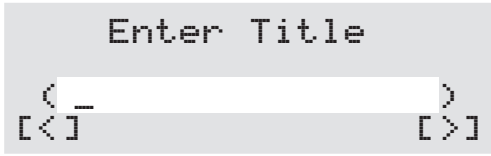
> ***IMPORTANT NOTE***
> *During the save process, the DMX data signal will be briefly interrupted.*

Viewing or Creating a Q-Card Title

A Q-Card can be given a name or title of up to 16 characters (including spaces) to help with identification.

☞ With a Q-Card inserted into the PATHFINDER's card slot, call-up the Q-Card Functions Page of the Store Menu:

☞ Press the **[TITLE]** soft function button to call-up the Title Entry Page:



If a title has already been programmed, it will be displayed. The current cursor position is indicated by the flashing 'underline' character.

☞ Rotate the **master select** wheel to step through the available letters, numbers and symbols.

☞ When the required character is displayed, press the **[>]** soft button to move the cursor to the next position.

☞ Repeat the last two instructions to enter the rest of the title.

To enter a 'space', simply move the cursor without selecting a character.

To edit a character, position the cursor on the character then rotate the **master select** *wheel to alter the character as required.*

☞ When the Q-Card title is complete, press the **exit** button.

Reading a Show from a Q-Card

☞ Insert a pre-programmed Q-Card into the slot in the PATHFINDER's front moulding (see page 7-3). Ensure that the card is inserted with the printed logo facing upwards and with its edge connector towards the slot.

☞ Call-up the Q-Card Functions Page of the Store Menu:

```
[Read]        [Write]
  Q Card Functions

[Swap]        [TITLE]
```

If there is no Q-Card inserted or you are trying to use an invalid type of card, the message 'No Q Card Inserted' *will displayed.*

☞ To initiate the read process, press the **[Read]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Read Into Desk

[Confirm]  [Confirm]
```

Remember that all Cues, Sequences and Stacks in the PATHFINDER's memory will be overwritten by this operation and cannot be recovered.

☞ Press the two lower soft buttons to confirm the read process, (or press the **exit** button to abort).

The read process will take about six seconds, during which time the display will show the message 'Reading Q Card'.

> ***IMPORTANT NOTE***
> *During the read process, the DMX data signal will be briefly interrupted.*

The Q-Card 'Swap' Function

The Q-Card Swap Function allows the contents of a Q-Card and the PATHFINDER's internal memory to be exchanged or swapped.

This means that if you are working on a complex show or performance which requires more Cues, Sequences or Stacks than can be accommodated in the internal memory, you can effectively double the storage capacity by swapping one set of Cues, Sequences and Stacks with another. In fact you could repeat the process many times using different Q-Cards to increase the potential capacity even further.

Preparation

☞ Program the first set of Cues, Sequences and Stacks as required into the PATHFINDER's internal memory.

☞ Save these settings to a Q-Card.

☞ Reset the PATHFINDER's internal memory, then program the second set of Cues, Sequences and Stacks.

☞ Save these settings to a second Q-Card.

HELPFUL HINTS
You are advised to program a 'change-over' Cue for use during the Swap operation; the Cue should be identical on both Cards and must occupy the same Cue number.

It is recommended, though not essential, to keep back-up copies of both Q-cards, just in case you should accidentally press the wrong button during a performance and loose your show data.

Using the Swap Function

For the following procedure we will assume that you are using two Q-Cards identified as 'MYSHOW A' and 'MYSHOW B' which contain the first and second halves of a show respectively.

☞ Read the first Q-Card (MYSHOW A) into the PATHFINDER's memory as described on page 7-6.

☞ Remove the card and insert the second Q-Card (MYSHOW B) in readiness for performing the Swap.

☞ Then proceed to recall each Cue as required.

☞ When you have recalled the 'change-over' Cue, call-up the Q-Card Functions Page of the Store Menu:

```
[Read]        [Write]
  Q Card Functions

[Swap]        [TITLE]
```

☞ To initiate the Swap process, press the **[Swap]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Swap Between The
Desk and The Card
[Confirm]  [Confirm]
```

☞ Press the two lower soft buttons to confirm the Swap process, (or press the **exit** button to abort).

The Swap process will take about eight seconds, during which time the display will show the message 'Swapping Q Card'.

IMPORTANT NOTE

During the Swap process, the DMX data signal will be briefly interrupted.

Provided that the same 'change-over' Cue exists both in memory and on the card, no change in the lighting state will be observed. If, however, the 'change-over' Cue incorporates a Sequence, some momentary disruption will occur to the stepping speed.

☞ At the end of the show, perform the Swap process again to return the MYSHOW B data to the Q-Card and the MYSHOW A data to the PATHFINDER's internal memory.

Q-Card Care

The Q-Card contains a small lithium battery (type BR2016 or equivalent) which provides data retention if the PATHFINDER is powered-down or if the card is removed. Whilst the card is connected to a powered PATHFINDER console, no battery power is consumed.

For really important shows, it is recommended that two separate back-up cards are kept to avoid loss of data should one battery fail for any reason.

Replacing the Back-up Battery

It is recommended that the battery is replaced at 12-month intervals rather than waiting for the battery to discharge fully. For this purpose it is helpful to write on the card the date at which a new battery is fitted.

When the battery is removed, data will be maintained for around 30 seconds to give time for the new battery to be fitted.

If preferred, the battery may be replaced whilst the card is still plugged into and powered by the PATHFINDER console. Alternatively you can read the card into the console, remove it to replace the battery, then re-insert the card and resave the settings to it.

CAUTION – Battery Handling
Avoid touching the electrodes of a new battery with bare fingers as this will leave greasy deposits which may affect the reliability of the connection.

Furthermore, do not touch both electrodes at once with any conductive material (including bare fingers) as this may reduce the life of the battery by causing a current to be drawn.

☞ Unscrew the small retaining screw from the end of the card until the battery compartment can be eased out (see Fig.7-3).

The retaining screw is 'captive' and the battery compartment withdraws by approx. 15mm.

☞ Push out the battery from the underside of the compartment.

☞ Insert the new battery (type BR2016 or equivalent) ensuring that the positive '+' electrode is at the top.

☞ Finally, close the battery compartment and re-tighten the retaining screw.

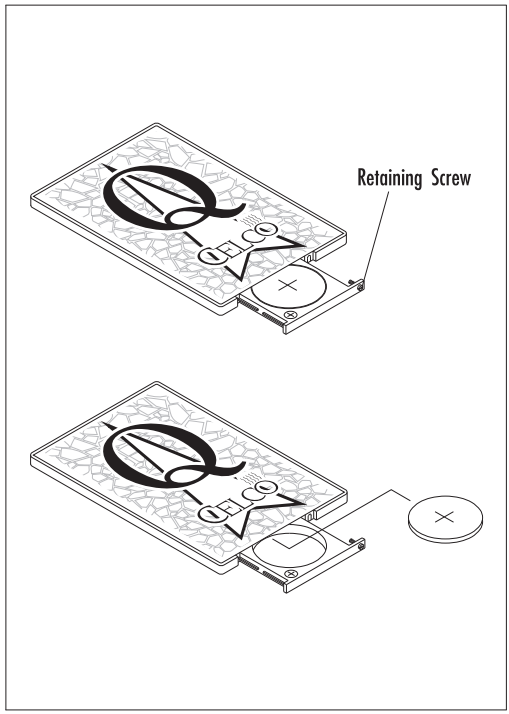


Fig.7-3: Replacing the Q-Card back-up

WARNING — Battery Disposal

The old battery must be disposed-of in accordance with any local regulations. In addition, please observe the following guidelines:

- *Do not recharge.*
- *Do not attempt to open or otherwise mutilate.*
- *Do not heat or dispose of in fire.*
- *Do not short-circuit the electrodes.*

Saving a Show to a Floppy Disk

☞ Insert a 3.5 inch floppy disk into the drive unit. If you are using a new disk (not previously used by PATHFINDER) it must be pre-formatted.

☞ Call-up the Disk Functions Primary Page of the Store Menu:

```
[Read]        [Write]
   Disk Functions
 (                  )
 Show: 1      [TITLE]
```

☞ Rotate the **master select** wheel to choose a Show number from 1 to 5.

If a title has already been entered for the selected Show this will be displayed between the two brackets ( ) .

☞ To enter or change the Show name, press the **[TITLE]** soft button to call-up the Disk Show Title Page:

```
 Enter Show 1 Title

 (MUSICAL SHOW PT1)
[<]                [>]
```

HEAD-UP DISPLAY FEATURE
see page 10-10

If a title has already been programmed, it will be displayed. The current cursor position is indicated by the flashing 'underline' character.

☞ Rotate the **master select** wheel to step through the available letters, numbers and symbols.

☞ When the required character is displayed, press the **[>]** soft button to move the cursor to the next position.

☞ Repeat the last two instructions to enter the rest of the title.

To enter a 'space', simply move the cursor without selecting a character.

To edit a character, position the cursor on the character then rotate the **master select** *wheel to alter the character as required.*

☞ When the Show title is complete, press the **exit** button.

☞ To initiate the save process, press the **[Write]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Write to Disk

[Confirm]  [Confirm]
```

☞ Press the two lower soft buttons to confirm the save process, (or press the **exit** button to abort). The save process will take about 30 seconds, during which time the display will show the following:

```
[Abort]      [Abort]
To Abort Disk Write
 Press Both Buttons
 Please Wait...
```

If you need to stop the save process for any reason, press the top two soft buttons.

Reading a Show from a Floppy Disk

☞ Insert a 3.5 inch floppy disk (containing pre-saved Shows) into the drive unit.

☞ Call-up the Disk Functions Primary Page of the Store Menu:

```
[Read]        [Write]
   Disk Functions
 (                  )
 Show: 1       [TITLE]
```

☞ Rotate the **master select** wheel to choose a Show number from 1 to 5.

If a title has been entered for the selected Show this will be displayed between the two brackets ( ) .

☞ To initiate the read process, press the **[Read]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Read from Disk

[Confirm]  [Confirm]
```

☞ Press the two lower soft buttons to confirm the read process, (or press the **exit** button to abort). The read process will take about 30 seconds, during which time the display will show the following:

```
[Abort]       [Abort]
To Abort Disk Read
 Press Both Buttons
 Please Wait...
```

If you need to stop the read process for any reason, press the top two soft buttons.

Deleting a Show from a Floppy Disk

☞ Call-up the Disk Functions Secondary Page of the Store Menu:

```
[Delete]
   Disk Functions
 (                  )
 Show: 1
```

☞ Rotate the **master select** wheel to choose a Show number from 1 to 5.

If a title has been entered for the selected Show this will be displayed between the two brackets ( ).

☞ To initiate the delete process, press the **[Delete]** soft button; the following confirmation message will then appear:

```
Press Both Buttons
To Delete Show

[Confirm]  [Confirm]
```

☞ Press the two lower soft buttons to confirm the read process, (or press the **exit** button to abort). The read process will only take a few seconds, during which time the display will show the following:

```
[Abort]       [Abort]
To Abort Show Delete
 Press Both Buttons
 Please Wait...
```

If you need to stop the read process for any reason, press the top two soft buttons.

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Section 8:
Console Set-up & Defaults

The PATHFINDER has several parameters which define how the console operates. These settings, together with various default timings for use with the AutoFade and AutoRun functions are accesssed via the Default Set-up Menu.

The Defaults Menu Pages

Fig.8-2 below shows how to reach the Defaults Menu Pages from the Root Menu.

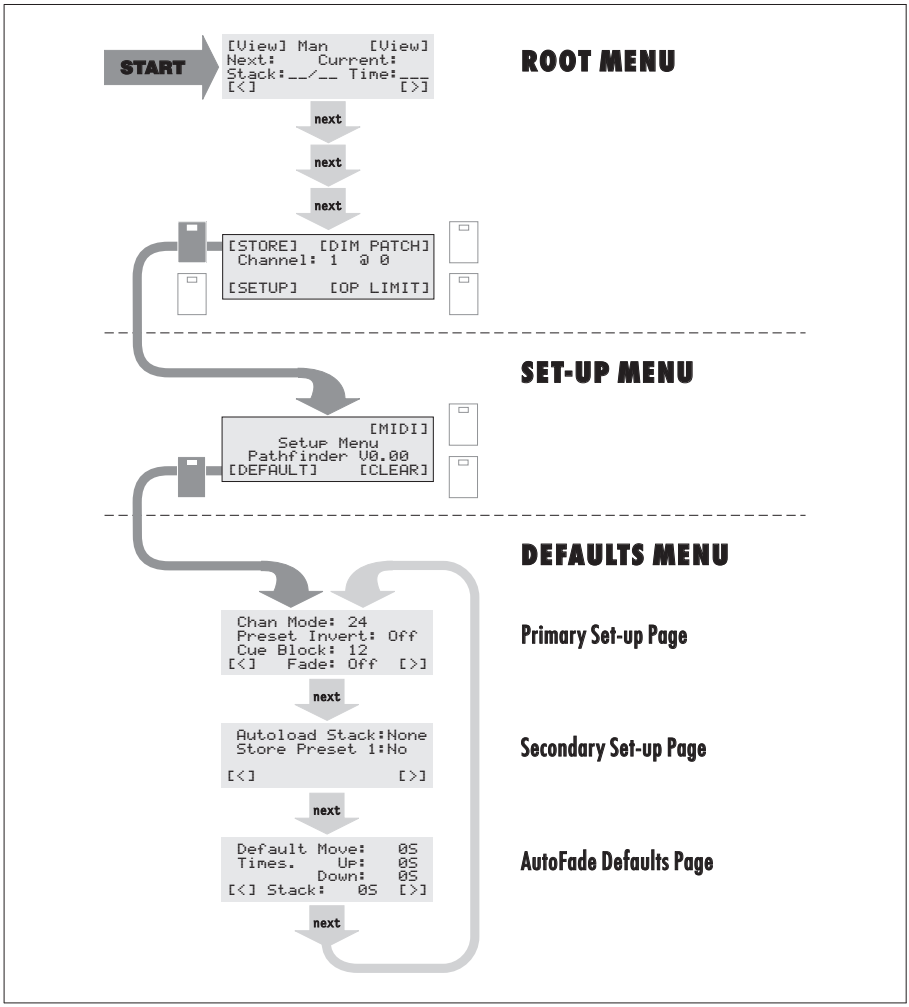


Fig.8-1: How to access the Defaults Menu.

General Settings

☞ Call-up the Primary or Secondary Set-up Page on the right-hand Panel:

```
 Chan Mode: 24
 Preset Invert: Off
 Cue Block: 12
[<]   Fade: Off  [>]
```

```
 Autoload Stack:None
 Store Preset 1:No

[<]               [>]
```

☞ Use the **[<]** and **[>]** soft buttons to move the cursor between parameters, and rotate the **master select** wheel to set the parameters as required:

Chan Mode Selects either 24- or 48-Channel Mode (see section 3-2 for further information).

Preset Invert This reverses the operation on Preset Master **p1**:
Off = at maximum when fully-up (same as **p2**)
On = at maximum when fully-down.
(see page 3-7 for further information)

Cue Block This selects the number of Cues that are scrolled with the cue scroll wheel and can be set from 1 to 12.
(see page 4-18 for further information)

Fade Turns the AutoFade / AutoRun functions On or Off.

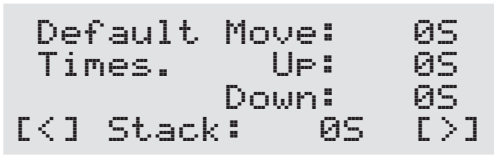
Autoload Stack Used to load the specified Stack (1 – 30) at power-up. The None setting means no Stack is loaded.

Store Preset 1 When programming Cues or Sequences in 24-Channel Mode, Channel levels are usually set via the lower bank of Channel Faders (Preset 2). With this parameter set to Yes, the levels of Preset 1 are also stored.

AutoFade & AutoRun Default Times

Whenever a 'time' parameter of a Cue or Stack is set to 'Def Seconds', it causes the PATHFINDER to use the default time values defined within the Default Menu.

☞ To view or change these times, call-up the AutoFade Times Page:



☞ Use the **[<]** and **[>]** soft buttons to move the cursor between each value, and rotate the **master select** wheel to set the value as required:

Move — the time for LTP Channels to reach their pre-programmed levels when a Cue is recalled.

Up — the time for HTP Channels to fade-in to their pre-programmed levels when a Cue is recalled.

Down — the time for HTP Channels to fade-out to zero when a Cue is finished.

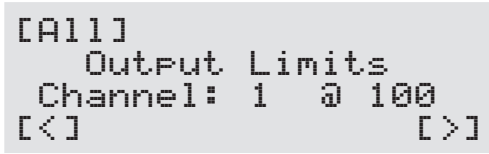
Stack — the Wait Time between Cues in a Stack when using AutoRun.

All of the above parameters can be set between 0 and 60 seconds. For a full list of available values, refer to page B-25.

Channel Output Limiting

The controlled output of each HTP Channel has a limiting parameter. This sets the maximum possible output level obtained from a Channel when its Channel Fader, Preset Master or Cue Fader is fully-up.

☞ To set (or view) a Channel Output Limit, call-up the Menu Options Page of the Root Menu and press the **[OP LIMIT]** soft button; the Output Limits Page will appear:



☞ To select a specific Channel number, ensure that the cursor is positioned on the **Channel** field, then rotate the **master select** wheel.

OR

To select *all* Channels, press the **[All]** soft button; the **Channel** field will then display the word 'ALL'.

☞ Now move the cursor to the level value (to the right of the **@** symbol) and rotate the **master select** wheel to set the required limit.

> ***HELPFUL HINT***
> *Whilst the Output Limits Page is displayed, any Channels which are 'limited' will have the indicator lit on their Channel Flash Buttons.*
>
> *Please remember that, when using 48-Channel Mode, the Flash Buttons will either correspond to Channels 1 to 24 or 25 to 48 — as indicated on the top line of the left-hand LCD Panel. To change the button range, call-up the Channel Utility Page on the right-hand LCD Panel and select the range with the top two soft buttons.*

Dimmer Patching

There are 60 controllable Channels on the PATHFINDER Console, but up to 512 possible Channels within the DMX protocol.

The PATHFINDER is, therefore, equipped with a patching facility which allows you to define which DMX Channels are controlled by which Console Channels. This facility applies to both HTP and LTP Channels

NOTE *Console Channels are also known as Desk Channels.*
DMX Channels are also known as Dimmer 'attribute' Channels.

In most applications you will probably use a '1 to 1' Patch, *i.e.*:
Console Channel 1 controls DMX Channel 1,
Console Channel 2 controls DMX Channel 2, *etc.*

If required, a single Console Channel can control more than one DMX Channel. However, a single DMX Channel can only be controlled by one Console Channel.

The PATHFINDER Console also has an uncontrollable 'Channel 0' which is permanently set to zero level. Any unused DMX Channels should normally be patched to Channel 0.

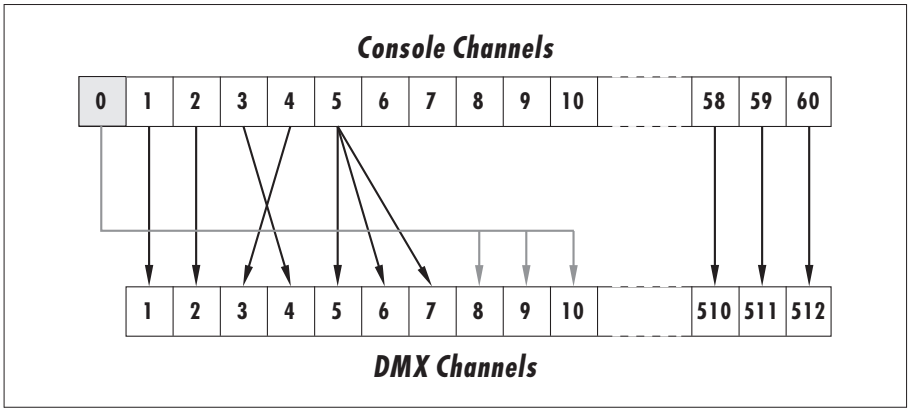


Fig.8-2: Example of Dimmer Patching.

The Dimmer Patch Menu Patch

Dimmer patching is achieved via the Dimmer Patch Menu. Fig.8-3 below shows how to reach the Dimmer Patch Menu from the Root Menu

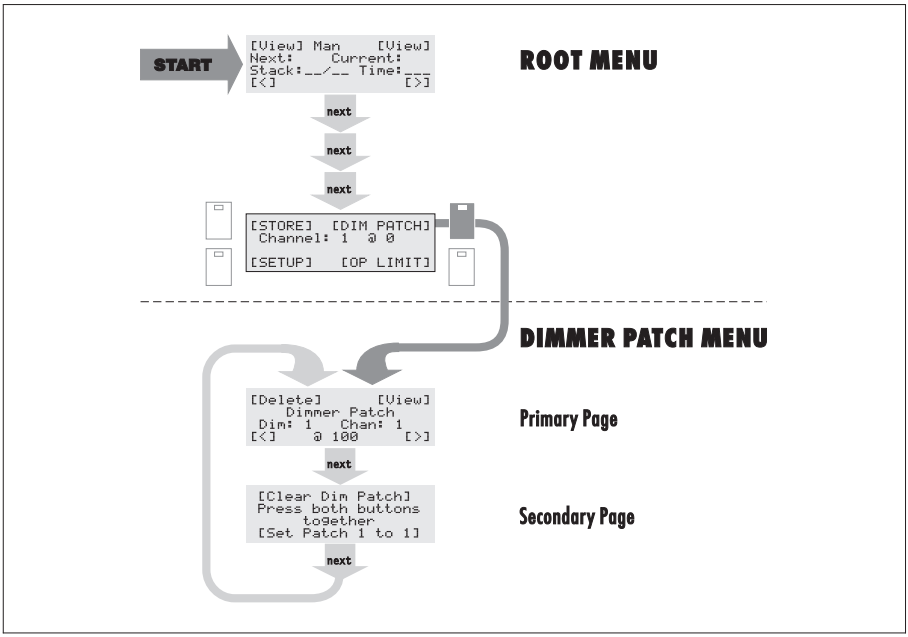


Fig.8-3. How to access the Dimmer Patch Menu.

Creating a Default Patch

To provide a 'known' starting point from which to program your own dimmer patch, the PATHFINDER has two default patches:

Patching Option	DMX Channels	Console Channels	Limit
1 to 1 Patch	1 to 48 49 to 60 61 to 512	1 to 48 *(HTP)* 49 to 60 *(LTP)* 0 *(zero level)*	100% 100% 0%
Clear Patch	1 to 512	0 *(zero level)*	0%

☞ Call-up the Default Set-up Page of the Dimmer Patch Menu:

```
[Clear Dim Patch]
Press both buttons
     together
[Set Patch 1 to 1]
```

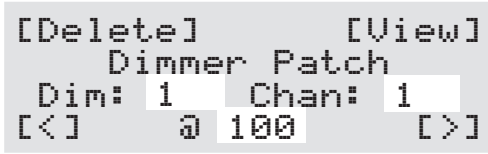
☞ To create a 1 to 1 Patch, press the lower two soft buttons at the same time.

☞ To create a Clear Patch, press the top two soft buttons at the same time.

Creating/Modifying a Patch

> ***HELPFUL HINT***
> *Before setting-up a new Dimmer Patch it is recommended that you start by using one of the two default patches described previously. This will ensure that you are commencing with a 'known' patch and avoids problems caused by using existing patches.*

☞ Call-up the Main Set-up Page of the Dimmer Patch Menu:



☞ With the cursor positioned on the **Dim** field, rotate the master select wheel to step through the 512 DMX Channels.

For each DMX Channel the correspondingly 'patched' Console Channel number will appear in the **Chan** *field.*

At the bottom of the display is the Dimmer Patch Limit parameter which sets a proportional limit for the DMX Channel in respect of the Console Channel level. A setting of 100% means there is no limiting..

☞ Press the **[View]** soft button to step through any other DMX Channels that are patched to the same Console Channel.

☞ To set or change the patch for a Channel, select the appropriate DMX Channel with the **Dim** field. Then move the cursor to the **Chan** field and rotate the master select wheel to select the required Console Channel. If any limiting is needed, move the cursor to the limit value at the bottom of the display and set as required.

☞ To set the patch for to Channel '0', press the **[Delete]** soft button. This also sets the limit parameter to zero.

Clearing the Internal Memory

Please remember that a 'Clear/Delete' action cannot be undone – IF IN DOUBT, DON'T DELETE! Alternatively, save the present settings to a Q-Card or floppy disk.

☞ Call-up the Clear Menu on the right-hand LCD Panel:

```
[CUES]   [SEQUENCES]
     Clear Menu

[STACKS]        [ALL]
```

☞ Press one of the four soft buttons to clear the appropriate portion of the internal memory:

- **[CUES]** delete all Cues
- **[STACKS]** delete all Stacks
- **[SEQUENCE]** delete all Sequences
- **[ALL]** delete all Cues, Stacks and Sequences.

☞ The following confirmation Page will then appear:

```
[Clear]      [Clear]
 Press ALL Four
 Buttons to Clear.
[Clear]      [Clear]
```

☞ To perform the chosen deletion, press all four 'soft' buttons at once.
The display will then revert to the Root Menu.

OR

To abandon the deletion, press the **exit** button.
The display will then revert to the Clear Menu.

Section 9:
Linking Consoles via MIDI/MSC

For applications where the 60 Channels provided by the PATHFINDER are not sufficient, it is possible to link two or more consoles together using the built-in MIDI Interface.

In addition, the PATHFINDER is compatible with the MIDI Show Control System (MSC) allowing it to control or be controlled by any other MSC-compatible console or device.

This section describes the setting-up and usage of simple Linking and MSC console control.

Linked Operation

For Linked operation one console is designated as a Master which is then used to control the operation of one or more Slave consoles.

Each console controls the levels of 60 separate Channels. By using the Dimmer Patching facility, the full range of 512 possible DMX Channels can be controlled, *e.g.* the Master console could control Channels 1 to 60, the first Slave could control Channels 61 to 120, and so on.

NOTE *The DMX output from each console is* **not** *linked. Therefore, a DMX 'merger' will be required if the outputs from the consoles are required to control Channels on the same DMX network.*

During Linked operation Cues, Stacks and Sequences become common to all consoles. For example, recalling a Cue on the Master console will recall the corresponding Cue on all Slave panels.

Operating the Consoles

All playback of Cues, Sequences and Stacks is controlled by the Master console. The following controls on the Master console will override the corresponding controls on the Slave panels:

- Grand Master Fader,
- Preset Master Faders and Flash Buttons,
- Cue Faders and Flash Buttons,
- Stack Fader and **go** Button,
- STL Fader,
- Sequence Control Buttons (**bass**, **step**, and **stop**).

Cue recall is controlled by the Master console only using any of the methods used for a single console.

Cue scrolling operates as normal on the Master console but is not available on the Slave consoles.

> ***IMPORTANT NOTE***
> *Q-Card functions (and Floppy Disk functions where available) are still controlled by each individual console. Thus, you must ensure that the correct Show (or portion of a Show) is loaded on each console.*

Programming the Consoles

All programming of Cues, Stacks and Sequences is achieved via the Master console using the same processes as for a single console. The only difference is that it is necessary to set the Channel Faders on *all* consoles to the required levels before 'entering' a Cue or Sequence Step.

When any Cue or Sequence parameters are modified on the Master console, the change is automatically sent to the Slave consoles.

Setting-up Console Linking

For Linked operation one console is used as a Master whilst the others become Slaves.

☞ Connect the **midi out** of the designated Master console to the **midi in** of the first Slave console.

☞ Then connect the **midi thru** of the first Slave to the **midi in** of the second Slave and so on, as shown in Fig.9-1.

Each console automatically configures itself as a Master or Slave depending on whether or not it is receiving a valid MIDI signal at its **midi in** connector.

The left-hand LCD Panel on each Slave console will indicate its Slave status as follows:

```
 Celco Pathfinder
 Mode: PRESET Live
** SLAVE ** SLAVE **
 Cue: 1    (         )
```

This Slave message should appear on all Slave consoles. If not, check that the MIDI cables have been connected correctly.

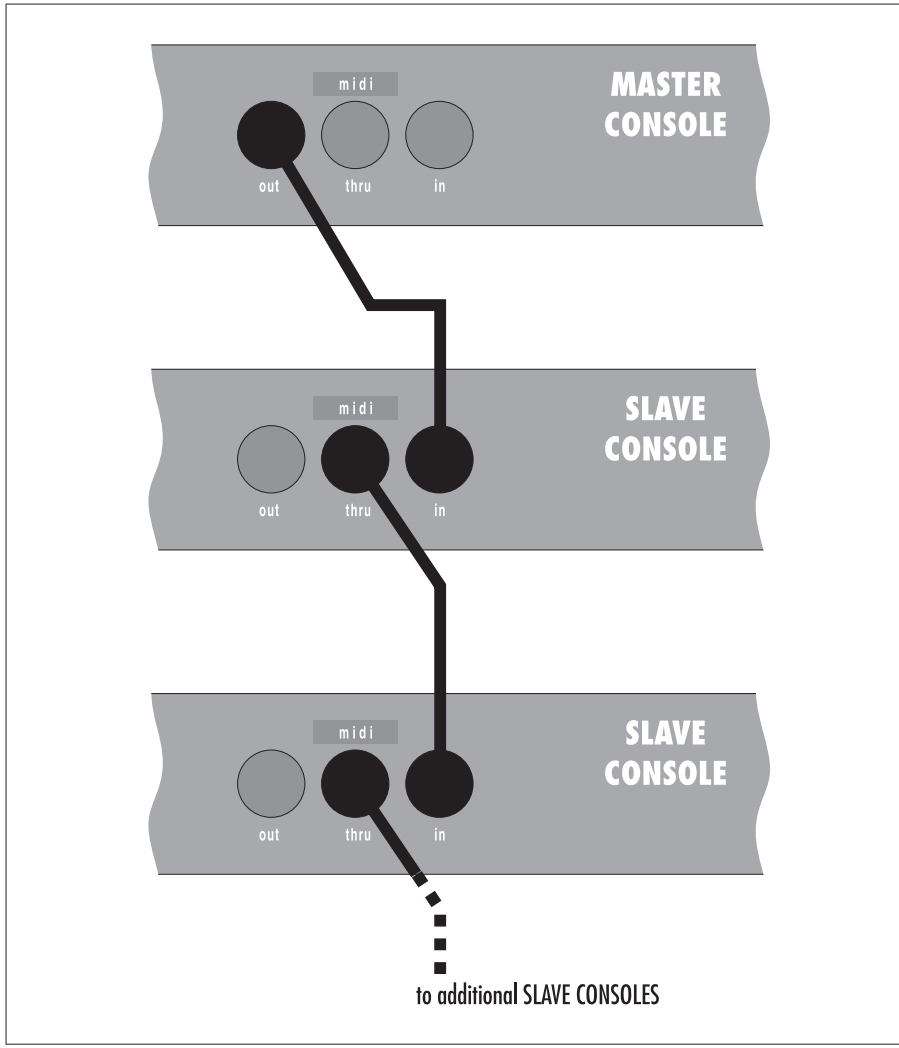


Fig.9-1: Connecting consoles for Linked operation.

MIDI Show Control (MSC)

MIDI Show Control (MSC) provides a set of commands within the MIDI interface that are specifically designed for lighting and control applications. Whilst this includes various devices, for the purpose of this User Guide we will refer specifically to Celco consoles.

The implementation of MSC on the PATHFINDER console supports both MSC Input and MSC Output commands. For detailed information on MSC message structure, please refer to Appendix D.

Setting-up Consoles for MSC

For MSC operation one console (or other device) is used as a System Master or MSC Output. The System Master will send MSC messages to all MSC Input consoles connected to it as follows:

☞ Connect the **midi out** of the designated System Master console / device to the **midi in** of the first console.

☞ Then connect the **midi thru** of the first console to the **midi in** of the second console and so on, as shown in Fig.9-2.

Configuring the System

The System Master console must be set-up for MSC Output whilst all other consoles must be set-up for MSC Input.

Since MSC messages can control either a specific console, a group of consoles or all consoles, each MSC Input console must be set-up with an individual and an *optional* group ID number. There are up to 111 individual ID numbers to enable specific consoles to be controlled. In addition, there are up to 15 group ID numbers which allow groups of two or more consoles to controlled. Finally, an 'All Call' ID is available which allows a single message to control all consoles at once.

Details of how to configure each console follows on the next few pages.

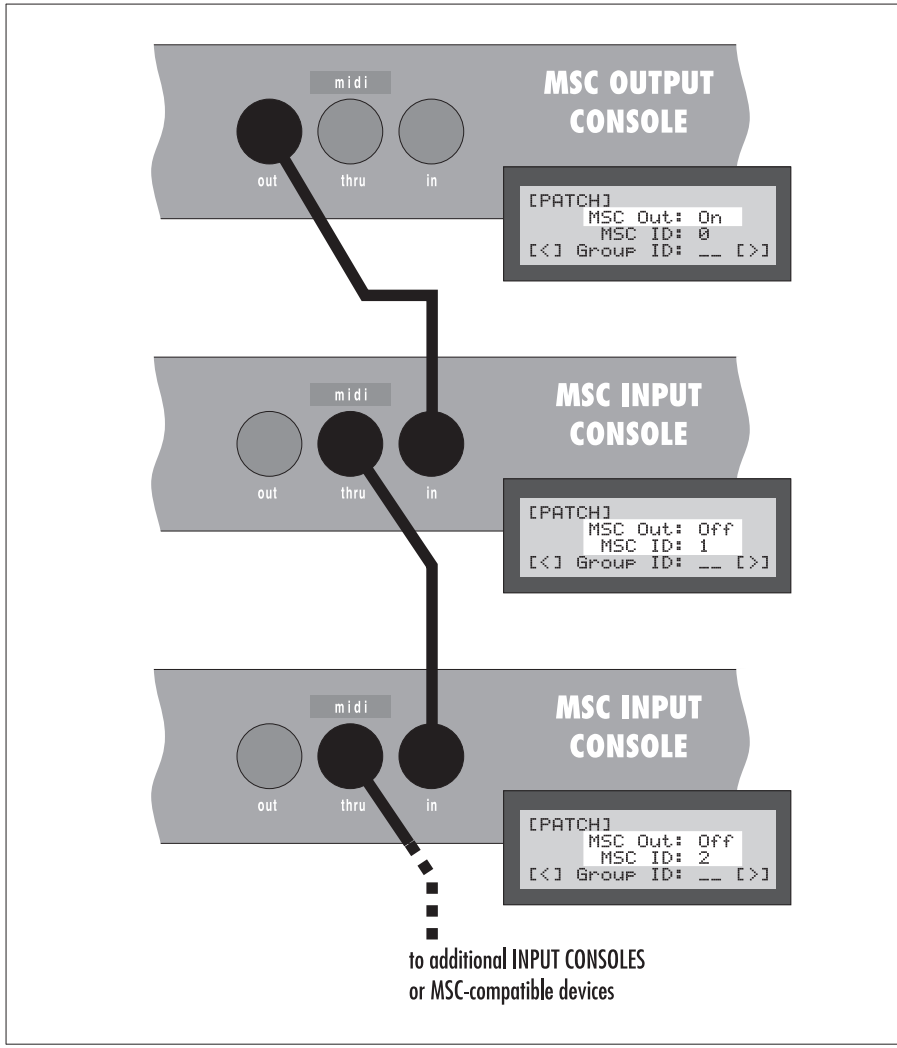


Fig.9-2: Connecting consoles for MSC operation.

MSC Input Functions

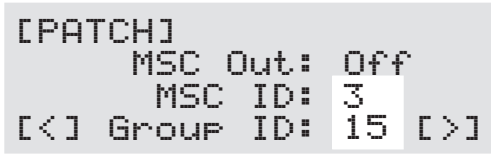
Using an external MSC-compatible device it is possible to remotely perform the following functions on the PATHFINDER console:

- Trigger a specific Cue.
- Trigger a specific Cue with a time.
- Set a Cue to off.
- Set all Cues (currently up via MSC control) to off.
- Load a Stack entry.
- Trigger the next Stack entry.
- Trigger a specific Stack entry.
- Trigger the next Stack entry with a time.
- Trigger a specific Stack entry with a time.
- Pause the current Stack cross-fade.
- Resume the current Stack cross-fade.
- Reset the console to its power-up state.
- DBO on.
- DBO off.

Configuring the Console for MSC Input Control

To set-up the PATHFINDER for remote MSC operation, it is necessary to enter the mandatory Individual and optional Group ID's that the console should respond to, as follows:

☞ Call-up the Main Set-up Page of the MSC Menu:



☞ Move the cursor to the **MSC ID** field and rotate the **master select** wheel to select the required Individual ID number:

- `0` *to* `111` corresponding to IDs 00_H to $6F_H$ inclusive.

☞ Move the cursor to the **Group ID** field and rotate the **master select** wheel to select the required Group ID number:

- `__` to ignore all Group ID's.
- `1` *to* `15` corresponding to Group ID's 70_H to $7E_H$ inclusive.

MSC Output Functions

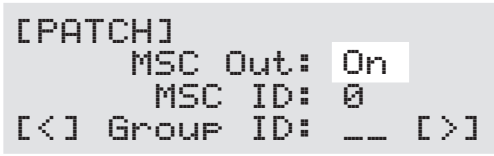
The PATHFINDER console can be configured as a System Master, *i.e.* to transmit commands to control external MSC-compatible devices when the following events occur:

- The **go** button is pressed.
- The **stack** fader is moved.
- A Cue Fader is moved.
- A Cue Flash Button is pressed.
- The Grand Master (**gm**) fader is moved.

Configuring the Console for MSC Output Control

To set-up the PATHFINDER to control other MSC-compatible consoles or devices, the MSC Out parameter must be set to 'On' as follows:

☞ Call-up the Main Set-up Page of the MSC Menu:



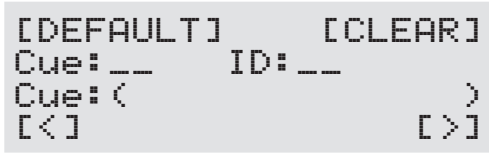
☞ Move the cursor to the **MSC Out** field and rotate the **master select** to set the parameter from 'Off' to 'On'.

Cue Patching

When an MSC message is sent in response to a Cue being triggered, it is possible to change the number of the Cue and ID transmitted; this allows any Cue to control any other Cue in external devices.

The transmitted Cue number can comprise any combination of digits 0 to 9, spaces or periods (full stops) up to a maximum of 13 characters. However, the format of the Cue should adhere to the numbering format specified in section 3.1 of **MIDI Show Control (MSC) 1.0, MIDI 1.0 Recommended Practice RP-002** (see page D-1 of this User Guide).

☞ Call-up the Patch Set-up Page of the MSC Menu:



☞ Position the cursor to the 'triggered' **Cue** field and rotate the **master select** to set the Cue number.

☞ Move to the **ID** field and rotate the **master select** to set the ID for the message. Permitted values are:

- `0` *to* `111` for individual ID's 0 to 111 inclusive.
- `Group 1` *to* `15` for group ID's 1 to 15 inclusive.
- `All Call` for all ID's.

☞ Move to the 'transmitted' **Cue ( )** field and rotate the **master select** wheel to step through the available characters. When the required character is displayed, press the **[>]** soft button to move the cursor to the next position.

To enter a 'space', simply move the cursor without selecting a character.

To edit a character, position the cursor on the character then rotate the **master select** *wheel to alter the character as required.*

Creating a Default MSC Cue Patch

To set a default MSC Cue patch whereby each Cue on the PATHFINDER console activates the corresponding MSC Cue, proceed as follows:

☞ Call-up the Patch Set-up Page of the MSC Menu:

```
[DEFAULT]    [CLEAR]
Cue:__   ID:__
Cue:(              )
[<]              [>]
```

☞ Press the **[DEFAULT]** soft button.

Clearing an MSC Cue Patch

☞ Call-up the Patch Set-up Page of the MSC Menu:

```
[DEFAULT]    [CLEAR]
Cue:__   ID:__
Cue:(              )
[<]              [>]
```

☞ Press the **[CLEAR]** soft button; the following confirmation will then be displayed:

```
[Clear MSC Cue Text]
 Press both buttons
      together
```

☞ To clear all MSC Cue Patching, press both top soft buttons at once

OR

To abort the deletion process, press the **exit** button.

Section: 10
Head-Up Display System

The EPX version of the PATHFINDER console (ESC2797) incorporates a Head-Up Display System which allows Channel, Cue, Stack and Sequence settings to be displayed on a Colour SVGA Monitor (*e.g.* the ESC2000 / H4).

The standard PATHFINDER console (ESC2297) can also be upgraded to the EPX specification by using the EPX Upgrade Kit (ESC2297 / EPX).

Connecting a Monitor & Keyboard

Connect a suitable monitor and keyboard to Port 1 of the PATHFINDER console as shown below. Note that the **trackball** connector is not used.

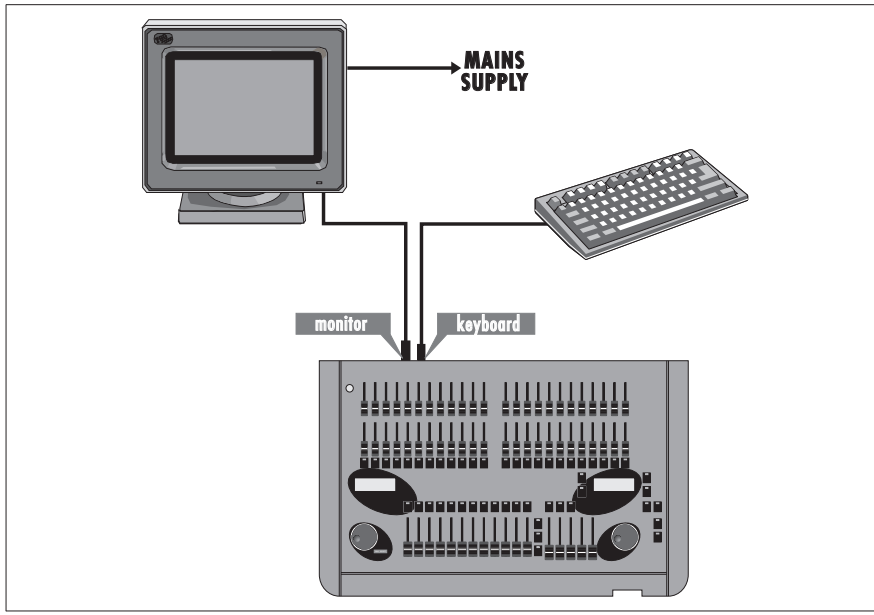
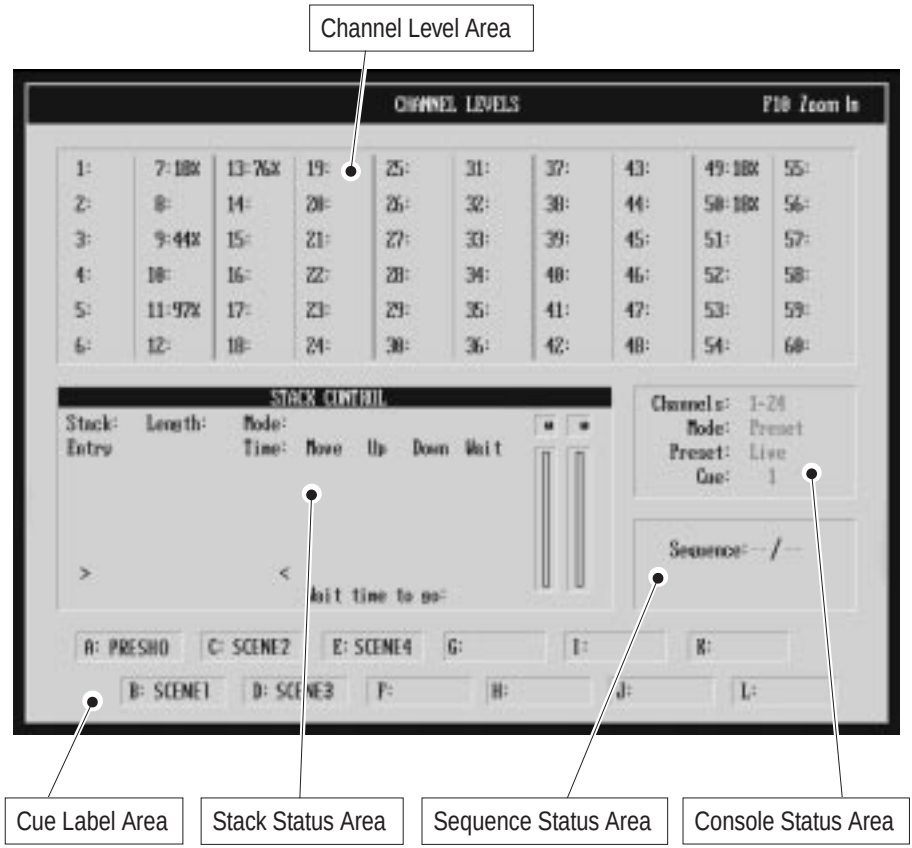


Fig.10-1: The Head-Up Display System.

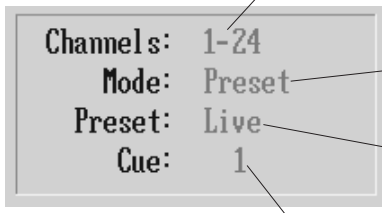
Main Display Screen

This is the default screen for the Head-Up Display System and comprises the following areas:



Console Status Area

This area duplicates the information shown on the PATHFINDER's left-hand LCD Display:



In 48-Channel Mode, this field indicates the current range of the Channel Flash Buttons, either **1-24** or **25-48**.
In 24-Channel Mode, this field remains blank.

Displays **Preset** for normal operation or programming, or **Modify** when the console is in Modify Mode.

Indicates whether the cosnole is in **Live** or **Blind** Mode.

Shows the Cue number assigned to the first Cue Fader (as defined by the **cue scroll** wheel).

Channel Level Area

When the console is in Live Mode, this area shows the **present** level of all 60 Channels. In Blind Mode, only the Channel Fader 'preset' levels are shown.

Each Channel is indentified by its desk/console channel number, followed by its current percentage level (zero level = *blank*, 100% level = **FF**).

By pressing the F10 function key on the keyboard you can 'Zoom In' on this area such that it fills the whole screen.

Cue Label Area

The 12 boxes marked **A:** to **L:** display the Cue Labels (if any) for the range of 12 Cues currently assigned to the Cue Faders. **The Cue Label Area appears on every HUD screen**:

When AutoFade is On, these boxes will also indicate the progress of the fade for the corresponding Cue. During the fade-up or fade-down, progress is shown by **Up** or **Dn** respectively, followed by the Cue's current level as a percentage value. For example, **Up 50%** means that the Cue level is currently at 50% and fading up. When the Cue reaches full level (or if the fade is stopped by moving the Cue Fader), the Cue label will reappear.

Entering Cue Labels via the Keyboard

☞ Firstly, do one of the following:

- preview the required Cue (by pulling the Cue Fader back), or
- call-up the Main Set-up Page of the Cue Menu on the right-hand LCD display.

☞ Type-in a Cue name of up to 8 characters / spaces using the keyboard.

The following special key functions are available:

→ move cursor to the right,

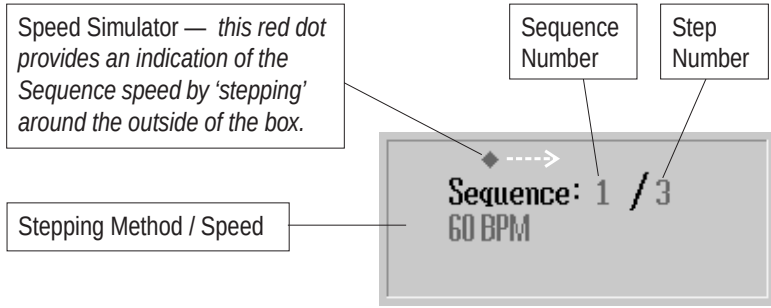
← move cursor to the left,

Home move to start of label,

End move to end of label.

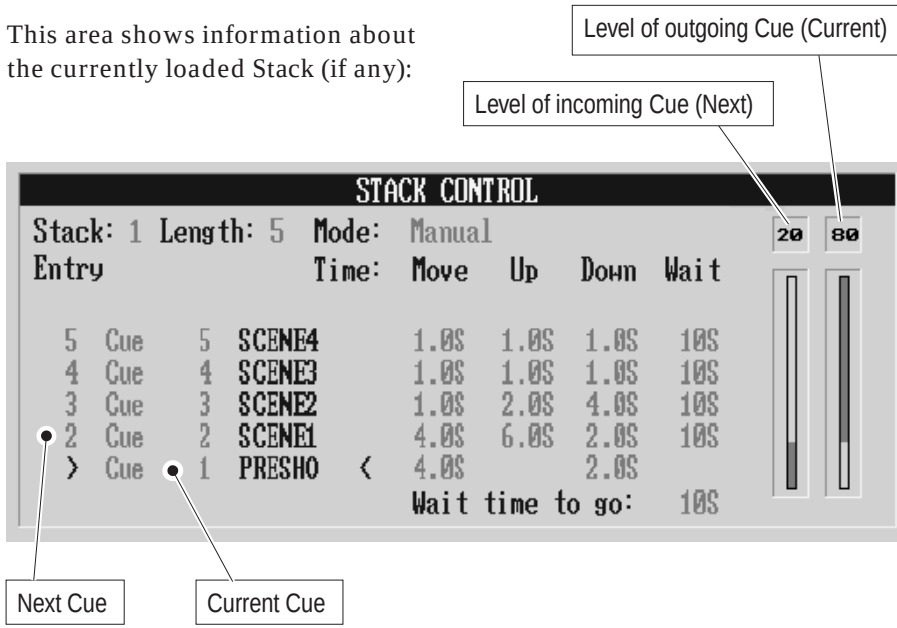
Sequence Status Area

This area shows details of the current Sequence. If more than one Sequence is running, this area will monitor whichever Sequence is assigned to the Cue nearest Cue 1. If a Sequence is being previewed, this area will show the Sequence number and Step number for the previewed Sequence.



Stack Status Area

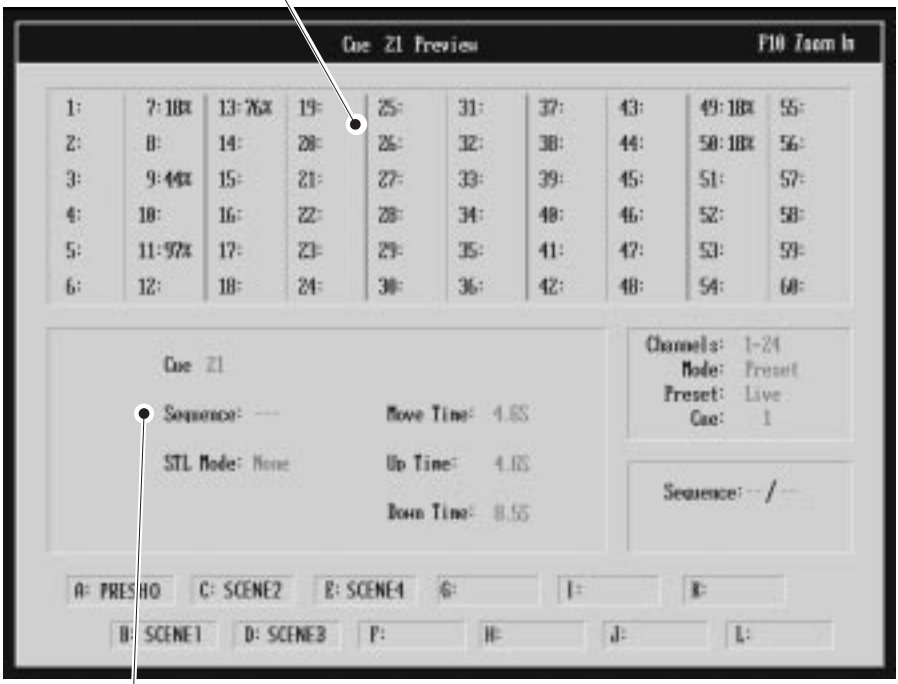
This area shows information about the currently loaded Stack (if any):



Cue Preview Screen

This screen is displayed whenever a Cue is being previewed:

Channel Level Area — *this now shows the Channel levels stored in the previewed Cue. Press the* **F10** *key to zoom -in on this area.*

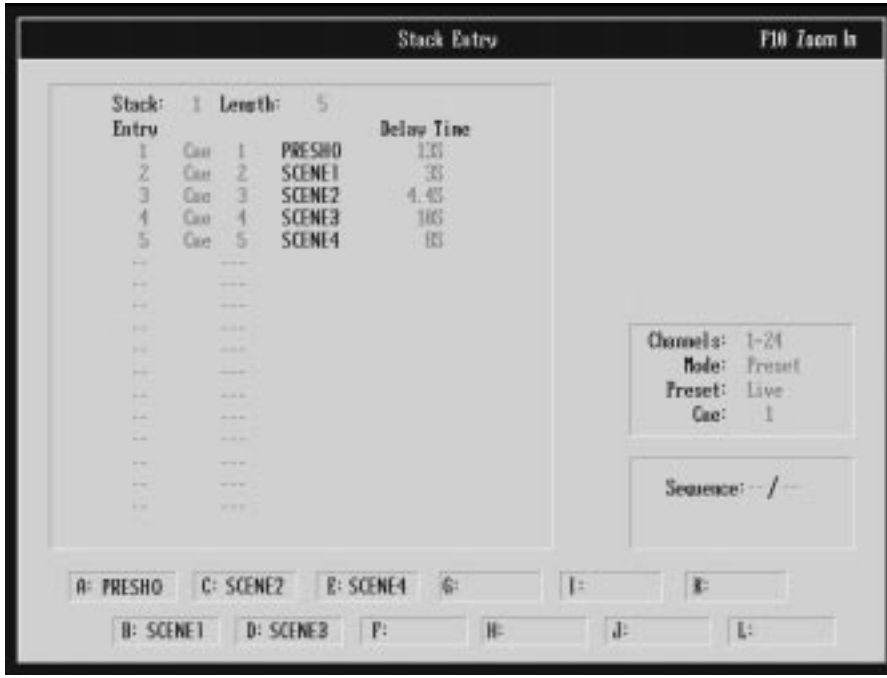


This area now shows the various parameters associated with the previewed Cue.

All other areas of the screen give the same information as described for the Main Display Screen.

Stack Entry Screen

This screen is displayed when any Page of the Stack Menu is called-up on the right-hand LCD Panel:

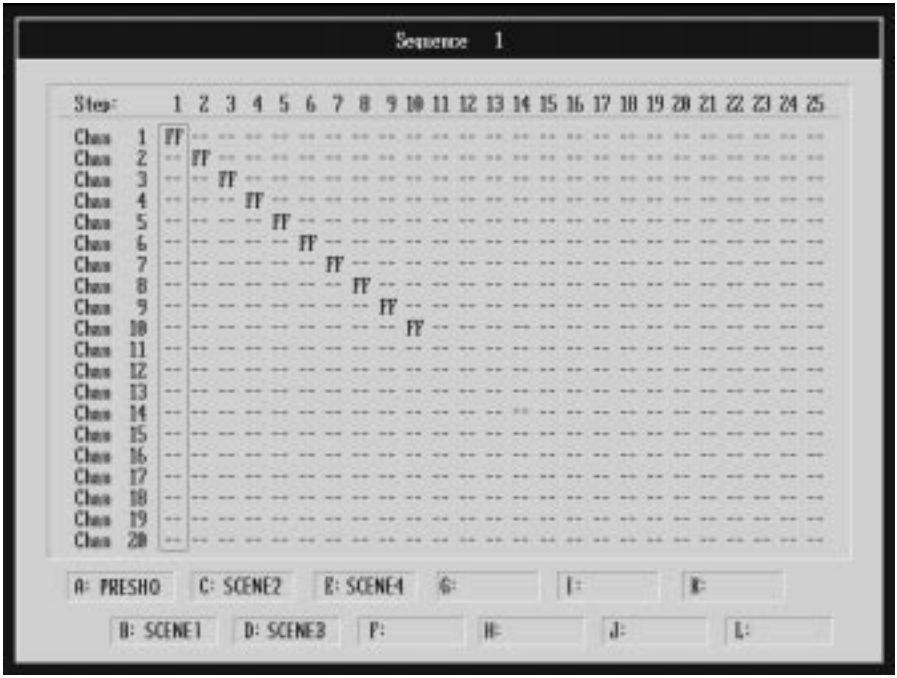


The Stack number is selected via the **Stack** field on the LCD Panel, whilst the range of Entries displayed can be scrolled by altering the value in the **Entry** field.

All other areas of the screen give the same information as described for the Main Display Screen.

Sequence Display Screen

This screen is displayed when any Page of the Sequence Menu is called-up on the right-hand LCD Panel:



The Sequence number is selected via the **Seq** field on the LCD Panel

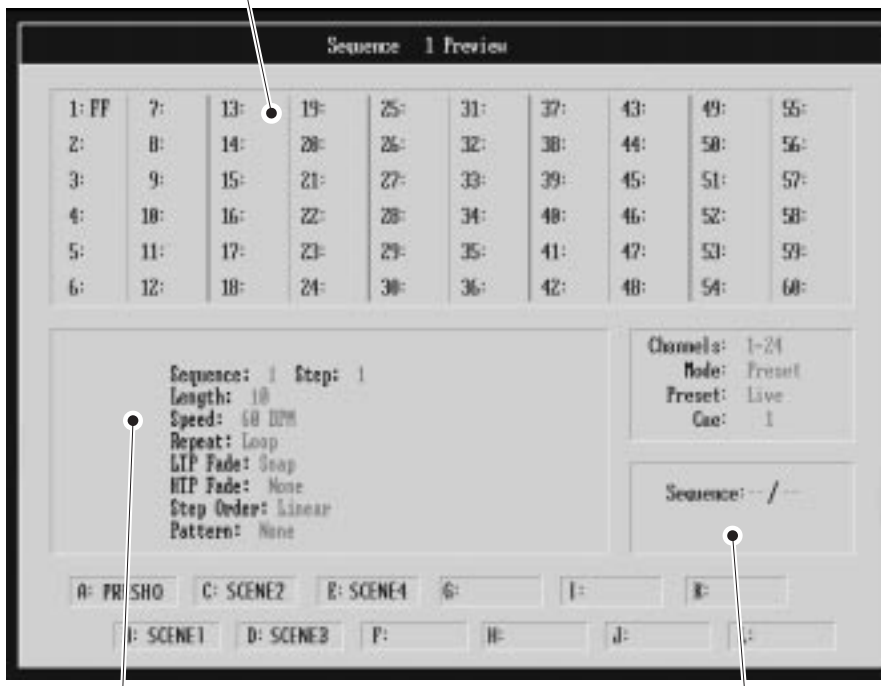
Across the top of the screen are the 25 possible Steps for the Sequence, and down the left-hand side are the Channel numbers. The levels associated with each Step are displayed in the central area.

To change the range of Channels displayed, press the Flash Button (or move the Fader) for any Channel within the range required.

The current Step is indicated by the green outline box.

Sequence Preview Screen

This screen is displayed whenever a Cue containing a Sequence is being 'double-previewed':

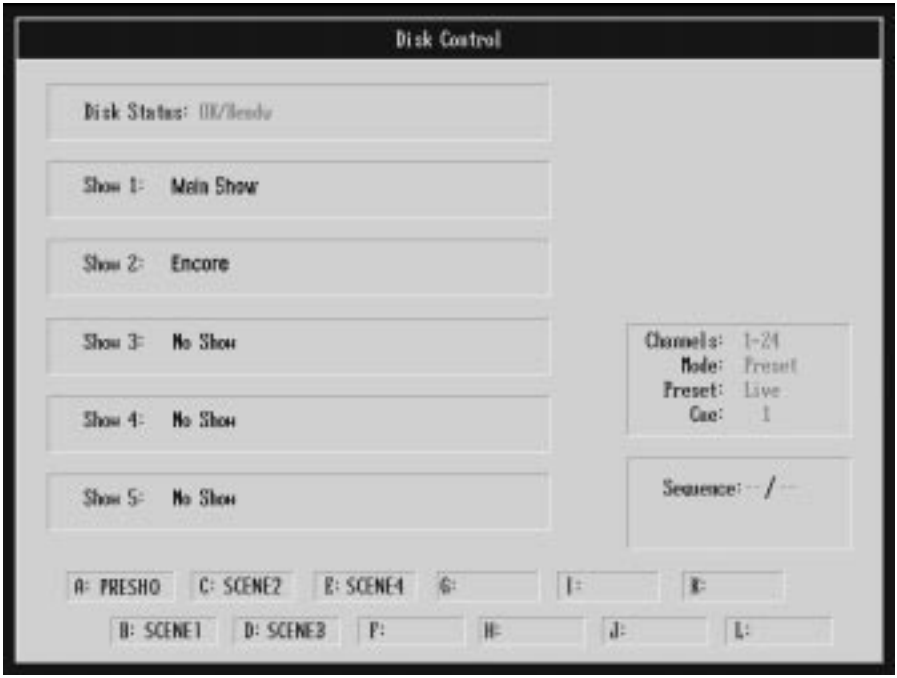


The Sequence Status Area shows the previewed Sequence number and current Step number (see page 10-5).

All other areas of the screen give the same information as described for the Main Display Screen.

Disk Control Screen

This screen is displayed when either of the two Disk Functions Pages of the Store Select Menu is called-up on the right-hand LCD Panel:



It lists the names of up to five shows found on the floppy disk drive, together with disk status information.

When the Disk Show Title Page is called-up on the right-hand LCD Panel, the keyboard can be usedfor entering or changing the Show names

Appendix A: Troubleshooting

Problem	Likely Cause & Solution	page ref.
The console is not functioning; the LCD Panel backlights are not on.	Check that the Power Supply Unit is connected to a suitable mains supply and switched on — *the red power indicator should be lit. If the indicator is not lit, check the plug fuse or circuit breaker/fuse.*	1-13
	Check that the flying lead of the Power Supply Unit is plugged fully into the **power** socket on the back panel of the console.	1-11 1-12
The LCD Panel backlights are on, but one or both of the displays are blank or difficult to read.	The display contrast may need adjusting — *rotate the edge wheel immediately below either display window to obtain optimum contrast.*	1-4 1-6
Some or all HTP Channel outputs are not responding to Channel Faders, Cues or Sequences.	Check that the Grand Master '**gm**' fader is fully-up. If setting levels by Channel Faders only, also check that the Preset Masters are fully up.	
	Check that the Channels used in the Cue are patched to the correct DMX Channels: *they may be patched to Channel 0 which is always zero level.*	8-6 *to* 8-9
	Check also that the Dimmer Patch Limit and Channel Output Limit parameters are not set too low.	8-6 *to* 8-9

Problem	Likely Cause & Solution	page ref.
A Cue Fader is open but no Cue is recalled.	Check that the Grand Master '**gm**' fader is fully-up.	
	Check that the Cue is actually programmed by 'Previewing' it — *pull the fader back past its zero position; the active Channels will be shown by the indicators on the Channel Flash Buttons*	4-22
	Check that the correct Cue Block is assigned to the Cue Faders.	4-18 4-19
	Check to see if the Cue is set-up for Sound-to-Light control — *if so, an audio signal will be required in order to 'see' the Cue.*	4-7
	Check to see if AutoFade is 'On'— *the Cue may be set-up with a long UP fade time.*	8-3 4-6
	Check that the Channels used in the Cue are patched to the correct DMX Channels — *they may be patched to Channel 0 which is always zero level.*	8-6 *to* 8-9
	Check that DMX cables are correctly connected and that there are no breaks or short-circuits.	1-12
	Check that a DMX signal is being received by the ***DMX dtr*** unit(s) and that its address is correct for the range of channels in the Cue.	1-14

Problem	**Likely Cause & Solution**	**page ref.**
LTP Channel(s) have been programmed in a Cue but are not invoked when the Cue is recalled.	Check that all Channels have been 'de-selected' on the the LTP Set-up Page of the Cue Menu. Check that all Channels have been 'de-selected' on the the LTP Control Page of the Root Menu.	4-4 4-5 3-12 *to* 3-14
A Stack is programmed but it won't AutoRun.	Check that the Stack is loaded and is set to Auto on the Main Screen of the Root Menu. Check that the AutoFade function is 'On' in the Default Set-up Menu. Check that the Stack Fader is fully up or down. Press the '**go**' button to start the Stack.	5-10 5-12 5-15 8-3
A Sequence is programmed and assigned to a Cue, but the Sequence doesn't run when the Cue Fader is opened.	Check that the **stop** button is 'off' (*i.e.* that its indicator is not lit). Check the step method and / or speed — *a very slow speed may be set or it may require an audio signal.*	6-41 6-40
A Sequence is running even though the **stop** button is pressed.	Only one Sequence can be 'stopped' at one time.	6-41

Q-Card Error Messages

Message	Likely Cause & Solution	page ref.
'No Q Card Inserted'	Check that a Q-Card is fully and correctly inserted — *the Q-Card Back-up battery may be discharged, missing or incorrectly fitted. Check and, if necessary, replace the battery.*	7-3 7-10
'No Data In Q-Card'	This is normal for a new / blank Q-Card — *the card can be 'written to' but not 'read from'.*	
'Q-Card Too Small'	You are attempting to use a Q-Card with insufficient capacity. Check that you are using a No.6 type card.	
'Wrong Data Format'	The Q-Card currently contains data for another type of console (*e.g.* Pathfinder) — *you will not be able to read from the card. You can, however, write to the card but all previous data on it will be lost.*	

Obtaining Further Assistance or Servicing

If you are still having difficulties in operating the PATHFINDER Console, please write to:

CELCO Head Office, Hawley Mill, Hawley Road,
Dartford, Kent. DA2 7SY (U.K.)
Fax: +44 (0) 1322 282 292

For urgent enquiries please telephone +44 (0) 1322 282 218 between 8.30am and 5.00pm (U.K. time).

If you think your console may be faulty, you should contact your dealer in the first instance for servicing arrangements. Alternatively, contact CELCO at the above address, fax or telephone number.

Appendix B: Menu/Page Reference

Left-hand LCD Panel

```
 Celco Pathfinder
 Mode: PRESET Live
====================
 Cue: 1    (         )
```

The top line of this display indicates whether the console is in 24- or 48-Channel Mode. `Celco Pathfinder` denotes 24-channel mode. In 48-channel mode, the top line will show either `Buttons: 1-24` or `Buttons: 25-48` to indicate which group of Channels the Flash Buttons currently apply.

The **Mode** field is in two parts. The first shows either:

- `PRESET` for normal Preset operation or programming, or
- `MODIFY` when the console is in Modify Mode.

The second part shows either:

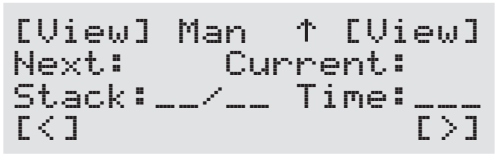
- `Live` for Live operation and programming, or
- `Blind` for Blind operation and programming

The **Cue** field shows the number of the Cue currently assigned to the left-most Cue Fader, as set by the **cue scroll** wheel and Cue Block parameter.

Immediately following the Cue number, a Cue name of up to 8 characters will be displayed (if one has been programmed). By default this will be the name associated with the Cue currently assigned to the left-most Cue Fader. Otherwise it will be the name of a Previewed Cue.

Root Menu

Stack Playback Page



This is the PATHFINDER's default start-up display. All fields on this Page are related to the replay of Cue Stacks.

Man/Auto disables or enables Stack AutoRun.

Next: shows the number of the next Cue during Stack replay.

Current: shows the number of the current Cue during Stack replay.

Stack: _ _/_ _ the first part of this field is used to specify a Stack number (1 to 10) to be loaded for replay; the second part shows the next entry number.

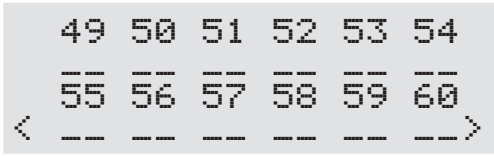
Time: shows the Wait Time associated with the next Stack entry during Stack replay.

SOFT BUTTONS:

[View] *left hand side:*
previews the 'next' Cue during Stack replay;
right-hand side:
previews the 'current' Cue during Stack replay.

[<] moves the cursor left / up.
[>] moves the cursor right / down.

LTP Control Page



This Page is used to directly set the levels of the LTP Channels (49 to 60). The level of each Channel is shown or set by the field beneath the Channel number and will be:

__	Channel is 'deselected',
0 *to* 99	Channel is 'selected' with the number indicating the percentage level,
FF	Channel is 'selected' with a level of 100%.

SOFT BUTTONS:

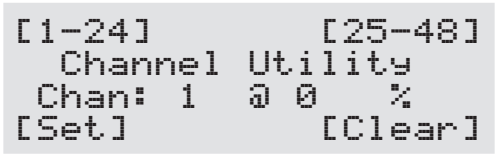
< *or* **>** use these to move the cursor to the required Channel.

In addition, the following are located on the Channel Utility Page:

[Set] 'selects' all LTP Channels.

[Clear] 'deselects' all LTP Channels.

Channel Utility Page



This Page shows the basic control level of an HTP Channel as set by a Channel Fader and Preset Master, or a stored level via a Cue Fader, Stack Fader or Stack AutoRun. It does not show the effect of the Channel or DMX Output Limit parameters.

The **Chan** field updates to show the Channel last controlled by a Channel Fader of Channel Flash Button.

SOFT BUTTONS:

[1–24] allocates the Channel Flash Buttons to Channels 1 to 48 (*in 96-Channel Mode only*)

[25–-48] allocates the Channel Flash Buttons to Channels 49 to 96 (*in 96-Channel Mode only*)

The following are for use with the LTP Control Page:

[Set] 'selects' all LTP Channels.

[Clear] 'deselects' all LTP Channels.

Menu Option Page

```
[STORE]  [DIM PATCH]
 Channel: 1  @ 0

[SETUP]   [OP LIMIT]
```

This Page is used to move from the Root Menu to the other Menus.
It also displays the last controlled HTP Channel / Level (in the same manner as for the Channel Utility Page).

SOFT BUTTONS:

[STORE]	moves to the first Page of the Store Menu
[DIM PATCH]	moves to the first Page of the Dimmer Patch Menu
[SETUP]	moves to the first Page of the Set-up Menu
[OP LIMIT]	moves to the Output Limits Page

Output Limits Page

```
[All]
   Output Limits
 Channel: 1  @ 100
[<]              [>]
```

This Page is used to limit the controllable range of HTP Channels.

Channel:	a Channel number from `1` to `48`, or `ALL`.
@	the percentage limit applied to the Channel (default = `100`, *i.e.* no limiting).

SOFT BUTTONS:

[All]	applies the displayed limit value to *all* Channels.
[<]	moves the cursor left.
[>]	moves the cursor right.

Dimmer Patch Menu

Main Set-up Page

```
[Delete]       [View]
    Dimmer Patch
 Dim: 1   Chan: 1
[<]    @ 0       [>]
```

Default Patch Page

```
 [Clear Dim Patch]
 Press both buttons
      together
 [Set Patch 1 to 1]
```

Store Menu

Store Select Page

```
[CUE]      [SEQUENCE]
    Store Select

[STACK]
```

SOFT BUTTONS:

[CUE] moves to the first Page of the Cue Menu.

[SEQUENCE] moves to the first Page of the Sequence Menu.

[STACK] moves to the first Page of the Stack Menu.

Q-Card Functions Page

```
[Read]        [Write]
  Q Card Functions

[Swap]        [TITLE]
```

SOFT BUTTONS:

[Read] reads data from the Q-Card into the internal memory.

[Write] writes data from the internal memory to the Q-Card.

[Swap] swaps the internal memory and Q-Card data contents.

[TITLE] moves to the Q-Card Title Page.

Q-Card Title Page

```
    Enter Title

 (ROCK CONCERT PT2)
[<]              [>]
```

This Page is used to display or edit the title of the currently inserted Q-Card. The title may be up to 16 characters long (including spaces).

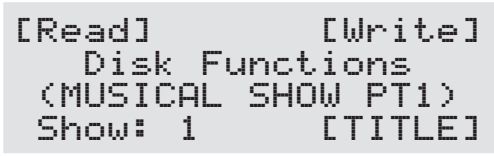
SOFT BUTTONS:

[<] moves the cursor left.

[>] moves the cursor right.

Disk Functions Primary Page

This Page is only applicable when the ESC2000/FDD floppy disk drive is fitted.



Show: selects a show (from 1 to 5) from the currently inserted floppy disk.

SOFT BUTTONS:

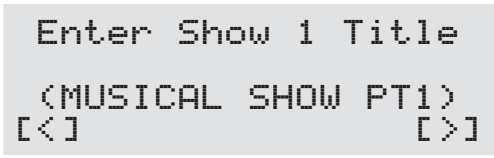
[Read] reads data from the specified floppy disk showinto the internal memory.

[Write] writes data from the internal memory to the specified floppy disk show.

[TITLE] moves to the Disk Show Title Page.

Disk Show Title Page

This Page is only applicable when the ESC2000/FDD floppy disk drive is fitted.



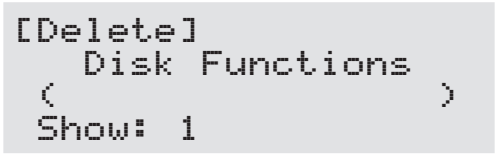
This Page is used to display or edit the title of a show on the currently inserted floppy disk. The title may be up to 16 characters long (including spaces).

SOFT BUTTONS:

[<] moves the cursor left.
[>] moves the cursor right.

Disk Functions Secondary Page

This Page is only applicable when the ESC2000/FDD floppy disk drive is fitted.



Show: selects a show (from 1 to 5) from the currently inserted floppy disk.

SOFT BUTTON:

[Delete] deletes the specified show from the floppy disk.

Sequence Menu

Main Set-up Page

```
Store Seq: 1    [End]
Step: 1    Linear
  1 BPM
[<] At End: Loop [>]
```

Seq: displays or selects the current Sequence number, 1 to 30.

Step: displays or selects the current Step number, 1 to 25, for the current Sequence.

Linear/Random selects the stepping order as Linear (sequential) or psuedo-Random.

1 BPM selects the stepping method and / or speed:

Regular Intervals (beats per minute):

1 *to* 10	*in 1 beat increments,*
10 *to* 20	*in 2 beat increments,*
25,30,40,50,60,70,80,	
90 *to* 170	*in 1 beat increments,*
180,	
200 *to* 600	*in 50 beat increments,*
600 *to* 1200	*in 100 beat increments.*

Psuedo-Random Intervals:

Wild Slow,
Wild Medium,
WIld Fast.

Sound-to-Light Control:

Fast-response step options:

Hard Bass Step,
Hard Mid Step,
Hard Top Step.

Slow-response step options:

Soft Bass Step,
Soft Mid Step,
Soft Top Step.

Fast-response build-up options:

Hard Bass Build,
Hard Mid Build,
Hard Top Build.

Slow-response build-up options:

Soft Bass Build,
Soft Mid Build,
Soft Top Build.

At End: selects the following replay options:

Loop	the Sequence will repeat continuously.
Stop	the Sequence will run once and then stop on its final Step.

SOFT BUTTONS:

[End] used to mark the final (plus one) Step of a Sequence if less than 99 Steps are used.

[<] moves the cursor left / up.
[>] moves the cursor right / down.

Pattern Set-up Page

```
[Do Pattern] [Learn]
Pattern: None
HTP Fade: None
[<]  LTP: Snap   [>]
```

Pattern: selects a Pattern to apply to a 'learned' Sequence from the following options:

None (*default*),
1 On,2 On,3 On,4 On,
1 On 1 Off,
2 On 2 Off,
3 On 3 Off,
4 On 4 Off,
2 Crawl,3 Crawl,4 Crawl,
Build Up,
Negative (*'inverts' the current Pattern*).

HTP Fade: selects the transition between Steps for HTP Channel levels from the following options:

None
X Fade (*cross-fade between Steps*)
In/Out (*fade-in then fade-out on each Step*)

LTP: selects the transition between Steps for LTP Channel levels from the following options:

Snap
Fade
Step

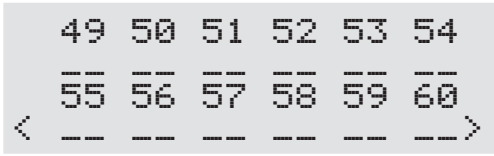
SOFT BUTTONS:

[Learn] runs the Chase Maker function — a Sequence is created using the Channels whose faders are above zero level.

[Do Pattern] apply the Pattern specified in the Pattern field to the current Sequence.

[<] moves the cursor up.
[>] moves the cursor down.

LTP Set-up Page



This Page is used to directly set the levels of the LTP Channels (49 to 60). The level of each Channel is shown or set by the field beneath the Channel number and will be:

__	Channel is 'deselected',
0 *to* 99	Channel is 'selected' with the number indicating the percentage level,
FF	Channel is 'selected' with a level of 100%.

SOFT BUTTONS:

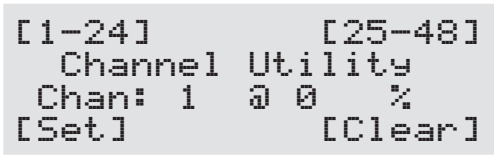
< *or* **>** use these to move the cursor to the required Channel.

In addition, the following are located on the Channel Utility Page:

[Set] 'selects' all LTP Channels.

[Clear] 'deselects' all LTP Channels.

Channel Utility Page



This Page shows the basic control level of an HTP Channel as set by a Channel Fader and Preset Master, or a stored level via a Cue Fader, Stack Fader or Stack AutoRun. It does not show the effect of the Channel or DMX Output Limit parameters.

The **Chan** field updates to show the Channel last controlled by a Channel Fader of Channel Flash Button.

SOFT BUTTONS:

[1–24] allocates the Channel Flash Buttons to Channels 1 to 48 (*in 96-Channel Mode only*)

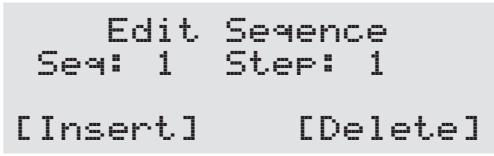
[25–-48] allocates the Channel Flash Buttons to Channels 49 to 96 (*in 96-Channel Mode only*)

The following are for use with the LTP Set-up Page:

[Set] 'selects' all LTP Channels.

[Clear] 'deselects' all LTP Channels.

Edit Sequence Page



This Page is used to insert or delete a Sequence Step. The Sequence number (**Seq** field) and Step number (**Step** field) are for display only — these values must be pre-selected on the Main Set-up Page; the Step value can be changed by using the **Step** button.

SOFT BUTTONS:

[Insert] inserts a new 'blank' Step prior to the currently displayed Step number.

[Delete] deletes the currently displayed Step number.

Cue Menu

Main Set-up Page

Cue: selects or displays a Cue number from `1` to `240`.

Move: selects the time taken for LTP Channels to change to their pre-programmed Cue levels when using AutoFade:

`Def` = use the console default value (see page B-25),
`0` *to* `60` = a delay in Seconds.

Up: selects the time taken for HTP Channels to fade-up to their pre-programmed Cue levels when using AutoFade:

`Def` = use the console default value (see page B-25),
`0` *to* `60` = a delay in Seconds.

Down: selects the time taken for HTP Channels to fade-down to off when using AutoFade:

`Def` = use the console default value (see page B-25),
`0` *to* `60` = a delay in Seconds.

STL: selects a Sound-to-Light modulation option:

None	= no option selected (*default*),
Hard Bass	= fast response to low frequencies,
Hard Middle	= fast response to mid frequencies,
Hard Top	= fast response to high frequencies,
Soft Bass	= slow response to low frequencies,
Soft Middle	= slow response to mid frequencies,
Soft Top	= slow response to high frequencies.

Seq: selects a Sequence to be assigned to the Cue:

0	= no Sequence assigned (default),
1 *to* 30	= a Sequence number.

> ***IMPORTANT NOTE***
> *Moving the cursor beyond the* **Seq:** *field (by pressing the* **[>]** *soft button will cause it to appear on the Cue Label field on the left-hand LCD Panel (see page B-1).*

SOFT BUTTONS:

[<] moves the cursor left / up.
[>] moves the cursor right / down.

LTP Set-up Page

```
  49 50 51 52 53 54
  __ __ __ __ __ __
  55 56 57 58 59 60
< __ __ __ __ __ __>
```

This Page is used to directly set the levels of the LTP Channels (49 to 60). The level of each Channel is shown or set by the field beneath the Channel number and will be:

`__`	Channel is 'deselected',
`0` *to* `99`	Channel is 'selected' with the number indicating the percentage level,
`FF`	Channel is 'selected' with a level of 100%.

SOFT BUTTONS:

< *or* **>**	use these to move the cursor to the required Channel.

In addition, the following are located on the Channel Utility Page:

[Set]	'selects' all LTP Channels.
[Clear]	'deselects' all LTP Channels.

Channel Utility Page

```
[1-24]        [25-48]
  Channel Utility
 Chan: 1   @ 0    %
[Set]          [Clear]
```

This Page shows the basic control level of an HTP Channel as set by a Channel Fader and Preset Master, or a stored level via a Cue Fader, Stack Fader or Stack AutoRun. It does not show the effect of the Channel or DMX Output Limit parameters.

The **Chan** field updates to show the Channel last controlled by a Channel Fader of Channel Flash Button.

SOFT BUTTONS:

[1–24] allocates the Channel Flash Buttons to Channels 1 to 48 (*in 96-Channel Mode only*)

[25–-48] allocates the Channel Flash Buttons to Channels 49 to 96 (*in 96-Channel Mode only*)

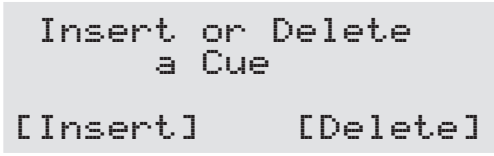
The following are for use with the LTP Set-up Page:

[Set] 'selects' all LTP Channels.

[Clear] 'deselects' all LTP Channels.

Insert/Delete Page

This Page is only available when a Cue is being 'Previewed'.



SOFT BUTTONS:

[Insert] inserts a new 'blank' Cue after the currently previewed Cue.

[Delete] deletes the currently previwed Cue.

Stack Menu

Main Set-up Page

```
[End] Stack:1 [Make]
 Entry: 1  Cue: 1
 Time: Def Seconds
[<]               [>]
```

Stack: selects a Stack number (1 to 10).

Entry: selects an entry within the Stack (1 to 99).

Cue: selects a Cue number (1 to 240) for the entry number displayed

Time: specifies a Wait Time for each Stack entry when using AutoRun function:

0,
0.3 to 2.0 in 0.1 second increments,
2.2 to 5.0 in 0.2 second increments,
5.5 to 10 in 0.5 second increments,
11 to 60 in 1 second increments,
Def = use the console default value (see page B-25),
Man = manual (AutoRun is 'paused'). When AutoRun is off, this setting is the same as 0 seconds.

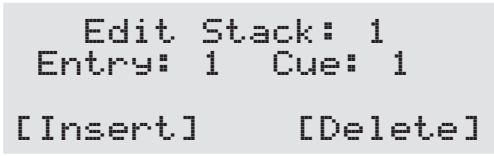
SOFT BUTTONS:

[End] used to mark the final (plus one) Entry of a Stack.

[Make] automatically creates a Stack using all 99 Entries with a range of consecutive Cues; the Wait Time for each entry is set to the value specified by the **Time:** field.

[<] moves the cursor left / up.
[>] moves the cursor right / down.

Edit Stack Page



SOFT BUTTONS:

[Insert] inserts a new 'blank' Entry for the currently selected Stack after the current Entry.

[Delete] deletes the current Entry for the currently selected Stack.

Set-up Menu

```
                [MIDI]
     Setup Menu
  Pathfinder V0.00
[DEFAULTS]   [CLEAR]
```

This is the only Page in the Set-up Menu. It displays the version number of the PATHFINDER's firmware – always quote this number with any queries you have regarding the console's operation.

SOFT BUTTONS:

[DEFAULTS] moves to the first Page of the Defaults Menu.

[CLEAR] moves to the Clear Menu.

[MIDI] moves to the first Page of the MSC Menu.

Defaults Menu

Primary Set-up Page

```
 Chan Mode: 24
 Preset Invert: Off
 Cue Block: 12
[<]   Fade: Off  [>]
```

Chan Mode: selects the Preset Channel mode
`24` = 24 Channel Mode,
`48` = 48 Channel Mode.

Preset Invert: selects direction of operation for Preset Master **p1** when using 24-Channel Mode:
`Off` = normal (fully-up is maximum),
`On` = inverted (full-down is maximum).

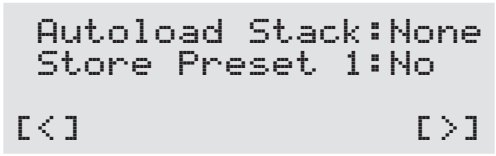
Cue Block: selects the size of the Cue Block that is moved by the cue scroll wheel when assigning Cues to the Cue Faders. Valid range is `1` to `12` (*default*)

Fade: selects whether the AutoFade and AutoRun functions are enabled or disabled:
`Off` = disabled,
`On` = enabled.

SOFT BUTTONS:

[<] moves the cursor up.
[>] moves the cursor down.

Secondary Set-up Page



Autoload Stack: selects the number of a Stack to be loaded automatically when the console is powered-up:

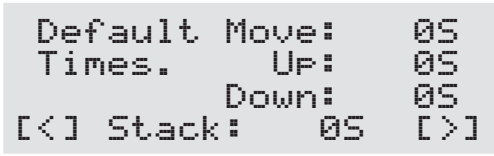
None = no Stack is loaded (*default*)
1 *to* 10 = the required Stack number.

Store Preset 1: When programming Cues or Sequences in 24-Channel Mode, Channel levels are usually set via the lower bank of Channel Faders (Preset 2). With this parameter set to Yes, the levels of Preset 1 are also stored. The default setting is No.

SOFT BUTTONS:

[<] moves the cursor up.
[>] moves the cursor down.

AutoFade Defaults Page



This Page is used to set-up various AutoFade default times. These settings are used whenever the 'Def' option is used within a Cue or Stack.

All settings on this Page are variable between 0 and 60 seconds as follows:

0.3 *to* 2.0	*in 0.1 second steps,*
2.0 *to* 5.0	*in 0.2 second steps,*
5.0 *to* 10	*in 0.5 second steps,*
10 *to* 60	*in 1 second steps.*

Move: selects the time taken for LTP Channels to change to their pre-programmed Cue levels when using AutoFade.

Up: selects the time taken for HTP Channels to fade-up to their pre-programmed Cue levels when using AutoFade.

Down: selects the time taken for HTP Channels to fade-down to zero level when using AutoFade.

Stack: selects the Wait Time for Stack entries when using AutoRun.

SOFT BUTTONS:

[<] moves the cursor up.
[>] moves the cursor down.

Clear Menu

```
[CUES]   [SEQUENCES]
     Clear Menu

[STACKS]        [ALL]
```

This menu is used for clearing all or part of the console's internal memory. It has only one Page with the following four soft button options:

[CUES] initiates deletion of all Cues.

[SEQUENCES] initiates deletion of all Sequence.

[STACKS] initiates deletion of all Stacks.

[ALL] initiates deletion of all Cues, Sequences and Stacks.

Each option displays the following before proceeding:

```
[Clear]       [Clear]
 Press ALL Four
 Buttons to Clear
[Clear]       [Clear]
```

Press all four soft buttons at once to confirm the deletion, or press the **exit** button to abandon the deletion request.

MSC Menu

Main Set-up Page

```
[PATCH]
      MSC Out: Off
       MSC ID: 0
[<] Group ID: __ [>]
```

MSC Out Controls the data format from the **midi out** connector:

- `Off` MIDI linking for master / slave linking of Celco Consoles (default setting).
- `On` MSC messages for MIDI Show Control.

MSC ID Specifies an individual MSC address, allowing messages to be sent specifically to this console.

- `0` *to* `111` respond to messages with this ID number.

Group ID Specifies an MSC group address, allowing messages to be sent to two or more consoles (sharing the same address).

- `--` ignore all group messages,
- `1` *to* `15` respond to group messages with this ID number.

SOFT BUTTONS:

[PATCH] move to the Patch Set-up Patch.

[<] moves the cursor up.
[>] moves the cursor down.

Patch Set-up Page

```
[DEFAULT]    [CLEAR]
Cue:1     ID:All Call
Cue:(               )
[<]               [>]
```

Cue The number of a Cue that is internal to the PATHFINDER Console, *i.e.* 1 to 240.

ID The ID (address) of an external device to be controlled by the Cue specified in the Cue field:

. 0 *to* 111	for individual addresses 0 to 111,
. Group 1 *to* 15	for group addresses 0 to 15,
. All Call	for **all** addresses.

Cue: (.....) Specifies the Cue number to be triggered on the external device — may be the same number as specified in the Cue field or a different number or format (see page 9-11).

SOFT BUTTONS:

[DEFAULT] sets-up a '1-to-1' patch, where the internal Cues 1 to 240 are directly mapped to the same external Cues. The ID parameter is set to `All Call` for each Cue.

[CLEAR] displays the Clear Patch Page to allow any existing patch data to be deleted.

[<] moves the cursor up / left.
[>] moves the cursor down / right.

Clear Patch Page

```
[Clear MSC Cue Text]
 Press both buttons
       together
```

Press the two top soft buttons at once to clear the MSC Patch.

Appendix C: MIDI Commands for Linking

'System Exclusive' Message Format

The PATHFINDER linking system uses a special form of the MIDI 'System Exclusive' message format. This consists of a data packet with the following structure:

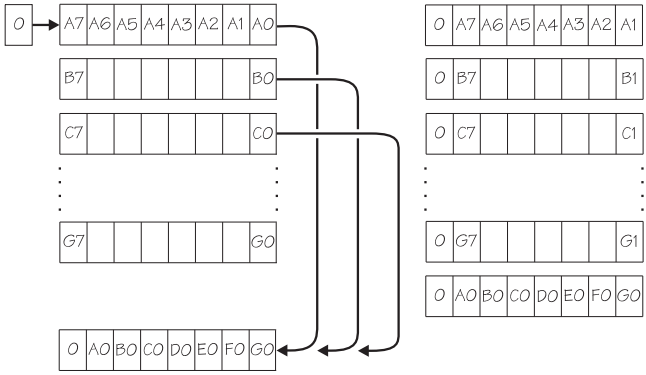
Byte	Description
1 2	System exclusive code.
	1 = $F0_H$ 2 = 00_H
3 4	Manufacturers' code.
	3 = 20_H Celco. 4 = 14_H
5	Product code
	01_H Explorer, Pathfinder or Navigator console.
	02_H–FF_H Reserved.
6	Data type code. This indicates the type of the data from bytes 7 *thru* Last–1.
	01_H Short data block.
	02_H Long data block.
	03_H–FF_H Not used.
7→	Data bytes.
	Refer to page C-4 for the data format.
Last	End of exclusive code.
	$F7_H$ EOX.

Special Encoding for Transmission

Although the MIDI system uses 8-bit data, bit 7 is reserved as a trip bit to indicate that the lower 7 bits contain a command byte.

As the Celco MIDI Linking system contains 8-bit data it is necessary to encode the data so that the bit 7's are clear, to avoid being confused with command bytes.

This is achieved by encoding seven bytes of data into eight prior to transmission, as follows:



- For each group of seven bytes — A – G — bit 0 is logical-shifted-right out (with the most significant bit being cleared) and then logical-shifted-left into the least significant bit of the eighth byte.
- The group of eight bytes are then transmitted.
- This process is repeated for all the data bytes within each group of seven (uncoded) bytes.

NOTE *If the last group of uncoded bytes is less than seven bytes long, filler bytes are not added. Thus, the last byte, before the End of Exclusive (EOX) byte, will only contain as many bits (least significant bit aligned) as there were bytes to encode.*

To decode the data received, proceed as follows:

- After receiving the Start of Exclusive (SOX) code, receive all bytes up to and including the data type code (byte 6).
- Receive up to eight bytes of data, or an End of Exclusive (EOX) byte, whichever occurs first.
- Logical-shift-right bit 0 from the last byte received and logical-shift-left it into the first byte of the group (A). Repeat this process for the remaining bytes received (B – G), excluding the EOX byte, if applicable.

Data Block Contents

The PATHFINDER uses two different data blocks within the System Exclusive packet. These are differentiated by the Data type code in byte 6:

- 01 — short data block code.
- 02 — long data block.

Short Data Blocks

Short data blocks are sent approximately every 20mS, with the data component comprising bytes 7 to 41 only. The data contained is the Master Level and Sequence Step numbers.

Long Data Blocks

Long data blocks are sent only when the data contained in the long block changes, *e.g.* when a Cue is stored or modified.

The following is a list of the data bytes, their functions and settings.

NOTE *The data in this table is in its uncoded format; when transmitted the data will be encoded as detailed above.*

Byte	Description
7	Cue Fader #1 Playback Level. This contains the combined level of the Cue Fader and Cue Flash button states, and the level of the Grand Master.
	00_H Zero level.
	FF_H Full level.
8 *thru* 18	Cue Fader #2 to #12 Playback Levels.
	Values as per byte 7.
19	Stack Master Current Cue Level.
	Values as per byte 7.
20	Stack Master Next Cue Level.
	Values as per byte 7.
21	P1 Master level.
	Values as per byte 7.
22	Grand Master level.
	Values as per byte 7.
23	Not used.
24	Cue #1 Playback Sequence Step Number. This contains the step number for the Sequence assigned to Cue Fader #1 on the console.
	00_H No assigned Sequence.
	01_H–19_H Valid Sequence step number.
	$1A_H$–FF_H Not valid.
25 *thru* 35	Cue #2 to #12 Playback Sequence Step Numbers.
	Values as per byte 24.
36	Stack Master Current Cue Sequence Step Number. This contains the step number of the Sequence assigned to the current Cue being replayed by the Stack.
	Values as per byte 24.

37	Stack Master Next Cue Sequence Step Number. This contains the step number of the Sequence, if any, assigned to the Currently Selected Cue.	
	Values as per byte 24.	
38	LCD Sequence Step Number. This contains the step number of any Sequence currently shown the the LCD panel.	
	Values as per byte 24.	
39	Current Cue Number in Stack Playback.	
	00_H	None.
	01_H–$F0_H$	Cue 1 – 240.
40	Next Cue Number in Stack Playback.	
	Values as per byte 39.	
41	P2 Master level.	
	Values as per byte 7.	
42 *thru* 54	Not used.	
55	Channel Block Size. This contains the size of the Channel Block.	
	00_H	Not valid.
	01_H–$0C_H$	Size 1–12.
	$0D_H$–FF_H	Not valid.
56	Not used.	
	00_H	Always set to zero.
57	Cue Preview. This indicates which Cue, if any, is being previewed on the LCD panel.	
	00_H	No Preview.
	01_H–$0C_H$	Preview Cue Fader 1–12.
	$0D_H$	Preview Stack current Cue.
	$0E_H$	Preview Stack next Cue.
	$0F_H$	Preview Preset.
	10_H	Not used.
	11_H	Preview Cue, or Sequence currently displayed.

58 59	Store Command Bytes. These two bytes — 58 LSB; 59 MSB — specify which Cue, Sequence, or Stack is to be stored; the data for storing is contained in bytes 76–91 inclusive.	
	0000_H	No Store
	0001_H–$01F0_H$	Store Cue header and channel data for cues 1–240. Header data is in bytes 76 onwards.
	0101_H–$01F0_H$	Store Cue header data only for cues 1–240. Header data is in bytes 76 onwards.
	4001_H–4024_H	Not used.
	8001_H–$801E_H$	Store sequence header and channel data for sequence 1–30. Header data is in bytes 76 onwards; step number is in byte 38.
	8101_H–$811E_H$	Store sequence header data only for sequence 1–30. Header data is in bytes 76 onwards.
	$C001_H$–$C004_H$	Store Stack 1–4. Not used in slave console.
60	Not used.	
	00_H	Always set to zero.
61	Cue Fader #1 Playback Assignment This byte contains the number of the Cue currently replaying on Cue Fader #1.	
	00_H–EF_H	Cue numbers 1–240
	$F0_H$	Dummy cue number 241. Used on LCD panel only
	$F1_H$	Blank cue
	$F2_H$–FE_H	Not valid
	FF_H	No Cue assigned
62 *thru* 72	Cue Fader #2 to #12 Playback Assignment	
	Values as per byte 61	
73	Cue Number on Stack Current Playback This byte contains the number of the current Cue replaying on the Stack.	
	Values as per byte 61	
74	Cue Number on Stack Next Playback This byte contains the number of the next Cue to replaying on the Stack.	
	Values as per byte 61	

75	Cue Number on LCD This byte contains the number of the current Cue displayed on the LCD panel.	
	Values as per byte 61	
76 *thru* 91	These bytes contain data for either Cues or Sequences See sub-section on 'Cues' (page C-10) or Sequences' (page C-13).	
92	Playback mode	
	00_H	Cues on playback.
	01_H–FF_H	Not valid.
93	Not used	
	00_H	Always set to zero.
94	Preview Mode This byte is used in conjunction with byte 57 to indicate which part of a Cue is being Previewed.	
	00_H	No Preview
	01_H	Preview Cue Channel levels
	02_H	Preview levels of current Step of assigned Sequence
	03_H–FF_H	Not valid
95	Not used.	
	00_H	Always set to zero.
96	AutoFade enable This byte indicates whether all fades are permitted.	
	00_H	Fades disabled.
	FF_H	Fades enabled.
97	Stack Trigger This byte indicates that the Stack has just been triggered.	
	00_H	No trigger
	FF_H	Trigger
98	Clear Button Flag	
	00_H	No action
	FF_H	Deselect all LTP Channels

99	Set Button Flag.	
	00_H	No action.
	FF_H	Select all LTP Channels.
100	Stack Number Loaded.	
	00_H	None.
	01_H–$0A_H$	Stack Number 1 to 10.
101	Stack Entry.	
	00_H	No Stack Loaded.
	01_H–63_H	Entry Number 1 to 99.
102	LCD Menu / Page Active on Master Console.	
	01_H–32_H	Menu / Page Reference Number 1 to 50.
103	Sequence Step Number to Store. When a Sequence Step is 'stored' by the Master console, this byte identifies the Step number.	
	01_H–19_H	Step Number 1 to 25.
104	'Mod' Mode Flag.	
	80_H	'Mod' Mode Set to Off.
	FF_H	'Mod' Mode Set to On.
	All other values = No Change.	

Cues Data (bytes 76 – 91)

When data bytes 58 / 59 contain 0001_H–$01F0_H$ inclusive, bytes 76–91 contain the following data:

76	Assigned Sequence Number.	
	00_H	No Sequence.
	01_H–$1E_H$	Sequences 1–30.
	$1F_H$–FF_H	Not valid.
77 *thru* 82	Not used	
83	AutoFade Time Code.	
	Refer to the 'AutoFade Time Table' starting below.	
84 *thru* 91	Cue Legend These bytes contain the title of the Cue.	
	00_H–FF_H	ASCII characters.

AutoFade Time Table

The following table lists all the permitted AutoFade time settings available on the console. The time is referenced in byte 83 by its offset within the table, *i.e.* column 1.

AutoFade time code (Byte 83)	**Time (seconds)**
0	0.0
1	Not valid
2	Not valid
3	0.3
4	0.4
5	0.5
6	0.6
7	0.7
8	0.8
9	0.9
10	1.0
11	1.1
12	1.2

AutoFade time code (Byte 83)	Time (seconds)
13	1.3
14	1.4
15	1.5
16	1.6
17	1.7
18	1.8
19	1.9
20	2.0
21	2.2
22	2.4
23	2.6
24	2.8
25	3.0
26	3.2
27	3.4
28	3.6
29	3.8
30	4.0
31	4.2
32	4.4
33	4.6
34	4.8
35	5.0
36	5.5
37	6.0
38	6.5
39	7.0
40	7.5
41	8.0
42	8.5
43	9.0
44	9.5
45	10
46	11
47	12
48	13
49	14

AutoFade time code (Byte 83)	Time (seconds)
50	15
51	16
52	17
53	18
54	19
55	20
56	21
57	22
58	23
59	24
60	25
61	26
62	27
63	28
64	29
65	30
66	31
67	32
68	33
69	34
60	35
71	36
72	37
73	38
74	39
75	40
76	41
77	42
78	43
79	44
80	45
81	46
82	47
83	48
84	49
85	50
86	51

AutoFade time code (Byte 83)	Time (seconds)
87	52
88	53
89	54
90	55
91	56
92	57
93	58
94	59
95	60
96	Def (default)
97	Man (manual) *used for Stacks only*

Sequence Data (bytes 76 – 91)

When data bytes 58 / 59 contain 8001_H–$811E_H$ inclusive, bytes 76–91 contain the following data:

76	Sequence Length	
	00_H–01_H	Not valid
	02_H–19_H	Sequence lengths of 2–25
	$1A_H$–FF_H	Not valid
77	Sequence Speed Code	
	Refer to the 'Sequence Speed Table' starting on the next page.	
78 79	Sequence Speed Count These two bytes — 78 LSB; 79 MSB — represent a 2mS count in the range 25 to 30 000 corresponding to 1200 to 1 BPM respectively.	
80	Sequence Status Bit Flags	
	BIT 0	0 = Snap mode 1 = Fade mode
	BIT 1	0 = Loop mode 1 = Stop mode
	BITS 2–7	Not used
81 to 91	Not used	

Sequence Speed Table

The following table lists all the permitted Sequence Speed settings available on the console. The BPM speed is referenced in byte 77 by its offset within the table, *i.e.* column 1.

Sequence Speed Code (Byte 77)	Beats-Per-Minute
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
10	12
11	14
12	16
13	18
14	20
15	25
16	30
17	40
18	50
19	60
20	70
21	80
22	90
23	91
24	92
25	93
26	94
27	95
28	96
29	97
30	98

Sequence Speed Code (Byte 77)	Beats-Per-Minute
31	99
32	100
33	101
34	102
35	103
36	104
37	105
38	106
39	107
40	108
41	109
42	110
43	111
44	112
45	113
46	114
47	115
48	116
48	117
49	118
50	119
51	120
52	121
53	122
54	123
55	124
56	125
57	126
58	127
59	128
60	129
61	130
62	131
63	132
64	133
65	134
66	135

Sequence Speed Code (Byte 77)	Beats-Per-Minute
67	136
68	137
69	138
70	139
71	140
72	141
73	142
74	143
75	144
76	145
77	146
78	147
79	148
80	149
81	150
82	151
83	152
84	153
85	154
86	155
87	156
88	157
89	158
90	159
91	160
92	161
93	162
94	163
95	164
96	165
97	166
98	167
99	168
100	169
101	170
102	180
103	200

Sequence Speed Code (Byte 77)	Beats-Per-Minute
104	250
105	300
106	350
107	400
108	450
109	500
110	550
111	600
112	700
113	800
114	900
115	1000
116	1100
117	1200
118	Wild Slow
119	Wild Medium
120	Wild Fast
121	Hard Bass Step
122	Hard Mid Step
123	Hard Top Step
124	Soft Bass Step
125	Soft Mid Step
126	Soft Top Step
127	Hard Bass Build
128	Hard Mid Build
129	Hard Top Build
130	Soft Bass Build
131	Soft Mid Build
132	Soft Top Build

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Appendix D: MIDI Commands for MSC

MIDI Show Control (MSC) provides a set of commands within the MIDI Standard that are specifically designed for lighting and control applications.

The implementation of MSC on the PATHFINDER console supports both MSC Input and MSC Output commands.

For further information about the general use and implementation of MSC, reference should be made to the following publication:

MIDI Show Control (MSC)
MIDI 1.0 Recommended Practice RP–002
25th July 1991.

which is available from:

United Kingdom MIDI Association (UKMA),
26 Brunswick Park Gardens, New Southgate,
London, N11 1EJ United Kingdom.
Tel: 0181 386 2245 (international +44 181 386 2245)
Fax: 0181 368 7918 (international +44 181 386 7918)

The International MIDI Association,
5316 West 57th Street, Los Angeles, CA 90056 U.S.A.
Tel: +1 231 649 6434

MIDI 'System Exclusive' Message Format

The MSC system uses the MIDI 'System Exclusive' (SysEx) message format. This consists of a data packet with the following structure:

Byte	Description	
1 2	Start of System Exclusive message	
	1 = $F0_H$ 2 = $7F_H$	
3	Device ID	
	00H-$6F_H$ 70H-$7E_H$ $7F_H$	Individual ID 0-111. Group ID1-15 inclusive. "all-call"
4	Sub ID	
	02_H	MSC
5	Command Format	
	01_H	Lighting
6→	Data Block	
	For details of data formats, refer to: page D-3 for MSC Input, or page D-6 for MSC Output.	
last	End of System Exclusive code	
	$F7_H$	EOX

IMPORTANT NOTE

When an MSC SysEx message is received by the PATHFINDER console, it will only respond if the Command Format (byte 5) = 01_H *(Lighting).*

'Data' Block for MSC Input

The table below details the interpretation of the Data block (*i.e.* byte 6 onwards) in MSC SysEx messages received by the PATHFINDER console (via the **midi in** connector).

Numbers suffixed with '$_H$' are hexadecimal; all other numbers are decimal. Values delimited by quotation marks are required to be ASCII characters, *e.g.*'16' is expected as 31_H and 36_H (49 and 54 in decimal).

Code	Description		
01_H	**GO**		
	GO	01_H	If no stack is loaded on the stack playback the Go button is triggered
	GO Cue number	01_H '1'–'240'	The specified Cue is loaded onto the first free Cue Fader and the level of the fader set to full. If there are no free Cue Faders, this command is ignored.
	GO Stack entry delimiter Stack number	01_H '1'–'99' 00_H '1'–'10'	The entry from the specified Stack is loaded onto the Stack playback and the entry triggered.
02_H	**STOP**		
	STOP	02_H	The current cross-fade on the Stack playback is halted. If there is no cross-fade in progress this command is ignored.
	STOP Cue number	02_H '1'–'120'	No action - ignored.
	STOP Stack entry delimiter Stack number	02_H '1'–'99' 00_H '1'–'10'	If the entry from the specified Stack is cross-fading, the cross-fade is halted. If there is no cross-fade in progress, or the numbers do not match, this command is ignored.

Code	Description		
03_H	**RESUME**		
	RESUME	03_H	The current cross-fade on the Stack playback is resumed, if previously halted. If the Stack cross-fade has not been previously halted, or the numbers do not match, this command is ignored.
	RESUME Cue	03_H '1'–'240'	No action-command ignored.
	RESUME Stack entry delimiter Stack number	03_H '1'–'99' 00_H '1'–'10'	If the specified entry on the Stack is halted the cross-fade is restarted. If the Stack cross-fade has not been previously halted, or the numbers do not match, this command is ignored.
04_H	**TIMED_GO**		
	TIMED_GO Standard time	05_H hmsff	If a Stack is loaded on the Stack playback the next Cue in the Stack is triggered with the cross-time hereby specified.
	TIMED_GO Standard time Cue	05_H hmsff '1'–'240'	The specified Cue is loaded onto the first free Cue Fader and the level of the Cue Fader set to full. The Cue fade time is set to that hereby specified. If there are no free Cue Faders this command is ignored.
	TIMED_GO time Stack entry delimiter Stack number	05_H hmsff '1'–'99' 00_H '1'-10'	The entry from the specified Stack is loaded onto the Stack playback and the entry triggered with the cross-fade time set to that hereby specified.
05_H	**LOAD**		
	LOAD	05_H	No action - command ignored.
	LOAD Cue	05_H '1'–'240'	No action - command ignored.
	LOAD Stack entry delimiter Stack number	05_H '1'–'99' 00_H '1'–'10'	The entry from the specified Stack is loaded onto the Stack playback and set as the Next entry on the playback.
06_H	**SET**		
	SET	06_H	No action - command ignored.

Code	Description		
07_H	**FIRE**		
	FIRE	07_H	No action - command ignored.
08_H	**ALL_OFF**		
	ALL_OFF	08_H	The level of the Grand Master is set to off (0%).
09_H	**RESTORE**		
	RESTORE	09_H	The level of the Grand Master is set to the level of the Grand Master Fader.
$0A_H$	**RESET**		
	RESET	$0A_H$	The console is reset to its power-up state.
$0B_H$	**GO_OFF**		
	GO_OFF	$0B_H$	All Cues on playback (set via MSC) will be set to off (0%).
	GO_OFF Cue number	$0B_H$ '1'–'240'	If the Cue is loaded onto one or more Cue Faders the level of the Cue Faders are set to off (0%). If the Cue is not loaded onto a Cue Fader the command is ignored.
	GO_OFF Stack entry delimiter Stack number	$0B_H$ '1'–'99' 00_H '1'–'10'	If the entry on the Stack is the current entry then the next entry is triggered. This is equivalent to pressing the **go** button.

'Data' Block for MSC Output

The table below details the format of the Data block (*i.e.* byte 6 onwards) in the MSC SysEx messages transmitted by the PATHFINDER console (via the **midi out** connector).

Numbers suffixed with '$_H$' are hexadecimal; all other numbers are decimal. Values delimited by quotation marks are formatted as ASCII characters, *e.g.*'16' is sent as 31_H and 36_H (49 and 54 in decimal).

Code	Description		
01_H	**GO**		
	GO Cue	01_H '1'–'240'*	When a Cue on a Cue Fader is moved past the trigger level -20%- andAutoFade is disabled.
	GO N delimiter X	01_H '1'–'99' 00_H '1'–'10'	When the Stack **go** button is pressed and the AutoFade facility is disabled. N is the Stack Entry number; X is the Stack number.
02_H	**STOP**		
	Not sent.		
03_H	**RESUME**		
	Not sent.		
04_H	**TIMED_GO**		
	TIMED_GO	04_H	Not sent.
	TIMED_GO Cue	04_H '1'–'240'*	When a Cue on a Cue Fader is moved past the trigger point -20% - and the AutoFade facility is enabled.
	TIMED_GO N delimiter X	04_H '1'–'99' 00_H '1'–'10'	When the Stack Go button is pressed and the AutoFade facility is enabled. N is the Stack Entry number; X is the Stack number.
05_H	**LOAD**		
	Not sent.		

* The actual Cue number transmitted is defined using the Cue Patching facility: by default Cue #1 to Cue #240 sends '1' to '240'.

Code	Description		
06_H	**SET**		
	Not sent.		
07_H	**FIRE**		
	Not sent.		
08_H	**ALL_OFF**		
	ALL_OFF	08_H	Sent when the Grand Master is moved to off (0%).
09_H	**RESTORE**		
	RESTORE	09_H	Sent when the Grand Master is moved above zero.
$0A_H$	**RESET**		
	RESET	$0A_H$	Sent when the console is powered-up.
$0B_H$	**GO_OFF**		
	GO_OFF	$0B_H$	Not sent.
	GO_OFF Cue	$0B_H$ '1'–'240'*	Sent when a Cue on a Cue Fader is moved to off (0%).

* The actual Cue number transmitted is defined using the Cue Patching facility: by default Cue #1 to Cue #240 sends '1' to '240'.

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Appendix E: Technical Data

Console Specifications

Overall Dimensions:	1120mm (W) x 440mm (D) x 75mm (H)	
Nominal Weight:	14kg.	
Power Supply:	9V @ 2A.	
Console Channels:	48 HTP (highest takes precedence)	
	12 LTP (latest takes precedence)	
Control Output:	USITT DMX512 / 1990 (4µs) protocol.	
	Break length:	120 – 320µs.
	Mark after break:	1.7 – 2.9ms.
	Mark between frames:	4µs.
	Start code:	0 (zero).
	Packet length:	24 – 512 dimmers.
Console/DMX Patching:	User-programmable	
	plus 0 to 100% proportional limiting.	

HTP CHANNEL CONTROL

Control Methods:	via linear Channel Fader;
	via pre-programmed Sequence or Cue.
Control Range:	0 to 100%, in 256 increments.
Output Limiting:	0 to 100% (proportional), in 256 increments
Mastering:	2 x Preset Master (proportional);
	Grand Master (broomstick).

SHOW CONTROL

Cue Capacity:	240
Cue Replay Methods:	via linear Cue Fader (*Cues assignable to faders in blocks of 1 to 12 Cues*); via Stack Fader (*cross-fades between Cues*) via Stack 'go' button (*auto fade in/out*) via Stack AutoRun. via MIDI Show Control.
Fade Options:	Auto HTP Fade Up Auto HTP Fade Down Auto LTP Move Sound-to-light
Sequence Capacity:	30 (each with up to 25 Steps).
Sequence Replay:	via a Cue (*up to 14 Sequences can run at one time.*)
Stack Capacity:	10 (each with up to 99 Cues)
Memory Type:	RAM backed-up by internal battery.
Memory Retention:	up to 12 months (*with fully-charged battery*).

Q-CARD STORAGE

Card Type:	Celco Q-Card No.6.
Memory Type:	SRAM backed-up by internal battery.
Memory Retention:	up to 12 months (*with new battery*).
Control Options:	Read, Write & Swap (card with memory)
Read/Write Access Time:	approx. 6 seconds (per show).

SOUND TO LIGHT CONTROL

Peak Input Voltage:	1V (via audio mic connector) 100V line (via audio speaker connector)
Frequency Filters:	Treble, Mid & Bass.

FLOPPY DISK STORAGE (Optional – for EPX Model Only)

Disk Drive Type:	Celco ESC2700/FDD.
Disk Type:	3.5 inch pre-formatted.
Shows per Disk:	5.
Control Options:	Read, Write & Delete.
Read/Write Access Time:	approx. 30 seconds (per show).

Rear Panel Connectors

Power Connector

This is for the connection of the PATHFINDER's external power supply unit.

Mating Connector	5-pin 'domino' DIN Plug (male)
Pin 1	Earth
Pin 2	+9 Vd.c.
Pin 3	0V (power supply common)
Pin 4	0V (power supply common)
Pin 5	+9 Vd.c.

Pins 2 & 5 are linked internally.
Pins 3 & 4 are linked internally.

MIDI Connectors

There are three connectors for connecting two or more PATHFINDER consoles together or for linking to other MIDI-compatible products:

- IN – data input from another console / product
- THRU – opto-isolated 'copy' of data input
- OUT – data output from this console.

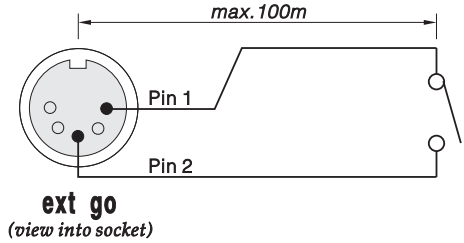
Mating Connector	5-pin 180° DIN Plug (male)
Pin 1	*not used*
Pin 2	Screen
Pin 3	*not used*
Pin 4	+5V reference
Pin 5	Data in / out

External 'go' Connector

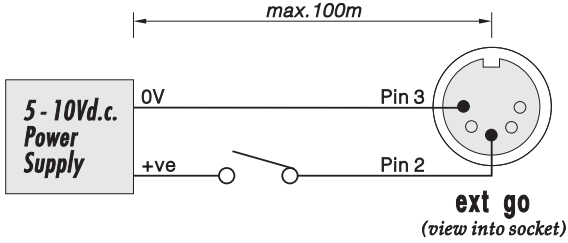
This is used to provide remote control of Stack replay instead of (or as well as) using the integral **go** button:

Mating Connector	3-pin or 5-pin 180° DIN Plug (male)
Pin 1	+5V reference
Pin 2	Trigger input
Pin 3	Common
Pin 4	*not used*
Pin 5	*not used*

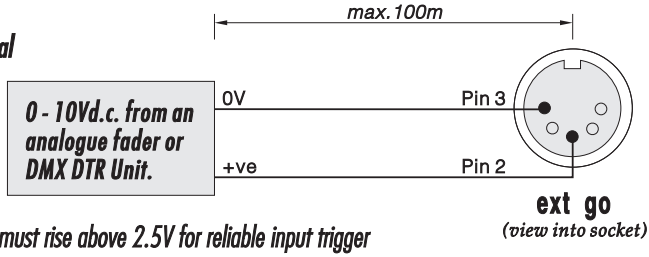
Method 1
Using the internal voltage reference



Method 2
Using an external power supply



Method 3
Using an external console fader



Voltage on Pin 2 must rise above 2.5V for reliable input trigger and drop below 0.5V for reliable input release.

DMX Out Connector

Mating Connector	5-pin XLR Plug (male)
Pin 1	Common (screen)
Pin 2	Data –ve
Pin 3	Data +ve
Pin 4	*not used*
Pin 5	*not used*

Audio Mic Connector

Mating Connector	3-pin XLR Plug (male)
Pin 1	Screen (earth)
Pin 2	Audio in
Pin 3	Audio common (referenced to earth)

Audio Speaker Connector

Mating Connector	¼" Stereo Jack Plug (male)
Tip	Audio channel #1 (left / mono)
Ring	Audio channel #2 (right)
Sleeve	Audio common (referenced to earth)

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