ABSTRACT

CE Controller - **Club64**

Contents

Contents

Joystick

CE controller

LCD display

Select Head,
Scene or Chase

No   Yes

Save   Cancel   Chase   Bank   Scene   Gobo   Colour   Head

Action keys

Head select / programmed LED's

| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |

Number keys

Sliders

Speed   Value

System control keys

Black out   Sound   Light show

1. The Abstract CE controller

The Abstract CE controller gives you total control over your lighting effects. It is a sophisticated and flexible unit designed to control all of the CE range, and also other similar units. Its main features are:

Controls

- Back-lit LCD display giving step by step instructions and information
- Tactile membrane control panel
- Joystick for beam positioning
- Pan/tilt can be swapped and/or inverted for each head
- Two sliders for control of other functions
- All scenes, chases and options retained by backup battery when power off
- 4U 19" rackmount case
- Reversible connections panel permits rackmount or table top use
- Control (GPI) socket, MIDI input and thru/out

Functions

- Individual or multiple control of up to 16 heads
- 512 scenes; 384 user programmable, 128 pre-programmed
- 128 chases of 64 steps; 64 user programmable, 64 pre-programmed
- Fast programming and recall of scenes and chases
- Two independent chases can be run concurrently
- Scene can be overlaid on chases
- Manual override of heads in chase
- Variable crossfade between chase steps and between scenes
- Chase step triggered by sound, timer, footswitch, or MIDI.
- Direct access to colours and gobos with display of names
- Comprehensive 'automatic' light show function
- Sequential or random selection of chases for unattended operation
- Automatic light show can be combined with chases and manual control
- Chases can be linked to recall two on one button

User configuration

- Personality of each head can be set
- Automatic DMX re-patch for 2,3 or 4 channel heads
- DMX soft patch (up to 64 channels)
- Graphic display of dip switch settings for heads
- 'Playback only' lock mode to protect programs
- Remote reset of CE range heads
- Control of other brand 2, 3 or 4 channel heads possible

External control

- Comprehensive MIDI control functions
- Memory save/reload via MIDI System Exclusive dump
- Assignable actions from footswitch

2. A quick guide to the controller

This section explains quickly how to access the main features of the controller. If you don't know much about intelligent lighting, this section is for you.

Each function is described in more detail later in the manual. If you are familiar with intelligent lighting or you want to know something specific, you can probably skip this section.

2.1 What is a head, and how does the controller talk to them?

The controller can operate up to 16 individual *heads* (intelligent lighting effects). The controller continuously sends out commands for all 16 heads, whether they are connected or not, one after the other. These commands are sent out in a standard control format called *DMX* (Digital MultipleX).

Each head has its own unique numerical *address* telling it which commands to respond to from the controller; this is usually set by miniature switches on the heads (called *dip switches*). In standard operation, the controller sends 4 commands for each head; one moves the mirror left-right, the second moves it up-down, the third controls the colour and the final one controls the gobo (pattern). So Head 1 has addresses 1-4, Head 2 has addresses 5-8, Head 3 has addresses 9-12, and so on. On each head, you set the lowest address it is to use, so Head 1 will be set to 1, Head 2 will be set to 5, and so on.

The dip switches are set in binary code. If you are not sure how to set the dip switches, the controller can show you a picture of how they should be (see section 4.3 on page 16), or the head will have a label on the back of it.

2.2 How do I make the heads work?

There are 4 ways to make the heads work:

- *Manual operation* - use the joystick and controls to manually work the heads
- *Scenes* - When you have positioned the heads to give a nice effect, you can save the position of all the heads as a Scene. Then you can recall the effect whenever you want with one button press.
- *Chases* - You can string together up to 64 scenes to form a dynamic moving chase
- *Light show* - The controller will automatically work the heads for you.

You'll probably want to use all of these ways of operating the controller. Each one is useful for different applications. Read on…

2.3 Manual operation

You can manually control any or all of the 16 heads by *selecting* the heads you want to use. Press the **Head** button, then the number corresponding to the head you want to control. You can do this for as many heads as you want. The green light above the head number will come on to indicate that the head is selected. If you press the button again it will go off and the head will be deselected.

If you get confused at any point or want to start with a 'clean sheet', hold down **Cancel** to turn everything off. This useful " all off" can be done at any time.

OK, so you've got some heads selected. If you move any of the front panel controls, the heads which are selected will respond. If you move the joystick, the mirror will move (if the head has a mirror). If you change the colour or gobo (pattern), then the head will change its colour or gobo. If you have got more than one head selected, they will all do the same thing.

When you deselect the heads, they will lock in the position you left them. You can now select some other heads and set different positions.

2.4 Using *scenes* - static positions

Manual control is OK, but it's a bit fiddly. You don't want to have to position all the heads by hand every time. This is where a scene comes in handy.

A scene stores the current position of all 16 heads. When you have got a nice effect with your heads, you can save the effect as a scene by pressing **Save**, then **Scene**, then pressing the number of the scene you want to save. When you are saving or recalling a scene, the green lights light up to show you which scenes have already been programmed. You can save up to 384 scenes, and the controller has a further 128 scenes which are pre-programmed. The scenes are organised in 32 banks of 16.

Once you've saved a scene, you'll want to get it back. To recall a scene, simply press **Scene**, then the number of the scene you want to recall. All 16 heads will be repositioned according to the settings you saved in the scene. To recall the next scene, press another number.

When you get a bit more advanced, you can tell the controller to move slowly (crossfade) between scenes if you want.

You can turn the current scene off by pressing **Scene** then **Cancel**.

2.5 Using *Chase*s - sequences of scenes

So you've stored some nice effects, but now you want to get a bit of movement. You want the lights to dance in time to the music, without having to keep selecting different scenes. What you need is a Chase.

A Chase is simply a sequence of scenes which are displayed one after the other. You can run through a chase automatically at a preset speed or in time with music. You can also jump between scenes in a chase or move slowly (*crossfade*) between them. You can save up to 64 chases and each chase can have up to 64 scenes in it. The controller has a further 64 pre-programmed chases.

You save a chase by pressing **Save**, then **Chase**, then pressing the number of the chase you want to program. To choose the scene you want at each step of the chase, just select the scene you want. When you've finished, press **Chase** again to end. (You can set the chase speed and crossfade now if you want).

To play back the chase, you simply press **Chase**, then the number of the chase you want to play back. The chase will start to run.

For more variety, you can run two chases together; the controller calls them Chase A and Chase B. This allows you, for example, to have a chase which moves the mirror around, and other chases which just change the colours. By running the "mirror" chase with one of the "colour" chases, you can get a wider variety of different patterns.

2.6 Light show

There will be occasions when you don't have time to program a light show, or you're bored with the one you have programmed. This is where the Light Show function comes in.

Simply press the **Light Show** button, and the controller will produce a very impressive automatic light show. You can alter the speed, crossfade and sound activation of the light show using the controls.

You can manually override any head by selecting it as described above. But any controls you don't change will still be controlled by the light show - if you move the joystick but don't set the colour to white, the colour will still come from the light show. You can also run scenes or chases to override the light show.

2.7 Customising how the controller works

The controller has got lots of options so that you can make it work the way you like. When you first get the controller, it will be set up in the simplest possible mode of operation so that you can get started quickly.

However, as you get more experienced with the controller, you'll want to start using some of its more advanced features. Hold down the **Save** button for about 2 seconds to set system options, the **Head** button to set head options, and similarly for scenes and chases. The controller remembers all the options you set even when turned off.

3. Setting up

This section explains how to get started with your new controller.

3.1 Connecting up the controller

The controller has a reversible connector panel which allows you to have the connections on the rear (for table-top use) or on the base (for rack-mount use).

WARNING! If you are going to turn the panel round, ensure that the unit is switched off and disconnected from the mains supply before removing any screws.

Remove the four screws from the connector panel, lift the panel out of the case, rotate it so the connectors are on the opposite side, then refit it into the case. Make sure you do not trap any cables between the panel and the case. Replace the four screws.
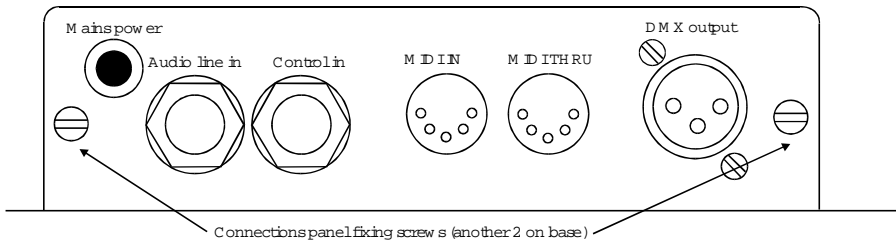
Connect the DMX output socket to the first lighting effect that you want to control using a standard XLR lead. Pin 2 is 'hot' (any cable with the pins connected straight through will be OK for Abstract CE range effects). Connect other lighting effects up in a chain to the first one.

If you are using MIDI, connect the keyboard or sequencer to the MIDI IN connector. If you have other MIDI equipment, connect it to the MIDI THRU connector.

Note: The MIDI signal is buffered inside the unit, and will not pass through if the unit is turned off.

If you are using an audio line feed, connect it to the audio line in socket using a 1/4" mono or stereo jack. *Do not connect speaker level signals to the controller as this will damage it.*

If you are using a footswitch or GPI (General Purpose Interface) trigger, connect this to the control in socket.

Finally connect the mains lead to a mains outlet and turn on.

3.2 Setting up the controller

Before using the controller for the first time, you need to tell it what type of heads you are going to connect to it, and what DMX channels you have set them to.

It is worth spending a little time to start with setting the controller up properly, as this will make it much easier to use and will allow you access to all the features of the unit.
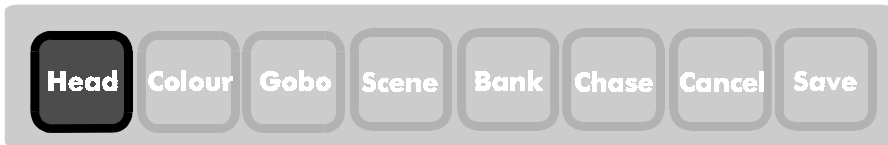
Enter Head Setup mode by holding down the **Head** button. Section 4.3 in the manual on page 16 has detailed instructions on how to use Head Setup.

Unless you have more than 16 effects to control, you will probably want to use them all on separate DMX channels. You don't have to set them in order; the controller can rearrange the DMX allocation if you want it to. Once you have told the controller what type of effect you are using as head 1, head 2, etc., the controller will automatically work out the DMX channels to use (see Head Setup option 3, on page 18). You can then ask the controller how to set the dip switches on each effect (Head Setup option 4), and it will show you using a picture on the display. You can also set the channels manually on the controller if you want (again using Head Setup option 3); if so, you will need to know which DMX channel each head is set to.

If you have problems setting up the controller to match the effects, look at the Head Setup section of the manual (page 16) for more details.

> Note: It is not recommended to use the auto-number facility on the heads when using the CE controller.

A new controller is set up by default so that all heads are Futurescan 2CEs. If all your effects are this type, you don't need to change anything.

Head **Colour** **Gobo** **Scene** **Bank** **Chase** **Cancel** **Save**
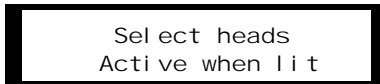
4. Head

The **Head** button allows you to select which of the 16 heads you want to work with. It also allows you to enter Head Setup mode, by holding the button down for longer than 2 seconds.

4.1 Head Select

In Head Select mode, the unit displays

```
Select heads
Active when lit
```

Press the number key corresponding to the head you want to control. The green light above the key will come on (and stay on) to tell you which heads are currently being controlled. The controller will tell you what type of head you have selected. If the head was in blackout, it will turn on (unless you've disabled the "Auto light up" option - see section 4.3). This can be useful to identify which head you have just selected when you are programming.

If you want to stop controlling a head, press the key again. The light above the key will go out. If "Auto light up" is on, you haven't moved the head, and it was in blackout before you selected it, it will turn off. If you have moved the head it will lock in the position you left it.

You can select a range of heads by pressing the first and last buttons in the range together. All the heads in between will be 'toggled' (they will be selected if they were not selected before, or deselected if they were selected before).

To deselect all heads, press **Cancel** briefly.

> Note: If you select a scene or chase when some heads are selected, any settings you have made on the selected heads will not change. All unselected heads will be overwritten by the new scene or chase.

To exit head select mode, simply press the key for the new function you want to use.

You can 'cancel' changes to an individual head (which will set all its controls to zero) by holding down its number key for more than 2 seconds. You can 'cancel' a range of heads by holding down the first and last buttons in the range for more than 2 seconds.

Note: If you have configured one or more heads as a switch pack (type 16), you will find you can only select those heads on their own. The controller will display a warning if you try to select a switch pack with other heads. If you select a range of heads including a switch pack, it will automatically be omitted from the range.

4.2 Controlling selected heads

Once you have selected the heads, you control them using the front panel controls such as the joystick, sliders and the colour and gobo buttons. The function of each control may vary depending on the type of head you are controlling, but in general:

- if the head has a moving mirror, the **joystick** controls the mirror
- if the head has rotating beams, the **speed** slider controls the rotation speed
- the **value** slider controls the colours (free positioning)
- pressing **Colour** followed by a number key gives 'full' colour positions (the selected colour will be displayed on the screen)
- if the head has a gobo function, pressing **Gobo** followed by a number gives gobo positions (the selected gobo name will be displayed on the screen).

If you have selected different types of head together, you will find that you can still control the different functions using the appropriate controls; for example, if you have a Futurescan 2 and a Galactic Moon selected together, the joystick will only operate the mirror on the Futurescan 2; it will not affect the Galactic Moon. The Speed slider will operate the beam rotation on the Galactic Moon, but will not affect the Futurescan 2. The colour and gobo controls will operate both units.

Note: If you select some heads while you are running a chase, the selected heads will continue to run the chase until you take over by moving the controls. Any functions you do not change will continue to be controlled by the chase. If you want full control of the head you need to set values for pan, tilt, rotation (if fitted), colour and gobo.

When you set up a head to be a Gladiator, the drum tilt works from the joystick tilt and the rotation speed works from the speed slider. If you would rather control the rotation speed from the joystick pan, set the head up to be a Futurescan 3 instead. Everything else is the same for these two units.

4.3 Head setup

You use this function to tell the controller what type of lighting effects you have connected, and what DMX channels it has to use to control them. You can also set other options about how the heads behave. You enter Head Setup mode by holding down the **Head** button for about 2 seconds

Note: You won't be able to select this option if the controller is in 'Playback Only' mode.

```
Head Setup
1-Reset Head(s)
```

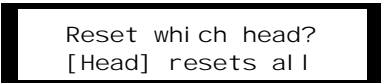There are 8 possible actions which are displayed one after the other. You can:

1.   reset the heads (only on Abstract CE range heads)
2.   choose what type of heads are connected
3.   change the DMX channel allocations used by the controller
4.   view the controller's current DMX channel allocations
5.   change the way the joystick controls the head
6.   change the way each head behaves in Light Show mode
7.   select the Automatic Light Up mode
8.   set heads to cancel when scene or chase selected
9.   set all heads in central position for testing
10. Joystick mode absolute / relative

Press the number key of the option you want to select (you don't have to wait for it to be displayed).

1: Reset Heads

You can reset any or all of the lighting effects connected to the controller. This can be useful if the heads lose position for some reason, and enables you to quickly re-initialise heads without having to turn the power off and on.

Note: Only CE range effects with software version 2 or above (August 96) will respond to remote reset.

```
Reset which head?
[Head] resets all
```

Either press the number of the head you want to reset, or press **Head** to reset all heads. (Press **Cancel** to abandon).
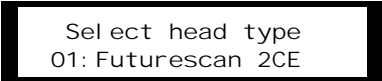
The controller will display a reset message, then go back to the menu. The resetting heads will not respond to the controller again until they have completed the reset

procedure, which may carry on after the controller has gone back to the menu. The other heads may be affected momentarily while the reset command is sent.

2: Set head type

This option allows you to tell the controller what type of head you have connected as head 1, head 2 and so on. The controller uses this information to decide which controls on the front panel are used to control the head, and to display the correct colour and gobo names for the particular type of head you have selected.

The unit will ask you for the number of the head. Press the number button corresponding to the head you want to set. The unit will then display

```
    Select head type
    01: Futurescan 2CE
```

Now press the number button corresponding to the type of head you want to be head 1. The possibilities are as follows:

Head type	Description	DMX channels used
1	Clubscan	4
2	ClubRevolution	4
3	ClubColour	2
4	ClubJive	4
5	VR4/VR8	4
6	Galactic Star	4
7	Galactic Moon	2
8	Twister 4	2
9	Futurescan 1/2CE	4
10	Gladiator Revolution	4
11	DuoColour	4
12	Futurescan 3CED	4
13	Gladiator CED	4
14	Old Futurescan 3	4
15	4 channel effect	4
16	4 ch switch pack	4

Unit types 15 & 16 are intended for use when controlling non-Abstract products. See Appendix A at the end of the manual for DMX output values.

When you have selected the correct type of head, press **Save**. The unit will ask for another head number. Press **Save** or **Cancel** to return to the Head Setup menu.

If the new head type you have selected occupies a different number of DMX channels to the old head type, you may need to change the controller's DMX allocations. You

can do this with option 3 (see below). Unless told otherwise, the controller will assume that all DMX channels remain the same. You can get the controller to display the dip switch settings needed for each head using option 4.

3: Set DMX channels

The controller permits any of the 16 heads to be located at any DMX channel, up to its maximum of 64. This allows you to connect a mixture of 2-channel and 4-channel lighting effects and still use the auto-numbering system. It also allows you to change which lighting effect is allocated to which head number, if you want to do that.

The unit will display

```
     Set DMX channel
   Select head to set
```

then

```
   Press [Head] to set
      all in sequence
```

You can either set the DMX output address for each unit individually, or if you press **Head** the unit will assume all heads are numbered sequentially and will set the DMX channels accordingly.

Note: This will only work if you've set the type of each head to match the way you've connected the heads, i.e. head 1 is set to match the first head in the DMX line, head 2 to match the second.

If you select sequential numbering, the unit will ask if you want to view the new settings. You can use this to set the dip switches on the heads. See option 4.

If you decide to set the channels manually by pressing a unit number, the controller will display the following:

```
   Hd 01: Futurescan 2CE
   Ch: 01 „…ƒ,,,,,,,,,,
```

The cursor will flash over the DMX channel number. Enter each digit (10's and 1's) separately by pressing number keys 1-10 for each digit (10 enters a zero), then press **Save**. The dipswitch graphic will be updated as you change the DMX channel, to show you how to set the dipswitches on the lighting effect to match the controller settings. You can't set the channel higher than 61; if you try, the controller will go back to its original setting.

> Note: Never set two heads to have the same or an overlapping DMX output address; this will result in the controller sending two sets of values to the same address which may have unpredictable effects.

If you press **Cancel** the changes will be abandoned.

Some non-CE range effects can only be set to a group of DMX channels, unlike the CE range which can be set to any individual channel. If the head you are setting is one of these, make sure you set a DMX channel that is possible for the head.

4: View DMX settings

This option allows you to view the controller's DMX output channel for each head. The controller will first display the settings of head 1:

```
Hd 01: Futurescan 2CE
Ch: 01  „…f , , , , , , , , ,
```

You can either keep pressing **Save** to display each head in turn, or press the head number button of the head you want to see. Press **Cancel** to leave this mode.

> Note: The dipswitch graphics are only displayed for CE-range effects, as the method of setting the switches varies on other types of unit.

5: Pan/tilt invert

This option allows you to change the way the joystick controls the head. Normally, left-right movement of the joystick (Pan) causes left-right movement of the mirror and up-down movement (Tilt) causes up-down movement of the mirror. However, it is often useful to be able to invert the movement so that you move the joystick up to make the mirror go down, or right to go left. It is also sometimes useful (if you have a head mounted on its side, for example) to be able to swap the pan and tilt so that up-down joystick movement controls left-right mirror movement.

The controller allows you to do any or all of these, individually for each head. The controller will ask you which head you want to change; when you select one, the display shows

```
Hd: 01 Mirror invert
1. Pan 2. Tilt 3. P<=>T
```

If you press 1 (pan invert), 2 (tilt invert) or 3 (pan/tilt swap) then a star will appear next to the option, telling you that the option is active (the control is inverted). If you have previously set the option, then a star will already be displayed. Press the key again to turn the option off.

Press **Save** or **Cancel** when you have finished (any changes you make will be saved whichever you press). If you want to set another head, select the option again.

If the head you want to invert has a rotation function (such as a Gladiator or Galactic Moon), use the Pan Invert option to invert the rotation.

Pan/tilt invert does not affect the way your scenes or chases are recalled; it only has an effect on the joystick when you are positioning the heads prior to saving a scene. However, the invert settings *are* used in the Light Show mode, and when recalling the pre-programmed scenes and chases; this allows you to vary their appearance.

6: Light Show group

This option lets you set which 'group' each head belongs to when the unit is running its automatic light show. There are 4 possible groups; the controller will generate contrasting effects on each group. You can add a lot of variety and interest to the light show by carefully selecting the group for each head depending on the physical location of the unit and the type of unit. You can also set the group to 'Off' which tells the controller not to include the head in the light show.

```
Light Show Group
Head: 01 Group: 3
```

Select the head by pressing a number button, then select one of the four possible groups for that head by pressing button 1-4, or select 'Off' by pressing any other key. Press **Save** or **Cancel** when you have finished setting heads.

If you've got less than 16 heads, you should set the unused heads on the controller to 'Off'; this will prevent the controller from trying to use heads that aren't actually connected which might result in an unexpected blackout.

See section 14 on page 56 for details of Light Show mode, and advice on how to configure your system for best results.

7: Auto Light-up mode

When you are programming a light show, it can sometimes be difficult to remember which head is which. The Auto Light-up option helps you by opening the shutter on the head (turning the light on) when you select it. If you change your mind and deselect the head again without moving it, the light will be automatically turned off. If you change any control on the head, it will stay on when you deselect it.

```
┌─────────────────────────┐
│  Auto Light-up          │
│  1.Off  2*On            │
└─────────────────────────┘
```

The asterisk shows you the current state of the option. The default setting is 'On'.

If you take 'live' control of the heads while performing a light show, you probably won't want them to automatically turn on, so you can turn the function off if you don't want it.

8: Head cancel mode

```
┌─────────────────────────┐
│  Cancel  heads  when    │
│  sc/ch sel  1*Yes 2.No  │
└─────────────────────────┘
```

If set to Yes (default), the controller will automatically cancel any selected heads when a scene or chase is run. When you stop the scene or chase, the heads will go back to how they were. If set to No, selected heads will stay selected and will override the scene or chase.

9: Test centre heads

For use when you are setting up a light show, this option positions all heads at their centre positions, on open white, to assist you in aligning the units.

10: Joystick mode absolute/relative

This option allows you to switch the joystick into a "relative" mode. The normal "absolute" mode sets the head mirror to match the position of the joystick. In "relative" mode, the joystick will modify the position of any scene or chase which is turned on. This can be useful if you have programmed the heads to point at a particular place on the stage to highlight a soloist, but they don't stand in the right place; you can use the joystick relative mode to reposition all the heads slightly. You can also manually sweep heads which are running a chase.

When you are programming you should ensure that the joystick mode is "absolute", as the full range of movement is not available in relative mode.

5. Colour

You enter Colour Set mode by pressing the **Colour** button.   You can then directly enter any of 16 colours by pressing the number buttons. If you press two adjacent buttons together, you will get a **split colour** (half of two adjacent colours). You have got to select one or more heads before you can set the colour.

For CE range lighting effects, the controller will tell you what colour you have selected. For other units the controller will display a colour number. If you are using an effect that has less than 16 colours, you will find that some colours are repeated.

> Note: If you've got several heads selected and they are different types, the controller will display the colour names for the first selected head. The colours on the other units may not match the display.

You can also use the Value slider to give free positioning of the colours (in other words it doesn't jump to full colour positions). This allows you to set 'split' colours. If you move the Value slider, the display will show the colour value as a percentage.

> Note: The Value slider can be used to change colours even when you are not in Colour Set mode (except when in Gobo mode or when running a chase). This allows you to change colours while in other modes.

If you press **Cancel**, the colours on all the selected heads will be set to open white (zero). If you were changing a scene, the colours will go back to how they were set in the scene.

You also use the Colour select mode to turn switch pack channels on and off. If the head you have selected is configured as a switch pack, you will get the display

```
Switch  1. 2. 3* 4*
Pack 01
```

Pressing 1, 2, 3, 4 will turn the channels on and off. The channel is turned on when a star is displayed, off when a dot is displayed.
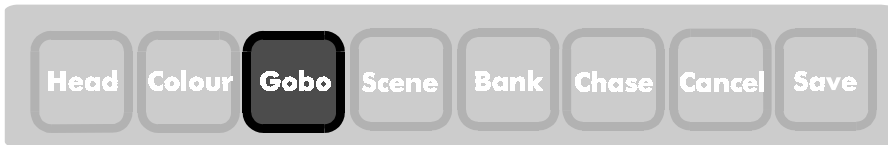
6. Gobo

You enter Gobo Set mode by pressing the **Gobo** button. You can then directly enter any of 16 gobos (patterns) by pressing the number buttons. You have got to select one or more heads before you can set the gobo.

For CE range lighting effects, the controller will tell you what gobo you have selected. For other units the controller will display a gobo number. If you are using an effect which has less than 16 gobos, you will find that some of them are repeated.

Note: If you've got several heads selected and they are different types, the controller will display the gobo names for the first selected head. The gobos on the other units may not match the display.

On CE range products:

- press 1 for 'open'
- press 2-14 for patterns
- press 15 for strobe (you can vary the strobe speed using the speed slider while you are in gobo select mode)
- press 16 for blackout

On other products, the gobos produced by selecting each number will vary depending on the type of effect. On the "general" types of head, you can also select gobos using the Value slider.

Note: On the Galactic Moon CE, the colours and gobos are on the same wheel. You can select the colour/gobo combinations using either the colour or gobo controls, but remember that changing the colour will also change the gobo, and vice versa.

If you press **Cancel**, the gobos on all the selected heads will be set to blackout (zero). If you were changing a scene, the gobos will go back to how they were set in the scene.

When you are in Gobo select mode, the Value slider allows free positioning of the Gobo channel. This lets you fade gobos, where the head has this function. At all other times the Value slider gives free positioning of the Colour channel (except in Chase mode).
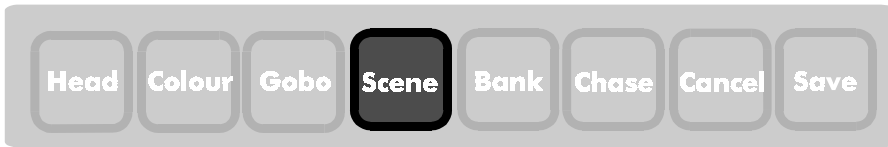
7. Scene

When you have positioned all the heads to give an effect you want to keep, you can save it as a **Scene**. You can then recall the scene at any time, or make it part of a sequence (a **Chase**).

The controller can store up to 384 scenes, as 24 banks of 16 scenes. The memory has a backup battery so that it will remember the scene indefinitely, even while turned off. The controller has another 128 scenes which are pre-programmed, which you can also use in your chases.

7.1 Saving scenes

Press **Save**, then **Scene**. The unit will display

```
Save as which scene?
  Current bank: 01
```

Some of the lights above the number buttons may come on to show you which scenes in this bank have already been programmed. If the light is lit, that scene is programmed.

> Note: You can't save scenes if the controller is set to playback only mode.

Choose the scene number to save by pressing one of the number buttons. If you choose a blank scene, the controller will save the scene straight away. If you choose a scene that is already programmed, the controller will say

```
Scene already used
OK to overwrite?
```
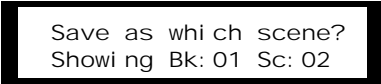
Press **Save** (Yes) if it's OK to overwrite the scene, or **Cancel** (No) if not. You can choose another scene to write to if you decide you don't want to overwrite that one.

> Note: If you change a scene that is used in a chase, the new scene will be automatically used in the chase in place of the old one.

You can clear a scene (put it back to 'unprogrammed') or a whole bank or scenes using the Scene Setup option (see section 7.3).

If you want to start programming with a completely blank scene, hold down **Cancel**. This will set all the outputs to zero.

If you are changing an existing scene (you've recalled a scene then used the controls to change it), the controller will tell you which scene you started with, in case you want to update the original scene with the changed version.

```
Save as which scene?
Showing Bk: 01 Sc: 02
```

You still save the scene in the same way. If you change the bank, the reminder will disappear.

Selecting the Scene Bank

There are 24 banks of user-programmable scenes. You can select another of the banks using the **Bank** button. Press **Bank** again to swap between banks 1-16 and 17-24. Press one of the number keys to select the bank number. For banks 17-24, add 16 to the number on the key to get the bank number you want (in other words button 1 will give Bank 17, button 2 gives Bank 18 and so on). The lights above the buttons will change to show you which scenes have been programmed in the new bank.

Programming scenes for use with multiple chases

You can play back two chases together, which allows you to program some 'mirror only' chases and some 'colour/gobo only' chases, then produce more varied chases by combining the two at different speeds. You can also overlay a scene on a chase allowing you to control, say, a switch pack or some Scenesetters separately from the chase.

To program, for example, a 'mirror only' chase, you will need some 'mirror only' scenes, which have the mirror channels set to non-zero values but the colour and gobo channels set at zero. When you replay the chase, you will be able to replace the zero values with values from another chase.

The controller has an Exclude function (Scene setup option 5, see page 30), allowing you to automatically exclude channels from the scene when you save it; you tell the controller which channels you want to be saved with the scene and which channels you want to save as zero.

Note: Channels are only set at zero when you haven't changed them, when you use the exclude function, or when you Cancel your changes. You can't manually set channels back to zero once you have changed them.

7.2 Recalling Scenes

Press **Scene** to go into Scene recall mode. The unit will display

```
        Select scene
    Bank: 01  Scene: --
```
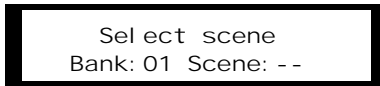
The lights above the number keys will light up to tell you which scenes in the current bank have been programmed.

Press the number key of the scene you want to recall. The output will change to the new scene. If you try to recall a scene which has not been programmed, the unit will tell you that the scene is not programmed. The output will not change.

You can continue to select scenes by pressing number buttons. The controller will stay in Scene Recall mode until you select another function.

You can also recall scenes by MIDI. See section 15 on page 58 for details.

Crossfading between scenes

You can set the controller to crossfade between scenes, allowing you to smoothly change between one scene and the next. You do this using the Scene Crossfade option in the Scene Setup mode (see next section); this allows you to either set a preset crossfade speed, or have a variable crossfade speed set using the Value slider.

Turning off a scene

You can turn off a scene by pressing **Cancel** when in Scene mode.

Selecting the Scene Bank

You can change the Scene Bank to any of the 32 possible banks by pressing the **Bank** button, then a number between 1 and 16. Press **Bank** again to swap between banks 1-16 and 17-32. (Banks 25-32 contain pre-programmed scenes). The lights will change to show you the programmed scenes in the new bank.

Overlaying a scene on a chase

If you recall a scene while a chase is running, or recall a chase while a scene is displayed, the values in the scene will be added to the chase and will 'offset' it. This might be useful if you want to set some static lighting while a chase is running. Set channels at zero if you don't want to affect them.

7.3 Scene setup

This function allows you to perform certain special operations on scenes, such as erasing and copying. It also allows you to set up the scene crossfade mode. You select the Scene Setup mode by holding down **Scene** for about 2 seconds.

Note: You won't be able to select this option if the controller is in 'Playback Only' mode.

```
Scene Setup
1-Erase scene
```
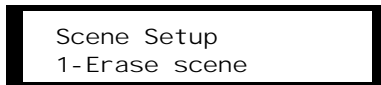
There are 6 possible actions which are displayed one after the other. You can:

1. erase an individual scene
2. erase a bank of scenes
3. copy one bank of scenes to another bank
4. set up the scene crossfade mode
5. set up the exclude channels mode
6. tell the unit to swap between scenes and chases rather than adding them

Press the number key of the option you want to select (you don't have to wait for it to be displayed).

1: Erase scene

This option allows you to erase an individual scene. You select the scene to erase exactly as if you were recalling it. You can change bank by pressing the **Bank** button. The controller will check you really want to erase it before wiping the memory for that scene. (You don't need to erase the scene if all you want to do is change it - you can just overwrite the old scene).

2: Erase whole bank

This option erases a complete bank of 16 scenes. You select the bank of scenes to erase exactly as if you were selecting a bank of scenes to recall. You can swap between banks 1-16 and 17-24 by pressing the **Bank** button. The controller will check you really want to erase the bank before wiping the memory for every scene in the bank.

3: Copy a bank

This option allows you to copy an entire bank of scenes to another bank. You might want to do this if you are 'tidying up' the storage of scenes on the controller.

The controller displays

```
        Scene Bank Copy
     Copy from [1-16]?
```

Press a number key from 1-16 to select the bank to copy from. You can swap between banks 1-16 and 17-32 by pressing the **Bank** button (you can copy a bank of the pre-programmed scenes to a user-programmable bank if you want to edit them). The display will change to

```
      Copy from bank 5
      Copy to [1-16]?
```

Press a number key from 1-16 to select the bank to copy to. Again, you can swap between banks as before. You cannot copy to the pre-programmed banks (25-32).

The controller will copy the bank of scenes.

Note: If you want to copy an individual scene to another scene, simply recall the scene then save it to the new scene.

4: Scene crossfade mode

This option lets you tell the controller how to change from one scene to the next. The display shows

```
      Scene xfade mode
     1*Off 2.Fix 3.Slider
```

The option currently selected has a star by it. Press a button from 1 to 3:

1. Off - tells the controller to jump from one scene to the next

2. Fix - lets you set the crossfade time to a fixed value using the **Value** slider. Set the crossfade time you want, then press **Save** to store it. The crossfade time will be fixed at the value you stored.

3. Slider - lets you change the crossfade time using the **Value** slider while you are in Scene Recall mode.

The default setting is Off.

5: Exclude channel mode

This option lets you tell the controller which channels you want to include in the scene when you save it, and which you want to set to zero. Normally you would save all the channels, but if you're saving a scene for a multiple chase (e.g. one chase to move mirrors combined with another to change colours) you might want some of the channels automatically set at zero when you save the scene.

Note: This function only affects how the scene is saved, not how it is recalled. You can turn the exclude options off once you have saved the scenes that you want.

```
Exclude    1.Pan/Rot
2.Tilt 3*Col  4*Gobo
```

The channels currently excluded have stars by them. Press a button from 1 to 4 to include/exclude channels from Scene Save. Channels which are excluded will be set to zero. For Galactic Moons, either 3 or 4 will cause the colour/gobo channel to be set to zero.

If you have set some channels to be excluded, the controller will warn you when you save a scene that some channels are being excluded, and will change the output to show you what is going to be saved.

Using the exclude channels function is the only way to set channels at zero. If you change a channel, the controller knows you've changed it and won't set it back to zero using the controls. If, for example, you set a head to blackout, then the controller assumes you want it to be blacked out and not be overridden by another chase. The only other way to get channels at zero is to Cancel the changes you have made (you can cancel Colour and Gobo separately) or use All Off (hold down **Cancel**) and leave unchanged the channels you want to be zero.

6: Scene/Chase swap

This option allows you to set whether the controller will run scenes and chases simultaneously, or whether it will swap between scenes and chases (turn off the current scene when you select a chase). You might find the Swap mode useful in live performances if you want to go to a static scene and automatically stop the chase.

```
Scene/chase select
1.Combine 2*Swap s/c
```

If set to "combine", when you select a scene with a chase running (or vice versa), the chase will be combined with the scene.

If set to "Swap" (default setting), the chase will stop and the scene will crossfade from the current step in the chase (the crossfade time will be determined by the current scene crossfade setting). If you have a scene selected and you run a chase, the first step of the chase will crossfade from the scene (the crossfade time will be determined by the chase crossfade setting). This also applies when recalling scenes or chases.

8. Bank

The function of the **Bank** button varies depending on what the controller is doing when you press it. If you are saving or recalling Chases, then the button allows you to change the Chase Bank. If you are saving or recalling Scenes, then it allows you to change the Scene Bank Otherwise the button will display a warning message and do nothing.

8.1 Chase bank select

If you press **Bank** while you are recalling a chase, or while you are selecting a chase number to save, then you will be asked to select a chase bank. If you are recalling a chase, you can choose from banks 1 to 8; banks 1-4 are user programmable and banks 5-8 are pre-programmed. If you are saving a chase, you can only choose banks 1-4.

8.2 Scene bank select

If you press **Bank** at any other time, you will set the Scene Bank. There are 32 possible scenes, but you can only write to the bottom 24.

The first time you press **Bank**, the unit will say

```
Select sc bank 1-16
   [Bank] for 17-32
```

If you want to select a bank between 1 and 16, press the number button of the bank. If you want to select a bank from 17 to 32, press **Bank** again. The unit will say

```
Select sc bank 17-32
   [Bank] for 1-16
```

If you are selecting banks 17 to 32, add 16 to the numbers on the buttons. In other words, if you want bank 17, press 1; for bank 18, press 2; and so on up to bank 32, for which you press 16.

If you are selecting a scene bank for saving, you will not be able to select banks 25-32 as they are pre-programmed and not user-programmable.

| Head | Colour | Gobo | Scene | Bank | **Chase** | Cancel | Save |

9. Chase

A chase is a sequence of scenes played back automatically, one after the other. The timing can be controlled by the **Speed** slider, by the beat of the music, by MIDI or by manually stepping through using a footswitch. You can store up to 64 chases, each with up to 64 steps. The controller has a further 64 pre-programmed chases which you can select. The chases are stored as 8 banks of 16 chases; banks 1-4 are user programmable and banks 5-8 are pre-programmed.

You can play back two chases together; the controller calls the first one Chase A and the second one Chase B. Each has its own speed and crossfade time, and can be timer or sound triggered. This allows you to produce a wider variety of chases by combining two existing ones. You will find that this works best when you program some chases with only mirror movements in, and some chases with only colour and gobo changes in, then combine the two; or you could use two sets of mirror values to offset the position. The values in each chase are added together to give the final output, so if you want to program a chase that, for example, doesn't affect the colour setting, you should program the colour values as zero (see 'Programming Scenes for multiple chases' on page 27).

9.1 Programming chases

> Note: Before you start programming a chase, make sure you have programmed all the scenes that you want to use in the chase.

Press **Save**, then **Chase**. The display will show

```
 Save which chase?
 Bk=01        Lit=Used
```
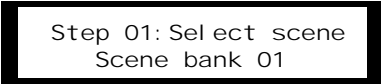
The lights above the number buttons will light up to show which chases in the chase bank are already programmed. If the light is not on, that chase is blank.

You can select another chase bank by pressing **Bank**, then number 1 to 4 (this doesn't affect the scene bank).

Press the number button of the chase you want to save. If the chase is blank, you will be able to start saving the chase straight away. If the chase is already programmed, you have the choice of overwriting it or editing it. See the next section.
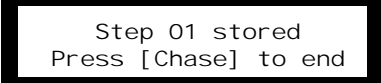
Storing a new chase

The unit will display

```
Step 01: Select scene
     Scene bank 01
```

The unit is now in Scene Recall mode, and you can use the normal Scene recall procedure. Press Bank to change the scene bank. When you choose a scene, the controller will output the scene and store it as a step in the chase.

For a short period, the unit will display

```
     Step 01 stored
Press [Chase] to end
```
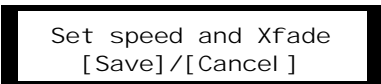
and then go back to the scene select display.

You can continue to enter steps by selecting scenes; the display shows you the current step number. If you change your mind about the scene you've just stored, you can press **Cancel** to go back a step. You can mark the end of the chase by pressing **Chase**.

You can store up to 64 steps in the chase. If you try to enter more, the chase will end automatically.

If you want to abandon the chase, press **Head, Colour** or **Gobo**. The unit will ask if you are sure you want to abandon it.

Storing speed, crossfade and sound mode

Once you have set the end of the chase, the controller will display

```
Set speed and Xfade
   [Save]/[Cancel]
```
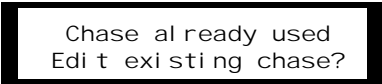
The controller will play back the chase you have just programmed.

If you want, you can set the default speed of the chase using the **Speed** slider, the default crossfade time between steps using the **Value** slider, and whether the chase will be sound triggered by pressing the **Sound** button. Press **Save** when all the parameters are set. When you recall the chase, the default speed, crossfade and sound trigger settings will be set automatically (you can then change them using the controls if you want).

If you don't want to set a default value, press **Cancel**. When the chase is recalled, the controller will use the current setting of the controls at that time.

Editing a chase

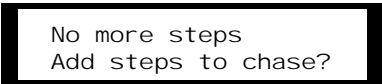If you choose to program a chase which has already been used, the controller will display

```
  Chase already used
Edit existing chase?
```

If you press **Cancel** (No) the unit will ask you if you want to overwrite the chase. Press **Save** (Yes) to overwrite the chase (see previous section). Press **Cancel** (No) to choose another chase.

If you press **Save** (Yes) you will go into Chase edit mode. The unit will display each chase step and will output the step. If you press **Save** the unit will go on to the next step, if you press **Cancel** it will go back to the previous one.

If you want to change the scene at any step, you simply select a new scene. If you want to make the chase shorter, press **Chase** on the step *after* the last step you want (in other words, if you want to end the chase at step 10, press **Chase** on step 11).

If you go past the end of the existing chase, the unit will say

```
No more steps
Add steps to chase?
```

If you press **Save** (Yes) you can continue to add steps to the end of the chase, as if you were saving a new chase (see previous section).

If you want to exit the chase edit mode, press **Head, Colour** or **Gobo**. Any changes you have made will still be retained.

You can also change the default chase speed and crossfade programmed with the chase. If you just want to change these values and not the rest of the chase, press **Head** after selecting Edit Chase to skip that step.

You can erase a chase using the Chase Setup mode. See the next section for details.

9.2 Recalling a Chase

You play back a chase by pressing **Chase**. You can select either Chase A or Chase B by pressing **Chase** again. The unit will display

```
Select Chase A
  Cbank: 01 Chase: --
```

The lights above the buttons will light up to show you which chases in the current bank are programmed; if the light is lit then the chase is programmed.

Recall the chase you want by pressing one of the number buttons. The chase will start to run. If a speed or crossfade value was programmed with the chase, this will also be set. If the chase was programmed as sound-activated, Sound mode will be turned on (Sound mode operates separately for Chase A and Chase B). If you try to recall a chase which is not programmed, the unit will warn you.

You can continue to recall different chases by pressing number buttons, or swap between Chase A and Chase B by pressing **Chase**. You can also recall the automatic Light Show as Chase B by pressing **Light show**.

When a chase is running, the controller will display lots of abbreviated information about the chase:

```
-Ch A- CBk: 01 Chs: 10
 Step 03:  Bk02-Sc08
```

The top left hand corner tells you whether you are on chase A or chase B. CBk and Chs tell you which Chase bank and Chase number is selected as Chase A. The bottom row tells you which step the chase is currently on and which scene bank and scene is programmed as that step.

To stop the chase (A or B), press **Cancel**. To do something else while the chase is running, press an Action button (for example, to manually take over a head, just press **Head**).
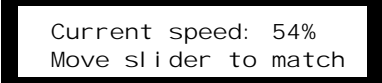
You can select a different bank of chases by pressing **Bank**, then a number between 1 and 8. The lights will change to show which chases are programmed in the new bank. Chases in banks 5 to 8 are pre-programmed.

Note: If you want to manually control a head, select it in the usual way, then take over the functions you want to control by moving the controls. The other functions of the head will continue to be controlled by the chase.

Changing speed and crossfade

You can always change the speed of the chase using the **Speed** slider and the Crossfade time of the chase (time to crossfade between steps) using the **Value** slider. A crossfade of 0% gives instant switching between steps, a crossfade of 100% gives constant movement.

Chase A and Chase B have independent speed and crossfade times; if you've currently got Chase A selected, then the changes will be applied to chase A, and similarly for Chase B. If the current value is different to the position of the slider, you will need to match the slider to the current setting before anything will change. The display will show

```
Current speed: 54%
Move slider to match
```

This avoids the problem of the speed or crossfade 'jumping' to the current position of the slider.

In Sound mode, the **Speed** slider sets the 'pace' of the chase, but the actual speed is also set by the music. The controller will run the chase for a few moments after each beat in the music; at fast speed settings you will get a 'burst' of steps, and at slow speed settings you will get only one step. The light above the Sound button will blink when a beat is detected. The **Value** slider still sets the time to crossfade between steps. You can go back to automatic (No Sound) mode by pressing **Sound** again to turn the Sound light off.

Note: You will only see the 'burst' effect at fast chase speeds; fast chases are most effective on shutter open/close (strobe) effects, as the head may not be able to respond fast enough to other movements.

Chase Link mode

If you run two chases together, the controller will remember that you have linked the two chases. When you recall one of the chases as Chase A, you can tell the controller to automatically recall the other one as Chase B. This is to allow you to select combinations of chases with just one button press. You select this option using Chase Setup option 5 (see next section). You can also tell the controller to replace any channels in the chase that are set at zero with automatic light show information.

If you stop Chase A (by pressing **Cancel**), Chase B will stop too if it was automatically recalled as a linked chase.

Automatic chase selection

You can tell the controller to automatically run through all the chases you have programmed, either in sequence or selecting them at random. You might want to do this if you don't have anyone to operate the controller, and you don't want it to sit there running the same chase all night. See Chase Setup mode, option 4 (see next section).

Manual chase mode

Using the Chase Setup option, you can select manual chase mode for chase A or B (or both). This allows you to manually step through the chase by triggering the Control input (such as by pressing a footswitch or other switch connected to this socket). The crossfade speed will be set by the **Value** slider as usual.

> Note: You need to have set up the Control input to trigger chase steps for this to work. See System Setup option 2 (page 48).
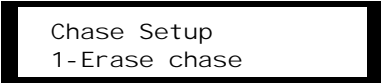
If you select both Chase A and B to be manually triggered, they will both step together, unless you are using the MIDI step command.

The MIDI chase step commands allow you to step each chase independently, and work in both Manual and Automatic chase modes. The crossfade of the step is set by the MIDI key velocity (if you have not disabled this feature). This means that you can run a slow fading chase as a 'background', but still trigger fast steps when you want them.

9.3 Chase Setup mode

This function allows you to erase chases, and to set up the chase run and chase auto-select modes. You get into chase setup mode by holding down the **Chase** button for 2 seconds.

Note: You won't be able to select this option if the controller is in 'Playback Only' mode.

```
Chase Setup
1-Erase chase
```

There are 6 possible actions which are displayed one after the other. You can:

1. erase an individual chase
2. erase a bank of chases
3. copy an individual chase
4. copy a bank of chases
5. set up the chase run mode (auto or manual)
6. set up the chase auto-select mode
7. set up the chase link mode
8. clear the links between chases
9. set an option which automatically runs a chase when you finish saving it

Press the number key of the option you want to select (you don't have to wait for it to be displayed).

1: Erase chase

This option allows you to erase an individual chase. You select the chase to erase exactly as if you were recalling it. You can change bank by pressing the **Bank** button. The controller will check you really want to erase it before wiping the memory for that chase. (You don't need to erase the chase if all you want to do is change it - you can just overwrite the old chase).

2: Erase whole bank

This option erases a complete bank of 16 chases. You select the bank of chases to erase (1 to 4) exactly as if you were selecting a bank of chases to recall. The controller will check you really want to erase the bank before wiping the memory for every chase in the bank.

3: Copy individual chase

This option allows you to copy a chase from one position to another. If you want to edit one of the pre-programmed chases, you can use this function to copy the chase to a user-programmed chase, where you can edit it.
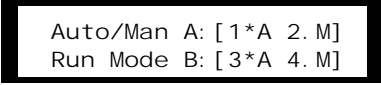
The controller asks you which chase you want to copy from. You can select the chase bank by pressing **Bank** as usual, and you select the chase number simply by pressing 1-16. The controller then asks you where you want to put the chase you've copied. You can't copy to the pre-programmed banks 5-8.

4: Copy bank of chases

This option allows you to copy a complete bank of 16 chases to another bank. You select the bank of chases to copy (1 to 8), and the bank of chases where you want the copied chases to be stored (1 to 4). Any chases in the bank you are copying to will be overwritten.

5: Chase run mode

This option lets you tell the controller how you want to run individual chases. The display shows

```
Auto/Man A: [1*A 2. M]
Run Mode B: [3*A 4. M]
```

The options currently selected have a star by them. Press button 1-4:

1/3.Auto - (Default) Press 1 to set Chase A to Auto, 3 to set Chase B to Auto. Chases run automatically; sound triggered if the Sound button is selected, or timer triggered if the Sound button is not selected

2/4.Manual - Press 2 to set Chase A to Manual, 4 to set Chase B to Manual. You step through the chase manually by activating the Control socket (pressing the footswitch), or by sending a MIDI step command.

6: Chase auto-select mode

This option lets you tell the controller if you want it to automatically select new chases, and if so, how you want it to choose them. The display shows

```
Chs Autoselect 1.Off
2*Seq 3.Rand 4*PrePg
```

The options currently selected have stars by them. Press button 1-4:

1.Off - Turns auto-select off: the controller will only change chase when you select a new one.

2.Sequence - Runs through all programmed chases in sequence (you can change manually as well - the sequence will carry on from the one you choose).

3.Random - Selects a new chase at random from the programmed chases.

4.Preprogram - When selected, the controller will use the preprogrammed chases as well as the user-programmed ones. When not selected it will only use user-programmed chases (this option is On by default - if you turn it off, make sure you've programmed some chases or the controller may lock up).
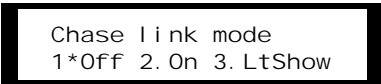
The controller will enter automatic chase selection mode after you have selected the first chase. If it is set to Sequence mode, the sequence will start from the chase you choose. The controller will choose a new chase either when it detects a change in the style of the music, or when it has run the current chase for a certain period of time.

If a link chase is programmed then the controller will run that too. You can override the automatic chase at any time by selecting a new chase, but the controller will replace your selection automatically after a time. If you want to stop the controller selecting chases, turn off the current chase by pressing **Cancel** (or alternatively, turn off Auto Select mode).

If you want the controller to start selecting chases automatically on power-up, you can set the System Startup option to Chase (see page 48).

7: Chase Link mode select

This option lets you tell the controller if you want it to automatically select a second chase to run with the first chase you select. When you choose two chases together, the controller remembers that they go together and can automatically recall the second chase as Chase B when you choose the first chase as Chase A. The display shows

```
Chase link mode
1*Off 2.On 3.LtShow
```

The option currently selected has a star by it. Press button 1 or 2:

1.Off - The controller will not choose a Chase B, it is up to you to do it manually.

2.On - The controller will automatically select a matching chase as Chase B when you choose a chase as Chase A. (You can then change Chase B if you want; this will not affect chase A).

3.Light Show - the controller will run the automatic light show as Chase B.

8: Clear all links

This option allows you to clear all the links between chases. The controller will re-learn the links as you select chases.

9: Run chase after save

```
Run chase after save
1*Off 2.On
```

Normally after you have finished saving a chase and set the speed, the controller will stop the chase automatically. If you set this to " On" , the controller will run the chase you have just saved when you finish saving it.

10. Cancel

The function of the **Cancel** button depends on what the controller is doing when you press it. Most of the time it will abort the last command that you have started, or go back a step in the procedure you are carrying out. If the controller asks you a " Yes-No" question on the display, the Cancel button functions as " No" .

This will happen provided you press the button for a short time. If you hold the button down, there are some special functions as follows.

Output clear

If you hold down **Cancel** for more than 2 seconds, the controller will clear all the outputs to zero, deselect all heads and turn off any selected scenes and chases. This is an 'all-off' function which works at any time, no matter what the controller is doing.

Deselect all heads

If you press **Cancel** briefly while in Head Select mode, then all the heads will be deselected.

Clear colour or gobo

If you press **Cancel** briefly while in Colour or Gobo select mode, then the colours or gobos for the selected heads will be set to zero.

Turn off scene or chase

If you press **Cancel** while in Scene select or Chase select mode, the current scene or chase (A or B) will be turned off.

Reset unit to factory defaults

Hold down **Cancel** while turning on the power to the unit, then release the button after 1 second.

This will (after checking that you really want to) erase the entire memory, then set all the options back to how they were when the unit left the factory.

Do not use this option unless you absolutely have to, because it will erase all the scenes, all the chases and all the configuration information. If you just want to reset the option settings without affecting the scenes or chases you have programmed, you can do this using System Setup option 6 (see page 51).

Note: This is the only way of unlocking the controller if you lock it into playback only mode and forget the code - so choose a code you will be able to remember easily.

Head **Colour** **Gobo** **Scene** **Bank** **Chase** **Cancel** **Save**

11. Save

The **Save** button has three main functions; it allows you to save scenes, save chases and alter the system setup options.

> Note: Save Scene and Save Chase functions are not accessible when the controller is locked in playback only mode.

11.1 Saving Scenes

Press **Save**, then **Scene** to save a scene. Section 7.1 on page 26 gives you all the information on saving scenes.

11.2 Saving Chases

Press **Save**, then **Chase** to record a chase. Section 9.1 on page 34 gives you instructions on saving chases. Any chases which are running will be turned off when you select this option.

11.3 System setup

You enter system setup mode by holding down **Save** for longer than 2 seconds.

> Note: If the controller is locked in playback only mode, you will have to enter the access code before you can use this option.

There are 8 possible actions which are displayed one after the other. You can:

1. lock the controller into Playback Only mode
2. define what will happen when the Control socket is activated
3. define how the controller will start up when first turned on
4. set options for how the Light Show mode works
5. set options telling the controller how to interpret MIDI information
6. display information about the controller
7. Reset all options to factory defaults (does not affect scenes or chases)
8. Set the output to 'highest takes precedence' rather than 'add'
9. Gobo-only blackout mode
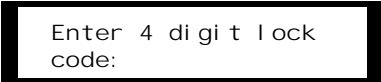
Press the number key of the option you want to select (you don't have to wait for it to be displayed).

1: Playback only mode

This option allows you to lock the controller to prevent unauthorised changes. All the playback functions remain accessible but none of the programming functions will work. MIDI System Exclusive data is also ignored in playback only mode.
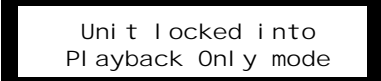
You might want to use this mode if you think operators will accidentally (or intentionally) erase, change or generally vandalise your programming.
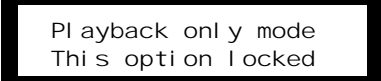
The unit will display

```
Enter 4 digit lock
code:
```

Using the numeric buttons, enter 4 numbers that you will be able to remember easily. The unit ask you to enter the code again, to make sure you pressed the right buttons the first time. The unit will then display

```
Unit locked into
Playback Only mode
```

and will go back to its normal operating mode. If you now try to use any programming functions, the unit will display
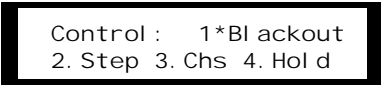
```
Playback only mode
This option locked
```

To unlock the unit, hold down **Save** as if you were entering System Setup mode. The unit will ask you for the code you entered when you locked the unit. If you type it in correctly the unit will be unlocked.

> Note: If you forget the code, the only other way to unlock the unit is to reset the memory, which will also erase all your programming - so choose a code which you will be able to remember easily.

2: Set Control action

This option allows you to set the function of the Control socket. You will see

```
Control:   1*Blackout
2.Step 3.Chs 4.Hold
```

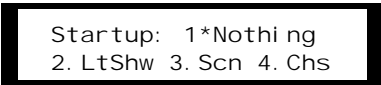The star indicates which option is currently selected. The options are

1. Blackout (on alternate presses of switch)
2. Next step in current chase (if you have set Chase Run mode to Manual for one or both chases)
3. Next programmed chase in current bank
4. 'Hold' the current chase(s); then run again (on alternate presses of switch). You must be running chase(s) in Auto (i.e. not manual) mode for this to have any effect. If a crossfade is in progress the Hold won't take effect until it has finished.

Option 1 is the default.

The Control socket is designed for use with a normally-open-contact footswitch, but you can connect other types of switch to it. Any contact closure or GPI (General Purpose Interface) trigger will work. The socket is fitted with a 10KΩ pull-up resistor so your external control signal must be able to pull the voltage down to ground to trigger the input.

3: Set startup mode

To a limited extent you can set what the unit will do when it is first turned on.

```
Startup: 1*Nothing
2.LtShw 3.Scn  4.Chs
```

The currently selected option has a star beside it. The options are:

1. Start with nothing selected (default)
2. Start in Light Show mode
3. Start with first Scene (Scene 1 in Bank 1)
4. Start with first Chase (Chase 1 in Bank 1)

Note: If you select option 3 or 4 and the scene or chase isn't programmed, the controller will use the first pre-programmed scene or chase.

You can use option 4 in conjunction with the Automatic Chase selection option to make the controller auto-run a variety of chases when it is turned on, without any user action being required.

4: Set Light Show options

You can tell the controller not to use strobing in the automatic light show using this option. You can also set Enhanced light show mode, where the controller produces more dramatic effects to add further interest to the light show.

```
LS Strobe 1:Off  2:On
Enhanced 3:Off  4:On
```

The default settings are Strobe On, Enhanced mode Off.

If you turn Enhanced mode on, make sure you have set any unused heads to 'Off' in the Light Show group selection (see page 20) or you might get times when everything goes dark.

5: Set MIDI functions

The controller has comprehensive MIDI control functions. This option lets you set the basic MIDI parameters and also sets how some of the commands operate.

You can do the following:

1. Set MIDI receive channel
2. MIDI Thru/Out mode
3. MIDI System Exclusive dump
4. MIDI Crossfade mode
5. Output test

The controller displays the options one after the other. Press the number key corresponding to the option you want to select.

5.1 Receive channel

The receive channel tells the unit which of the 16 MIDI channels to respond to. Press the number button of the channel you want. If you hold down the '1' button the unit will be set to 'omni' (the unit will respond to messages on any MIDI channel)

```
MIDI rx chan: 01
 Select new channel
```

5.2 Thru/Out mode

This option allows you to determine how the MIDI Thru/Out connector is used.

```
MIDI mode
1*Thru  2.Data Out
```

There are 2 settings; the currently selected one has a star by it:

1. Thru mode: MIDI is passed straight through, no changes are made

2. Data Out mode: Unit will transmit MIDI code when any Scene or Chase is selected, cancelled, or when Scene or Chase bank is changed (used for recording light shows, and slaving controllers).

   Note: Set this option to "Thru" when you are not using MIDI output, as the controller slows down slightly while it outputs the MIDI data.

See the MIDI section on page 58 for details of how these modes operate.

5.3 System Exclusive Dump

MIDI memory dump allows you to save the entire memory (including configuration) to a sequencer program using a System Exclusive dump; this will take approximately 30 seconds. You can then reload the memory at a later date by instructing your sequencer program to send back the System Exclusive dump.

Note: the controller will ignore the dump if it is in Playback Only Mode or if SysEx Receive is set to Ignore. The DMX output may be intermittent while SysEx data is being transferred.

You might want to use this function to backup the memory of the controller, or if your light shows use up a lot of memory you can swap between several shows by reloading them from the sequencer.

```
1: Start SysEx dump
Rx-2.Accept 3*Ignore
```

You start the memory dump by pressing the '1' key. You can disable SysEx reception using option 3, or enable it using option 2. SysEx reception is disabled by default, and it is advisable to keep it disabled while you are not using it to protect against accidentally overwriting the memory.

5.4 MIDI crossfade mode

When you recall a scene or chase, the controller will set the crossfade time using the MIDI key velocity; if you hit the key hard you will get a fast crossfade time, and if you hit the key gently you will get a slow crossfade time. You can turn this option off if you don't like it, in which case the default settings will be used.

5.5 Output test

The numeric keys on the controller turn into a piano to allow you to check your MIDI output connections. If you connect a MIDI sound module or a sequencer, you should hear or see notes being played when you press the number keys. The bottom row are the white keys and 2,3,5,6,7 are the black keys.

6: Product information

The controller will display some information about itself, including the control software version number and date of last update. You might need this information if you run into difficulties and contact Abstract for technical support.

7: Reset all options to factory defaults

You can use this command to return all option settings to their factory defaults. Unlike the complete reset, which you get by holding down Cancel while turning the power on, this does not affect any scenes or chases you have programmed. However, all user-settable options are returned to their factory default settings.

You might want to use this option if someone else has used the controller and you don't know what state all the options are in, or if you just want to go back to "standard" operation.

8: Output calculation mode

If you select two chases to run together, or a scene and a chase together (if the controller is set up to allow this), the controller will has to combine the DMX values in the two chases, or the DMX values in the scene and the chase. This option tells it how to work out the values.

```
Output calc mode
1.Add 2*Use highest
```
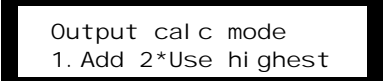
The controller can be set to add the values together, or to take the highest value and ignore the others.

9: Gobo only blackout mode

If this option is set to "on", when you press blackout only the Gobo channels of heads are set to zero. This gives a faster response when you take the controller out of blackout. Normally all channels are set to zero when in blackout.

12. Blackout

The **Blackout** button is a 'system' button, which means that you can press it at any time, whatever the controller is doing, and it will always work.

When you press **Blackout**, the controller changes all its outputs to zero*. The light comes on above the button to show that Blackout mode is active. When you press **Blackout** again, the controller restores all its outputs to how they were before.

> Note: This is different to All Clear mode (which you get when you hold **Cancel** down) - that permanently clears all the outputs, whereas Blackout temporarily sets them to zero.

You can continue to operate the controller in 'Blind' mode while it is in blackout - it continues to work as normal, except zeros are output on the DMX line.

Standby mode

If you leave CE-range effects in blackout for longer than 10 seconds, they will switch to standby mode. If they use halogen lamps, they will turn the lamps off to conserve lamp life. If you want an 'instant' start from blackout, define a scene which has only the gobo channels at blackout, but all other channels in a non-zero position. Recall that scene, then release Blackout mode. This will take the heads out of standby mode and turn the lamps back on. Otherwise you may notice a delay as the lamps turn on.

(* You can change this so only the gobo/shutter channels are set to blackout. See "Gobo only blackout" in System Setup section on previous page)
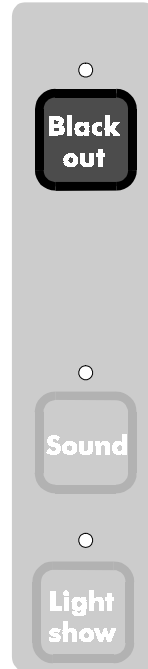
13. Sound

The **Sound** button allows you to turn on and off the unit's sound activation.

Normally the Sound mode is inactive, and the light above the button is off. However, if you want to sound-trigger chases or the automatic light show (so that they step on the beat of the music), press the **Sound** button. The light above the button will come on.

When a beat is detected in the music (either through the unit's internal microphone, or in the audio signal connected to the audio line in socket), the light will blink off momentarily.

If you want to cancel sound mode, press the button again. The light will go off.

If you press the Sound button in Chase Select mode, you can turn sound activation on and off independently for Chase A and Chase B; the light indicates if Sound mode is turned on for each chase. If you press the button in any other mode, it will turn sound activation on or off for both chases.

If you recall a chase which has been programmed as being in sound mode, then Sound mode will be automatically enabled; otherwise the previous setting will be retained.

Sound sources

The controller has a sensitive internal microphone with automatic gain control which will detect the beat of the music in most situations. It is bass-filtered, so will not respond to high pitched sounds; tapping on the case should trigger it (so will pressing buttons!).

However, if the controller is positioned a long way from the speakers, or in a control room, or the music is not particularly loud, then you may find you get a better result by connecting an audio line level signal (pre-amp level) to the audio in socket. Use a full range output from your mixer. The audio in socket is high impedance, so you can split it off another signal if you don't have a spare output.

Do not connect a speaker level signal to the controller - only use signals from the input side of the amplifiers. A speaker level signal may permanently damage the controller.
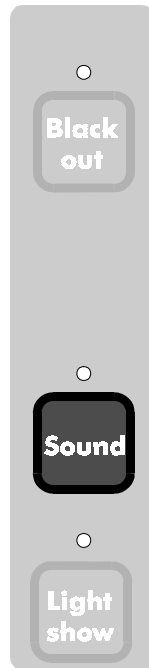
14. Light Show

The controller has a complex automatic light show system. When you press the **Light show** button, the controller will begin to generate its light show. The light above the button will come on to indicate that this is happening.

> Note: You can't select Light show while you are in the middle of recording scenes or chases.

If the controller is idle, in other words you haven't selected any heads, scenes or chases, then it will produce a full light show using all the connected effects. (You can turn off all selections by holding down the **Cancel** button). If you want an 'instant' light show, or you don't have a lighting operator available, Light Show mode will give you the best results - a fascinating ever-changing display. In fact, once you've watched the automatic light show, you may decide not to bother doing any programming yourself!

You can change the speed, crossfade or sound activation of the Light Show using the sliders and sound button, as you would for a chase. You can stop the light show by pressing the **Light show** button again or by pressing **Cancel**.

You can also select the first 16 pre-programmed chases instead of the automatic Light Show, by pressing one of the numeric keys.

However, the light show mode is much more than just an automatic show. You can use it together with your own scenes and chases to add variety to your programming. You can combine a scene, a chase and manual control of heads with the light show; any values which you don't set (which are zero) will be replaced by the light show. So for example you could program a chase consisting of only mirror movements and have the light show mode fill in the colour and gobo settings (see page 27 for how to program a chase like this).

Light show setup

The light show will use all the heads that are connected, and divides them up into four groups. It is up to you to allocate the heads to the groups; you do this using the Head Setup mode (see section 4.3 on page 16). You will find that this works best when you allocate similar types of effect to the same groups, perhaps splitting them left and right. The four groups will perform synchronised actions, perhaps using contrasting colours or blacking out alternately. If you use Enhanced mode, make sure you set any unused heads to 'Off'. Enhanced mode is described below.
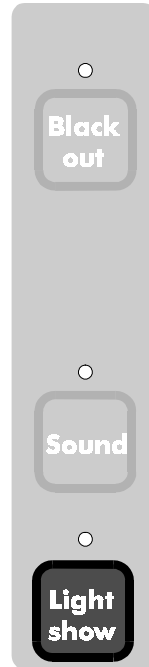
For example: if you've got 4 Futurescan 3's, 4 Gladiators and 4 Galactic Moons, you will get good results if you have the left-hand Futurescans on Group 1 and the right-hand ones on Group 2, the top 2 Gladiators and the bottom 2 Galactic Moons on Group 3 and the rest on Group 4. But experiment! You can change the group settings while the light show is running.

How Light Show works

The controller produces the light show as Chase B, but working as a 'background'. Normally Chase B will be added to Chase A and the currently selected scene, but the light show only affects channels which would otherwise be zero. This means that any channels you set will be excluded from the light show.

> Note: If you set a head's gobo to Blackout, the controller sets a special blackout value (not zero). This enables it to tell the difference between a head that has not been set, and a head which you have deliberately set to Blackout.

If you are in Chase Select mode, you can select Light Show as one of the chases simply by pressing the **Light show** button. The controller will automatically replace Chase B with the Light Show (even if you are in Chase A select mode). You can change the speed, crossfade and sound trigger of the light show using the sliders and **Sound** button exactly as you would for any other chase. You can cancel Light show by pressing **Cancel** (as you would to stop a chase) or by pressing **Light show** again. If you select a different Chase B this will also replace the Light show.

> Note: Chase Link mode does not operate when Light Show is selected, and Chase Auto-select mode won't change chase B if it's set to Light Show.

15. Using MIDI

The controller is designed to be fully controllable by MIDI, either from a keyboard or a sequencer. You would typically use a keyboard to allow dynamic 'real-time' playback of scenes, and a sequencer if you need to match the lightshow to pre-recorded MIDI or sound.

The controller can be set to either receive on a specific MIDI channel, or to receive on all MIDI channels (OMNI mode). If set to a specific channel, it will ignore MIDI on any other channel. This can be useful if you want to control several units independently from one sequencer.

You set the MIDI channel using System setup option 4 (see page 49).

15.1 Recalling Scenes by MIDI

You can recall any scene using the white keys on a standard 5-octave keyboard. The bottom 16 keys (starting at MIDI note 36, C2 or C3 depending on which manufacturer made your MIDI equipment) recall the 16 scenes in the current bank. The key velocity (how hard you press the key) sets the crossfade time between the current scene and the new scene - if you press the key gently, a slow crossfade will be set. If you press the key hard, a fast crossfade will be set (you can turn this feature off if you don't like it - see page 51)

White notes: Scenes 1-16 in current bank — Bank 1-8 in current group — Group 1-4
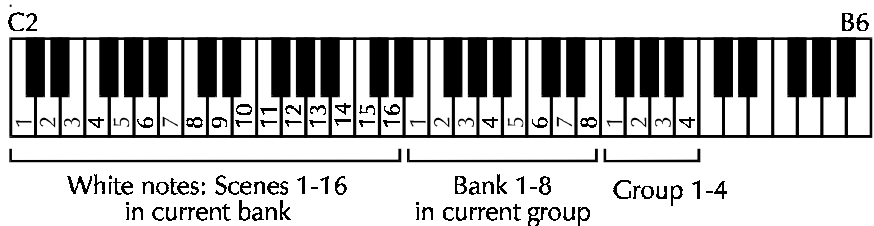
You can select any of the 32 scene banks using the next 12 white keys. To enable 32 banks to be fitted on a standard keyboard, the 32 scene banks have been divided up into groups of 8. Banks 1-8 are in group 1, banks 9-16 in group 2, banks 17-24 in group 3 and banks 25-32 in group 4. You can change group by pressing F, G, A or B in octave 5. You can select any bank in the group by pressing one of the 8 bank keys.

If you are recording a light show on a sequencer, you should always start off by setting the bank, as you don't know which bank will be selected.

15.2 Recalling Chases by MIDI

C2   B6

Black notes: Chases 1-16 in current bank   Chase Bank 1-8
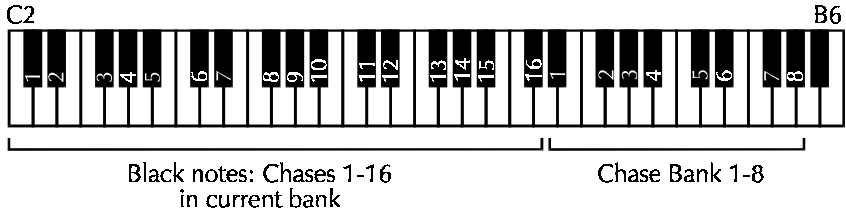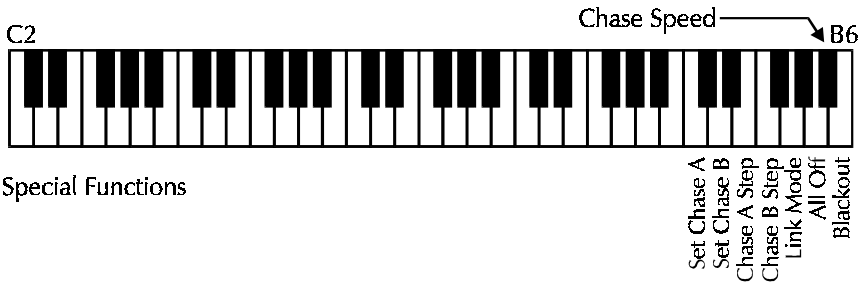
You can recall any chase using the black keys on a standard keyboard. The bottom 16 black keys recall the 16 scenes in the current bank. If the chase does not have a speed or crossfade time programmed with it, the key velocity (how hard you press the key) sets the crossfade time and the speed can be set by the velocity of the top black note (Bb6).

You can select any of the 8 chase banks using the next 8 black keys. If you are recording a light show on a sequencer, you should always start off by setting the Chase bank, as you don't know which bank will be selected.

You can select whether you want to run the chase as Chase A or Chase B; you can also turn Chase Link mode On or Off. See the next section for details. (Chase Link mode allows you to automatically recall two chases together).

15.3 Special functions by MIDI

Chase Speed

C2   B6

Special Functions   Set Chase A / Set Chase B / Chase A Step / Chase B Step / Link Mode / All Off / Blackout

You can select certain functions from a standard keyboard to assist you in a 'live' situation. These are: Blackout, All Off, Set Chase A, Set Chase B (any chases you select will be loaded as Chase A or Chase B depending on which of these keys you pressed last), Link mode (turned on if velocity > 64, off if less), Chase A step and Chase B step.

You can also turn Chase A or Chase B off individually, and set Light Show mode, but this uses keys outside the normal keyboard range. See next page.

The controller also understands MIDI commands outside the range of a normal keyboard; it uses these for special functions. You may be able to access them from a keyboard using its "transpose" function.

The other MIDI commands that the controller uses are given in the following table.

MIDI Key	Note	Function	Velocity
24-95	C1-B6	White notes = Scene select, Black notes = Chase select (see diagram)	sets xfade time
96	C7	Turn Scene off	
97	C#7	Turn Chase off*	
98	D7	Light show mode on/off	
102	F#7	SysEx dump scenes	
103	G7	SysEx dump chases	
104	G#7	SysEx dump config	
105	A#7	SysEx dump all memory	

*The "Turn Chase off" function operates on Chase A or B, depending on which was selected last.

15.4 MIDI Thru modes

Normally the controller receives MIDI and also passes it through to any other MIDI devices connected to the Thru socket. If you want to program a light show, you connect a keyboard or some other MIDI-generating device to the input of your sequencer, then connect the output of the sequencer to the controller.

The MIDI Thru socket has a further function in MIDI "Data Out" mode (see section 5.2). This allows you to record a light show in real-time on your sequencer. When this mode is enabled, every time you select a scene or chase from the front panel, the controller sends out the MIDI key code (from the "Thru" connector) to represent your action. When you play back the MIDI file, the controller will replay your actions.

> Note: You MUST switch off MIDI Thru on your sequencer when using this function, or disconnect the MIDI In connection to the controller. You will also find that the controller responds slightly slower because it has to output the MIDI data.

The controller outputs MIDI for the following actions: Select scene, select scene bank, Scene Off (i.e. pressing Cancel) , Select chase, Select chase bank, Chase Off. (Chases will be run as Chase A or Chase B, as you selected them).

Scene crossfade and chase crossfade values are output with the MIDI information as they are set when you record the MIDI file. Chase speed will be determined by the speed saved with the chase, unless you save a Chase Speed command separately.

You can also use this mode to slave two controllers together; however, there is no MIDI command transmitted for a chase step, so chases run on two controllers may not be synchronised.

When the unit is sending its own MIDI information, it transmits on the same channel on which it is set to receive. If the Receive setting is OMNI then it transmits on channel 1.

15.5 System Exclusive

You can save and reload the controller's memory from MIDI using a 'System Exclusive' dump. This can either be done from the System Setup command option 4 (see page 50) or you can request partial dumps by sending MIDI codes (see previous page).

This function allows you unlimited storage of scenes and chases. It also allows you to backup the controller's memory and setup in case someone overwrites it! The MIDI data is output on the MIDI Thru connector; DMX output may be intermittent while System Exclusive data is being transferred. It takes about 30 seconds to download the complete memory.

The unit does not have a 'Receive System Exclusive' command; this function is performed simply by sending System Exclusive data to the unit. If the unit is in Playback Only mode or if System Exclusive reception is disabled, the unit will ignore the data. See page 50 for how to enable or disable SysEx transfers.

Note: When you trigger a SysEx dump using the Midi command keys, the command keycode will be echoed back out of the Thru socket and be saved at the start of the SysEx dump. You must remove the command code from the start of the SysEx dump before sending it back to the controller.

A. DMX implementation charts

This section lists the DMX values that the controller generates. You might need this information to work out if the controller will be compatible with a non-Abstract lighting unit. If you are using CE range lighting effects you can probably ignore this section.

Colour / Gobo number	Colour values			Gobo values		
	CE range value	Old Abstract	"4ch effect"	CE range value	Old Abstract	"4ch effect"
1	10	0	0	24	15	0
2	26	15	16	40	30	16
3	42	30	32	56	45	32
4	58	45	48	72	60	48
5	75	60	64	88	75	64
6	91	75	80	104	90	80
7	107	90	96	120	105	96
8	123	105	112	136	120	112
9	140	120	128	152	135	128
10	156	135	144	168	150	144
11	172	150	160	184	165	160
12	188	165	176	200	180	176
13	205	180	192	216	195	192
14	221	195	208	24	210	208
15	237	210	224	(strobe)	225	224
16	253	225	240	0	0	240*

*gobo 16 on "generic" types gives output value 255.

B. MIDI Implementation Chart

Function		Transmitted	Recognised	Remarks
Channel	Default	1	1	
	Changed	1-16	1-16	
Mode	Default	3	3	
	Messages	X	X	
	Altered	1	1	
Note number		24-105	24-105	
Velocity	Note on	O	O	0=note off
	Note off	X	X	
Aftertouch	Keys	X	X	
	Chans	X	X	
Pitch bend		X	X	
Control change	0-127	X	X	
Program change		X	X	
System exclusive		O	O	
System common	Song pos	X	X	
	Song sel	X	X	
	Tune	X	X	
System realtime	Clock	X	X	
	Messages	X	X	
Aux messages	Local control	X	X	
	All notes off	X	X	
	Active sense	X	O	
	Reset	X	X	

Mode 1: Omni On, Poly   Mode 2: Omni On, Mono   O : Yes

Mode 3: Omni Off, Poly   Mode 4: Omni Off, Mono   X : No

C. Error Messages

This section lists the error messages that the controller might produce and tells you what to do. There are two types of message - information and fault. The information messages are normally just to help you out. The fault messages indicate that there is a problem with the controller and you will need to take some action.

Information messages

Message	Explanation	Solution
You need to select some heads first	You can't use the colour or gobo option unless you've selected some heads	Use Head Select to select one or more heads
Scene has not been programmed	You tried to recall a scene that isn't programmed	Choose a scene with a light above the button
Chase has not been programmed	You tried to recall a chase that isn't programmed	Choose a chase with a light above the button
Deselect other heads to use switch pack	The head you are trying to select is a switch pack, you need to deselect all other heads to use it	Press Cancel to deselect other heads, then select the switch pack
Use [Colour] to control switch pack	You are trying to use the Gobo option with a switch pack	Use the Colour set option to control the switch pack
Playback Only Mode This option locked	The unit is 'locked' and this option cannot be used	Unlock the unit (if you know the code it was locked with) by holding down the Save button
Invalid head setup found, defaults set	Invalid settings found in head setup, replaced by default settings	Check the setup of all heads and correct any errors (may be caused by corruption or entry error).

Fault messages

Message	Explanation	Solution
`Backup battery low` `    -WARNING-`	Memory backup battery is getting low - memory may be lost in a few weeks	Contact dealer for replacement
`Backup battery flat` `Memory will be lost`	Memory backup battery is flat - memory will be lost when unit is turned off	Contact dealer for replacement
`RAM ERROR AT 0000` `Fatal system fault`	Error detected in RAM - fault in system (only tested when RAM is initialised)	Contact dealer - unit requires repair. This should never occur in normal use

D. System options

This section lists the options that you can set on the system, where you find them and what effect they have. All the options listed below are remembered when the unit is turned off.

Option	Location	Function
Set head type	Head Setup option 2	Sets the physical head type for each head number
Set DMX channels	Head Setup option 3	Tells the controller the DMX base channel setting for each head
Pan/Tilt invert	Head Setup option 5	Inverts the operation of the joystick for each head when manually controlled, also can swap x-y.
Light Show options	Head Setup option 6	Sets the allocation of heads to Light Show groups.
Auto light up	Head Setup option 7	Selects the automatic light-up mode when a head is selected
Head cancel mode	Head Setup option 8	Turns off selected heads when scene or chase is turned on
Scene xfade mode	Scene Setup option 4	Sets the crossfade mode between scenes to Off (no crossfade), Fix (set value) or Slider (variable)
Exclude channels	Scene Setup option 5	Sets functions to be automatically excluded when saving a scene for a multiple chase
Scene/Chase swap	Scene Setup option 6	Automatically turns scene off when chase selected, and vice versa
Auto/Manual mode	Chase Setup option 3	Sets auto (sound/timer) chases or manual (keypress/footswitch) chases
Chase auto-select mode	Chase Setup option 4	Sets options for unit to automatically run through different chases
Chase Link mode	Chase Setup option 5	Sets option for linked chase selection (unit finds chase last used with the one you select)

Option	Location	Function
Playback only mode	System Setup option 1	Sets the unit to 'locked' mode (protected by code)
Set Control action	System Setup option 2	Sets the action to perform when Control socket is activated
Set startup mode	System Setup option 3	Sets what the controller does when first turned on
Light show options	System Setup option 4	Sets Light show strobe enable and enhanced mode
Midi options	System Setup option 5	Sets midi options (see midi chapter for details)
Output calc mode	System Setup option 8	Sets whether scenes and chases add or highest-takes-precedence