CHAMELEON

User Guide

V2.1

Introduction

Chameleon is a versatile, easy-to-use lighting control application for Mac OSX. It uses the DMX512 protocol, which is widely used for stage and effects lighting. It is meant to look and feel like a physical lighting desk used by professionals. If you're used to working with these lighting desks, you'll immediately be at home with Chameleon; if you're new to lighting control, Chameleon is a great place to start learning.

Before you start

You will need:

- a compatible DMX interface (either USB or Art-Net). Chameleon works with our own interface, available through our web site, the Enttec Pro, and a range of art-net compatible interfaces
- some DMX cable
- a DMX compatible lighting system - the kit will have sockets that look like the ones below

Installing & Registering Chameleon

You can download Chameleon from our web site (www.maclightingsoftware.com). To install it, simply open the disk image and click the installer package. You'll be walked through the rest of the process.

Chameleon will run without a licence, and all of its features will be available to you: however, from time to time, the DMX output will black out. To prevent this, you'll need to purchase a licence for the number of channels you intend to use through our web site. We offer free one-day trial licences if you're not ready to spend any money straight away. When you purchase your licence, you will first be sent an activation key. Open the Preferences menu and select licences: you'll see the window to the left.

The box marked XXXX-XXXX-XXXX-XXXX is where you'll need to paste your activation key whilst you are connected to the internet.

This window tells you about your installed licence (or licences): whether the licence is for a defined time or perpetual; how many channels it contains, how many banks of playback faders you have, how many cue stacks - and to the right of the window, installed activation keys (just out of view in the screenshot to the left.

If you don't want to - or can't - connect your computer to the internet, we can manually generate a licence for you: you will need to send us the serial number of your computer (you can find this on Apple -> About this Mac -> More Info).

A single Chameleon licence allows you to run Chameleon on up to two machines: one main machine and one backup. If you decide to upgrade your computer, and already have Chameleon running on two machines, you can go to Preferences -> Licences and click the 'Remove' button on the machine you no longer need to use Chameleon for.

If you have already disposed of the Mac you no longer need, you can email the serial numbers of the Macs you still want to run Chameleon on to support@vanilla.net and (by a process of elimination) we will de-register the serial numbers of the disposed-of Mac for you.

Setting Up

Simply put, Chameleon uses the DMX protocol to control the intensity of the lights that you connect to the DMX interface.

Each light is allocated one channel in DMX, and it is the value of each of these channels that you control using Chameleon.

When you launch Chameleon, you will be asked if you want to connect any interfaces (USB or Art-Net) that you have to the two universes of 512 DMX channels at your disposal. If you don't have a DMX interface you can still use the software, but you won't actually be able to control any real lights. You can distribute your channels over as many universes as you need, but remember for each universe, you'll need to connect a separate interface (or have an interface that supports multiple universes).
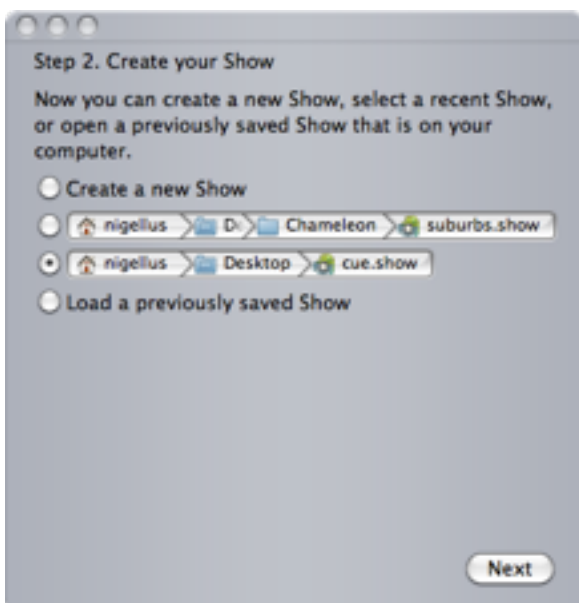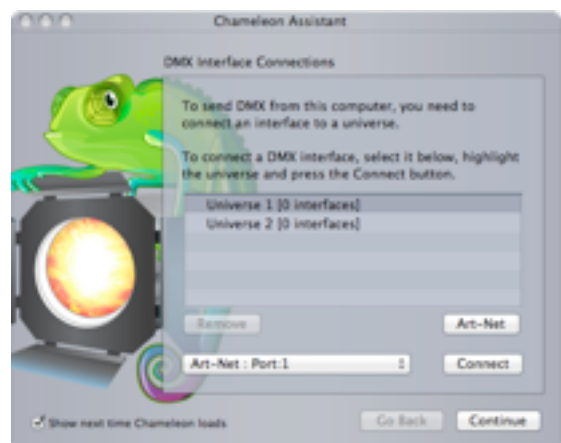

You'll then be asked whether you want to create a new show, or load an existing one: if it's your first time, go ahead and create a new show.

To get started, you need to patch in some channels for the show you've just created. Every light fixture you connect to the interface on a particular universe is reached by DMX using a physical address from 1 to 512. You have to set the physical DMX addresses on each fixture you connect: for example, on an 8-channel dimmer, if you set the physical address of the first channel on the first universe at 101, the dimmer would occupy physical addresses 1/101-1/108. At this stage you'll need to patch enough channels in Chameleon to cover all the lights you want to connect.

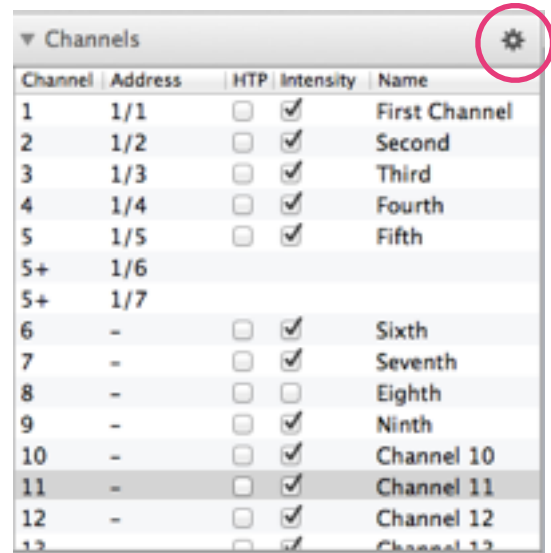When you see the window below, just opt to create some new channels.

The next bit of the set up connects your Chameleon channels to physical DMX addresses. When you see the window below, select the number of channels you think you're going to need, up to the total number of channels you have free. If you're unsure how many you'll need, just choose the maximum for now. You can unpatch unused channels later.
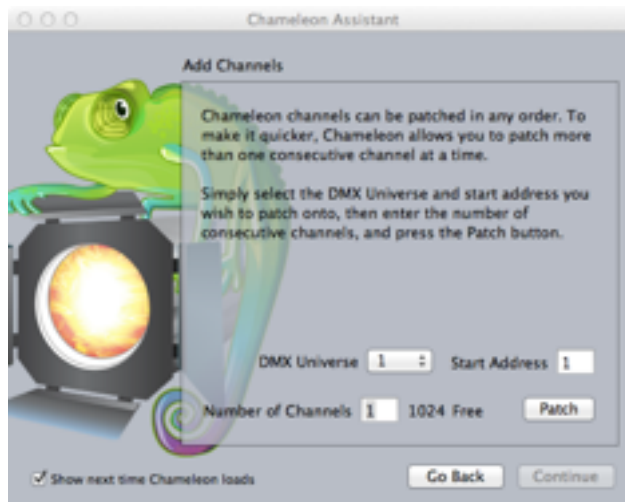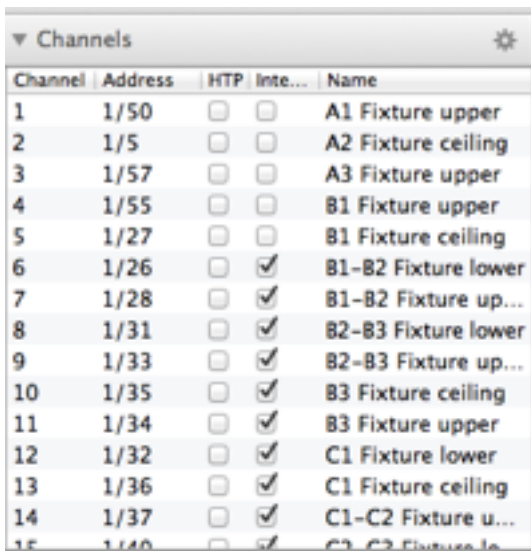
In the window to the right, we've patched 50 channels to physical DMX addresses. The channels show up, numbered, alongside the address they are patched to and their name. You can click in this window and rename the channels to something more useful.

You can amend the patches you have made from the Channel View in the main interface window. This also allows you to do a few more things than the set-up window. Clicking on the cog top right of the window (circled here in red) allows you to unpatch, re-patch and patch additional channels to DMX addresses. Patching a single channel onto multiple DMX addresses allows you to control multiple fixtures with one channel. In the window below, channel 5 is patched to DMX addresses 1/5 - 1/7.

Finally, you can name the channels you've just set up. It's better to do this now as it will help you later on when you're setting up a show. A good idea is to name channels based on the type of fixture they control, or their position on the stage, or both, as shown left.

The Interface

Now that you've set up the framework for your new show, let's take a look at the interface.
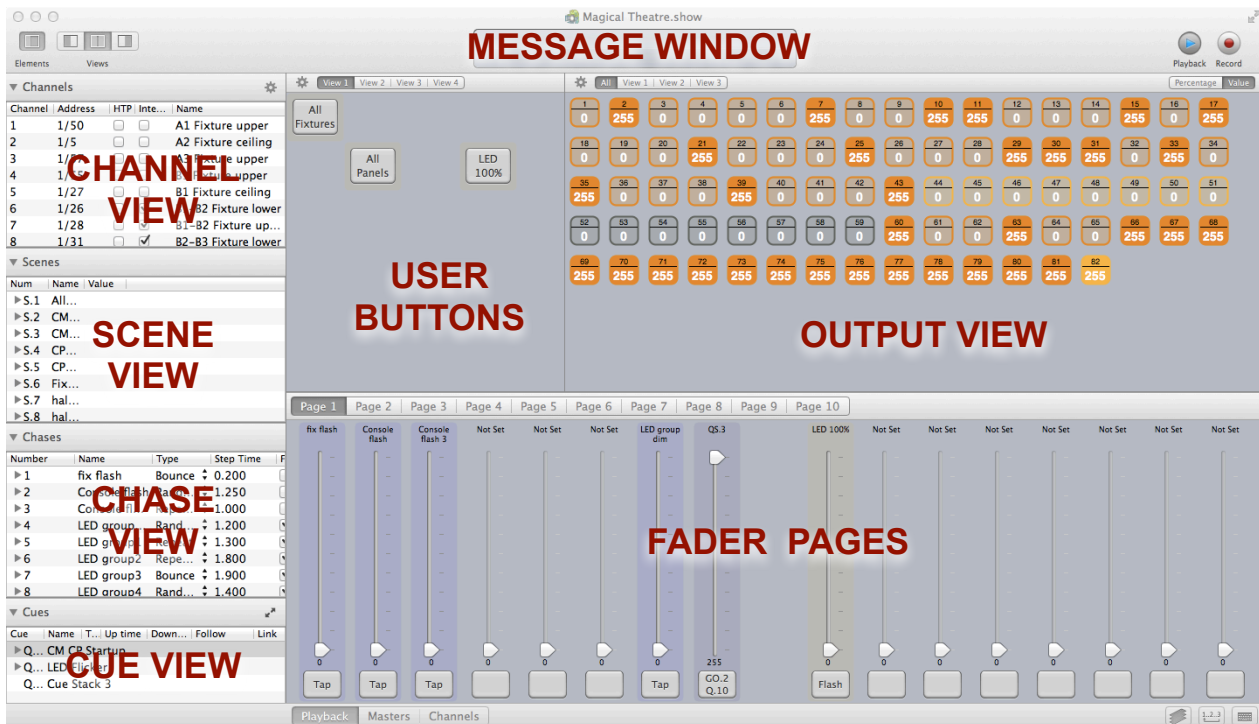
The interface is divided into seven main sections, labelled above. Each section can be re-sized by dragging its edges. Whilst each section has a minimum size, you can completely remove a section by dragging further than half way past its minimum size.

The **Fader** Pages section contains the faders (or sliders) that you can use to control most things in Chameleon. Here you can find the channel faders, which allow you to bring each light fixture up and down; the playback faders, which you can configure to control the intensity of an entire scene, or a chase; and the master faders, which allow you to control everything we've just mentioned all at once.

Down the left hand side, on top of one another, are the **channel**, **scene**, **chase** and **cue views**. These contain details of all of the channels, scenes, chases and cues that you have stored (or programmed).

Individual channels, chases and scenes can be assigned to User Buttons, in the **User Buttons** window, to make them easy to bring up in a show. Just drag them into the user button window and new buttons will appear.

The **Output** View shows you what is happening in each of the channels you have patched in to your show. It's a great way of tracking on the screen what is happening on your 'stage'. Channels show up in different colours depending on what they are taking their values from. The 'All' tab, above the window, shows all the channels you have set up. The 'View 1', 'View 2' tabs (which you can rename) shows only channels you have dragged into the output view. These tabs allow you to rearrange the channel positions to match the layout of your stage, if you wish.

The Message Window is there to give you information about what Chameleon is doing. It will also give you information about what's under the mouse pointer.

In addition to the main windows, you can bring up additional control windows using these buttons at the bottom right hand side of the interface:

Left to right, these bring up the Chase Controller, and the Control Keypad.

The Chase Controller like this:

The Keypad Controller looks like this:
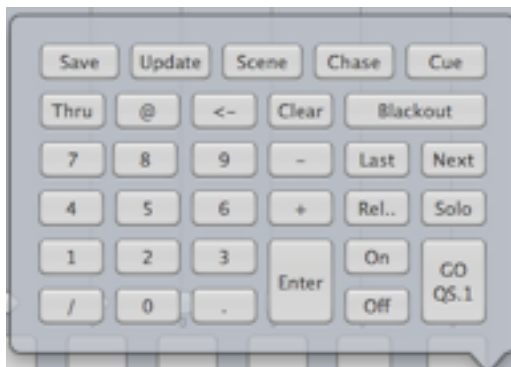
We'll explain more about what each of these windows does later.

Getting started

Basic principles of stage lighting

Lighting desks and lighting control software allow you to control the way the stage looks at a given time, and how its look evolves over time. To explain the basic concepts better, imagine a stage set up as shown in the diagram below.
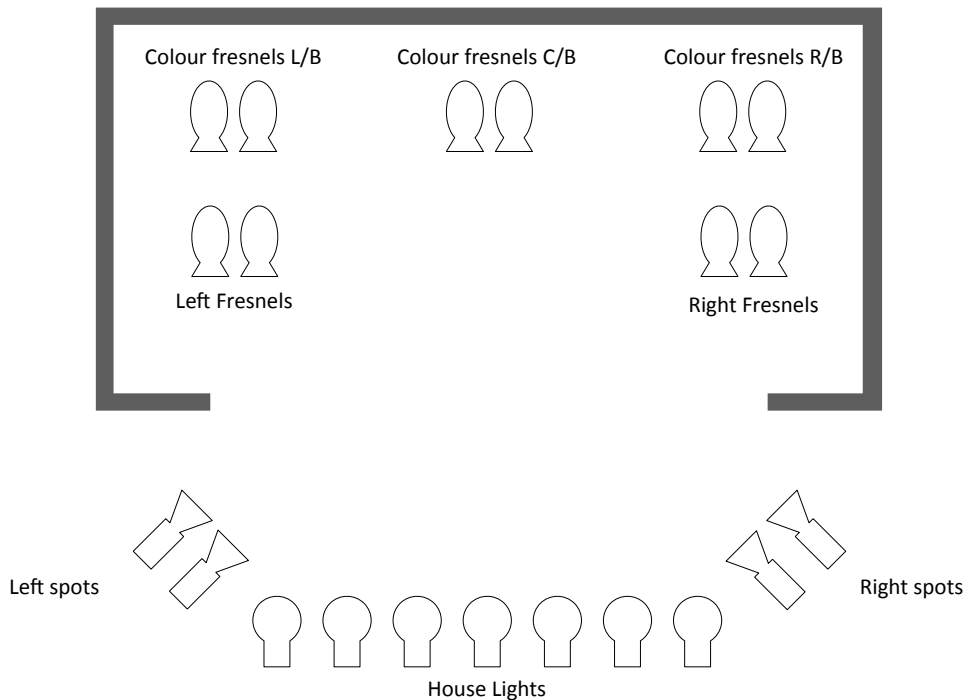
Now let's imagine how the first part of the show might go.

1. When the audience comes in, you might want all the house lights to be up, and the left spots on stage right.

2. At the beginning of the performance, the house lights go down, the spots go down, and all the rear colour fresnels go up to a low intensity, washing the back of the stage.

3. The actors come on, exchange a few lines, and the right hand spots play on and off over stage left, suggesting light dappled over water.

Let's look at this from the perspective of a lighting designer. First, to help them describe the appearance of lighting on a stage and the way it evolves, lighting designers use the technical terms **scene**, **chase** and **cue**.

A **scene** is a static group of lights and associated intensities that go together. It would make sense, for example, to group all the house lights (on full intensity) together in a single scene. In the show described above, you could also group the left spots together into a scene. Then, when the audience comes in, you would just bring up the house lights scene and the left spots scene; and when the performance was about to start, you could bring them both down and bring up another scene containing the rear colour fresnels. Scenes are a convenient way of grouping configurations of lights for particular parts of a performance. You can have more than one scene 'up' at a particular time, combining to create the overall look of the stage.

A **chase** is a sequence of light settings that plays out automatically over time, such as the right hand spots suggesting dappled water in our example. A chase can be made up of a sequence of individual light settings, or a sequence of scenes. Each step in the sequence plays for a set time, then fades over a set time into the next step in the sequence. The sequence can play just once, or repeatedly; it can be a fixed sequence, or it can be random.

Cues allow you to control the movement between the different parts of the performance. Cues are just a way of sequencing looks so you can move from one look to another, in either a timed way, or manually. They're used for theatre productions mainly, where there's a set sequence of events on stage and each will have its own lighting setup. In our example, the first cue would contain the house lights scene and the right spots scene. The second cue would contain the colour wash scene. And the third cue would contain the chase with the right spots. A sequence of cues is organised in a **cue stack**, and movement between cues is controlled manually by the lighting operator.

Using Chameleon

Now you know your way round, you can start controlling some lights. First, make sure you're in Record mode (Mode -> Record). You need to be in Record Mode to create and save shows. By contrast, in Playback Mode, you can control lights and execute previously saved shows, but you can't save anything. When you're running a show live, Playback Mode is where you'll normally want to be, unless you need to fine tune things as you go. If you have a show already running in Playback mode, switching to Record mode won't stop or interrupt it: it will just give you the option to change things you wouldn't otherwise be able to change, as we will see.

Now, in Record mode, select the 'Channels' tab in the Fader panel. This allows you to control the setting of each of the channels you have set up. If you named the channels, the channel names you chose will be at the top of each of the sliders. Move the faders up and down: if your lights are switched on and connected, you should see them change. Notice that the values of each of the channels are also shown in red or light red in the Output panel, either as absolute values or percentages, depending on what tab you have selected in there. In record mode, they will continue to show in red or light red until you hit the release button on the keypad (you might need to hit it twice).

Anything in the Output panel circled in red or light red is locked into the **programmer**. The programmer is the collection of channel values that you are currently working with. Think of them as being held in a sort of short term memory. A channel value in the programmer over-rides any conflicting value for that channel. This means that you can change the value of that channel no matter what the Playback mode is doing (we'll come onto what Playback mode might be doing in a moment). By default, the value stays in the programmer (and stays red or light red) unless released (by clicking the Release button in Record mode), even if you switch back to Playback mode. If you're in Playback mode and there is still unwanted channel data in the programmer that is over-riding the show (i.e. you can see red in the Output window) you will need to switch back to Record mode, release the data from the programmer, and switch back.

Whilst in Record mode, when you have set a value for each of the channel faders in the Faders panel, which in turn will have set up a particular appearance for the lighting on your 'stage', shown in red in the output panel, you can **save** that set of channel values as a **scene**: just hit the **save** button in the keypad on the bottom right, followed by the **scene** button. The numbered scene will

appear in the Scenes panel at top right, and you will be able to name it. To start work on another scene, hit the release button twice to clear your previous inputs. You should always release channels when you have finished with them, or they will end up being added inadvertently to subsequent scenes you save.

You can also create scenes by dragging channels from the channels window into an empty area of the scenes window next to it: you can add new channels to existing scenes in the same way. You can create and save as many scenes as you like.

Once you have created a scene, you can bring it up in several different ways. You can drag the scene from the scenes window onto a **playback fader** in the bottom left window. Moving the fader up brings up all of the channels in your scene to the value you stored for them, moving it down takes them all back to zero. Alternatively, you can drag and drop the scene onto a **user button** in the left hand panel. You can configure the button, by right clicking on it, to bring up your scene immediately or fade it in and out over a specified number of seconds.

A sequence of channels or a sequence of scenes, played one after the other, is called a **chase**. Just as you can create scenes from collections of channels, you can create chases from collections of channels (or scenes). If you drag channels from the Channels panel (or scenes from the Scenes menu) into an empty part of the chases window, you will automatically create a new chase. You can drag more things onto the new chase and they will appear in the order that you drag them - you can re-order the channels or scenes as you wish. Just as you did with your scenes, you can assign chases to user buttons or playback faders, and control the way in which they play back (such as how long each channel plays for, and the amount of time between channels) using the Input panel at the bottom right.

Let's say you have four channels 1, 2, 3, and 4 in your chase. The chase type you choose will determine its behaviour:

Repeat:	1 2 3 4 1 2 3 4 1 2 3 4…
Repeat Back :	4 3 2 1 4 3 2 1 4 3 2 1…
Bounce :	1 2 3 4 3 2 1 2 3 4 3 2 1 …
Random:	a random sequence
One Shot:	1 2 3 4 - then it stops running
One Shot Back :	4 3 2 1

If you have a chase cross-fading, when you start the chase it will fade up from nothing to the first step, then cross fade from then onwards. If you have the skip box ticked, when you start the chase it starts at step 1 then fades directly to step 2, so you don't have to wait for the first fade up to happen. For instance if you had a chase fading between colours, you can bring it up and get the first colour immediately, whereas without skip you would have to wait out the time of the first fade before the first colour was fully there.

Finally, **cues** are used to control progression between looks in a show manually. As with chases, scenes or channels (or chases) can be dragged into the cues window and located in a **cue stack**, which is a sequence of individual cues. The cue stack can then be allocated to a button, which can be used to control progress from cue to cue. The cue helper window can also be used to control progress between cues, and gives additional control over the transition between cues using the GO button. Every time you press GO it will move from the current cue to the next, using the timings you have set. If you want to re-order cues in the cue stack, you'll need to do this by re-numbering the cues (rather than by dragging and dropping). The cue stack always keeps the cues in order, so when you have re-numbered a cue it will be moved to the right place.

Cues can be set up with our without **tracking**. If a cue has tracking switched on, it will remember the values of scenes and channels in the previous cue and, if it doesn't have a new value for them, leave them as they are; or, if it does have a new value, fade to the new value. For example, if the previous cue in the stack had channel 10 at 100%, and the current cue does not have any details for channel 10, then with tracking switched on it will stay at 100%. If, on the other hand, the current cue had channel 10 at 0%, channel 10 would fade out. You can enable / disable tracking by selecting the tracking tick box in the cue. Without tracking, if the scene or channel isn't in the cue, it is set to zero on that cue.

Cues can also be set up to **follow** one another automatically, after a specified time. If one cue is set up to follow another automatically, obviously there is no need to hit the go button.

When you put a scene in a cue stack - i.e., when you assign it to a cue - the cue normally updates if you update the scene. If you don't want this to happen you can right click on the cue and copy it to **private**. This procedure decomposes the scene into its constituent channels and detaches the cue from the originally saved scene.

As with scenes and chases, cue stacks can be dragged and dropped onto user buttons and playback faders and operated in this way.

Channels in the Output View

Individual channels in the output view can take their values from different places, since channel values can be specified directly (using faders), in scenes, chases or cues. You can tell where the channel is getting its value by its colour in the output view.

YELLOW: Channel values set directly using a channel playback fader (either by right clicking on a channel from the channel window and selecting playback fader, or because you programmed a playback fader as a channel, or from the channels tab in playback mode. They all do the same thing: you can adjust any one of them and look in the other places, they will all be adjusted).

ORANGE: Channel values set from a SCENE that contains the channel, and has its scene value set via a playback fader (again right click on a scene and select playback fader or a playback fader that you have programmed).

LIGHT BLUE. Channel values set from a CHASE that contains either just the channel, or a scene that contains the channel. The chase must be running, or paused, and the chase value needs to be up on a playback fader.

DARK BLUE. Channel values set from a CUE that contains either a scene or is a private cue (i.e. contains all the channel data not as a link to a scene). The cue needs to be up on a playback fader (or a later cue with tracking).

Where the channels are configured (in the Channels window) as HTP (Highest Takes Priority) the value set for a channel is examined across all of these sources, and the HIGHEST value is used to set the output value for the channel. So if the channel playback fader is 50% and the scene is 60% then the output will be 60% (in ORANGE), if the scene is then changed to 40% then output will be 50% (and YELLOW). So to get a channel value at 0% in the output window ALL references to the channel must be at 0% across scenes, chases and cues.

Anything in the Output panel circled in red or light red is, as was explained in the previous section, locked into the **programmer**, and this over-rides all the other places the channel may be getting its value from, higher or not.

If a scene is contained in a chase or a cue, the channels in that scene will show LIGHT BLUE (for a chase) or DARK BLUE (for a cue). Chases always show up as LIGHT BLUE even if they are in a cue. Anything in the programmer always shows up as red or light red, regardless of what else it's in.

Note that you can set up channels as HTP or

Playback Buttons

Playback buttons can be configured in a number of different ways, and can be a very powerful way to run a show.

A playback button can be used to trigger a channel, a scene or a chase. By default the button is configured to be a flash button (see below), but can easily be configured in a number of other ways.

To set the playback button's target, make sure you are in record mode and, simply drag a target scene, channel or chase onto the button. If you drag multiple targets onto a button, each subsequent button will take on the next target in the dragged sequence.

The area surrounding the button, or buttons, receiving the dragged targets will highlight as you hover over them if you are able to configure them. If you attempt to drag more targets than there are buttons, you will not be able to drop them onto the button.

To configure a playback button, make sure you are in record mode and, simply **right click n the button and select configure**. If you are not in record mode, or the button has not been assigned a target, the configure menu item will not be selectable. You may also use this men to clear a target from the button.

Flash / Latch

If a button is configured as a flash button, it will turn the target (channel, scene or chase) on when pressed, and off when released. If it is configured as a latch button, it will turn the target on when pressed, and it will stay on until pressed again.

Timed

A timed button will turn itself off after the configured number of seconds. This can be used for instance to add a pre-determined amount of haze into the room.

Fade On & Fade Off

When a button is configured to fade on, turning on the button will bring the target value on over the configured number of seconds, and likewise if configured for fade off, then it will bring the target value off over the configured number of seconds.

If a button is configured for both Fade On & Timed, the timer starts from the moment the button is turned on, not the moment the fader on has finished.

On & Off Value

By default the on value is fully on (dmx value 255) and the off value if fully off (dmx value 0), you can however configure these values to be anything between 0 and 255.

Button Group

You can assign buttons to radio button groups. Only one button in a radio button group can be on at a time: if another button in that group is pressed on, all other buttons in that group are set to off (they fade off if this is set). This is useful for making sure that scenes and looks don't overlap when they shouldn't. When you put your mouse over a button, a popup window appears telling you which group it is in, and all other buttons in that group appear outlined in light grey (see below).
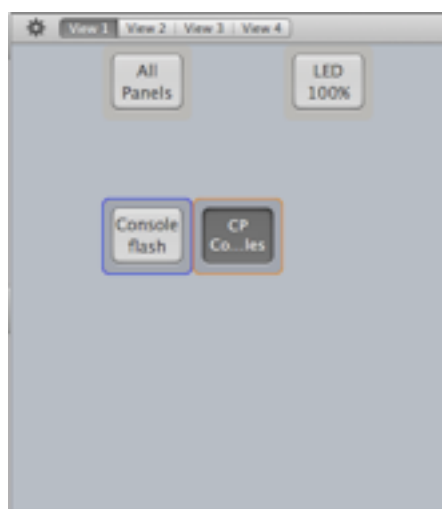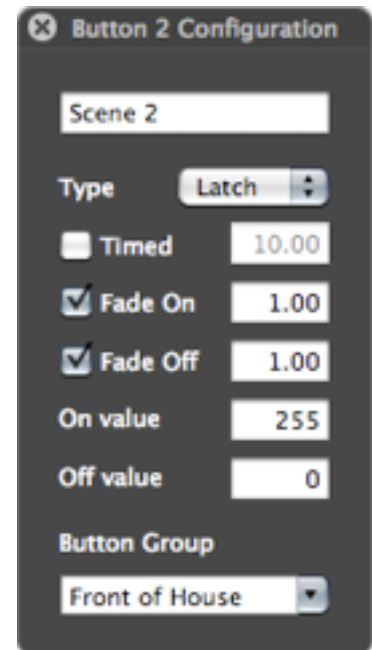
Output View

The output view allows you to see the current channel intensity output. If there are more channels that can be displayed in the size of the view you have allowed, then a scroll bar will be visible, and you can scroll to see the other channels.

Using the tabs at the top, you can view either DMX values (a value between 0, meaning off, and 255, meaning full intensity), or percentages (0 to 100%) displayed to 1 decimal place.

The actual channel intensity is based on the DMX value, so if you expect to see a channel at 50% intensity, it will actually be DMX value 128 (255 / 2 = 127, so when rounded this is 128), which will be displayed as 50.1% in the percentage view.

Programmed Channels, Scenes, Chases & Cues

The windows down the left hand side of the interface display all of the elements that can be used as targets for the playback buttons and faders.

In record mode you can select one or more rows, and drag them onto the playback buttons or faders to configure their targets.

To select several consecutive rows, simply click the first row and drag either up or down until all the required rows are selected. You will need to stop dragging and release the mouse button to finish selecting the rows.

To select several non consecutive rows, select the first row by clicking on it, and then holding down the command (Apple) key click on any additional rows you wish to select.

Once you have selected all the rows you wish, you can drag these rows sideways onto the buttons or faders.

Playback Faders

At the bottom of the interface you will find the playback faders. These are arranged in banks of 16 faders. The actual number of banks will depend on your license.

Each bank is accessed by clicking on the relevant bank tab. In addition, there is a special bank containing the master faders, this is located in a tab to the right of the playback faders view.

Each of the 16 faders within the playback bank can be assigned to any channel, scene or chase by dragging the relevant target from the target view onto a fader.

If you drag multiple targets onto a fader, each subsequent fader will take on the next target in the dragged sequence.

The area surrounding the fader, or faders, receiving the dragged targets will highlight as you hover over them if you are able to configure them. If you attempt to drag more targets than there are faders, you will not be able to drop them onto the faders.

Once configured, moving the fader will change the value for the configured target, which should be visible in the Output View.

By default the button below the fader is configured as a flash button for the fader, but as with the Playback Buttons, you can right click and configure it for many different uses.

If you have the optional motorised fader unit, selecting a new bank tab will sync the left 8 faders of the bank to the unit, and if you have 2 motorised fader units, the second unit will be synced with the right 8 faders in the bank.

The Master fader bank currently contains only the Grand Master fader, although this will also contain master faders for channels, scenes & chases.

The Grand Master fader is configured as the eighth fader, meaning that if you only have 1 motorised fader unit, it will still be accessible.

Helpers

Right-clicking on a chase gives you the option of bringing up a helper for that chase or cue. (You can also bring up the helper directly by pressing the relevant helper button at the top of the keypad.)

The chase helper allows you to set the step and cross-fade time for a chase on the fly, as well as allowing you to pause a chase and step through it manually. The <tap> button can be used by DJs to match the chase to the beat of the music: repeated tapping establishes the step time for the chase, and the BPM shows up on a Heads Up Display (HUD).
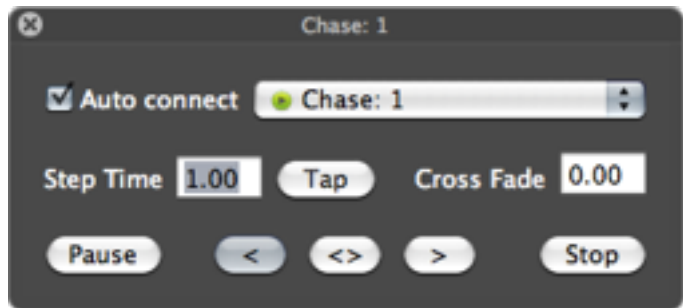
Using the Keypad

The lower right hand section of the playback window is a simple keypad. This keypad has different uses in record and playback mode.

Keypad Commands - Playback Mode

In playback mode you can use the keypad to set the value of one or more channel, scene or chase. This is done by entering a range of channels, scenes or chases.

As you enter a command with these keys it will be displayed in a HUD (Heads Up Display) floating above all other windows.

A range is defined as <start channel> [THRU] <end channel>, or in the case of a single channel can be shortened to just <start channel>, for example :

        4

is a single range containing just channel 4.

        1 [THRU] 5

 is a range containing channels 1, 2, 3, 4 & 5

        7 [THRU] 9

 is a range containing channels 7, 8 & 9

You can use the range modified keys + & - to combine multiple ranges together, for example

        1 [THRU] 5 + 7 [THRU] 9

 is a range containing channels 1, 2, 3, 4, 5, 7, 8 & 9

        1 [THRU] 9 – 6

 is a range containing channels 1, 2, 3, 4, 5, 7, 8 & 9

        1 [THRU] 20 – 5 [THRU] 18 + 15 + 30

is a range containing channels 1, 2, 3, 4, 15, 19, 20, 30

Each range can also be modified by prefixing it with either Scene or Chase, for example

        [SCENE] 1 [THRU] 3

 is a range containing Scenes 1,2,3 & 4

These prefixed rages can be combined together, for example

        1 [THRU] 5 + [SCENE] 1 + 7 + [CHASE] 1

is a range containing channels 1, 2, 3, 4, 5 & 7; Scene 1 and Chase 1

As special case is where you press the [THRU] key twice, this automatically expands to the possible value in the range, for instance if you have 48 channels:

```
10 [THRU] [THRU]
```

is equivalent to:

```
10 [THRU] 48
```

To set the value for the range simple enter <range> @ <value> Enter where <value> is a percentage, for instance

```
1 [THRU] 5 @ 50 [ENTER]
```

will set channels 1, 2, 3, 4 & 5 to 50% intensity

If you wish to set a specific DMX value (0 to 155) instead of a percentage simply prefix <value> with a 0, for instance

```
1 [THRU] 5 @ 0150 [ENTER]
```

will set channels 1,2,3,4 & 5 to DMX value 150.

The On key can be used as a short cut for @ 100 Enter, and the Off key can be used as a shortcut for @ 0 Enter.

The backspace key <- is used to delete the last key pressed, and the clear key is used to delete all keys pressed. When you press the clear key the HUD will fade out, still displaying the entered command, unless you start to enter a new command.

Also on the keypad is a blackout key, pressing the key will temporarily set all intensities to 0, its the equivalent of moving the Grand Master fader to 0.

Pressing blackout a second time will revert the intensities to their original values.

The Release and Solo keys are not used in playback mode.

Keypad Commands - Record Mode

In record mode the keypad is an alternative to using the drag and drop method of creating new scenes and cues.

The keypad allows you to directly affect the values of channels stored in the programmer. The programmer has 2 distinct sets of channels, the first are the Tier 1 channels, these are generally the latest channels that have been added to the programmer, and are the default for programmer operations. In addition to the Tier 1 channels, there is a second Tier of channels (Tier 2), this Tier of channels are ones that are still locked into the programmer, but are not currently being affected by changes being made to the programmer.

Any channels locked into the programmer can not be affected by playback faders. They need to be explicitly released from the programer before they can be used for playback.

All channels that are locked into the programmer will be red on the channel output view (channels 11-26 in the screenshot below).
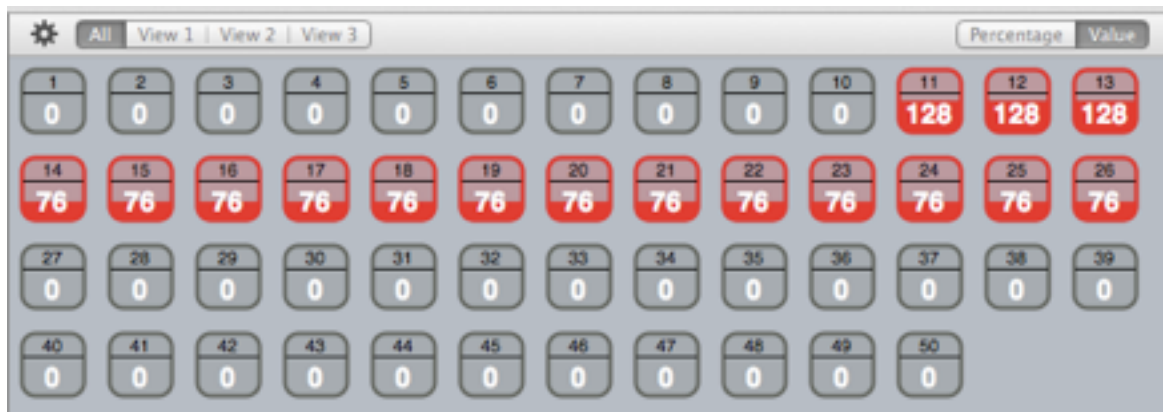
The first important concept of keypad programming is that every command is an operation on a collection of channels. This collection of channels could simply be a single channel, or multiple channels. The collection is defined on the command line by using the numbers 0 - 9, and the following keys: [THRU] [+] [-].

[THRU]

The [THRU] key allows you to specify a range of channels, for instance:

    1 [THRU] 5

would be a range of channels comprising of channels 1, 2, 3, 4, 5.

It does not matter if a range is specified in reverse, for instance:

    5 [THRU] 1

is exactly the same as

    1 [THRU] 5

[+]

Multiple channels or ranges can be added together to form the collection, to do this the [+] key is used. Fr instance:

    1 [+] 2 [+] 3 [+] 4 [+] 5

specifies channels 1, 2, 3, 4, 5.

You can also add ranges of channels together for instance:

    1 [THRU] 5 + 8

would specify channels 1, 2, 3, 4, 5, 8.

[-]

You can also remove channels of ranges from the collection by using the [-] key, for instance:

    1 [THRU] 5 [-] 3

specifies the channels 1, 2, 4, 5

It's possible to build up a complex collection of channels by companying the [THRU], [+] & [-] keys, for instance:

    1 [THRU] 5 [+] 10 [THRU] 20 [-] 12 [THRU] 15

would be channels 1, 2, 3, 4, 5, 10, 11, 16, 17, 18, 19, 20

The channels are added and removed in the order specified in the command line, for example:

```
1 [THRU] 5 [-] 12 [THRU] 15 [+] 10 [THRU] 20
```

would be channels 1, 2, 3, 4, 5, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

In other words the [-] 12 [THRU] 15 in this case has no effect as the channels being removed have not yet been set.

[SCENE] modifier keys

By default the range assumes you are entering a channel number, but you can precede a number with the range modifier key [SCENE] to specify that you are referring to a scene number and not a channel number. For instance:

```
[SCENE] 1 [THRU] 3
```

refers to scenes 1, 2, 3,

```
[SCENE] 1 + 2
```

refers to scene 1 and channel 2.

Setting channel values in the programmer

The following additional keys are used when setting values of channels in the programmer:

```
[@] [ON] [OFF] [ENTER]
```

In the following examples <collection> refers to one or more channels or scenes as defined above.

The following command is the basis for setting values in the programmer :

```
<collection> [@] <value> [ENTER]
```

This sets all channels in the <collection> to the value, as a percentage, of full brightness. <value> can be any whole number from 0 to 100.

Also any channels currently in Tier 1 will be added to those channels in Tier 2, and all channels specified in <collection> will become Tier 1.

If you wish to specify a specific DMX value for a channel as opposed to a percentage, then you may prefix <value> with a 0, for instance is value is 0100 then it does not mean 100%, it means DMX value 100. a DMX value can be between 0 and 255

If collection includes a scene all the channels in the scene will be set at percentage of the individual value of each channel in the scene. For instance if scene 1 contains channel 1 @ 50% and channel 2 @ 100% then the command:

```
[SCENE] 1 @ 50 [ENTER]
```

would result in the channel 1 being set to 25% and channels 2 being set to 50%.

NOTE: Scenes are processed before channels, so if <collection> includes a channel that is also included by a scene in the collection, the channel will be set to <value> and not to the scene value.

NOTE: Scenes are processed in numerical order, and not in the order presented on the command line, meaning that if 2 scenes contain the same channel number at different values, then channel will be set to the value found in the scene with the highest scene number.

In the event that you remove a scene from a collection, the scene will be treated simply a collection of channels, for instance (assuming scene 1 contains channels 1 & 2):

```
1 [THRU] 10 [-] [SCENE] 1 @ 50 [ENTER]
```

would result in channels 3,4,5,6,7,8,9,10 being set to 50%

Shortcuts

Sometimes it's nice to save a little time. If you want to set the percentage of your <collection> to 100 you can simply press the [ON] key instead of [@] 100 [ENTER], and if you want to set the percentage of your <collection> to 0 you can similarly press the [OFF] key instead of [@] 0 [ENTER].

In addition [@] [@] is also a substitute for [@] 100, so

```
1 [@] [@] [ENTER]
```

 is a valid command.

If you want to simply update the values of all the channels in Tier 1, for instance you set them to a value, but now feel they should be a little brighter, you can simply miss out the <collection> part of the command, for example

```
[@] 50 [ENTER]
```

would set the intensity of all Tier 1 channels to 50%. NOTE that the programmer has no concept of scenes, so if you loaded a scene into the programmer, it is now represented purely as channels, and all channels will be updated to the new intensity, they will not be updated as the intensity of the scene they were in.

If you want to affect all channels in the programmer (Tier 1 & Tier 2) then you can use the shortcut [+] [+] to specify the <collection> of Tier 1 and Tier 2 channels. For instance

```
[+] [+] [@] 50 [ENTER]
```

will set all channels in the programmer to 50%. All channels will be Tier 1 after this command has executed.

If you want to change the values of channels in the programmer respective to their current values then <value> should be specified with a leading [+] or [-]. For instance:

```
[@] [+] 20 [ENTER]
```

will add 20% intensity to every channel, that is to say if channel 1 is at 50% and 2 is at 60% after the command channel 1 will be at 70% and channel 2 will be at 80%.

NOTE: If a channel intensity would be taken over 100% it will be set to 100%, and if it would be taken below 0% it will be set at 0%. This means that if a channel is 90% and you add 20% and then remove 20% it will now be 80% and not 90%.

Moving channels in the programmer

Sometimes you will want to lock a channel into the programmer with its current value, for instance a channel has an intensity because of a playback fader, you simply enter the channel or collection and press [ENTER], For example

```
    1 [THRU] 5 [ENTER]
```

Will move channels 1 ,2, 3, 4, 5 into Tier 1 in the programmer. This is also a convenient way to swap channels from Tier 2 to Tier 1. As before any channels in Tier 1 will be moved to Tier 2 before the command is executed.

If you specify a scene in the <collection> of channels, the channels in that scene will be added to Tier 1 regardless of the intensity set in the scene.

There are times when you might want to add channels to Tier 1 without the current Tier 1 channels moving to Tier 2. This can easily be accomplished by prefixing the <collection> with the [+] key. For instance:

```
    [+] 5 [ENTER]
```

will add channel 5 at its current intensity to Tier 1

```
    [+] 5 [@] 50 [ENTER]
```

will add channel 5 at 50% intensity to Tier 1

```
    [+] [SCENE] 1 [ENTER]
```

Adds all channels in scene 1 to the Tier 1 with their current intensities

```
    [+] [SCENE] 1 [@] 50 [ENTER]
```

Adds all channels in scene 1 to Tier 1 with the channels values at 50% of their respective scene intensities.

If you want to move all channels in Tier 2 to Tier 1 you can do this with the following shortcut:

```
    [+] [+] [ENTER]
```

Save a scene from the programmer

When you are happy with the current look in the programmer, and you want to save it as a new scene, simply press the [SAVE] button, followed by the [SCENE] button. This will save all Tier 1 & Tier 2 channels into the new scene. All channels will remain in the programmer as they were before you saved the new scene.

Any channels not locked into the programmer will not be saved into the scene.

You may also add [SAVE] [SCENE] at the end of another command, such as :-

```
    1 [THRU] 5 [@] 50 [SAVE] [SCENE]
```

This execute the command as normal, and then save ONLY the Tier 1 channels into a new scene.

Update a scene

There are several ways you might want to update a scene. You might want to add a new channel into a scene, or update the value of channels already in a scene. You might also want to remove some channels from a scene.

Pressing [UPDATE] [SCENE] <number> [ENTER] will take all the channels currently in the programmer and add or update the channels in the scene. So if the programmer contains channels

not in the scene, then will be added to the scene. If it contains channels already in the scene they will be updated to the new value in the programmer.

Any channels in the scene and not in the programmer will still remain in the scene. To perform the same update on a scene as above but also remove any channels in the scene that are not in the programmer, simply enter the following command [UPDATE] [SCENE] <number> [RELEASE]. This releases all urn used channels from the scene.

As with the same command, you can append the update command sequence to the end of an existing command, and it will execute the command, and then update the scene with Tier 1 channels. This can be done with or without RELEASEing unused channels.

Finally you might just want to remove some channels from a scene. You can do this by specifying a channels or collection of channels and performing the update release, for example :-

        1 [+] 5 [UPDATE] [SCENE] 1 [RELEASE]

Will remove channels 1 & 5 from scene 1.

HINT: The update scene command will actually take a range of scenes, so for instance if you accidentally programmed the housee lights into all your scenes you can easily remove them like this (assuming house lights are channels 50 to 55) :-

        50 [THRU] 55 [UPDATE] [SCENE] 1 [THRU] [THRU] [RELEASE]

Remember [THRU] [THRU] is a shortcut to mean [THRU] <end of range>, so channels 50 to 55 will be removed from all scenes.

This also works in the standard update, for instance if you wanted to add channels 1 & 3 at 100% to scenes 3 to 8 you could execute the following command :-

        1 [+] 3 [@] [@] [UPDATE] [SCENE] 3 [THRU] 8 [ENTER]

Remember [@] [@] is a shortcut for [@] 100.

Save a cue from the programmer

A cue exists with a specific cue number, and can be in the form n.nnn, for instance 10.103. By default cues are stored in the default cue stack (stack 1). It is possible to store a cue into a different cue stack.

To save the current look from the programmer into a scene simple press [SAVE] [CUE] <number> [ENTER]. <number> is optional, and if not specified will use the next cue number from the default cue stack. The programmer will intelligently guess the correct cue number to use based on the current cues in the stack, and the last cue number saved by the programmer.

If <number> is specified, it must be a unique number in the cue stack, and can optionally include up to 3 digits after a decimal place. In addition it can also be preceded with a cue stack number in the following manner: 2 [/] 10 This would be cue 10 in cue stack 2

If the optional cue stack number is not specified, it will default to the last cue stack to be used via the command line, or cue stack 1 in the event no cue stack has ever been used via the command line.

You can also optionally specify an up time for the cue by appending [+] <time> to the save command. In the same way you can specify a down time for the cue by appending [-] <time>

You may also add the [SAVE] [CUE] command sequence to the end of another command, in this case it will execute the command, and save ONLY the Tier 1 channels into the new cue.

Using a scene as a cue.

A cue can be created with the contents of scene. This has the advantage of being able to use a scene in multiple places, and a single update will update the every place that scene is used. This can be done with the following command :-

```
[SCENE] <number> [SAVE] [CUE] <number> [ENTER]
```

Update Cues

Updating cues works using the same principles as updating a scene.

Running a cue from the command line.

To run the next cue in the current cue stack simply press the [GO] button. Each time you press the [GO] button the next cue in that current cue stack will be run. When there are no more cues to run, the [GO] button will remove the last cue.

If you want to run a cue in a different cue stack, simply enter the cue stack followed by the [/] button before pressing [GO].

```
<cue stack> [/] <cue number>
```

For example to run the next cue in stack 2 you would use the following command :-

```
2 [/] [GO]
```

If you want to run a specific cue in the current stack you can enter its cue number followed by [GO], for instance to run cue 20 you would enter :-

```
20 [GO]
```

If you want to run a specific cue in a different cue stack, simply enter the stack and the cue number for instance to run cue 10.9 in stack 3 enter :-

```
3 [/] 10.9 [GO]
```

If you miss out the <cue number> it will automatically go to the next cue in the stack, e.g. 2 [/] [GO] will run the next cue in stack 2.

You can also leave out the <cue stack> and following [/] to mean running in the current (last used) cue stack: so, if you last used stack 2 then

```
20 [GO]
```

would run cue 20 in stack 2, or just [GO] would run the next cue in stack 2 (or whatever the previously used cue was).

Patching from the command line

You can also use the keypad to patch and re-patch channels to DMX addresses.

To patch, in record mode **hit the p key** (for patch). E.g.

        p <channel> [@] <DMX Address> [ENTER]

<channel> can be a range of channels using [+] [-] [THRU] syntax. Where multiple channels are selected, the DMX address will be simply incremented, so there must be enough DMX addresses free in a contiguous block for the command to be valid.

<DMX Address> can also be multiple addresses, and in this way you can multi-patch onto a channel. If multiple addresses are selected with a range of channels each is considered to be the start of a contiguous block, and each must have enough free channels to be valid.

<DMX Address> can be specified in the full format of <universe> [/] <address> or in a condensed format of the currently selected universe. Once a universe has been selected it will remain the default universe for patching.

        p 1 [@] 50 [ENTER]

Patches channel 1 to DMX address 50.

        p 1 [THRU] 5 [@] 50 [ENTER]

Patches channels 1 to 5 to DMX addresses 50 to 54.

        p 1 [@] 5 [+] 20 [ENTER]

Patches channel 1 to DMX address 5 and DMX address 20.

        p 1 [@] [+] 20 [ENTER]

Adds DMX address 20 to the patch on channel 1. This will work even if channel 1 is not yet patched (allowing a range of channels to be multi patched even if a channel in the range if not patched to anything yet).

        p 1 [THRU] 5 [@] 50 [+] 100 [ENTER]

Patches channel 1 to DMX address 50 and DMX Address 100, Patches channel 2 to DMX address 51 and DMX address 101 etc.

To automatically find a DMX address you can use the [NEXT] key, for example:

        p <channel> [@] [NEXT] [ENTER]

will find the first block of DMX addresses and patch them to <channel>;

        p <channel> [@] [50] [NEXT] [ENTER]

will find the first block of DMX addresses starting at 50 or greater and patch them to <channel>;

        p <channel> [@] [2] [/] [NEXT] [ENTER]

will find the first block of DMX addresses on universe 2 and patch them to <channel>.

You can specify range multiplier after the DMX address. This allows you to patch every nth DMX address.

        p 1 THRU 5 [@] 100 [.] 5 [ENTER]

Will patch channels 1 to 5 at DMX addresses 100, 105, 110, 115, 120

To un patch a channel you simply patch it to DMX address 0, e.g :

```
p 1 [@] 0 [ENTER]
```

If you try to patch a channel that it already patched, the command will fail (unless you are adding a multi patch with the [+] key). To replace a patch you can simply use the multi patch syntax to un patch first:

```
p 1 [@] 0 [+] 50 [ENTER]
```

will re patch channel 1 to address 50.

In the case of a range of channels the 0 is treated in a special way that un-patches every channel in the range, and in not that start of a block, for instance:

```
p 1 [THRU] 20 @ 0 [+] 50 [ENTER]
```

will re patch channels 1 to 20 to Addresses 50 to 69.

Keyboard Shortcuts

0 - 9   =   0 - 9

Save   =   A

Update   =   U

Scene   =   S

Chase   =   C

Cue   =   Q

Thru   =   T

@   =   @

<-   =   Back Space

Clear   =   Esc

Blackout   =   B

Last   =   L

Release   =   R

Solo   =   X

On   =   O

Off   =   F

Enter   =   Return

Go   =   G

Using Art-Net

As of Version 1.1, Chameleon supports the Art-Net protocol for sending DMX over ethernet using TCP/IP. Art-Net(TM) is Designed by and Copyright Alderamin Group Ltd.

Our implementation of Art-Net allows you to send up to 4 DMX universes (2048 channels).

The Mac you have running Chameleon needs to have an ethernet interface configured to run on the same IP network as your Art-Net nodes (interfaces or fixtures). This is typically a Class A IP address range required in the range 2.0.0.0/8, which will need to be set up on whatever ethernet interface is being used, together with a subnet mask of 255.0.0.0. (You can do this via Network Preferences in OS X, opting to manually configure IPv4.) Art-Net to DMX interfaces connected to a correctly configured network normally self-assign an appropriate IP address.

To configure Art-net within Chameleon, in the DMX interface patch preferences, click on the Art-Net button. This opens a configuration sheet, select the IP address of the interface you want to use from the pull down list.

Next, select the Art-Net Sub-Net you wish to broadcast on.

Then, select the universe addresses (all 4 must be different). You need to configure all 4, even if you're only going to use one.

Once done, the 4 Art-Net ports (Universe 1 - 4 from the config screen) appear as interfaces that you can patch as normal.