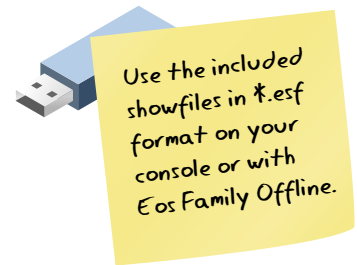


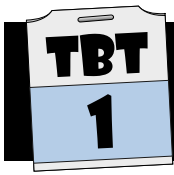


TEA BREAK TUTORIALS

For Eos-Family Software Version 2.1

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Power-on and Navigation



Power-on



Press the power button on the front panel - the console will begin its boot sequence. Depending on how the console has been configured, you may have to press or click the "Primary" button to begin. This area above the main keypad (or on an external monitor on Ion) is referred to as the Central Information Area, or CIA.

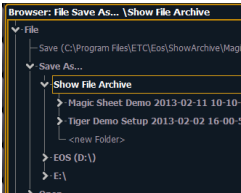
Save



Activate the Browser, which allows you to "get to" many areas of the desk that don't have dedicated buttons. Use the arrow keys and **[Select]** to navigate.

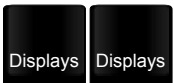


Use the star icon to identify the Browser as your "Favourite" - the default display in the CIA.



- Use the level wheel and/or the **[Page Up]** / **[Page Down]** keys to navigate to **File**
- Use the **[Page Right]** key to open submenus to get to **Save As | Show File Archive**. Use **[Select]** to save the current show, calling it "Tutorial Backup". This show is now saved on the internal hard drive.
- Re-select the Browser. Use the **[Page Left]** key to navigate back to **File | New**. Use the **{OK}** button to start a new show.

Open Base Showfile



Activate the Browser again and navigate to **File | Open | (your USB memory stick)**, and open the **Eos Family TBT 01 Power-on and Navigation.esf** (Eos-Family Show File) for this tutorial. This will be indicated in future tutorials with the icon to the right showing the file to load before starting.



Navigation



You are now in **Live** mode - this is the normal mode for controlling lights. Note the **Live Tab** is now active on an external monitor - you can see the gold tab title and border. Tabs in the Eos Family work much like those on a web browser or mobile phone - the active tab receives any commands you type.



Press **[Format]**. Many displays have multiple formats. In Live, you can choose Live Channel or Live Table. Ensure that the Live Channel (aka summary or tombstone) format is active.



Press **[Tab]**. The Playback Status tab is now active (it has a gold border). There are 3 different formats on this display. *Note that throughout this tutorial series, the Eos Ti's button style will be shown - this may differ on your console.*



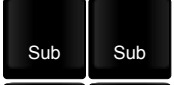
Pressing **[Live]** puts you back in Live mode.



In channel displays, using **[Page Up]** and **[Page Down]** will move onto the next page.



Toggling **[Scroll Lock]** on will cause the same paging keys to now only move by one row.



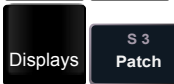
Press **[Sub]** twice in rapid succession. Pressing a record target (anything we can record to) button twice in this manner brings up a list of that record target type - in this case, submasters - in a new tab.



You now have a list of all Groups, again in a new tab.



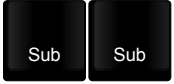
Pressing **[Live]** puts you back in Live mode.



The Patch display is opened in a new tab. Note that the tab numbers increase whenever you open a new one.



Holding **[Tab]** and typing a number will take you directly to that tab - in this case, Live.



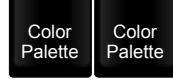
The submaster list is now active again. Note that as this tab was already open (but not active), a new tab was not created - the focus was merely changed to the submaster list.



Holding **[Tab]** and navigation arrows will move tabs between displays.



You now have a list of all Focus Palettes.



You now have a list of all Color Palettes. Note that some tabs recycle the same tab as an existing display. This is also true of Live/Blind.



The Color Palette list tab is now closed. You can close any tab by focussing on it (using any of the methods above) and pressing **[Escape]**. Note that Live/Blind and Playback Status cannot be closed.



Holding **[Shift]** and pressing **[Tab]** will close all open tabs except Live/Blind and Playback Status.



Holding **[Format]** and using the wheel will zoom your active display.



Holding **[Help]** and selecting another key will put a short description of the key onscreen in the CIA.

Don't forget to load this show file first!

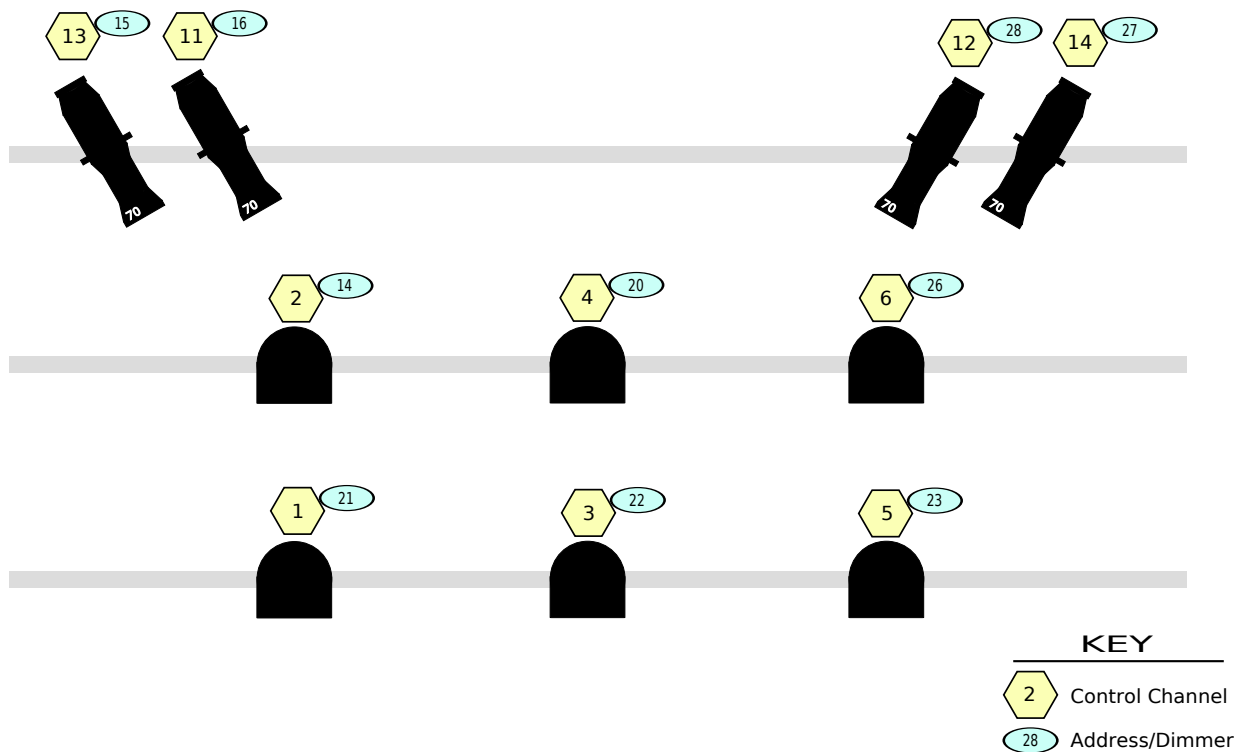
Introduction

Patching is the process of assigning which channel/fader controls which dimmer or dimmers. Although you can work with a 1-to-1 patch (where the channel and dimmer number are the same), it is often useful to group certain channels together in an easier-to-remember fashion. You might group toplights, crosslight, LX1 warmers, LX4 backs, etcetera.

In the Patch display, you can choose between two different formats: by-channel or by-address (dimmer). This allows you to quickly find the information you want as well as allowing you to patch "whichever direction" your information is organised.

A channel can contain multiple dimmers - each of these will be allocated to a new "part" in Patch. A given dimmer, however, can only be assigned to one control channel. All dimmers in a channel will be driven to the same level in Live.

Take, as an example, this small lighting plot. It contains 6x Source Four PARs as toplight and 4x Source Four 70° profiles with a breakup pattern.



You can see that although the dimmers are assigned seemingly randomly (due to which plug socket was closest), control channels 1-6 are the downlights and 11-14 are the breakup pattern.

Unpatched channels (channels without a dimmer assigned) can still be set and recorded in Live. Deleted channels, on the other hand, cannot. Some users might prefer to delete all channels first, then only patch those that exist in the rig.

Note: The above assumes that the installation is dimmer-per-circuit. This simply means that there is no hard-patch bay, but that there is a physical dimmer for each and every individual circuit. With a patch bay, the console patching operation is identical - you will just have to also create a circuit-to-dimmer schedule for your hard patch.

Patching Conventionals



Use the **{Patch}** softkey after hitting **[Displays]**. This will take you to a mode where you define your softpatch: what dimmers are controlled by each channel. If available, you can also double-hit the **[Address]** key.



Press the **[Format]** button. Most displays have multiple formats - different ways to see the data. In Patch, you can toggle whether your list is sorted by Address (dimmer) or Channel. Leave the display sorted by channel.



Channel 2 is patched to DMX address 14. It is automatically given a type of "dimmer".



Channel 4 is patched to address 20.



Channel 6 is patched to address 26.



Channels 22-24 are patched to 3 contiguous dimmers: 17, 18, and 19.



As above, channels are patched, but the **[Offset]** of 2 selects every other channel in the range. This is a quick method to patch multiple channels.



The display changes to show Address in the first column, channel in the second. More importantly, the patching syntax changes so that the first number you enter is the address, and that is applied to the channel that you now type.



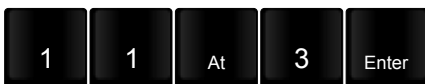
Address 1 is patched to channel 11 - this is the opposite logic to above.



Address 2 is also patched to channel 11. Two parts now appear in channel 11 - one to hold each address (dimmer).



The display and patch syntax reverts to channel first, then address.



Address 3 is also patched to channel 11. Three parts now appear in channel 11 - one to hold each address (dimmer). Note that existing addresses are not removed.



Address 3 is removed from channel 11, and again there are only two parts. Note that deletion normally requires a confirmation.



Address 2 is removed from channel 11. There is again only one part.



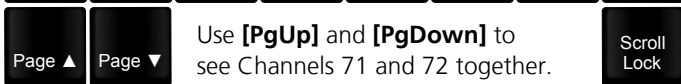
Channel 11 is now patched to address 16 instead of 3. In this syntax, **{Replace}** takes the place of **[At]**.



Channel 71 is patched to address 204 on DMX/SACN universe 3 (an external Gateway would be required).



Channel 72 is patched to address 1232 (address 208 on universe 3).



You may need to toggle **[Scroll Lock]** - this toggles whether the arrow keys move by row or page.



Pressing **[Data]** once shows addresses in long address format (see blue text at the top left of the tab)



Press again to show addresses by universe (Port/Offset)



Press again to show addresses in the format in which they were typed.



The command **[At][Enter]** signifies "remove data". As such, channels 71 and 72 are now unpatched, but the type is not changed.



Channels 7 through 10 are deleted. Note that this, unlike simply unpatching, will remove any and all show data for this channel and also make it unavailable for selection in Live/Blind.

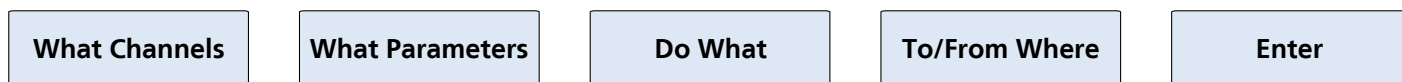


Use the **{Swap}** softkey to quickly change the patch information between two channels, using the syntax: **[X]{Swap}[Y][Enter]**. Also use the **{Unpatch}** softkey to see how it differs from **[At][Enter]**.

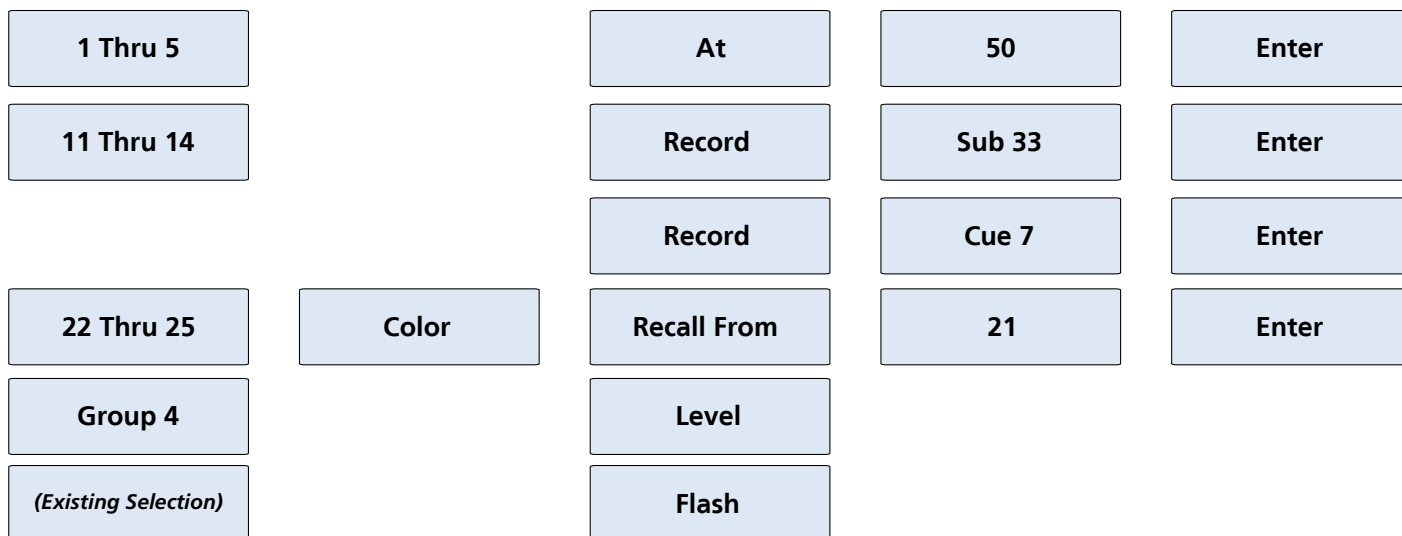
☑ = Your turn!
These exercises help ensure that you understand the concepts - this isn't just data entry!

Command Structure

Eos family consoles are command-line driven desks. As a general rule, the command structure is:



In many cases, not all of the command components are required. For example:



You will find that most if not all commands are variations on this structure.

Selective vs. Full Recording

Two primary methods of recording are supported - Selective and Full.

Selective recording simply means that a channel selection is provided before the **[Record]** command. This is often used when recording submasters, palettes, or other non-cue information. With this method, only selected channels are placed into the target (Cue, Group, Sub, Palette, etcetera). Existing information for those channels will be overwritten, but other channels that already have data will not be affected.

Full recording means that no channel selection is provided before the **[Record]** command. A simple ruleset exists for which channels will then be included in the target:

- Channels above zero
- Channels that have moved to zero
- Channels tracking at zero
- Channels with manual information

As a general rule, this means that you record what you see - this is very commonly used when recording cues. With a terminated command line (look for the **◆** symbol), **[Record]** will clear your existing channel selection.

Auto Playback on Record

Eos-family consoles default to "Auto Playback on Record". This simply means that when you record a cue, that cue is now active in your playback - there is no need to "release" manual control channels.

Note that this behaviour happens only with a Full record - you will still have manual levels onstage when using selective recording.

Manual Control

Live Go to Live mode to control lights. Channel 1 goes to Full (note that **[Full]** is not self-terminating). **1 At Full Enter**

2 + 3 At 3 Enter 2 and 3 go to 30%.

At 3 3 Enter 2 and 3 (your last selection, still on the command line) goes to 33%

Shift & + Shift & + 2 and 3 go to 43%, then 53% (the level to increment can be modified in the Setup menu). **EOS GIO + % + %**

4 At At 4 goes to Full. Note that Enter is not required, as **[At][At]** acts as a termination. This brings you to a definable "level", which can be changed in the Setup menu. **EOS GIO Level**

5 Thru 6 At 5 Enter 5 through 6 go to 50%.

1 1 Thru 1 4 - 1 3 At 0 5 Enter 11 through 12 and 14 go to 5%.

6 Out 6 goes to 0%.

Recording

1 Thru 2 Record Group 1 Enter 1 through 2 are recorded as Group 1. This is a "selective record", as we provided a channel list before the **[Record]** command.

Record Cue 1 Enter Cue 1 is recorded with a time of 5 seconds. This is a "full record" - any terminated channel selection is automatically cleared with **[Record]**. Cue 1 is now active in the master playback.

Cue 1 Time 3 Enter Cue 1's time is changed from 5 (the default) to 3 seconds. Note that **[Cue][1]** is optional, as 1 is the current cue and therefore assumed.

5 Thru 6 At 1 Enter 5 through 6 go to 10%.

2 + 3 Recall From 1 Enter 2 and 3 go to Full, the level of channel 1. Note that you could also recall from another cue as well: **[Recall From] [Cue] [x]**. Double-hitting **[Recall From]** will post **[Recall From] [Cue]** to the command line as well.

Record 2 Time 3 Enter Cue 2 is recorded with a time of 3 seconds. It is now the active cue in the playback.

Time 4 Time 8 Enter Cue 2's time is changed from 3 (the previous command) to have a 4 second upfade and an 8 second downfade. **[Time] [4] [/] [8] [Enter]** will also work.

Record Sub 2 Enter Submaster 2 is recorded. This must now be loaded to a fader - load this to fader 2. (See figure to the right)



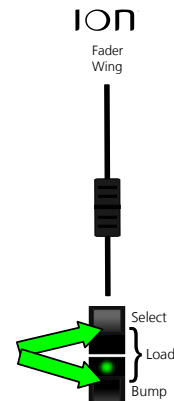
Bring Sub 2 to full, then back to 0. As submasters are HTP with cues, you will not see any changes onstage - Sub 2 is not taking levels any higher than those provided by Cue 2.

Go To Cue 0 Enter

The main playback is reset to the beginning, and intensities are faded out.



Again bring Sub 2 up and down - this time you should see changes, as there are no cues active.



Clear the command line and practice loading Submaster 2 to different faders. **[Shift]&[Load]** will unload. Also record a few more subs, noting the difference between full- and selective-recording.

Go To Cue

You can have up to 999 cue lists containing up to 9999 cues. These cues can be numbered between 0.01 and 999.99. Each time the **[Go]** button is pressed, the next cue in the "stack" is executed. Broadly speaking, in most theatre applications only one cue list is used for the main programming of the show.

It is useful to know about the concept of Cue 0 (zero). Cue 0 is the beginning of the cue list. The command **[Go To Cue] [0] [Enter]** will return you to this point, making the first cue in the stack the pending cue. Assuming there are no submasters or Park levels outputting, you will also have a blackout - Cue 0 contains no levels. Just as you can go to Cue 0 with the above command, you can just as easily jump to any other cue in the list - foreexample, **[Go To Cue] [3] [Enter]**. Note that the time to fade to this cue is dictated by the "Go To Cue Time" in the Setup menu, not the time of the cue. If you do want to use the cue's stored timing, you can append the **[Time]** command - **[Go To Cue] [2] [Time] [Enter]**. If you want to temporarily over-ride the Go To Cue time, you can append a time into the command - **[Go To Cue] [2] [Time] [1] [Enter]**.

Stop/Back

You will notice that there is only one button for both Stop and Back. If there is an active fade/transition happening onstage, the first press of this button will Stop (pause) the fade, and the second will go back to the previous cue.

If there is no active fade, the first press will go back to the previous cue.

Editing

One of the more common activities in lighting programming is making edits to existing cues.

It is important to know that changes that you make in Live mode will result in manual levels. If you want to keep these changes, you must remember to use the Update feature - this will automatically apply the changes to the active cue and also include any tracking. You can use the **[Update] [Cue Only] [Enter]** command to ensure that no changes track forward, if this is desired. Tracking is discussed in much greater detail in Tutorial 13.

Changes made in Blind will be applied immediately. There is no need to update - once a change is made, it is done, including any tracking. If you do not want to track changes forward, or if you are not sure, you can again use the **[Cue Only]** key. For example - **[1] [At] [2] [5] [Cue Only] [Enter]**.

Blind Spreadsheet Format

In Blind mode, there is a third format called "Spreadsheet". This format allows you to see the levels and tracking across multiple cues. This is often a useful tool to determine when a channel comes in or changes.

Go, Stop/Back, and Go To Cue in Blind

It is important to remember that there are a few commands that will still happen "Live" even if you are in Blind mode.

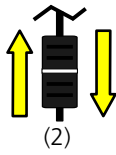
- **Go**
- **Stop/Back**
- **Go To Cue**

A common mistake is to use **[Go To Cue]** in Blind in an effort to see that cue. Instead, the command **[Cue] [x] [Enter]** or **[Next] / [Last]** should be used.

Playback



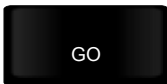
The main playback is reset to the beginning, intensities are faded out.



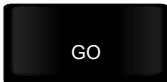
Bring submaster 2's fader up and down. Notice the levels fading in and out in **yellow**.

- Red levels** indicate manual instructions - Live commands not yet recorded
- Blue levels** indicate that levels are higher than the previous cue
- Green levels** indicate that levels are lower than the previous cue
- Magenta levels** indicate that levels are the same as the previous cue (tracking levels)
- White levels** indicate that levels are the same as the previous cue (blocked levels)

Some Mnemonics	
Yellow	sub marine
Blue	like the sky
Green	like the grass
Magenta	Purple Rain is a track by Prince *
Red	Have you read the manual ?



Cue 1 is faded in over 3 seconds.



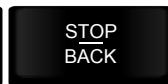
Cue 2 is faded in with channels moving up over 4 second and down over 8 seconds



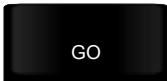
Cue 1 is faded in over 1 second, the default Back Time in Setup



Cue 0 (the beginning of the stack) is faded in over 1 second, the default Back Time in Setup



Cue 1 begins to fade in, then pauses



Cue 1 continues to fade in, and Cue 2 fades on top of it.

Live Editing



Go to Live.



Channel 1 goes to 10%.



2 and 3 go to 53%. **[At][Enter]** means "remove information", which will cause these channels to track (inherit levels) from the previous cue.



Channels 1, 2 and 3 are updated into cue 2.

Blind Editing



Go to Blind. Note that the display background has changed as a reminder that you are in Blind, where the live output of the desk is not affected, and edits happen immediately (recording/updating not required or possible).



Cue 1 is now the cue being edited



Cue 2 is now the cue being edited



4 is now at 50% in cue 2 - remember, no record or update is needed (or even possible).



Cue 1 is now the cue being edited.



2 is now at Full in both cues 1 and 2. This is because the Eos Family are tracking consoles - if a channel is at the same level in 2 cues in a row, and you change the level in the first one, it will track through to the second (and on until a level change or a block is encountered).



3 is at Full in cue 1, but has not tracked through to cue 2, because of the **[Cue Only]** command - 3 is still at 53% in cue 2 (and is shown in green as it is move instruction to a lower level).



Go back to Live and make some more edits to cues, practicing using different command-line structures and shortcuts. Remember to update these changes.

Also make some changes in Blind, remembering to use **[Next]**, **[Last]**, and **[Cue] [x]** to navigate.

* Prince is from Minnesota, a beautiful state in the north of the USA. Minnesota also has lots of grass and frequent blue skies, but few (if any) submarines.

Groups

Groups on the Eos Family, unlike some other lighting desks, only contain a list of channels - they do not store levels. Groups can largely be considered a selection tool - they are not a tool for referencing.

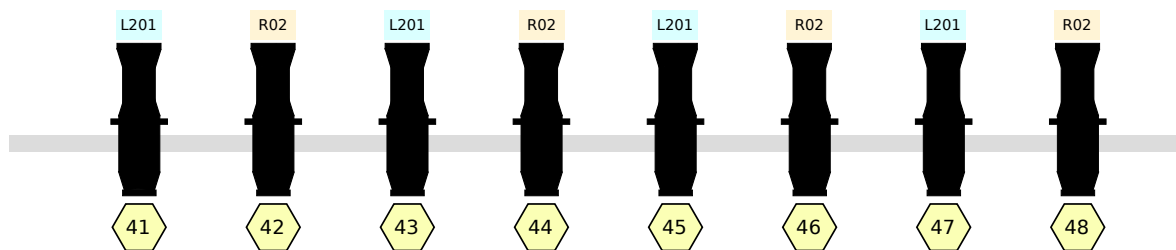
For example, here are some Groups:

Group 1	Downlights	1 > 6
Group 2	Breakup	11 > 14
Group 3	Backlight Scrollers	21 > 35
Group 4	Specials	71 > 74
Group 5	Cyclorama	31 > 46

As you can see, there are no levels, just channel numbers.

It is also important to know that Groups are used at selection-time only. If you later make changes to a Group, it will not affect existing Cues/Subs/other references.

Groups also store the order in which they are created. This can be useful, for example, when using Groups in an Effect or rig check. For example, you might have cool and warm FOH washes from LX1. You might want a few different Groups to select them, based on what you are trying to do:



Group 41	LX1 Cool	41 43 45 47
Group 42	LX1 Warm	42 44 46 48
Group 43	LX1 RigChk	41 > 48
Group 44	LX1 Flash/Trash	41 43 45 47 42 44 46 48

Target Groups

Although you can create pre-planned Groups as above, sometimes it is useful to utilise "Target Groups". This simply means that you can use an existing record target (Cues, Subs, Palettes, Effects) as a temporary group.

For example, you might have a Submaster which contains sidelight, but only shins and mids. Rather than typing in all the channel numbers or going through and creating a new group to contain these channels, you could use:

[Group] [Sub] [3][6] [Enter]

This will give you all the channels in Submaster 36 as a selection for manual control.

You could also use ranges:

[Group] [Cue] [1][1] [Thru] [1][5] [Enter]

This will select all channels used (above zero) in this range of cues. Again, this will be a selection - channels are not driven to levels.

Creating Groups

Live Enter Live mode.

3 **Thru** **6** **Record** **Group** **2** **Enter** Group 2 is recorded with channels 3 through 6. Groups do not have associated levels; they are simply channel selectors.

Group **Group** Open a group list. Group 2 is probably highlighted. **Last** **Next** Moves to the previous and next item in the list. Group 2 is now highlighted

- **6** **Enter** Channel 6 is removed from Group 2.

+ **6** **Enter** Channel 6 is added to Group 2.

Group **2** **5** **Enter** Group 25 is created, but empty.



1 **1** **Thru** **1** **4** **Enter** Channels 11 through 14 are added to group 25.

Label Note **Breakup** **Enter** Group 25 is given a label of "Breakup". You can use either the on-screen or an external USB keyboard.



Group **2** **6** **Enter** Group 26 is created, but empty.

1 **+** **3** **+** **5** **+** **2** **+** **4** **+** **6** **Enter** You now have a group with 1-6, but in the order as typed.

Using Groups with Direct Selects

 Load a virtual direct select in the lower left of the console display via **Browser | Virtual Controls | Direct Select Module (Classic Layout)**. You can also open a Direct Select in a tab for increased flexibility.  Note that buttons shown like this are within the Direct Select, not on the keypad.

Select **Groups** Fifty groups are now displayed on your Direct Select buttons. **20/50** Display is changed from 1x50 to 2x20 buttons or vice-versa.

  Use the up and down keys to page through your groups. Note the tiny numbers on the tiles which show you where you are, as well as the Page indicator under the word Groups.

Expand When in the smaller mode (2x20), Expand allows the set of targets in question (Groups in this instance) to take over all of the tiles. **Expand** Pressing Expand again returns you to the previous view.


Select **Show Flexi** **Select** This Flexi mode (we'll cover more in Tutorial 9) condenses the tiles to show only those with content, while leaving space to record the next target of each contiguous set (Group 3 in this case).


Live **Group 1** Group 1 button is highlighted. Channels 1 through 2 are selected in Live. **Group 2** Group 2 button is highlighted. Channels 1 through 6 (Groups 1 and 2) are selected in Live.

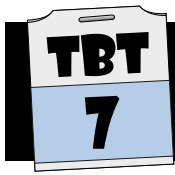
Group 1 **Group 1** Group 1 button stays grey, Group 2 button is not. Only channels 1 and 2 (Group 1) are selected.

At **6** **5** **Enter** Channels 1 through 2 are set to 65%. Note that these are manual levels. **Group 2** **At** **5** **Enter** Channels 3 through 6 are set to 50%.

Clear **Sneak** **Enter** All manual changes are faded back to cue or background state.

 Load channels to the direct selects to see how they behave. Try recording a group using only the direct selects and the **[Record]** key on the keypad.

 Load a Direct Select in a tab, this time selecting "Fit to Screen". Note that the number of buttons might change depending on the resolution of your display.



Follow

Adding a follow to a cue tells the console to automatically run the next cue in the sequence after a set amount of time. This is frequently used for:

- Complex cue structures which would be difficult to call/run accurately
- There is a desire for uncalled cues to run to preset moving lights
- A series of snap cues that should run evenly and/or predictably
- To reduce the number of unnecessarily called cues

The Follow command is applied to the cue which is the trigger. In other words, if you want Cue 6 to follow on from Cue 5, you should put the Follow flag on Cue 5:

[Cue] [5] [Follow] [5] [Enter]

This will cause Cue 6 to automatically run 5 seconds after Cue 5 is triggered. It is important to remember, in the case of "auto-follows" (run the next cue when this cue completes) that if you change the time of the cue, you must also change the follow time:

[Cue] [5] [Time] [3] [Enter] [Follow] [3] [Enter]

Hang

Hang is similar to Follow, except that the countdown begins from the completion of the flagged cue. For example:

[Cue] [5] [Hang] [2] [Enter]

will cause Cue 6 to run 2 seconds after Cue 5 has completed its fade.

[Hang] [0] is frequently used when an "auto-follow" is desired - no maths is required and if times are changed the autofollow is still respected. Note that negative hangs are also possible:

[Hang] [-] [1] [Enter] will run the next Cue one second before the flagged Cue has completed.

Link

Under normal circumstances, a cue list will run its cues in order. Link is used if you wish to change this order - for example to "link out" a section of the show. For example, during rehearsals, Peter Pan entered via a zipline over the audience. Now, on opening night, the HSE has determined that it would be better for him to walk in from DSR. You now want to jump directly from Cue 33 to Cue 38, ignoring the intermediate cues:

[Cue] [33][3] {Link/Loop} [3][8] [Enter]

Now, after Cue 33 is run, Cue 38 is pending - 34 through 37 are skipped.

Loop

Loop allows you to set a number of times to perform a link. For example, you may have a sequence of cues for a dance piece that repeats - Cues 6-9 repeat themselves 3 times, then it should go on to Cue 10. You would put a link from Cue 9 to 6 with a Loop of 2 (loop twice):

[Cue] [9] {Link/Loop} [6] {Link/Loop} {Link/Loop} [2] [Enter]

Cue 10 is now the "recovery cue" - the cue that plays when the link/loop sequence is complete. Note: If you do not want levels to track from Cue 9 into Cue 6, put an Assert flag on Cue 6.

Follow and Hang

Pressing **[Live]** puts you back in Live mode. Cue 2 is faded in over 5 seconds (unless it is already the active cue).

Our breakup pattern is brought to 70%, and all other levels are set to 0.

A new cue, 3, is recorded with a time of 2 seconds.

1 and 2 are taken to full. A new cue, 4, is recorded with a time of 2 seconds.

3 and 4 are taken to full. A new cue, 5, is recorded with a time of 2 seconds.

5 and 6 are taken to full. A new cue, 6, is recorded with a time of 2 seconds.

Cue 3 is given a Follow time of 2 seconds. This means that upon execution of Cue 3, a countdown of 2 seconds will begin and then the next Cue (4) will be automatically started.

Cue 2 is faded in over 1 second. Cue 3 is faded in over 2 seconds, and a Follow countdown appears on the playback status display. After 2 seconds, Cue 4 is automatically started.

Cue 3 is given a Hang time of 0. This means that upon completion of Cue 3, the next Cue (4) will be triggered immediately.

Cue 2 is faded in over 5 seconds. Cue 3 is faded in over 2 seconds, and a Hang countdown appears on the playback status display. After 2 seconds, Cue 4 is automatically started.

Cue 3 no longer has a follow or hang time onto cue 4. Note that you can also use **[Shift]&[Delay]** to insert a Follow.

Link and Loop

Cue 6 is linked to Cue 4. This means that after Cue 6 is run, Cue 4 will be the pending Cue.

Cues 4 through 6 are played back. In this situation, Cue 6 will link back to Cue 4 indefinitely.

Cue 6 is played back.

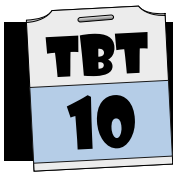
All channels go to 0.

Cue 7, a blackout, is recorded with a time of 2 seconds.

Cue 6 is set to loop back to Cue 4 twice. Note that this will result in the entire Cue 4-6 sequence playing back three times before moving onto the next Cue, 7.

Cue 3 is played back. Press **[Go]** until the loop are completed. Note that the number of remaining loops is displayed in brackets. Note, however, that levels from Cue 6 are tracking into Cue 4.

Cue 4 is given an Assert flag. This will cause levels from Cue 6 to no longer track when the loop is executed. Press **[Go]** until the loops are completed. Note that because Cue 4 is now asserted, Cue 6's levels no longer track into Cue 4 whilst looping.



Channel Check and Park



Channel Check

Channel Check is a mode of the desk which allows you to quickly set a level on a channel and then move onto the next patched channel. This is normally used for a rig check or "flash-around" to verify that channels are working prior to a performance.

[1] [At] [8] {Chan Check} [Enter] will bring Channel 1 to 80%. **[Next]** will bring 2 to 80% and return Channel 1 to its background (cue/sub) level. Only channels with an address assigned in Patch will be selected in Channel Check mode. Pressing any key other than **[Next]** or **[Last]** will terminate Channel Check mode.

Park

Often, you wish to bring a Channel or Address to a level, but not have this level recorded into any record targets or have live control of it. Some examples of when you might Park a channel rather than bring it up live:

- Setting the Houselights to 20% during technical rehearsals
- Setting a channel to zero whilst a problem with the lantern is being resolved
- Performing a dimmer check from a client/remote onstage during a notes/programming session
- Setting moving light power relays on for a performance
- Parking a faulty colour scroller to a non-obtrusive colour during a performance
- Parking a moving light out and at home until it can be reset during the interval

Channels and/or dimmers can be parked from Live directly, or from the Park display. Channel Check mode is the default behaviour whilst in the Park display. A proportional Park is also possible. Setting **[6] [At] [/] [9] [Enter]** whilst in the Park display will cause channel 6 to play back at 90% of its stored values in all cues and/or submasters. Note that the Park status is not loaded as part of a show by default.

Channel Check in Live

Live Pressing **[Live]** puts you back in Live mode.

Go To Cue **0** **Enter** Channels are faded out and the cuelist is reset to the beginning.

1 **At** **Full** **Enter** Channel 1 goes to Full.

Next Channel 2 is selected, Channel 1 remains at Full.

Clear **Sneak** **Enter** All manual channels are sneaked back to their background level. Without a selection, **[Sneak]** assumes all channels with manual values.

1 **At** **Full** **More SK** **S 5 Chan Check** **Enter** Channel 1 goes to full. We are now in Channel Check mode, which is cancelled by any key other than **[Next]** or **[Last]**.

Next Channel 2 goes to full, channel 1 returns to 0. **Next** Channel 3 goes to full, channel 2 returns to 0. **Last** Channel 2 goes to full, channel 3 returns to 0. **Clear** All channels are returned to 0 - Channel Check mode is cancelled..

Park

1 At Full Park Enter

Channel 1 is now parked at full. You will not see the FL in red, but instead a small P symbol in the tombstone. In addition, you will see Parked Channels at the top of the screen, and the **[Park]** button LED will be lit in green.

Park Park

A new tab showing Parked channels and addresses is opened. You can see that Channel 1 is parked at Full.

2 At 5 Enter

Channel 2 is now parked at 50%. This level is what will be output.

Live 2 At 7 Enter

Channel 2 is shown at 70%. This level is what would be recorded or updated, but the light is still parked and output at 50%.

2 Recall From Park Enter

Channel 2 is now set to the same value (50%) at which it is parked. Note that this does not unpark the channel.

Park Park

The Park display is now active again.

1 At Enter

Channel 1 is unparked (remember that **[At] [Enter]** means "remove information").

S 1 Address 2 6 At Full Enter

Address (dimmer) 26 is parked at Full. As this dimmer is patched to Channel 6, we see that information as well. Note that [Address] is also an Eos/Gio hard-key.

Park Enter Enter

All channels are unparked. Note that any parked addresses remain parked.

S 1 Address Park Enter Enter

All addresses are also now unparked.

Sneak

Sneak allows you to restore a channel to its recorded/background state or define a new state, typically with non-zero timing.

With one or more channels selected, **[Sneak] [Enter]** will return those channels to the current cue or sub level using the Sneak Time (default of 5 seconds). **[Sneak] [2] [Enter]** would do the same, but over 2 seconds rather than 5. **[At] [5] [Sneak] [Enter]** would set the channel(s) to 50% over 5 seconds.

With a clear command line (no channels selected), **[Sneak] [Enter]** will restore all channels to their background level.

Some examples of when you might use **[Sneak] [Enter]** rather than setting a level directly:

- You were asked to bring a channel to a level during programming, but the designer says "No, never mind." Sneaking the channel rather than setting a hard zero ensures that tracking is maintained and that no changes are stored for that channel.

- You have changed the colour and level on a scroller. It is decided to leave the colour as it was, but at a lower level. **{Color} [Sneak] [Enter]** will return to the original colour, but maintain the level change.

- You are in a dress rehearsal, making last-minute changes. In order to not distract the actors or draw attention to the changes, change the Sneak Time to 10 in Setup, and append **[Sneak]** to all changes - for example, **[Group] [2] [At] [Full] [Sneak] [Enter]**.

Submasters can also be Sneaked. For example, perhaps you wish to bring the Houselight submaster to Full over 30 seconds at the end of a performance. Rather than doing this manually, **[Sub] [9] [At] [Full] [Sneak] [3] [0] [Enter]** will fade the sub for you.

[Shift] & [Sneak] after a channel selection will remove the red manual colour from the channels so that they will not be included in an Update, Record Only or Sneak operation.



Sneak

Live	Pressing [Live] puts you back in Live mode.							
Go To Cue	6	Enter	Cue 6 is faded in.					
1	Thru	6	At	5	Enter	Channels 1 through 6 are lowered to 50%. As always, red indicates that these are manual values.		
Group	2	5	At	Full	Enter	Channels 11 through 14 are raised to full.		
Sneak	Enter	Channels 11 through 14 (the currently selected channels) are sneaked back to their cue level of 70%. This happens over 5 seconds, the default sneak time.						
Group	2	5	At	8	Enter	Channels 11 through 14 are raised to 80%.		
Clear	Sneak	Enter	All manual channels are sneaked back to their cue level. Without a selection, [Sneak] assumes all channels with manual values.					
1	Thru	4	At	2	Enter	Channels 1 through 4 are lowered to 20%.		
3	Thru	4	Sneak	Enter	Only channels 3 and 4 are sneaked. All other manual values remain at their current values.			
2	Sneak	1	0	Enter	Channels 2 is sneaked over 10 seconds. Note that you could use [Time] after Sneak - but it is assumed.			
1	Thru	4	At	9	Sneak	2	Enter	Channels 1 through 4 are sneaked to 90% over 2 seconds.
Clear	-	3	Sneak	Enter	All channels in the show except 3 are sneaked.			
At	4	An error appears on the command line - you cannot set levels using a negative selection. This is to protect you from accidentally driving nearly all channels to a level.						
Undo	With an unterminated command line (such as ours which has an error), [Undo] clears the entire command line but does not bring up the undo history.							
Go To Cue	0	Enter	Channels are faded out and the cuelist is reset to the beginning.					
Sub	2	At	5	Enter	Submaster 2 is set to 50%. On Eos/Gio, you will see the motorised fader move, assuming you have a fader page with Sub 2 active. On a fader wing, the LED flashes to indicate a mismatch.			
Sub	2	At	8	Sneak	5	Enter	Submaster 2 is sneaked to 80% - this will behave as if the sub's fader has been moved to 80% over 3 seconds. On Eos/Gio, the fader handle will still move to its end state in 0 time.	
Sub	2	Home	Sneak	1	Enter	Submaster 2 is homed (0% for additive subs) with a 1 second sneak.		
Recall From	Cue	2	Sneak	Enter	The active channels from Cue 2 are sneaked onstage to become manual levels.			
Clear	Sneak	Enter	All channels are again faded out.					



Sneak some channels. Sneak some Subs. Shift-Sneak some channels.

Part Cues

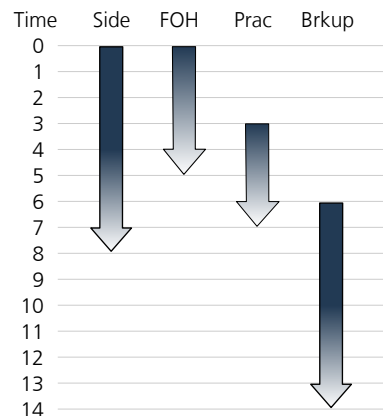
Part cues are a tool that is used when you want to have multiple times on a single cue. As we saw earlier, you can easily "split" the time on a cue, meaning that channels moving higher use one time whilst those moving lower use another.

If you need finer control, Part cues are the answer. Up to 20 parts can be created, each with its own delay and time. Channels in a cue are assigned to a part, either in Live or Blind.

As an example, you may have a cue that requires the sidelight to fade in over 7 seconds (we'll call that normal), the FOH to come in over 4 to pick up the beginning of the scene nicely, a practical to wait (delay) for 3 seconds prior to a 4-second fade, and the breakup pattern to delay for 6 seconds (to allow a bit of flying scenery to clear) and then fade in over 8 seconds.

We can create the parts as:

Part	Delay	Time	Channels
1	-	7	Sidelight
2	-	4	FOH
3	3	4	Practical
4	6	8	Breakup



Part cues can also be used to create simple chases, typically if the chase does not repeat:

Part	Delay	Time	Channels
1	-	1	1
2	1	1	2
3	2	1	3
4	3	1	4
5	4	1	5
6	5	1	6

You will see later, however, that this is probably better achieved with an effect.

You might also use Part cues for:

- Applying different Focus/Color/Beam times to cues
- Delaying a single channel that is too "hot" on the set
- Creating a "growing" pool of light for a dance piece
- Creating a "wave" colour change across scrollers
- Giving one channel a much longer fade out to highlight an actor before a blackout

Recording Part Cues Live

Live Go to Live mode.

Go To Cue **0** **Enter** The cue list is reset to the start.

Delete **Cue** **1** **Thru** **Enter** **Enter** All cues are deleted.

Group **1** **Thru** **2** **At** **5** **Enter** Downlights go to 50%.

Record **1** **Part** **1** **Time** **4** **Enter** Cue 1 Part 1 is recorded with a time of 4 seconds.

Group **2** **5** **At** **Full** **Enter** Breakup goes to Full.

Record **Part** **2** **Time** **2** **Enter** **Enter** Cue 1 Part 2 is recorded with a time of 2 seconds.

7 **2** **At** **7** **Enter** Channel 72 goes to 70%.

Record **Part** **3** **Time** **0** **Delay** **4** **Enter** **Enter** Cue 1 Part 3 is recorded with a time of 0 seconds, but with a 4 second delay.

STOP BACK The cue list is reset to the start. **GO** Channels play back as defined by their part. All times and delays begin from the press of **[Go]**.

Parting Existing Cues in Blind

Select Active **Out** A Blackout is created.

Record **2** **Block** **Enter** Cue 2 is recorded as a Block cue.

Recall From **Cue** **1** **Enter** Cue 1's levels are onstage as manual levels. **Record** **3** **Time** **4** **Enter** Cue 3 is recorded - this is a duplicate of Cue 1, but with no parts.

Blind Enter Blind mode to edit the current cue. **Format** **Format** Change to Spreadsheet format to view multiple cues with fewer channels.

Flexi **S 3 Show** Change to Show Channels Flexi.

1 **1** **Thru** **1** **4** **Part** **2** **Enter** **Enter** Cue 3 Part 2 is created with channels 11-14 in it. All other original Cue 3 channels are put into Part 1.

Part **2** **Time** **2** **Enter** Cue 3 Part 2 is given a time of 2 seconds.

7 **2** **Part** **3** **Time** **0** **Delay** **4** **Enter** **Enter** Cue 3 Part 3 is created with timing. Non-Part channels are shown in grey.

Live **STOP BACK** **GO** In Live, you see that Cue 3 now plays back identically to Cue 1.



Move some channels between parts, noticing how the text colours change. **[At]** **[Enter]** some channels in a Part to see the results.

Introduction

The Eos-family are tracking lighting consoles. For some users this will be a new style of working, so this tutorial aims to outline principles and techniques used with tracking consoles.

Computerised lighting consoles have been with us for roughly three decades. In that time, two distinct approaches have emerged within lighting console design:

Preset, State or Cue-Only desks (lighting technicians tend to use these terms interchangeably - some would argue that these are all actually different, but it is fine for our purposes.) Classic examples include Strand Galaxy, Strand Gemini, and ETC Express/Expression. Any 2-scene preset console is by definition also in this category.

Tracking desks Classic examples include Strand Light Palette 90, ETC Obsession, Whole Hog, GrandMA. Any 1-scene or "piano" console would fall into this category.

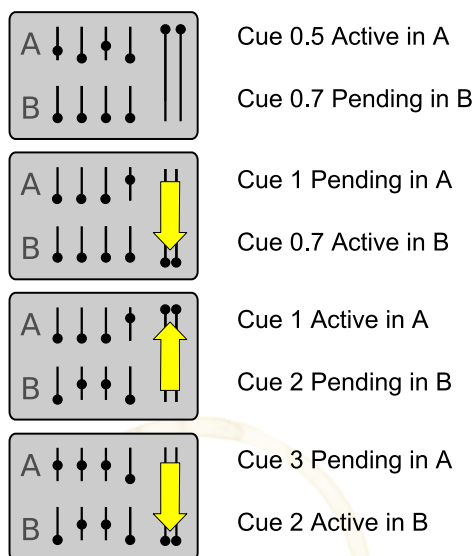
Neither approach is "right" or "wrong" - the requirements of specific users usually dictate which style of console is most appropriate. In general, tracking is preferred when working with a large number of moving lights, as it greatly eases management of non-intensity parameters.

Note: Wondering which category the Strand 500-series console fits into? The answer: Both! The 500-series was designed to succeed both the Light Palette 90 (tracking) and Galaxy (preset). It could be run in either mode by changing the cue tracking field.

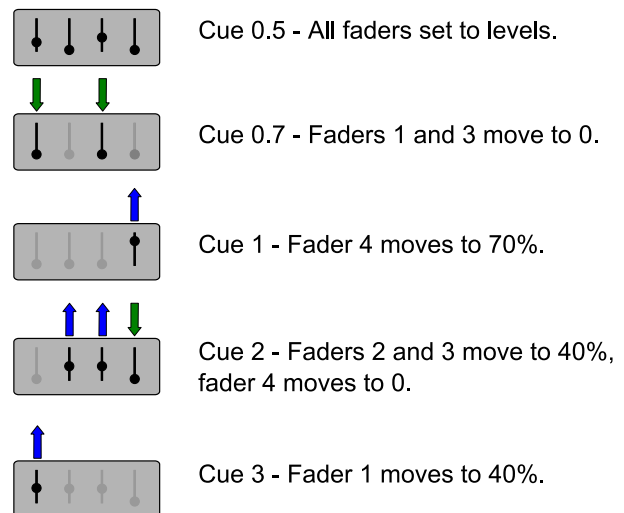
What is the Difference?

The key difference between a tracking console and a cue-only console occurs when we record a cue:

A **cue-only** console records a cue by remembering the entire lighting state. Each cue therefore contains a value for every intensity/attribute/parameter of each light. The example 2-scene preset console below illustrates this:



A **tracking console** records a cue by remembering the changes from the previous cue being recorded. Each cue therefore only contains values for levels/parameters that are actually changing - these are often referred to as "move instructions". The example single-scene console below illustrates this:



Another difference is revealed when we play back a cue:

Cue-only consoles tend to run each cue as a cross-fade - all levels are faded on **[Go]** irrespective of whether they have a move instruction. Channels that are still fading from the previous cue take the new cue's time.

Tracking consoles tend to run each cue as a move-fade - only levels with a move instruction are faded on **[Go]**. Channels that are still fading from the previous cue continue in their original time.

Example

A lighting rig has groups configured for Downlights, Breakup, Backlights and Special. Here is how the same cues would be recorded on a preset and tracking console:

Preset Desk:

Cue	Time	Down	Breakup	Back	Special	
0.5	5	20	0	40	0	Preset look for audience entrance
0.7	4	0	0	0	0	Blackout
1	2	0	0	0	70	Special DSL
2	3	0	40	40	0	Beginning of scene - breakup and backlight
3	2	40	40	40	0	Downlight in
4	2	0	40	40	0	End of scene - breakup and backlight only
5	1	0	0	20	70	Special on actor
6	2	0	0	0	0	Blackout
7	3	70	25	35	0	Full scene in
7.5	12	40	0	15	60	Scene down, special on dancer
8	4	0	0	0	60	Scene change with special on dancer
9	2	20	10	70	0	New scene - special on dancer out

Tracking Desk:

Cue	Time	Down	Breakup	Back	Special	
0.5	5	20		40		Preset look for audience entrance
0.7	4	0		0		Blackout
1	2				70	Special DSL
2	3		40	40	0	Beginning of scene - breakup and backlight
3	2	40				Downlight in
4	2	0				End of scene - breakup and backlight only
5	1		0	20	70	Special on actor
6	2			0	0	Blackout
7	3	70	25	35		Full scene in
7.5	12	40	0	15	60	Scene down, special on dancer
8	4	0		0		Scene change with special on dancer
9	2	20	10	70	0	New scene - special on dancer out

Both consoles will play the same lighting states, but the tracking console has recorded far less data into each cue than the preset console. For example, cue 1 contains a single change in level from cue 0.7 - the DSL special coming on. The tracking desk reflects this small change, whereas the preset desk has many redundant zeros. As you can imagine, this distinction becomes more and more important the larger the quantity and complexity of the channels.

Does This Distinction Matter?

Irrespective of whether we use a cue-only or tracking console, the recorded lighting states will look exactly the same. So, if they look the same, why are you being forced to listen to this propeller-head mumbo-jumbo? The answer is that it has crucial implications on how edits (updating, adding and deleting cues) will affect the show.

On a preset desk, every change affects only that cue - the next cue always contains an entire look, so will be replayed as it was originally recorded. On a tracking desk, changes track forward until a move instruction is encountered. This means, for example, that if you were to change the backlight from 40% to 60% in cue 2 on both the preset desk and tracking desk above, cue 2 would obviously be changed on either desk, but the behaviour of cue 3 would differ. On the preset desk, the backlight would fade back to 40% (it has this level stored), but would stay at 60% on the tracking desk - there was no move instruction. Indeed, it would not change until cue 5 where it has a move instruction to go to 20%. Tracking is not an advanced function or method of working. The difference is largely in your way of thinking - in the above example, you wanted the backlight to be brighter in this scene, and it now is.

Stopping Tracks

Although tracking is both quick and powerful, you often want to ensure that tracks do not go too far. In general, you want a channel to track for a scene at most, often less. Firstly, remember that move instructions stop tracks by their very nature.

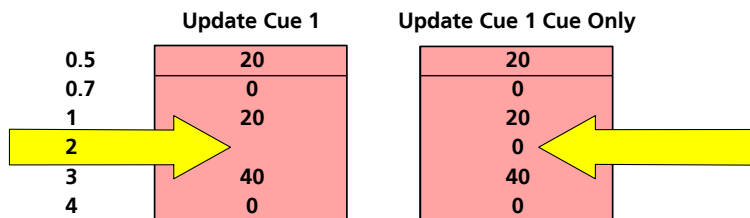
More to the point, it is generally a good idea to set aside points in your cue list that stop any tracks from continuing past that cue. A classic example is a blackout or scene change. Refer again to the example above. It would be wise to put a block on cue 6 so that any additions upstream do not accidentally track into this blackout. Our cue list with blocks (B flag) would look more like this (ignore the lower-case b for now):

Cue	Time	Down	Breakup	Back	Special	
0.5	5	20		40		Preset look for audience entrance
0.7	B 4	0		0		Blackout
1	2				70	Special DSL
2	3		40	40	0	Beginning of scene - breakup and backlight
3	2	40				Downlight in
4	2	0				End of scene - breakup and backlight only
5	1		0	20	70	Special on actor
6	B 2			0	0	Blackout
7	3	70	25	35		Full scene in
7.5	12	40	0	15	60	Scene down, special on dancer
8	b 4	0		0		Scene change with special on dancer
9	B 2	20	10	70	0	New scene - special on dancer out

You can see that the example shows a line above each blocked cue. This line does not appear on cue list - it is a visual representation for this example that changes to levels upstream that track forward will stop at this point and not affect further cues.

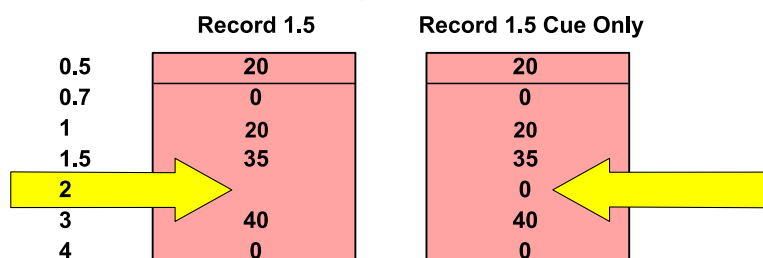
Updating Cue Only

Although the Eos Family are tracking desks, it is still possible to easily make changes to a cue without tracking any changes forward. In this case, any previously tracking levels in the next cue are converted to move instructions. As an example, imagine that we want to add a bit of downlight to Cue 1. When updating the cue, adding the [Cue Only] command has an important difference:



Recording Cue Only

Similarly, insert a new cue 1.5 between Cues 1 and 2 (to bring in a bit of downlight after the special is up). Recording this cue without or with [Cue Only] makes a big difference:



As you can see, the existing (tracking) zero in Cue 2 is converted to a move instruction to zero in the case of a Cue-Only record operation.

Partial Blocking

Often, it is more appropriate to only block certain channels. In our example above, we can see that a special comes up on a dancer in Cue 7.5, and this should stay up during an otherwise-dark scene change. Very avant-garde.

We want to maintain the track between Cues 7.5 and 8 for the dancer special to ensure that if we change the level to 50% in cue 7.5, it stays at this lower level until it goes out. At the same time, we want to ensure that any changes or additions upstream (for example bringing the breakup to 25% in Cue 7.5) do not destroy the near-blackout. In this case, a partial block is used - all channels except the Special are blocked - in Eos/Ion, **[-] [channel] [Block] [Enter]**. Note the lower-case b indicates this partial block.

It is worth noting that many programmers prefer to still block the entire cue and take the risk of the few channels not tracking forward as far as they otherwise might. This is down to experience and personal preference.

System- or Auto-Blocks

As a safety measure, the software will sometimes place blocks on channels for you. These are referred to as system blocks or auto blocks.

One circumstance where this happens is when you match a level "upstream". For example, if you were to add downlight at 40% in Cue 2, the existing 40% in Cue 3 would be automatically blocked. This is to ensure that your original intention is maintained, and that modifying the level in Cue 2 does not affect Cues 3 and beyond without your intervention.

It is, however, common that you did indeed wish to "bring that in a cue earlier", and do want this level to track. It is a simple matter of removing this block in Cue 3 to now create a track from Cue 2. This is often done using the **[At] [Enter]** command - remove the block and therefore create a track.

In the Cue List Index, you have a softkey which allows you to perform an Auto-Block Cleanup - remove all auto blocks for an entire cue list or for a range of cues.

Updating Cues in Tracking



In Live, go to cue 2. Note that these cues are different to those you created and edited in previous tutorials. Don't panic! A masked programmer has made some changes.



Group 3 (backlight) is changed from 40% to 60%.



Cue 2 is updated. The backlight was tracking forward from this cue at 40%, but is now tracking at 60% instead.



Similar to above, Group 1 (downlights) are set to 20% and updated into cue 4. These channels also track.



Pressing **[Go]** twice takes you to Cue 6, which is should be a blackout. However, notice that the 20% downlight level has tracked into this cue from the previous update. Uh-oh.



Pressing **[Undo]** provides a list of your recent commands, with the most recent at the bottom of the list. Press the **[Page Up]** button until the Update command is highlighted. You again have manual levels.



Put a Block flag on Cue 6. This will ensure that any tracking levels upstream do not affect this cue.



As Cue 0.7 is also a blackout, it is a good idea to block it now to avoid trouble in the future.



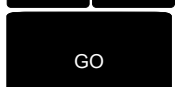
Again set the downlights to 20% and update them with tracking.



[Go] to Cue 6. Notice that at it is blocked, the downlights now go out when they reach the block. Note also that levels that are the same as the previous cue are now shown in white rather than purple.



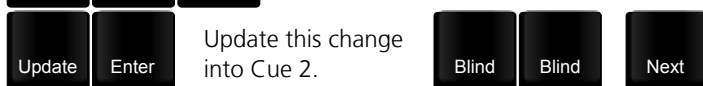
Add downlighting at 20% to Cue 1 and update.



Use **[Go]** to go to cue 2. Oops, we do not want downlights in this cue! This time, rather than using **[Undo]**, let's just fix the problem.



The downlights are no longer on.



Update this change into Cue 2.

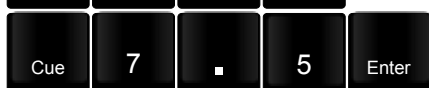
Note that this change does not affect Cue 3, as it has a move instruction on Channels 1-6.



A double-hit of Blind ensure that you go to Blind in the same cue you are seeing in Live.



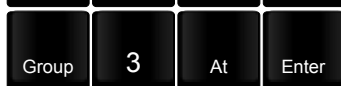
Giving the channels a level of **[At][Enter]** removes the level/block and causes the levels from the previous cue (in this case, 0) to track in.



Select Cue 7.5 for editing.



Use **[Format]** as required to view as a spreadsheet.



Give the backlights a level of **[At][Enter]**. This again will cause these channels to inherit their levels from the previous cue. As a result, they are now tracking at 35% rather than moving to 15%.

Recording Cues in Tracking



In Live, go to cue 1.



Set channel 73 to 70%.



Record a new cue 1.5 with this level.



Go into Cue 2. Note that 73 has tracked into this cue. Again, you could fix this problem by simply setting it to zero, but use **[Undo]** instead.

Undo Page ▲ Enter Enter STOP BACK 7 3 At 7 Enter

Record 1 . 5 Time 2 Q Only Track Enter

GO

Last Label Note Lara Enter

Undo recording Cue 1.5 and make the level change again.

Record a new cue 1.5 with this level, but append the **[Cue Only]** command. This will ensure that Cue 2 plays back as intended.

Again go into Cue 2. Note that 73 has not tracked in. This change was recorded to Cue 1.5, but into **that cue only**.

Label Cue 1.5.

Deleting Cues in Tracking

Blind Cue 2 Enter

In Blind, select Cue 2 for editing.

Format Format . . .

Use **[Format]** as required to view Blind Channel (tombstone).

Delete Cue Enter Enter

Delete Cue 2. You are now viewing Cue 1.5.

Next

Cue 3 is selected. Note that all of the formerly-tracking levels (the breakup and backlights) are now gone, and that channels 72 and 73 are now in the cue. Why? Cue 2 set these levels on and off respectively, but it has now been deleted.

Use great care when deleting cues to track, as it can cause drastic changes to your show.

Undo Page ▲ Enter Enter

Undo the deletion of Cue 2. Phew!

Last

You are again editing cue 2.

Delete Cue Q Only Track Enter Enter

Again delete Cue 2, but this time with the Cue Only modifier. This will cause tracks in Cue 3 to be converted to move instructions. As a result, the look is now preserved.

Next

Note that Cue 3 contains move instructions to maintain its look before Cue 2 was deleted..

Cue 1 . 5 Enter

Cue 1.5 is selected for viewing/editing.

Delete Cue Enter Enter

As Cue 1.5 only brings in a special that we have decided is no longer required, it is appropriate to delete this cue to track.

Cue 3 Enter

Cue 3 is selected for viewing/editing.

7 3 At Enter

Use **[At] [Enter]** to remove the now-redundant "blue zero" in Cue 3. This 0 has no effect on playback - you are only removing it from the list to keep the show looking tidy and to impress your boss.



Practice updating and recording cues with and without tracking. Use Blind in Spreadsheet format to see what effect updates will have on following cues.

Knowing when to use tracking and when to update/record cue-only is an art!



Submasters

As you saw in earlier lessons, Submasters allow you to have a collection of channels on a fader. Submaster levels interact with cues, by default, on a Highest-Takes-Precedence basis - the desk outputs the highest level between cues and subs. Manual control from the keypad will still over-ride both.

Submasters can be created in Live or Submaster Blind mode. You can also use Update in Live or edit in Blind to apply changes to Submasters.

By default, Submasters have no timing associated - or rather, they have a time of 0 seconds. This means that when you press the bump button below a submaster's fader, the sub will "flash" to Full for as long as you are holding the bump button (this is referred to as a dwell time of Manual), and will return to zero in 0 seconds upon releasing the button. Remember that the faders are not submasters by default - they have to be assigned as such.

Sub Timing

Submasters can be assigned three different times - an Up, a Dwell, and a Down:

- Up: The length of time for the sub to move to full upon execution
- Dwell: The length of time for the sub to stay at full upon execution. A time of **Manual** indicates that it should stay at Full for as long as the bump button is held down. A time of **Hold** indicates that it should hold at Full until the bump button is pressed a second time.
- Down: The length of time for the sub to return to zero (or the current fader position).

Exclusive Subs

Submasters can be set to Exclusive mode. This mode causes the contribution of this submaster to be ignored at the time of recording. This is often used for "special" lights that you might want to have control of, but not record unless they are made manual. For example, you may put control of your house lights, workers, blues, music stands on subs for ease of technical rehearsals and performances, but not want them recorded into the cue stack.

Shielded Subs

Submasters can be set to have a priority of Shield. This priority will ensure that the submaster has control over its channels at a higher priority than any other playback or even manual control (Park will still over-ride shielded Subs, however). On some other lighting desks, this is referred to as an Independent.

You can still plot levels that are under the control of a shielded Sub into Cues in Blind. These levels will not be played back, however, until the Shield priority of the Sub is lifted.

Inhibitive Subs

Inhibitive subs are a tool used to disallow bringing channels to a level unless the "Inhib" is removed. If an inhibitive submaster contains a channel and that sub is at zero, that channel will not be driven above zero. This works for any level, not just 0.

Some examples of inhibitive sub usage:

- Smoke and Haze inhib - especially useful during technical rehearsals to avoid filling the auditorium with smoke
- FOH inhib - useful when bringing in the safety curtain to avoid showing how ropery the focus is
- 5K blinders inhib - crowd-blinders are fun, but also tend to blind actors, LX crew, directors, creative teams.
- Snow machines, Glitter bombs, Kabuki drops, trick tables, magic effects - these would range from annoying to dangerous if accidentally run as part of a rig check. Often, enabling these devices would be on instruction from the show caller only.

Recording Subs in Live

Go to Live mode.
 Go to Cue returns the cuelist to the beginning and fades out all lights. You want to ensure that any recording only includes the lights we are currently using.

The toplight goes to Full.

TopLX Record a new submaster 1 with a label of "TopLX".

or or Load the sub to a fader. Note that Sub 1's bump LED is now lit in green. Also note the display above the sub fader.
 Sneak the channels back to zero.

Bring Sub 1 to 50%.
 Note that the levels are recorded.
 "Exclusive" means "excluded from record".

Note that the levels are not recorded.
 Return Sub 1 to 0.

Create and load three more subs:

Sub 2	11-14 at 70%	Bkup
Sub 3	21-25 at 50%	ScrLs
Sub 4	71-74 at 90%	Spec

Shielded Subs

Works A new Sub 10 is created with Channel 200 at Full.

A priority of Shield means that these channels cannot be controlled by any other means, including manual control. The Exclusive flag is also automatically set.
 Load submaster 10 to a fader.

Return to Live. Note the "S" on channel 200 to indicate it is shielded.
 Manual control has no effect on a channel that is Shielded.
 Move Sub 10 to see the channel's level change.

Creating Inhibitive Subs in Blind

Sub 1 is now given a mode of Inhibitive - when it is at 0, it inhibits its associated channels from being used by playbacks, other subs, or manual control. Note that the fader puts itself at full when it is made inhibitive; this is to stop the creation of an inhibitive sub suddenly setting channels to zero. On non-motorised fader wings, the LED will flash to show that you need to bring the fader up manually to match its actual level (100%)

Lower Sub 1's fader. Little yellow "I" symbols appear in the tombstone, and the channel level is scaled with the fader.
 Sub 1 is again given a mode of "Additive", the normal mode.

Submaster Timing

All manual control and cues are removed.
 Reset all Subs to 0.

Sub 2 now has a Hold flag.
 (2) Pressing Sub 2's bump button latches the Sub to Full.
 (2) Pressing the bump button again returns the Sub to zero.

(3) The Sub bump now causes the sub to fade over 2 seconds to Full, hold for 2, then fades to zero over 2.

(4) Sub 4 will now flash to Full and fade to 0 over 2 seconds.

Give Sub 4 a timing of Manual to see the results. Double hit [Sub] to bring up the list of submasters, and use [Thru] to select and make timing/mode changes to multiple subs at the same time.

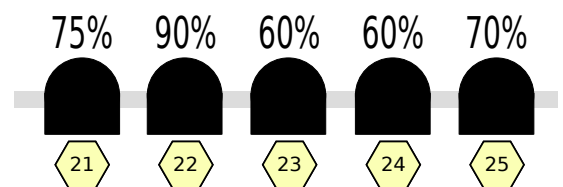
Intensity Palettes

Intensity Palettes are a feature that allow you to create a "look" once, and then easily re-use it many times. This look can then easily be changed and this change will propagate through the cues in which it was already used.

The name "Palette" comes from a painter's palette. When the painter is setting out to mix the colours that will be used in the painting, it is much easier to create a palette with these colours pre-mixed. When she wants the orangey-red used in the sunset, it doesn't have to be mixed each time - she can simply use the pre-mixed colour. She may then choose to modify the mix on the canvas.

Unfortunately for the painter, once the paint is on the canvas, it no longer references the mix on the palette. Eos-family users have the clear advantage here - any changes to the base palette will be applied to the cues in which it is used. As an example, you may have a row of PARs that focus as high backlights. Due to varying distances, varying lamp age, and varying levels of filth on the gel, having all of the channels at the same level creates a rather unbalanced coverage. You can adjust levels to give a more balanced look.

Once this balanced look is stored to an Intensity Palette, it can be used in cues whenever a balanced wash is required. If a lamp is changed, a gel is cleaned, or for whatever other reason a re-balance is required, this can be done once and the palette updated. These new levels will now be applied in all of the cues that reference that palette as well.

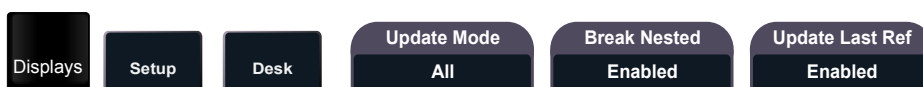


It is also possible to use this Intensity Palette as a starting point but then modify the levels in the cue. These levels are now "absolute" and will not be affected if and when the Intensity Palette is modified. The **{Make Absolute}** softkey has the same effect - it causes the selected channels to no longer be a reference to a palette.

Update Setup Options

In the **Setup** menu, under **Desk Settings**, there are three options for Updating.

Update Mode allows you to determine whether Update operations will, by default, update changes back to the Palettes (or Presets, as you will see in a later tutorial) used in a Cue/Sub, or result in absolute information (hard numbers). For the remainder of these tutorials, it is assumed that you have changed this mode to **All**, which will update changes back to palettes by default.



With the added power of Intensity Palettes there are some risks. When you use absolute data in a cue, you can be reasonably sure that changes to that cue will not affect other non-tracking cues. When you are using IPs, a bit more care is needed. If you modify a channel in a cue that is using an Intensity Palette (or, as you will later see, any kind of palette), updating that cue will update the palette as well. This can of course be over-ridden on each Update operation, but it does require a greater attention to detail.


Other Examples

Here are some other examples of when Intensity Palettes might be used:

- Record your House Lights into an Intensity Palette labelled "House". Use this palette in the stored cues. If you now see "House" on the Live display in a cue that shouldn't have the House Lights in, it is worth investigating.
- Similarly, the channel which rotates the mirrorball can use an Intensity Palette labelled "MB" for "On". This will make it very obvious when the ball is spinning, even if there are no lights on it.
- In a step-based Effect, you can assign a level for the step channels to go to. Using an Intensity Palette rather than a hard level allows you to have those channels at different levels than each other.

Using Intensity Palettes in Live

Live **Go To Cue** 9 **Enter** 2 1 **Thru** 2 5 **At** 8 **Enter** The wash channels in Cue 9 move to 80%.

2 1  Adjust channel 21 with the wheel to even out the balance. Set channels 21-25 to the levels shown to the right.

Chn	Lev
21	65
22	75
23	60
24	55
25	80

2 1 **Thru** 2 5 **Record** **Int Palette** 1 **Enter** The wash channels are recorded into an Intensity Palette. The channels now show IP1 rather than their levels.

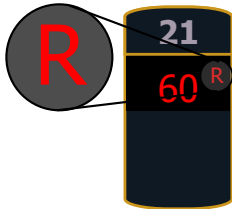
Update **Enter** Cue 9 is updated to contain the wash at an IP rather than absolute levels.

Go To Cue 7 **Enter** 2 1 **Thru** 2 5 **Int Palette** 1 **Enter** This same IP is now manually applied to cue 7


 Press and hold **[Data]** to show the absolute data behind the reference (the IP). **Update** **Enter** Cue 7 is also updated to contain the cyc at an IP rather than absolute levels.

2 1 **At** 6 **Enter** Adjust channel 21 to 60%. Note the red "R" next to this new level. This is a warning to you that this channel *was* in a reference, but you have applied a manual change.

Update **Enter** Update Cue 7. Note that channel 21 is again showing IP1, not 60.



Update will, by default, update back to the original source - in this case, Intensity Palette 1.

Go To Cue 9 **Enter**  Note that as the IP was updated previously, this new level of 60 carries through to each and every cue where IP1 is used.

2 2 **At** 6 **Enter** Modify channel 22 - again note red "R" next to the level.

S 2 **Make Abs** **Enter** Note that channel 22's level of 60 is now "absolute" - it no longer references IP1. The red "R" disappears as well. **Update** **Enter** Cue 9 is updated with channel 22 at 60% as absolute data. As a result, no changes are made to IP1.

Using Intensity Palettes in Blind

Blind **Blind** Go to Blind. Note the double-hitting Blind will force a "re-sync" to the active cue in the main playback. **Format** **Format** Use **[Format]** as required to view as a spreadsheet.


Cue 3 **Enter** Cue 3 is selected for editing. **Group** 3 **Int Palette** 1 **Enter** The wash now uses IP1 rather than 60%.


At 7 **Enter** Level changes are immediately absolute in Blind - there is no worry about accidentally updating palettes as in Live. **Int Palette** 1 **Enter** The wash again uses IP1 for Cue 3.


Editing Intensity Palettes in Blind

Int Palette **Int Palette** Double-hit Intensity Palette to bring up a list. **S 6** **Edit** All record target lists have an **{Edit}** option that will take you to that target in Blind. **Format** Change to Summary (tombstone) format.

2 3 **At** 7 **Enter** As with any changes made in Blind, there is no need to update - the change is made immediately.

Blind **Blind** Again re-sync the active cue in Blind.  Note again that the new level of 70% for channel 23 can be seen in this cue.

Live  Note that channel 23 is still showing at 60%. Changes made in Blind to active Live channels do not automatically refresh.

Go To Cue **Enter**  Note that channel 23 is now fading (in the Go To Cue time) to 70%.

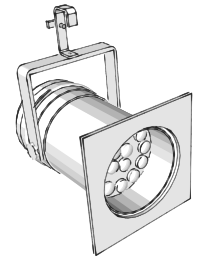


In Live or Blind, create two IPs for a channel to go between 0 and Full, with labels of "Zero" and "11". Now you can brag that your light goes to 11.

Understanding LEDs

The newest technology in entertainment lighting is that of multi-coloured LED fixtures. LEDs are generally a lower-power device for the same amount of light output as a conventional fixture. The simplest and most common multi-colour LED fixture is the Red-Green-Blue or RGB variety.

The theory is that as RGB are primary colours, the three colours can be combined to mix any desired colour. In practice, RGB LEDs have a very limited spectrum and as a result tend to perform poorly for less saturated and/or non-primary mixes.



Controlling LEDs

Most LED fixtures are DMX-controlled, with one DMX channel for each colour. Many also contain a fourth channel for an overall intensity. This "virtual intensity" allows the user to mix colours as desired and then lower the intensity without re-calculating the RGB levels (as these levels are what actually create the intensity). In order to see light output, this intensity channel must be above zero, just as if you were controlling a conventional channel with a colour scroller.

Many LED fixtures also contain "macro" channels for use with lower-end lighting desks that do not have the effect capabilities of the Eos family. In some cases, it may be easier to ignore these parameters. See an example LED DMX chart to the right and note that the "Generic RGBI" profile in Eos only contains 4 parameters.

FabuColour 300	Eos Generic RGBI
1 Red	1 Red
2 Green	2 Green
3 Blue	3 Blue
4 Dimmer	4 Intensity
5 Colour Chase	
6 Colour Fade	
7 Random Strobe	

Note that there are also many RGB LED fixtures that do not contain a virtual intensity, only Red, Green, and Blue LED control. For these fixtures, Eos and Ion still provide the virtual intensity, which operates under the same principle as above - you can mix the RGB colours as desired and then adjust the overall intensity. On the console display, the RGB parameters will still display between 0-100% regardless of the intensity.

Beyond RGB

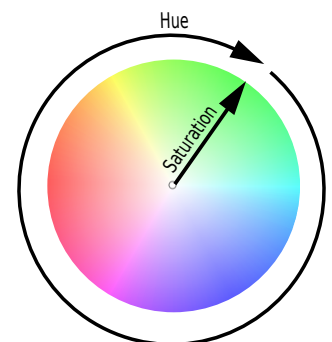
As discussed earlier, RGB LED fixtures do not generally provide a large enough spectrum for more subtle designs. As a result, there are various solutions, such as fixtures with the addition of a white LED (RGBW), or the addition of an amber LED (RGBA).

ETC has a range of LED luminaires called the Selador Series. These lights contain seven different colours in order to "fill in the gaps" left by simpler technologies. In addition, an intensity channel which is optimised to match that of a tungsten light is provided.

Hue and Saturation

As modern lighting rigs now tend to contain a mixture of technologies for adding colour (CMY, RGB, Selador x7, and gel scrollers), The Eos family supports the use of Hue and Saturation to select colours. Hue and Saturation may not be defined parameters on actual lights, but it is an abstracted "Rosetta Stone" to allow you to use one method of colour selection and colour copying across multiple technologies.

As you can see in the diagram to the right, Hue is a 360° circle for "Which Colour?" and Saturation is a 0-100% level for "How Much Colour?". As a result, at 0% Saturation the Hue is irrelevant.

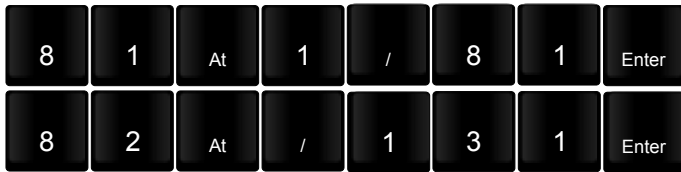


As some technologies fade better between colours in their native format (especially Selador x7 fixtures), a **{Color Format}** button is provided - this simply ensures that record targets use the native mixing format of the luminaire. In addition, you can force fades in native colour space in the Setup menu.

Patching Selador Desire LEDs



Fixtures with multiple modes are shown in blue, to indicate a further layer of information. For example, the physical device in this case is a D40 Fire, which has been put into RGB mode by the user. Clicking on the fixtures shows you the available modes.



Channel 81 is patched at address 81 on universe 1.

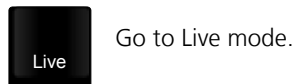
Channel 82 is patched at address 131 on universe 1.



Patch the remaining LED fixtures in the rig:

Channel	Type	Mode	Address
83-84	Selador Desire D40 Ice	RGB	1/91, 1/121
61-64	Selador Desire D40 Lustr+	Direct+Strobe	2/471, 10 addresses between
65-66	Selador Desire D40 Vivid	Direct+Strobe	2/11, 10 addresses between
67-68	Selador Desire D40 Vivid	Direct+Strobe	1/281, 10 addresses between

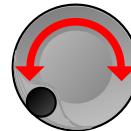
Controlling LEDs in Live



Channel 83, a Selador Ice, goes to Full. Note that due to the intensity channel, there is no need to bring up the individual colours to full.



Go to the Color category if you are not there already. You should now see controls for Hue and Saturation.



Manipulate the Hue/Sat encoders to see the results. Use **[Home]** to again return Hue/Sat to 0/0.



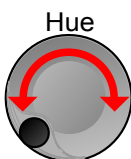
As in Tutorial 18, you have now directly selected Lee 71, and the Hue and Saturation are changed appropriately. Change to a few other colours and then use the Saturation control to mix a very unsaturated blue tint.



The Color Picker uses the same gel range shortcuts that we used while making scroller rolls, so you can call up gel numbers from the command line



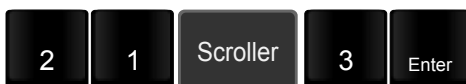
61-68 (Selador Lustrs) recall the data from 83, and go to Full in an unsaturated blue tint.



Hue
Manipulate the Hue encoder to see the subtle change in colour. The Saturation is maintained.



Saturation
Manipulate the Saturation encoder. The Hue is maintained, but the colour becomes much more saturated.



Channel 21 (a scroller) is now in frame 3. Remember you can press the Encoder to post "Scroller" with an Ion.



Channel 21's colour (a lovely red) is copied to the Selador luminaires.



Intensities are faded to zero, and the main cuelist is reset to the top. Note that the manual colour changes you have made are not changed - they simply show in grey.

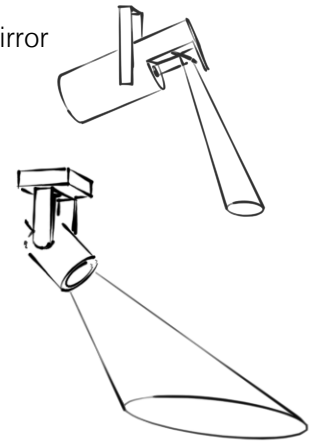


Both intensities and NPs (Non-Intensity Parameters) are returned to their home value. All cue lists will also be returned to the top.

Moving Lights

"Moving Lights" is a generic term for luminaires that have more parameters than just intensity and colour. There is no hard-and-fast rule, but generally any device with focus parameters (where the light is pointing) is considered an ML.

Most MLs fit into one of two categories - "Moving Mirror" and "Moving Head". Moving Mirror fixtures (aka scanners) use a small mirror to direct the light output - the actual source is static. These have the advantage of generally being very quick-moving. The disadvantage, and probably the reason that they are more and more rare, is that they are quite limited in their range - they can only point in a relatively small cone below where they are rigged.



Moving head devices are characterised by the fact that the entire light source (lamp, optics, colour-changing mechanisms, lens, etcetera) physically moves. As a result, they are slower to move than mirror-based fixtures but have a much greater range. Moving head fixtures are much more likely to be found in a theatrical environment than scanners.

NP Parameters

"Moving Lights" could legitimately be referred to as "Buckets O' Parameters". Most moving lights have several parameters, which the software categorises into different, well, categories. For example:

Intensity Category	Focus Category	Color Category	Beam Category
Intensity	Pan	CMY Mixing	Frost
	Tilt	Colour Wheels	Gobo wheels
		Colour Temperature	Zoom Mechanism
		Correction	Framing Shutters
			Animation, etcetera...

Fixture Parameters

Each ML manufacturer decides how to map the DMX (or network-based control) channels for a fixture. For example, two different moving-head fixtures might use the following values:

Superspot 250

DMX	Function
1*	Pan
3*	Tilt
5	Intensity
6	Zoom
7	Gobo Select
8*	Gobo Angle/Speed
10	Function

Wonderbeam 700

DMX	Function
1	Intensity
2*	Tilt
4*	Pan
6	Animation
7	Macro
8*	Gobo Angle/Speed
10	Gobo Select

The starred numbers above indicate that these are 16-bit parameters - they actually use two DMX addresses together. This is common for any attribute that requires greater than 255 individual steps. As an example, 255 steps is more than adequate for Zoom, but would cause problems if applied to Pan which has 540 degrees. Using two addresses together gives 255*255 (~65 thousand) potential values. That should do it!

It would be very difficult to remember how each manufacturer has layed out their mapping. Fortunately, this is where a console's library comes into play - it is a list of manufacturers and fixture models that has this data. You only need to patch the fixture and the desk sorts out which DMX address (offset from the defined start address) should be adjusted for, say, Zoom.

To further complicate things, however, many fixtures have many different modes. Not everyone is lucky enough to have an Eos-family desk, and they may need to run the lights in 8-bit mode, or without fan control, or without reset, etcetera. Also, many fixtures have different options - a fixture may have either framing shutters or an iris - and this must be accounted for when it is patched.

Patching Moving Lights

Displays **S 3 Patch** Enter the Patch display. Ensure that you are in By-Channel format.

2 **4** **1** **Type** **Manfctr** **ETC** **Revolution Wybron** **RWM/SM** Channel 241 is set to a type of ETC Revolution with the appropriate modules.

At **5** **1** **/** **2** **6** **3** **Enter** Channel 241 is patched to universe 51, addresses 263-293 (the DMX footprint of the device).

2 **4** **3** **Type** **Favorites** **Revolution RWM/SM Wybron** Channel 243 is also now set to a type of ETC Revolution from Favorites.

At **/** **2** **0** **1** **Enter** Note that selection **[/]** is a shortcut to fill in the last-used universe.

1 **0** **6** **Thru** **1** **1** **0** **Type** **Manfctr** **Martin** **Mac 250 Entour** **S**

At **2** **/** **2** **0** **1** **More SK** **S 5 Offset** **2** **0** **Enter**

Channels 106 through 110 are patched to 2/201, but leaving a gap of 20 addresses between each fixture rather than the default footprint. This allows for easier fixture/mode changes in the future.



Patch five Martin MAC 250 Wash (Standard mode) to channels 101-105, with a starting address of 2/101. These also have an offset of 20.

Remote Dimmers

1 **1** **5** **Type** **Manfctr** **VariLite** **VL1000 TS** Channel 115 is set to a type of Vari*Lite VL1000TS. Because this fixture requires a remote dimmer, two parts are automatically created, as with scrollers.

At **2** **/** **7** **1** **Enter** Channel 115 Part 1 (the device head) is patched to 2/71-97.

Part **2** **At** **1** **/** **5** **Enter** Channel 115 Part 2 (the remote dimmer) is patched to 1/5.

Inverting Pan and/or Tilt

S 2 Attributes **1** **1** **5** **Invert Pan Enabled** The encoder for the Pan attribute is now inverted. This will make control of the pan more logical and also the same as the MAC moving lights.

Lamp Controls

Live **About** The About display is opened in the CIA - this display will give you detailed information about whatever is selected.

1 **0** **1** **Thru** **1** **1** **0** **Enter** The About display now shows details about Channel 101, the first channel in your selection.

Lamp Controls The **[About]** display contains built-in controls that send the appropriate control channel to the manufacturer-defined levels for various lamp and reset commands are shown.

Lamp On **Enter** The command to strike the discharge lamp is sent.




Add the following gobos to the VL1000 (channel 115):

- Open
- Apollo 3240
- Rosco 77722
- Rosco 77787
- Rosco 77614
- Rosco 77616

Using Pan and Tilt Encoders


Live Go To Cue Out Enter 1 0 1 Full Full

Channel 101, a MAC 250 Wash, is selected and brought to Full. Note that it is pointing straight down, sometimes called its "50/50" position.

Tilt Pan 

First use the Tilt encoder to raise the light up to an approximate angle to provide backlight for Charlie. Then use the Pan encoder to finish the job. In the Live channel display, if you are in Table format you should see the Pan/Tilt degrees onscreen.

GIO ION
Focus Focus


1 0 2 1 0 3
1 0 4 1 0 5

Repeat this process with 102 - 105, using Tilt and then Pan to pick up Charlie. Use **[channel] [Home] [Enter]** if you find yourself lost or are unsure of your tilt orientation.



Recording New Focus Palettes

1 0 1 Thru 1 0 5 Record Focus Palette 1 Enter

A new Focus Palette is created with these MLs pointing at Charlie.

Clear Focus Palette 1 Label Note **charlie** Enter

This FP is now labelled.  Note that this FP is also available on Direct Selects that are assigned as type Focus Palette.

Create Focus Palettes for the remainder of the characters (Lara, Marilyn and Nessie) for 101-105. Going **[Home]** between each Palette is good practice. Test each palette when complete by using **[Home]** and then the FP direct select. Don't forget about **[Next]** and **[Last]**! Put 101-105 at 0% when you're done.



Recording Into Existing Focus Palettes

1 0 6 Full Full Tilt Pan 

Focus channel 106, a MAC 250 Entour, at Charlie. These profiles will act as specials for our figures.

Select Last Record Focus Palette 1 Enter **Confirm** Enter

Channel 106 is added to FP1. Because FP 1 already exists, you must confirm any additions to the Palette. Using **[Select Last]** or a keyed selection before recording a palette ensures that you only record the desired Channels.

Add Channels 106-110 into each Palette. Don't forget to use **[Select Last]** or a keyed channel selection before **[Record]** to ensure that you only store the desired channel(s). Again test each palette to ensure that all of the lights point at the same character.

1 1 5 Full Rem Dim Enter Tilt Pan 

Focus channel 115 at the bottom of the cyc.

Record Focus Palette 5 Label Note **cyc** Enter

You may not realise it now, but it's all gone horribly wrong! Because you did not provide a leading channel selection, you have recorded 101-110 into FP5. Leave it for now, you can fix it later in Blind.

Editing Focus Palettes in Blind

Blind Focus Palette 5 Enter

You are now in a Blind editor for Focus Palette 5. Remember that Blind edits happen immediately - there is no need for **[Update]** or **[Record]**.

1 0 1 Thru 1 1 0 At Enter

101-110 are removed from FP5. This is largely a house-keeping exercise - it gets very confusing very quickly to have data in a Palette that isn't "right".

Step-Based Effects

The Eos family software supports 3 different types of Effects: Step-Based, Absolute, and Relative.

Step-Based Effects are the simplest of the three, and are created in a similar manner to those on many other lighting control desks. Within the effect, you create a number of steps. Each of these steps contains a list of channels and an "On State" and "Off State". Individual steps can be given timing information as well.

By default, the Effect will loop, and play each step in order. When a given step is active, the associated channels will go to the On State, when it is not active, it will go to the Off State. By default, these states are 100% and 0%, but this can be easily changed.

In Live or Blind, you "trigger" the Effect with the command **[Recall From] [Effect] [x] [Enter]**. Unlike many other lighting desks, this does not trigger the Effect externally - the level generated by the effect is embedded in the Cue and recorded in the same manner as "normal" levels - for example, **[Record] [Cue] [x] [Enter]**. This effect level will continue to track until it is given a stop command **[channels] [Effect] [x] [Enter]** or a new level.

Absolute Effects

Absolute Effects contain a list of instructions which your Live selection will perform. For example, you might create an Absolute Effect which sends selected channels between two Focus Palettes, or absolute levels, or Color Palettes, or really any other record target. This list can, of course, have a mixture of instructions - ie "Go to Charlie, Fade to Full, move to Marilyn, fade to Red, fade back to Blue, then snap to 0".

One of the great advantages of Absolute Effects is that because they do not have an embedded Channel list, you can recycle the same Effect with different channels. For example, you might write a fun disco effect and use it, in various different cues, over the MAC Wash lights, the scrollers, the Cyc and any other set of channels. It is often useful to create a Preset to contain each end state, as Presets can contain all of the NPs as well as intensities.

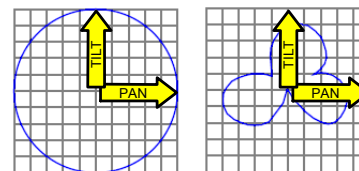
Relative Effects

Relative Effects use a channel's current information and allow you to provide offsets of a given shape and size.

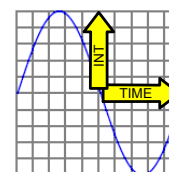
Relative Effects also have a Grouping function which allows you to define how many different groups should spread themselves along the shape - the default grouping is "Spread", meaning one group for each channel that you select.

Relative Effects are further categorised into Focus, Linear and Color.

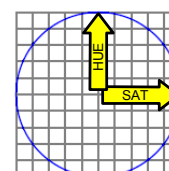
Focus Effects default to a Circle shape about the Pan and Tilt axis. Any shape, however, can be drawn, and the X/Y scaling can be modified. This type of Effect is the best option for drawing shapes about a given starting point - many of the built-in Effects (901 and higher) are Focus Effects.



Linear Effects default to a sinewave shape with Time on the X axis and Intensity on the Y. Again, any shape can be drawn instead of the sinewave, and any parameter or group of parameters can be used instead of Intensity. Some common examples are Iris, Tilt, Pan, Zoom, and Scroller. The Cycle Time will adjust the length of time between repeats.



Color Effects also default to a Circle shape with Hue and Saturation on the axis. In its default state, it will move a channel through the Hue spectrum, leaving saturation static. Again, any shape can be drawn, and the controls are largely the same as Focus and Linear Effects.



Step-Based Effects

Live **Go To Cue** **1** **6** **Enter** **Group** **3** **At** **5** **Enter** **Color Palette** **3** **Enter** From the blackout, put the scrollers in red.

Effect **Effect** Open a list of Effects. 901-916 are built-in Effects you can use later. **1** **Enter** **StepBased** You see a spreadsheet-style interface. This is where you can define the steps, levels, timing, etcetera.

Step **1** **Thru** **5** **Enter** Five steps are created. **Page** **2** **1** **Thru** **2** **5** **Enter** Channels 21-25 are inserted, one to each step.

Live **Recall From** **Effect** **1** **Enter** The effect plays in Live. Once it is playing, changes to the Effect will happen immediately. **Effect** **Effect** You are editing Effect 1 again.

Cycle Time **2** **Enter** The overall time to complete one pass of the Effect is set to 2 seconds. Note that the step times have been adjusted proportionally. **Cycle Time** **1.5** You can also adjust the cycle time on an encoder.

Step **1** **Thru** **5** **Enter** **On/Off** **8** **Page** **1** **Enter** The On and Off states are now 80% and 10%. You could also change individual steps.

Attributes **Bounce** There are many other behaviours that you can change, such as grouping, random rate (for which you also give a **[low] [Thru] [high]** range), and duration options. Leave yours as created above.

Live **Record** **1** **7** **Label Note** **cylon attack** **Enter** Effect-generated levels are recorded into Cues in the same manner as you've recorded throughout - with **[Record]!**

Group **2** **Full** **Full** **Record** **Next** **Label Note** **frack!** **Enter** Note that the Effect continues to track as you add additional cues.

Group **3** **Effect** **Enter** The Effect stops, and 21-25 return to their original value, 50%. **Out** 21-25 are Out. Note that you wouldn't actually need to stop the Effect with **[Effect] [Enter]** - a new level stops Step-Based Effects automatically.

Select Active **Out** **Record** **Next** **Intensity** **Block** **Assert** **Mark** **Label Note** **dbo** **Enter** This blackout is recorded and given the appropriate flags.



Create a new step-based Effect 2 with four steps. Chase 71-74, snapping each light to 70% in with 0 time and then fading out to 0% over 2 seconds. The entire sequence should take 3 seconds. This should be recorded as Cue 20 with a time of 2 seconds. Stop this effect in Cue 21, leaving the lights at 20%. Create a blackout with flags as appropriate for Cue 22.

Remember that you still need to mark 21-25 in Cue 17 as well.

Try changing the Entry/Exit times from "Cue/Sub" to set times to see the results.

Cue-Level Overrides

Live **Go To Cue** **1** **8** **Enter** Effect 1 is tracking from Cue 17. You want it to be a bit faster in the this Cue, which is where we find out that two of the four characters onstage are Cylons.

Effect The CIA shows the Effect Status Display, a list of all running Effects. **1** **Enter** Effect 1 is selected. **Rate** **210** Effect 1 is now playing faster, at 210% of its stored cycle time.

Update **Enter** This Cue-level override is updated into Cue 18. **STOP BACK** **GO** Note that Effect 1 accelerates over 5 seconds, the time of Cue 18.



Create a new Cue 20.5 which contains a Cue-level override for Effect 2, dropping its rate to 45% over 2 seconds.

Absolute Effects

Live Go To Cue Out Enter Kill all running effects from the last tutorial. Effect Effect Open the Effects List.

Effect 1 1 Enter Absolute The Absolute spreadsheet is much smaller and simpler than the Step-Based one. Individual stages are called Actions rather than Steps.

Action 2 Enter Page Page Page 1 0 0 Enter A second Action is created, with a value of 100. The first Action's value is still 0.

Live Go To Cue 5 1 Enter That's all that's required for a basic Absolute Effect, so back in live, bring up a base state for our effect.

Group 3 Effect 1 1 Enter We have achieved a very similar effect to our first Step-Based one, using far less information. This effect can also be reused on any group or selection of channels.

Effect Effect Open the Effects List again. Cycle Time 1 Enter Halving the cycle time speeds up the effect as before. Again, you could also use the Cycle Time encoder.

Grouping 2 Trail Solo Watch what happens on stage when you apply each of these settings. Rather than defining a set list of steps, Absolute Effects allow you to define how the Actions will be distributed over the channels used in the effect.



Try out other settings for Grouping and Trail. Apply Effect 11 to another set of channels in Live. A single Absolute Effect can be applied to several sets of channels at once. Note that any changes you make in the Effects List will apply to any channels currently referencing that effect. If you want independent control over similar effects, you can make multiple copies using the **[Copy To]** command in the Effects List.

Referencing Palettes

Live Go To Cue 5 2 Enter Above we set the value of each action to be a level, i.e. 0 or 100. This is something any channel can relate to (any channel with an intensity at least, which is most of them). Values can also reference Palettes and Presets.

Effect Effect Open the Effects List. Effect 1 2 Enter Absolute Create a new Absolute Effect.

Action 1 Thru 4 Enter Page Page Page Page Create 4 Actions and select the Level field for Action 1.

Focus Palette 1 Enter Focus Palette 1's name, charlie, appears in the Level field (You could also use a direct select for this).

Page Focus Palette 2 Page Focus Palette 3 Page Focus Palette 4 Enter

The four Actions now have the first four Focus Palettes as their Levels. If, in your excitement, you pressed the Page Down key instead of enter at the end, a 5th Action is inserted. To remove an Action, use **[Effect] [12] [Action] [5] [Delete]**. Note that this is backwards compared to the usual way of deleting things.

Live Group 1 1 Effect 1 2 Enter The Mac 250 Washes perform the effect around the 4 Focus Palettes.



The Macs are struggling to physically reach each character. Slow the effect down by increasing the cycle time, or by using a Cue-level override.

Apply Effect 12 to the Mac 250 Entours. Note that as the effect only contains Focus information, you'll have to give them a level manually.

Create a new Absolute Effect, using Color Palettes 3, 5, 7 and 9 as your levels. Apply the effect to the Mac 250 Washes, the Cyc Seladors, the D60s. Anything that references those Color Palettes can join in, although the scrollers won't do a great job. Time for an upgrade? Contact your local ETC sales representative.


Relative Effects - Linear

Live Go To Cue Out Enter Kill all running effects from the last tutorial. Effect Effect Open the Effects List.

Effect 2 1 Enter Linear Linear is the general category of Relative Effects, allowing you to plot any parameter against time. The default is a sine wave on Intensity.

Live Go To Cue 6 1 Enter That's it, you now have a fully functional relative effect.

Group 3 Effect 2 1 Enter Once again, we've achieved a chase effect running across the scrollers. This time, however, it's a bit ... underwhelming.

 Data Because the channels had a level of 0 when the effect was applied, the channels are moving between 25% and -25% (i.e. spending a lot of time at 0). Group 3 At 5 Enter That's a bit better.

Effect Effect Scale 5 0 Enter The channels are now moving between 0 and 100%. Much nicer!

Relative Effects - Focus

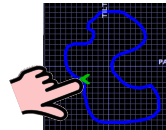
Live Go To Cue 6 1 Enter Back to a blackout. Effect Effect Open the Effects List.

Effect 2 2 Enter Focus The axes of the graph are now labelled Pan and Tilt. The default shape is a circle.

Live 1 1 5 Full Full Focus Palette 5 Enter The VL1000 is pointed at the cyc. This will serve as the centre for our focus effect.

Select Last Effect 2 2 Enter The VL1000 spins in a circle.

Effect Effect Edit Clear The default circle is cleared, and the graph area is now editable.



Using the touchscreen or mouse, draw a shape to your liking (an amoeba is a popular choice).

Apply The VL1000 will do its best to reproduce your shape.



Use your encoders to stretch, squeeze and rotate your shape. This can be useful to tweak an effect which is the right shape, but is hitting a backcloth or audience.



Insert a new Focus Effect 23, apply it to the VL1000 and use the scale and axis functions to squash the default circle so that it doesn't hit the floor or spill off the top of the cyc

Create a new Linear Effect 24, clear the default shape and make a random flicker. Apply it to Group 1, and adjust it to look like a mad scientist has put an axe through your dimmers (ask your local ETC office for replacement options).

Relative Effects - Color

Live Go To Cue 6 2 Enter Cyc Seldadors to Full. Effect Effect Open the Effects List.

Effect 2 5 Enter Color The axes of the graph are now labelled Hue and Saturation. Again, the default shape is a circle. The results of this are harder to visualise, so let's apply it immediately.

Live Group 4 Effect 2 5 Enter The cyc Seladors perform a lovely hue-saturation rainbow.

Displays S 2 Color Picker While the fixtures are selected, the color picker shows a visual representation of the effect.



Magic Sheets

Magic Sheets is a tool that allows you to create a custom layout to display and to interact with your console functions in different ways.

OPEN A NEW OR BLANK MAGIC SHEET

Use Add-a-Tab (the {+} sign)

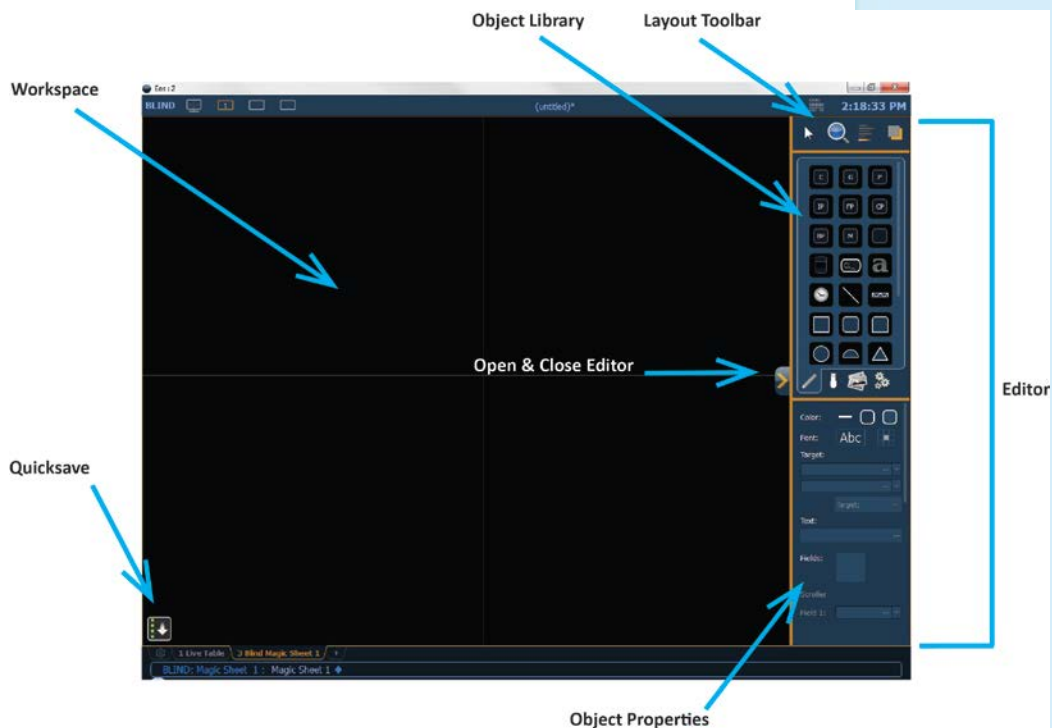
[Displays] {Magic Sheet} [Enter]

Click or touch "create a new Magic Sheet..."

[Displays] {Magic Sheet} [1] [Enter]

GETTING STARTED

Clicking on the Edit button (>) on the right hand side of the magic sheet display will open the editing tools.



QUICK SAVE

Clicking on the {Quick Save} button allows you to save a restore point for the magic sheet you are working on. Once saved, a green check mark will temporarily appear next to the {Quick Save} button.

NOTE: If no restore points are saved, [Undo] [Enter] will delete the magic sheet.



SIMPLE TOOLS

Click in the Object Library on the rectangle – 6th down on right side

Drag and drop it on the worksheet

- Green Handle for proportional stretch
- Blue handles for edge stretch
- White dot handle for rotate
- Pink handles for individual point move

OBJECT PROPERTIES

COLOR PROPERTIES

- Outline line weight
- Outline color
- Object fill color
 - Brightness (saturation) bar on right side
 - X is the no fill or clear.

Select a line weight and a fill color

TARGET ASSIGNMENT

- | | |
|--|---------------------|
| • Beam Palette | • Channel (default) |
| • Color Palette | • Cue |
| • Focus Palette | • Effect |
| • Intensity Palette | • Group |
| • Preset | • Pixel Map |
| • Submaster | • Snapshot |
| • Macro Magic Sheet | • User |
| • Console Button * | |
| • Zoom - when clicked, the view will zoom in to show all objects within that object's group. | |
| • Selection - when clicked, all other objects within that object's group will be selected. | |

Make the target 'Group' and start at number 8

FIELD SELECTION

Up to six different fields of custom information can be displayed

- | | |
|-----------------|----------------|
| • Target ID | • Fixture Type |
| • Target Name | • Label |
| • Text 1-4 | • Intensity |
| • Intensity Bar | • Color Swatch |
| • Summary | • Focus |
| • Color | • Beam |
| • Status | • Prev Move |
| | • Next Move |

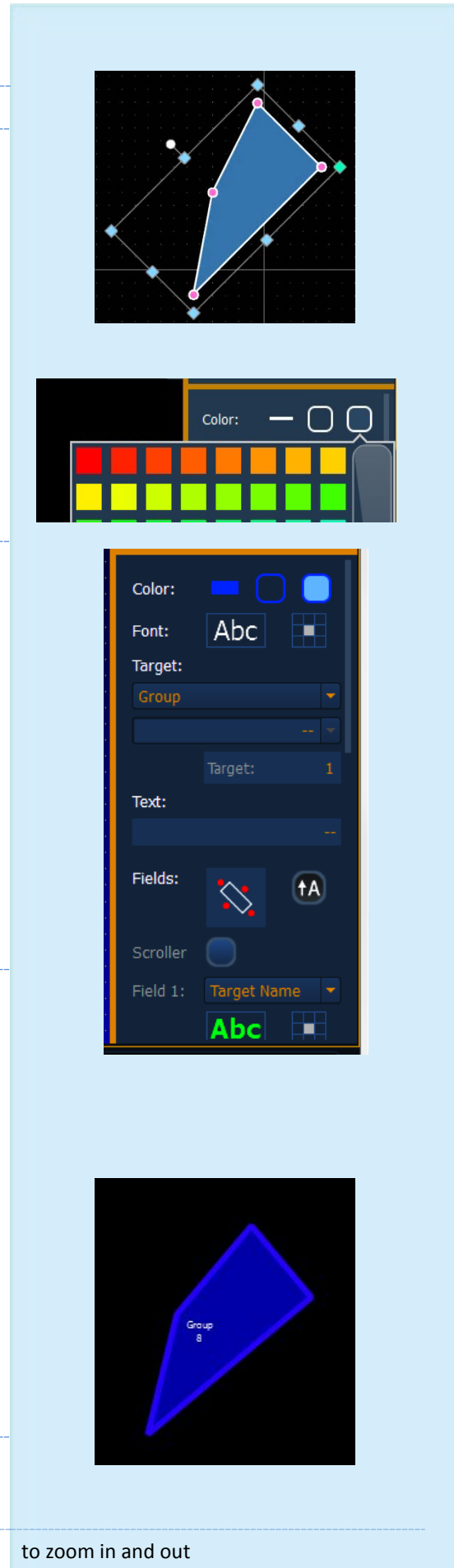
- **Abc or Font icon** - adjust the font type, size, color and style (bold, italic, underline)
- **Alignment icon** - position of the field

Make Field 1 the Target Name and make Field 2 the Target ID

The object might look something like the image to the right.

MOUSE NAVIGATION TOOLS

Use your mouse wheel



to zoom in and out

DISPLAY BEHAVIOR

Determines how the magic Sheet tab interacts with display functions

- **Normal Display** – takes focus like any Display Tab.
- **Channel Display** – uses [Shift] & [Live] to navigate to the tab.
- **Control** - will not take focus unless it is double-clicked.

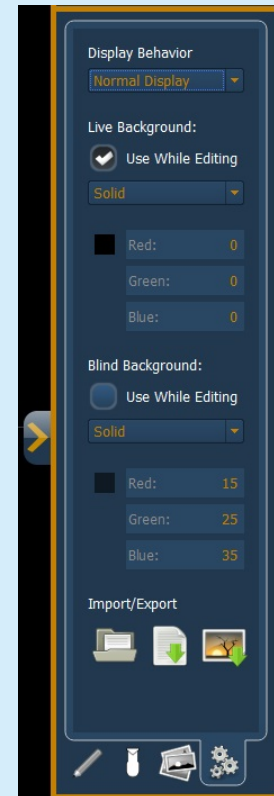
LIVE AND BLIND BACKGROUND SETTINGS

You can select Live and Blind backgrounds for magic sheets. To select the background to be used when editing, check the {Use While Editing} box.

- **Solid** – use Red, Green and Blue to select a color or click on the small square next to 'Red' to open a color picker, complete with saturation bar on the right. Note the X closes the color picker
- **Gradient** – select top and bottom colors and display will scale between the two colors
- **Image** -- click on the image icon to select a background image, set width, height and opacity, options for inverted or normal
 - Currently accepts image files: jpg, tif, bmp, png

Select Gradient in the pull-down menu

Choose a top color and a bottom color



LET'S ADD SOME OTHER OBJECTS

Click in the Object Library on the round rectangle – 6th down center

Drag and drop it on the worksheet, stretch it out longer

Make the target Color Palette 1

Make Field 1 the Target Name, font size to 20

Make Field 2 the Target ID, font size to 20

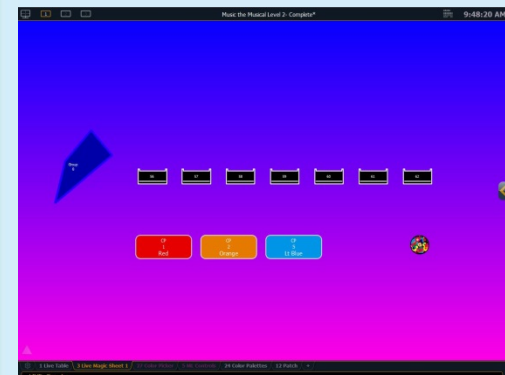
Make Field 3 the Label, font size to 25

Make the fill color red

CTRL+C and then CTRL+V twice

Make the copies: Color Palette 2 (Orange) and Color Palette 5 (Lt Blue)

The magic sheet might look something like the image to the right.



HOW IT WORKS IN LIVE

Close the Editor

Click on Group 8 object. [Full] [Enter]

Click on the Color Palette objects - red, orange, lt. blue

Roll down intensity wheel

now in Live

to bring cyc lights up

cyc changes color – also notice channel objects are changing color

channel objects slowly fade to black.

Right click and hold

to pan or drag the display

CTRL+C and CTRL+V

to copy and paste

Control and multiple clicks

to select multiple objects

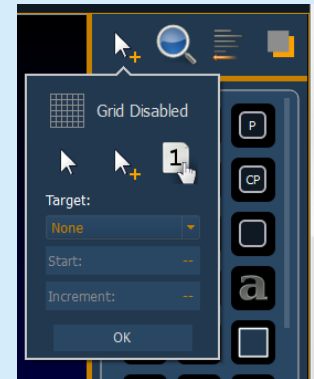
Zoom out to have more room

LAYOUT TOOL BAR

On the Layout Toolbar, click on the Pointer

Click on the Quick Layout Tool (arrow with a plus sign)

Target should be Channel and Start = 56, Increment = 1



OBJECT LIBRARY

Click on the Fixtures Library tab

Select the Selador – 3rd down on right side

On the workspace, click and drop 7 Seladors - preferably horizontally

Click on the red Done icon when finished

Back on Layout Toolbar, change back to Normal pointer (simple arrow)

ALIGNMENT

Click and drag to select all the Selador fixtures

Back on the Layout Toolbar, click on the Align tool

Select Align Middle and then select Distribute Horizontally

BACK TO OBJECT PROPERTIES

Click on the Object Fill Color icon

Click on both Link to Channel Color and Link to Channel Intensity

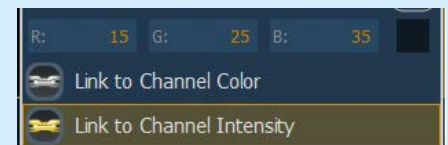


IMAGE LIBRARY TAB

Images can be imported into magic sheets for two different purposes: background images or as icons.

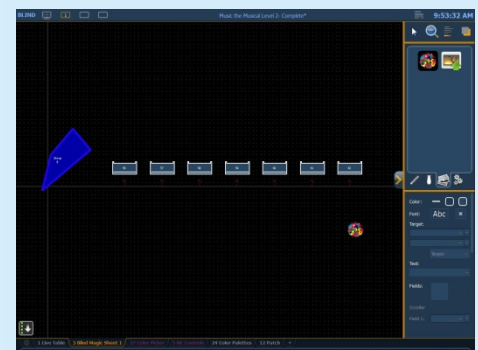
- **[Gobo]** – a direct link to the console gobo library
- Accepted image formats: .bmp, .gif, .ico, .jpg, .pbm, .pgm, .png, .ppm, .svg, .svgz, .tga, .tiff, .xbm, and .xpm.
- The maximum image size allowed is 1920 x 1920

Click in the Images Library

Select your favorite gobo from the gobo library to add to the Image Library

Click on it and add it to the Magic Sheet

The magic sheet might look something like the image to the right.



Ion Hardware Overview

On the back:
 ↩️ Mains input
 - 2x DVI*
 - 1x VGA*
 - Ethernet 😊

- 4/6x USB
 - 2x DMK Out
 - MIDI i/o
 - Phone remote
 - Contact i/o
 * Use VGA or DVI #1, not both!

C.I.A.
 On ext. monitor
 ↗️

Pageable Encoders
 ↙️ ↘️

Master Fader Load Btn
 ↗️

Softkeys
 ↗️

Encoder Categories
 ↙️ ↘️

Live/Blind Navigation
 ↙️ ↘️

Level Wheel
 ↙️

[ENTER]
 ↗️

Numeric Keypad
 ↙️

Record Targets
 ↗️

Main Playback-Stop/Back and GO
 ↗️

Blackout & GM
 ↗️

12Vdc & USB (unless docked)
 ↗️

Dockable Fader wing 2x10 or 2x20
 ↗️

Press both together to Load
 ↗️ ↘️

