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New and Changed for V2.22

**V2.22.0**

**New** – Administrator flag added to User Permissions.

**New** – Special "Relay" type assignable to channels in the Patch and new options added to System Settings.

**New** – Fixture defaults can be set using the patch "Command Line Method"

**New** – “Touch Selected Channels” added to Channel Display “On” Menu.

**New** – “Exclude Zeros” switch added to “Record Group”.

**New** – Right-Click options added to “Page” buttons in palette, submaster and short cuts windows to edit label and color.

**New** – Added <Left Alt> key for Cue Back to “Keyboard Playback Options”.

**New** – Macro variables can have a “Random” attribute.

**New** – “Macro” column added to Cue List grid.

**New** – The “Cue List ID” can be set and changed.

**Changed** – Improvements to Magic Sheets.

**Changed** – Improvements to Cue Playbacks display.

**Changed** – Improvements to Submasters display.
1 Overview

“Darkness cannot drive out darkness; only light can do that”  Martin Luther King, Jr.

LightFactory is a unique PC based lighting controller that combines the best of traditional lighting control with advanced features only available with the power of a PC.

LightFactory was designed with the idea that every lighting engineer, operator or designer could have his or her own control desk. One desk they are completely familiar with, one desk that works for every situation and one desk they can rely on every time. Created by lighting designers for lighting designers, LightFactory allows you to set up a new venue quickly without having to learn a new lighting controller or have budget constraints restrict your choice of desk.

With advanced features for all lighting situations, from museums to stage shows, LightFactory does it all. Control over 76,800 DMX addresses with up to 30,000 channels, depending on license level which can be purchased in blocks of 512 addresses (i.e. by DMX universe).

This user guide will take you through all of the features of the software and show you how to use it to its fullest potential.

How to use this guide

The LightFactory user guide is divided into several main chapters to help navigate through this document.

The Concepts section outlines various ideas assumed within the user guide. It covers lighting concepts, the machine user interface and the ideas used in LightFactory.

The Quick Start guide is a section dedicated to covering the basics of using the system. It will walk you through controlling lights and building a basic show.

The largest part of this guide is the Reference section. This section details each of the windows in LightFactory and covers all of the functions and options available.

Note: Important notes and tips will be shown like this with the LightFactory logo on the left. The notes often contain important information about the current topic.

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2 Concepts

“I am a showman in the traditional sense, but modern, too. I like to use sets and lighting to create magic.” André Rieu

This section covers some lighting basics as well as introducing you to LightFactory’s main concepts and computer terminology required to use the software.

Lighting Concepts

DMX System

DMX (Digital MultipleX) is a multi-drop serial communication protocol and the standard by which lighting control systems interface with lighting equipment.

A DMX controller transmits packets of 512 8-bit values at a rate of up to 44 per second over a balanced cable. This is known as a DMX universe. An 8-bit value has the range of 0 to 255 decimal. Since the values are sent sequentially, each one can be referenced by its position (address) in the packet.

Initially DMX was generated by a physical control desk and controlled banks of dimmer circuits, which in turn were connected to conventional lighting instruments (luminaires). The value (level, often expressed as 0-100%) addressed to each dimmer circuit controlled the brightness (intensity) of the luminaire connected to it.

Over time, more sophisticated (so called “intelligent”) lighting equipment was developed as well as computer-based controllers and DMX values were used to set attributes such as color, aperture, position, etc. in addition to dimmer levels.

RDM

RDM (Remote Device Management) is a protocol enhancement to USITT DMX512 that allows bi-directional communication between a lighting controller and attached RDM compliant devices over a standard DMX line. This protocol will allow configuration, status monitoring, and management of these devices in such a way that it does not disturb the normal operation of standard DMX devices that do not recognize the RDM protocol.
The figure below illustrates an example of how a lighting system consisting of conventional dimmers and intelligent fixtures controlled by a PC-based console might be configured.

**DMX Connection Example**

**Patching**

Most lighting control systems (including LightFactory) allow the assignment (called patching) of DMX addresses to logical controls, usually called channels and/or fixtures. Once patched, the operator uses these controls to set the attributes of the dimmer(s) or fixtures(s) assigned to them.

Typically, a control can have multiple DMX addresses assigned to it. However, the converse is not allowed usually (i.e. a given DMX address can be assigned to one control only).

The figure below shows an example of a simple patch map.

<table>
<thead>
<tr>
<th>Control</th>
<th>DMX Address(es)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>15</td>
<td>Single Dimmer</td>
</tr>
<tr>
<td>2</td>
<td>31, 42</td>
<td>Multiple Dimmers</td>
</tr>
<tr>
<td>3</td>
<td>101-112</td>
<td>Martin MAC 500 Fixture</td>
</tr>
</tbody>
</table>

**Patching Example**
**Fixture Profiles**

Intelligent fixtures can have many functions and can require a block of many DMX addresses to control them. Most lighting control systems (including LightFactory) have available a library of fixture profiles that map functions to (relative) DMX addresses. Once a profile is patched, the operator can manipulate the fixture using labeled controls.

As an example, the Martin MAC 500 fixture patched in the figure above has functions for shutter, dimmer, color wheels, gobo wheels, focus, iris, pan, tilt, etc. and requires a block of 12 DMX addresses.

**LightFactory Concepts**

**User Interface**

LightFactory (LF, for short) is a software-based lighting control system that runs on a PC under Microsoft Windows™. All features of the software are controllable through a graphical user interface (GUI) by either a keyboard/mouse or a touch screen.

In addition to graphical buttons, sliders and menus, LF has a text command interface useable through the PC’s local keyboard or by remote applications over a network that run on Apple™ or android devices.

Also, there are available hardware interfaces (often called “wings”) that can be added to the system. These interfaces provide programmable keys, sliders and encoders to facilitate the control of LF and the lighting fixtures used.

**DMX Interfaces**

In order to use a computer-based lighting controller such as LF, an interface capable of generating the DMX signal that can be connected to or communicate with the PC is required. LF supports several interfaces that connect via USB or are network devices. The LightFactory website lists supported hardware.

Depending on license level, LF can communicate with multiple devices simultaneously, i.e. can control several DMX universes.

**Database**

The top-level storage entity for LF is called a show file (.NEO extension) and is in the form of a relational database. The database engine (Firebird Open Source Database) has built-in automatic backup and restore features to safeguard against data loss. When LF is started, the latest prior show file is loaded and the state of all controls is restored. Any changes made to a show file are saved automatically when the program is exited.

A show file can contain any or all the following:

- **Patch Map** – As described above, the patch map contains the assignment of dimmers and fixtures to LF controls.
- **Cue List(s)** – A cue list contains one or more cues, which are triggerable events affecting the state of the channels associated with the show. An LF show can have multiple cue lists and they can be executed simultaneously, each with its own playback controls.
- **Submaster(s)** – A submaster is a slider (physical or virtual) that allows the level(s) of the control(s) assigned to it to be adjusted.
- **Shortcut(s)** – A shortcut is a physical or virtual button that can be assigned to perform an action when activated.
• Channel Group(s) – A channel group records the state of one or more controls for recall later. A channel group can be assigned to a submaster to control the level, assigned to a shortcut to select or apply the group and be included in cues. These are also called “Specific Palettes”.

• Palette(s) – A palette is similar to a channel group but generally is not channel specific, therefore is called a “Generic Palette”. A palette can record often used values for fixtures, such as color, focus, zoom, etc. for recall later. A palette can be assigned to a shortcut and be included in cues. These are also called “Specific Palettes”.

• Effect(s) – An effect is a time-based routine that operates on controls to change their state in a series of steps. Typical effects are called chases, loops, color changes, etc. LF has a large selection of effect types and aids (wizards) for programming various sequences.

• Macro(s) – A macro can record a sequence of commands that may be used frequently and then recalled to execute the sequence. Macros may be assigned to shortcuts and/or included in cues.

Tracking
As advancements in lighting control systems progressed, two philosophies in the methods used to store and run cues emerged, called Preset and Tracking. In simple terms, a Preset system stores the state of every control in every cue, whereas a Tracking system stores only those controls that have changed from cue to cue while the unchanged controls “track” through.

With the introduction of intelligent fixtures, it became important to distinguish between DMX values used to control the intensity of a dimmer or fixture and those that control other attributes such as pan and tilt, called non-intensity parameters. Intensity parameters usually are applied over time (i.e. faded from one level to another) while non-intensity parameters typically are “snapped” from one level to another.

LF can be set to operate in tracking or non-tracking (preset) mode, but this applies only to intensity values. Non-intensity values are always recorded and played back in tracking mode (with some user-selectable exceptions). Thus, the non-tracking (preset) mode is called “Hybrid Tracking Mode”, while the other is called “Full Tracking Mode”. The mode is set and stored per show so a show will run as programmed when loaded and executed.

Blocking
With tracking there is sometimes a need to indicate that you don’t want particular values to track through successive cues. This is called blocking and LF provides cue level blocking and more detailed blocking on individual fixtures or attributes.

Marking
With intelligent fixtures, especially those that have movement (pan & tilt), color and gobo wheel control, there is a need to tell them when to make changes so you don’t see the results on stage (lights moving, colors changing, etc.). LF provides a method, called marking, to tell a fixture to move only when its intensity is at zero.

MIDI
Musical Instrument Digital Interface, an industry-standard interface used on electronic musical keyboards and PCs for computer control of musical instruments and devices. LF has extensive facilities to receive MIDI messages that can be used to run cues, fire shortcuts, operate submasters and synchronize events via timecodes, etc. LF can also send MIDI messages and timecodes to other systems to synchronize events.

Telnet & UDP
Telnet is a network protocol that provides bidirectional text-oriented communication between applications. Remote applications can send text commands to LF and receive status information from LF. The most useful application of this protocol is for remote control via hand-held devices such as Apple iPhones and iPads or Android devices.

UDP is similar to telnet but is unidirectional and connectionless with no error checking.
Computer Concepts

In order to use the LightFactory software, it is necessary to understand a few basic computer concepts.

Mouse Scroll Wheel
A mouse is a small device that connects to a computer. It is used for navigating around computer software, by means of a pointer. Many types of mouse have what is known as a scroll wheel. This is a wheel set into the top of the mouse, usually located between the left and right buttons.

In LightFactory, the scroll wheel can be used for increasing/decreasing dimmer values in a similar way to the sliders on a lighting console desk.

Drag-and-Drop
Drag-and-drop is a commonly used method of moving one or more items from one location to another using the mouse. Typically, it is done by left clicking on the item you wish to move, then, while still holding down the mouse button, moving the mouse to the required destination and releasing the mouse button.

In LightFactory, drag-and-drop is used to assign fixtures into channels, dimmer patching, etc…

Right-click pop-up Menus
Right-click menus are hidden menus, accessible by clicking the right mouse button. If there is a right-click menu available for a feature, it will appear. Once available, you can click on the desired menu item.

If you right-click and a menu appears that you do not want to use, simply press the escape key on your keyboard (or click elsewhere on the screen) and the menu will disappear.

Screen Real Estate
As the name suggests, screen real estate refers to the screen area you have available on your computer monitor for viewing information.

The individual features of LightFactory are in their own separate windows and can be arranged / resized on the computer screen according to a user’s preference. LightFactory will remember the arrangement and will restore it the next time the software is started.

It is also possible to add one or more extra monitors, thus expanding the available screen real estate.

Window Docking
Some windows in LightFactory can be “docked” onto other windows. This means that the two windows are attached to one-another, which is useful if you want to have two related windows remain next to each other at all times.
3 Quick Start Guide

“We occasionally stumble over the truth but most of us pick ourselves up and hurry off as if nothing had happened.” Winston Churchill

To get you started using your LightFactory system, the following describes a few quick examples of controlling a lighting system and covers the following:

▪ Creating a show file
▪ Using the channel window
▪ Patching a moving light
▪ Controlling a moving light
▪ Creating a basic cue list
▪ Running the show

This quick start guide can be used on both a registered and un-registered system. The only difference being that an un-registered system will output DMX for 30 minutes only.

When the software is started, the “Command Interface” window is displayed and the system is ready to go. On start-up, the software will interrogate your computer and attempt to auto detect any USB DMX hardware you may have connected.

**Note:** Since V2.19, LF defaults to a dark styling mode (light text on dark background) which can be changed back to the ‘classic’ mode of dark text on light background. The ‘classic’ mode will be set for the screen captures in this manual for better readability.

In this example, the software is setup to output one universe to an ENTTEC USB-DMX Pro device. If you are using different DMX hardware with the system see “Chapter 5 – System Properties” for information on configuring other devices.
Note: If this is the first time the software is started, the following screens will appear. For this example, click on the "Advanced Mode" button.
Creating a show file

In the "Command Interface" window, click on the "Options" button and select "New show" from the menu that appears. If there's a show already loaded into LF's memory, a dialog will appear:

New Show

Changes have been made to the current show. Would you like to save the changes to "Unnamed Show" before creating a new blank show?

For this tutorial, click on the "No" button to start creating the demo show. By default, a new show will use "Full Tracking" when storing and playing back cues. However, for this tutorial, we will use "Hybrid Tracking" as described in Chapter 2 Concepts. To change the default mode, click on the "Options" button in the "Command Interface" window and select "System Properties" from the menu and on the screen that appears, click on the "Show Defaults" tab and set "Hybrid Mode" as shown below:
A warning message will appear as shown below:

![Warning Message]

Click on the "OK" to dismiss this message and then the "OK" button on the "System Properties" window to apply the change and dismiss the window.

**Using the Channel Window**

To get started with the tutorial, click on the button labelled "Channel Display" located at the bottom left of the "Command Interface" window or press the F2 key on your keyboard.

![Partial View of Channel Display]

The channel display window is the main access to all of the channels and fixtures that are connected to the software. It allows you to modify the output of a channel, control the attributes of intelligent fixtures and record various functions of the software.

**Note:** The channel display can be shown in a variety of formats. The default format is called "Classic" which works well with the dark styling mode on screen. However, for better readability in this manual, the mode has been changed by clicking on the "View" button and selecting "Expanded (Verbose)."

**STEP 1**

The grid will try to fit as many channels across as it can and so resizing the window will allow you to see as many channels as possible. If you prefer to have a fixed number of channels across the screen you can set this in the view menu. For the figure above, the column count was set to 8.
**STEP 2**

A standard Windows scroll bar on the right-hand side can be used to scroll through the non-visible channels. If you do not have any channels selected you can also use the wheel on your mouse to scroll through the channels.

**STEP 3**

Select **Channel: 1** by left clicking on it with your mouse. You will notice that the cell background changes color to a pale blue. This indicates that the channel is “selected”.

**STEP 4**

Now click on **Channel: 3** and notice its color changes to “selected” and **Channel: 1** becomes “unselected”. This is the default behavior. To select multiple channels, hold down the <**CTRL**> key on the keyboard while clicking on the desired channels.

Reselect **Channel: 1** now by clicking on it while holding down the <**CTRL**> key.

**STEP 5**

On your keyboard, enter @30 and press <**ENTER**>.

As you enter the numbers, you will see them appear in the command line editor box of the main window. As soon as you press <**ENTER**> the selected channels will now have a value of 30%.

**Hint:** Move the command and channel display windows in order to see the command line.

The lights connected to those channels should now be displaying 30% of their maximum output.

**STEP 6**

Un-select **Channel: 1** by clicking on its cell with the left mouse button while holding down the <**CTRL**> key. You will see that the cell is now highlighted green. This indicates that the channel is not selected but is active.

**Note:** An active channel is any channel with an output value above 0.

**STEP 7**

With **Channel: 3** still selected, move the scroll wheel on your mouse forward one click and you should see the value increase. The mouse scroll wheel is a convenient way to control the intensity of selected channels when the exact value you want is unknown.

**Note:** If you do not have a scroll wheel on your mouse, use the GUI scroll wheel in the upper right corner of the Channel Display. The wheel is moved by holding down the left mouse button over the graphic and moving the mouse up or down.

Channels can also be selected in large numbers by holding the left mouse button down, dragging it over the channels you want and releasing the button. For example:

1. Click on **Channel: 5** and hold down the mouse button.
2. Now drag the mouse over to **Channel: 7** and release the button. You should now see channels 5, 6 and 7 all selected.
3. Move the scroll wheel forward and back and notice that all of the selected channels increase or decrease with every movement.

**Note:** Before proceeding to the next section, click on the “Release” button twice in the Channel Display to reset the channels back to inactive.
Patching a Moving Light

To use the channel window for controlling a moving or intelligent light you first need to tell the software where and how the fixture is patched, i.e. what channel will be used to control the fixture and what DMX addresses are assigned.

In this example you will patch a Martin MAC 250 Entour that is running in extended mode (Mode 2) with its starting address set to 26.

**STEP 1**

Open the patching window by clicking on the “Patch” button at the bottom of the command interface or press the F7 key on your keyboard.

![Patch window showing MAC 250 Entour patched to Fixture 6](image)

**STEP 2**

Below the label “Fixtures” near the bottom right of the window you will see a list of manufacturers of lighting fixtures and devices.

Scroll through the list and expand the “Martin” brand by clicking on the small arrow to the left of the name. You should then see the complete list of the Martin fixtures contained in the fixture library.

**STEP 3**

Scroll to and click on the model “MAC 250 Entour (Mode 2)”. Notice that the picture on the right-hand side has changed to show your selection.
STEP 4

Move the mouse over the “DMX Outputs” section of the window and notice that as you move the mouse the 18 addresses trailing your mouse are highlighted. This shows that the fixture you have selected uses 18 addresses to control it and that you should consider these reserved for this light.

STEP 5

Move the mouse over address 26 (our starting address) and click and hold down the left mouse button. Drag the mouse over to the left hand side of the window and over Fixture 6.

In the dimmer patching window, you will now see that the details column of Fixture 6 displays “MAC 250 Entour (Mode 2) @ 1.26”. This shows us that a MAC 250 is patched with the starting address of 26 in Universe 1.

Note: You will notice that address 6 is now “Unpatched”. This is because Fixture 6 where it used to be patched has been superseded with the Mac 250. Also Fixtures 26 through 43 are now blank and do not contain any patch information (Scroll the left side of the patch window to see these). This is because the addresses that were patched to these fixtures are now in use by the Mac 250 that you just patched. LightFactory will allow you to overlap patch information but by default it will assume this is undesirable and will un-patch for you automatically.

STEP 6

Click on the “Options” menu and select “Save patch & close window” from the popup menu that appears. Alternatively you can close the window with the X in the top right hand corner and the software will prompt you to save your changes. The dimmer patching window is the only place in LightFactory where you specifically need to save your work. In all other windows the changes are saved automatically.

You are now ready to use this fixture in the channel window as Fixture: 6. To patch other moving lights, simply repeat the procedure above patching each light into the desired channel.

Note: You can patch multiple fixtures of the same type all at once by changing the quantity (Qty) number in the available fixtures section of the patch window.
Controlling a Moving Light

**Note:** This section assumes that you know how to open the channel window and have already done the patching exercise above.

Before proceeding to the next section, click on the "Release" button twice in the Channel Display to reset the channels back to inactive.

Have a close look at channel six and notice that the content of the cell has changed. It is now labeled "**Fixture: 6**" and below the label is the name of the fixture followed by its attributes.

**STEP 2**

Click on **Fixture: 6** and as well as highlighting the cell, the "**Fixture Control**" window will appear in the sidebar on the right side of the window.

![Channel Display window showing fixture control](image)

The "**Fixture Control**" window can now be used to modify the attributes of the moving light. The attributes are grouped by function accessible via the tabs along the top of the window. The tabs presented will vary per instrument type and are controlled by the fixture definition file associated with it.

On the "**Position**" tab you will see a picture of the fixture you have selected as this makes the background for the primary pan and tilt control. Click and drag the mouse around this picture to change the pan and tilt values of the fixture. If the fixture is physically attached to the system the changes will immediately take effect and you will see the fixture move.

Only the controls that are applicable to the selected fixture will be shown in the fixture control window. However if you select multiple fixture types, then a generic control window will be displayed. This generic window may have attributes shown that a fixture is not able to do. The software will always try to apply the generic attribute to the best of its ability based on internal logic. For example if you choose a color from the color picker and the fixture only has a color wheel (rather than color mixing capabilities), the software will find the closest match to the color chosen.
Control of the dimmer of intelligent fixtures can be done in the Fixture Control window using the “Primary Dimmer” control or from the Channel Display window using the mouse scroll wheel or entering the value on the command line.

Creating a Basic Cue List

A basic cue list is a series of cues each containing a specific lighting state or scene. The transition between each lighting state can also be defined to control the timing of how the cue plays back.

Notes: This guide assumes HYBRID tracking mode was selected as described in “Creating a show file” above.

LightFactory allows you to create multiple cue lists and play back multiple cue lists at the same time. This example will focus on a single cue list.

Also, this example does not cover the use of the effects engine, but only basic cues.

In the show you are going to create you will have three different scenes and will only use the first 12 channels. The table below shows the three cues and their contents. In this show, the cues transition from a very bright scene to a very dim scene and then back to a bright scene again. The show also uses the moving light that was patched into Fixture: 6 and places it at a specific position for each scene.

<table>
<thead>
<tr>
<th>Cue</th>
<th>Channel</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>@80</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>100%, 128°pan, 27°tilt</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>30%, 128°pan, -46°tilt</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>80%</td>
</tr>
</tbody>
</table>

Before you create these simple cues in LightFactory, open the channel display and set all of the fixtures back to zero so that no channel is active. Do this by clicking twice on the button “Release” at the top right of this window. The channel display will now look as it did when you first started with all the channels having a gray background (not selected or active).

You are now ready to start programming the show.

Creating Cue 1

Click on channels 2 and 3 to select them and then enter @80 on your keyboard and press <ENTER>. The selected channels should now be set to 80%. The * can also be used as an alternative to the @ symbol. (e.g. *80).
STEP 2

Double click on **Fixture: 6** to bring it up to 100%. Because this is an intelligent fixture, the “Fixture Control” window will appear automatically. Set the pan and tilt to the desired location using the control described above in “Controlling a Moving Light”.

**Hint:** Use the mouse to drag the position pointer to approximately the desired pan and tilt values and adjust with the PAN and TILT spin boxes to the right of the picture.

STEP 3

Once you have set the desired scene, click on the **Record Cue** button.

![Record Cue (Active Channel) dialog box]

STEP 4

The “**Record Cue**” dialog box will be displayed. LightFactory will automatically pick the active cue list (for this example, this will be the only cue list) and set the cue number to the next available cue. Click the “**OK**” button to record this cue. The cue has now been recorded with the active channels in their current state.

**Creating Cue 2**

STEP 1

Select channels 2 and 3 and set their value back to zero.

STEP 2

Now select channels 1, 7 and 11 and set their values to 20%. (Hold down `<CTRL>` key while selecting.)

STEP 3

Click on **Fixture: 6**. Bring its intensity back to 30% by either entering `@30` on your keyboard or using the scroll wheel.
**STEP 4**

In the “Fixture Control” window set the new position for cue 2.

**STEP 5**

Now that the second scene is set, click on the “Record Cue” button again. Alternatively you can use the keyboard shortcut <CTRL>+C to perform the same operation.

**STEP 6**

In the resulting “Record Cue” dialog, cue 2 should already be set in the “Cue Number” edit box. If this is not the case, enter the number 2 and click the “OK” button.

**Creating Cue 3**

**STEP 1**

Click on the arrow next to the “Release” button and select “Release all control” to reset all channels to dimmer levels of 0.

**STEP 2**

Double click on Channel: 8 to bring it up to 100%.

**STEP 3**

Select Channel: 9. Set its value to 80%.

**STEP 4**

Now that the third scene is set, click on the “Record Cue” button or press <CTRL>c.

**STEP 5**

In the resulting “Record Cue” dialog, cue 3 should already be set in the “Cue Number” edit box. If this is not the case, enter the number 3 and press the “OK” button.
The Cue List Editor

To view and modify the newly created cue list, open the “Cue List” editor by clicking the button on the Command Interface or by pressing F4 on your keyboard.

![Cue List Editor Window](image)

Cue List Editor Window

This window will show the three cues you just created, and you will see in the “Channels” field the fixtures used in each cue.

Setting the transition between cues

In this example, you will apply the following transitions between each cue.

4. Cue 1 will fade up slowly over 5 seconds.
5. Cue 1 will fade down in 2 seconds when Cue 2 is triggered.
6. Cue 2 will delay for 2 seconds, then fade up quickly (1 second).
7. Cue 2 will fade down in 3 seconds while cue 3 fades in.

To apply these rules, you need to set the fields on the right-hand side of the window.

**STEP 1**

In the row for Cue 1, enter the number 5 into the field labelled “Cue Time” and press <ENTER>. Notice that the “Down Time” for Cue 1 automatically follows, but can be overridden if desired.

**Note:** You can also navigate through the time fields in the cue list by use of the arrow keys. The <ENTER> key must be used on the last field for the value entered in that field to take effect.
STEP 2

To prevent a cross fade between Cues 1 & 2, you need to set a delayed start on Cue 2 of 2 seconds. This will cause Cue 2 to wait the same length of time it takes Cue 1 to fade out. In the row for Cue 2, enter the number 2 in the field labelled “Cue Delay”, enter a 1 into the field “Cue Time” and enter a 2 into the field “Down Time”.

STEP 3

For Cue 3, the default “Cue Time” and “Down Time” of 3 seconds are already set. The time and delay fields should now appear as shown below.

<table>
<thead>
<tr>
<th>Cue No</th>
<th>Description</th>
<th>Status</th>
<th>Trigger</th>
<th>Channels</th>
<th>Effects (Fx)</th>
<th>Shortcuts</th>
<th>Groups</th>
<th>Follow Time</th>
<th>Cue Delay</th>
<th>Cue Time</th>
<th>Down Delay</th>
<th>Down Time</th>
<th>Fx Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Starting Cue</td>
<td></td>
<td>Manual</td>
<td></td>
<td>None</td>
<td>None</td>
<td>User</td>
<td>3s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Manual</td>
<td>2/0/8</td>
<td>None</td>
<td>None</td>
<td>User</td>
<td>3s</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Manual</td>
<td>Manual</td>
<td>1,4/7,11</td>
<td>None</td>
<td>None</td>
<td>User</td>
<td>2s</td>
<td>2s</td>
<td>2s</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Manual</td>
<td>Manual</td>
<td>8/6</td>
<td>None</td>
<td>None</td>
<td>User</td>
<td>2s</td>
<td>2s</td>
<td>2s</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STEP 4

This completes the modifications to the cue list and the editor window can be closed.

Saving the Show

In the “Command Interface” window, click the “Options” button and select “Save As…” from the menu. The “Save show file” dialog window will be displayed:

Enter a name (in this case “Quick Start”) in the “File name:” box and click the “Save” button.
Running the show

You are now ready to run the show for the first time and see the result of the procedure above. If you have a real lighting rig connected to the system, you should see the result apply to your rig. However, in the absence of real lights, you can see the effect of running the cues in the Channel Display window.

Note: While you can run cues directly from the “Cue List” editor window, they can be run also using the playback controls located in the sidebar of the “Channel Display” window as shown below.

Click the “Go” button and Cue 0 (the Starting Cue) should run. In this example, this cue is blank without any fixtures set. There is no reason not to use this cue other than to have a blacked-out state when the show begins. Click the “Go” button again and notice how channels 2, 3, and 6 slowly fade from zero to their set values over a period of 5 seconds. Once this cue has finished, (green progress bars for the currently executing cue and the outgoing cue will show the status) click the “Go” button again to go from Cue 1 to Cue 2. This time Cue 1 will fade out, and then Cue 2 will quickly fade in. The current cue will always be highlighted in gold.

Clicking the “Stop/Back” button while a cue fade is in progress will halt the execution which can then be resumed by clicking “Go” again. If you click “Stop/Back” a second time, the previous cue will be executed.

The “Reset” button will release all control and set Cue 0 as the cue to be executed the next time the “Go” button is pressed.
4 Options

Options menu

The options menu is at the bottom left of the Command Interface, accessible by clicking on the word "Options" with your mouse. The options that appear are:
**New Show** – Creates a new blank show in the active database and loads this as the current show. A prompt to save the previous current show is provided if changed and not previously saved. Depending on the state of an option in System Settings, the new show can be patched one-to-one or with nothing patched. If any templates have been saved previously, they will be listed in the dialog and be loaded rather than creating a blank show.

**Note:** You can create a new show directly when starting LightFactory by holding down the left `<CTRL>` button before clicking on the application icon.

**Open File** – Opens an existing show file from several formats and loads it into the active database (“ACTIVE SHOW.FDB”) as the current show. A prompt to save the previous current show is provided if changed and not previously saved. Show files from earlier versions of LightFactory (with .FDB extensions) will be converted to the new .NEO format. Show files may be loaded from any online source such as USB memory sticks or network drives. Below is an example of the Open dialog:

In addition to the standard .NEO format, other forms of saved shows may be loaded by choosing the appropriate tab on the left side of the dialog window.

**New Show** – This tab allows you to create a new blank show or load a template (see ‘Save File…’ below). A blank show may be created with nothing patched or with a one-to-one patch depending on the state of the option “Start new shows with nothing patched” found under the Intermediate tab of System Settings.

**Open Show** – This tab is selected by default when “Open File” is chosen from the Options menu. A list of available show files from the selected source is shown. Click on the desired file to select it, then click on the “Open” button to load it. Normally, only the latest version of each show file is shown. However, if you wish to load a saved prior version of a show file, set the switch at the bottom to “Revision Files Showing” to see the files with “_REVn” listed (See “Save” option below for more information on revision files).
Open Packed Show – Packed shows have the extension .RPS. After selecting and opening a packed show file, the following dialog appears:

This dialog allows you to choose what features contained in the packed file will be loaded. The default state of the options is shown.

Import Show – Use this option to load elements from another show file and merge them into the current show. Once opened, LightFactory will read all of the information about the show and allow you to select what elements you want to import. You can select to import Channel Groups, Cue Lists, Effects, Palettes, Macros and Patch information.
To select the elements of the show you want to import, use the check boxes on the right of each line. There are 6 tabs on the left that separate out the different parts of a LightFactory show.

If a name conflict is detected when importing any part of the show, the imported element will be renamed as “Copy of <previous name>”.

Once you have selected the elements you want to import, click on the “Import” button to proceed.

Import ASCII – The United States Institute for Theatre Technology (USITT) developed a specification titled “ASCII Text Representation for Lighting Console Data” which outlines a format for transferring the information contained in a show file from one lighting console to another. The specification defines standard keywords and record types, but allows for considerable flexibility in defining manufacturer-specific features.

This option in LightFactory is geared primarily around importing show files from Electronic Theater Controls (ETC) consoles, although files from other suppliers may work also. The files may have several file types, such as .ALQ, .ASC, .CSV, .TXT, etc.

When the file to be imported is selected, the following warning dialog is displayed:

Answer “No” if you wish to save the current show before proceeding with the import.

Restore Backup – Backups are in the form of compressed zip files stored in a folder called “show backups” (or other user-designated folder). The number of backup files kept is a settable option, the default being 10.

The naming convention for backup files is “{show name}_{date}_{time}.zip”.


Revision Files switch – Default: Hidden. See description of the “Save” option below. If set to Showing, the files ending “.REVn” will be listed.

Save – If any changes have been made to the current show since it was loaded, the name shown in the Channel Display will have an “*” at the end and this option will be armed. When chosen, an archive copy of the original show file is created with “.REVn” appended to the show name, where “n” is a digit starting at 1 and incremented for each save operation. This allows the user to load previous versions of the show file if desired.
Save File… – Opens a dialog window with options to save the current show in several formats as described below.

Save Show - This tab is selected by default when “Save File…” is chosen from the Options menu. Enter the name of the file you wish to save in the edit box and if you click on the “Save” button, saves the current show with the new name, closes the current show and the newly named show becomes the current show loaded into the active database.

**Note:** If you select an existing show file, all information will be overwritten by the “Current Show”. A warning dialog will inform you if you are about to overwrite an existing show.

If you click on the “Save Copy” button, saves a copy of the current show with the new name but keeps the current show in the active database.

Save Packed Show – This tab is used to create a file with an .nps extension that contains the show file, system settings and all related media files. The packed file may be used to clone the exact setup from one PC running LightFactory to another.

Save Template – If you have standard show elements, such as patch, groups, cues, effects, palettes, macros, etc. that you use in every show, you may wish to save them as a template which can be then loaded as the starting point for a new show. Use this tab which will create a template file with the extension .ntf in a separate directory (…\Documents\LightFactory Templates). To retrieve a template, use the “New Show” tab of the “Open File” dialog.

Connect to remote - LightFactory can connect to a remote database server to allow multiple users to manipulate the same show. Details of how to set up the database server and connect to it with LightFactory is available in the document titled “LightFactory V2 Multi User Setup Guide” which is supplied with the installation kit.

Backup Now – LightFactory automatically creates a backup file of the current show periodically and every time it exits. However, there may be a situation where you want to create a specific backup to capture the current state of a show under development. Use this option to create a backup without exiting the software.
**System Properties** – a series of options allowing you to configure hardware, database, default settings, and licensing information. The details are covered in [Chapter 5 – System Properties](#).

**External Triggers** – LightFactory can accept control messages produced by other systems through a variety of hardware interfaces. See section [External Triggers](#) for details.

**Hardware Interfaces** - External wings are dedicated hardware designed to provide hands-on control of LightFactory. They include playback, shortcut, and program devices. See the document “[Installing LightFactory](#)” for instructions on installing and configuring wings.

**Scheduled Tasks** – Virtually all functions within LightFactory can be scheduled to execute automatically at set times. See section [Scheduled Tasks](#) for details.

**User Permissions** – Use this feature to control access to various functions by a user name and password. Details in section [User Permissions](#).

**Attach to task bar** – Expands the Command Window to the width of the display removing the normal title bar. This option button then changes to “[Detach from task bar](#)” to restore the normal window.

**Manuals & Documentation** – Shows a list of documentation items available to be opened. This User Guide is one of the selections.

**About LightFactory** – Shows the about screen for copyright message, version and registration details.

**Lock** – The LightFactory command interface can be locked so it cannot accept any input until unlocked.

**Restart** – Close the current instance of the program and start a new instance.

**Shutdown** – Close LightFactory.

**Note:** If the option “Shutdown System on Exit” is set in “System Settings”, the PC will shut down after LightFactory exits. Also, if the option “Prompt to Close Software” is set, a confirmation dialog will be displayed before LightFactory exits.
External Triggers
LightFactory provides the ability to connect external triggering devices and programs to control the running of shows and other features. When this option is selected, the following window is displayed:

On the left side are tabs that switch the right side to the setup details for the chosen trigger method. The following sections give details about each method.
**MIDI Control**

The Musical Instrument Digital Interface (MIDI) is a standard that describes a protocol, digital interface and connectors which allows a wide variety of electronic instruments, computers and other devices to connect and communicate with one another. A single MIDI link can carry up to 16 channels of information, each of which can be routed to a separate device. In addition to physical connections there are utilities available that create virtual MIDI ports enabling two or more programs to communicate with one another on the same or networked computers. In the examples below, the virtual MIDI device used is loopBe.

The MIDI specification defines several message types. LightFactory can receive and respond to Note ON/OFF, Control Change, Show Control and Timecode messages. The details of each type are given below.

Note ON/OFF messages contain a note number and a “velocity” value, both in the range of 0-127 decimal. LightFactory maps the note number to an action to be performed such as triggering a shortcut or sending a GO command. The velocity value can be used to set the level of a submaster control, where a value of 127 represents a submaster at full level.

Similarly, Control Change messages contain a control number and a value, both in the range of 0-127 decimal. These are referred to below as “Value 1” and “Value 2”. Value 1 can be mapped to submasters or shortcuts and Value 2 can be used to set the level of a submaster control, where a value of 127 represents a submaster at full level.

To enable the MIDI functions you must turn on the “Enable MIDI Events” option.

**MIDI LEARN**

To make it easier to set up MIDI triggers being received from an external device or program, LightFactory can learn events as you go. The following is an example of a received event:

Click on the “START LEARNING” button to begin listening for MIDI events. As soon as a MIDI message sent to LightFactory is received, the “Found MIDI event” options will be shown.
Use the ACTION options to determine what the MIDI event will do. To the right of the action options will appear any additional parameters required. For example to execute a shortcut you must set the number you want to trigger.

Once you have set what you want the event to do, click on the Save button. The event will be added to the appropriate type, i.e. “Note Triggers”, “Note Velocity” or “Control Change Events”.

Note: Timecode events are handled differently. See Timecode (MTC)/ Clock description below.

Click on the Cancel button to return to the “START LEARNING” state without saving the current event.

Use the “Save and Start” button to save the event action and return to the learn state.

NOTE TRIGGERS

The “Note Triggers” tab provides the ability to add any number of note on/off triggers to the system manually. Click on the “Add” button to create a new line in the list of triggers. To remove a trigger click on the row you wish to remove and click on the “Remove” button.

Each trigger requires the following settings:

Description – This provides a way to identify the trigger by entering a description for your reference.

Channel – Identify the MIDI Channel to listen on (1-16).

Device – Interface device to listen on. This is a pulldown list of any MIDI interfaces connected to the system.

Note – This is the scale note that will trigger the event.

On/Off – Determine if the system will trigger by a note on or note off event.
Octave – The MIDI octave number of the scale note that will trigger the event. The MIDI octave ranges from -1 to 9. Note C in octave 4 is middle C, for example. To help in translating the received MIDI message to the Note and Octave, use the following conversion chart:

<table>
<thead>
<tr>
<th>Note</th>
<th>Octave</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1</td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>C#</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>D#</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
</tr>
<tr>
<td>F#</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td></td>
</tr>
<tr>
<td>G#</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>A#</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
</tbody>
</table>

Action – Each event can either trigger a shortcut, execute the GO command in the Master Playback or send a command to the Command Interface. Use the drop-down combo to select one of these options.

Shortcut/Command – If the action is set to “Shortcut”, this field is used to specify what shortcut number you want this trigger to execute. If set to “Command” enter the command syntax into this field (Example: cue go).

Import / Export – To help manage a large number of MIDI note triggers you can import this information from a comma separated text file (.csv). Click on each of these buttons to open a standard Windows file dialog to select the file you want to import from or export to.

**Hint:** You can create a .csv file with a text editor such as WordPad. To see the format of the triggers, create a few manually and use Export to create a file to look at for reference. Then you can edit your own .csv file and Import it into LightFactory.

When choosing the import option, a dialog will pop up asking you if you want to remove existing entries before importing the new data.
The “Note Velocity” events can be used to directly control submasters within LightFactory. Click on the “Add” button to create a new line in the list of velocity triggers. To remove a trigger click on the row you wish to remove and click on the “Remove” button.

**Note:** Control Change events can be used to control submasters as well and may be a better choice if motorized MIDI faders are connected to LightFactory. See next section for more details.

**Description** – This provides a way to identify the trigger by entering a description for your reference.

**Channel** – Identify the MIDI Channel to listen on (1-16)

**Device** – Device to listen to.

**Note Number** – This is the MIDI note number that the software will listen for and translate the velocity into a submaster value. Velocity values are in the range of 0-127 decimal, where a value of 127 represents a submaster at full level.

**Submaster** – Set the submaster number that will be controlled when the note is received.

**Import / Export** – Same as described in Note Triggers above.
The "Control Change Events" tab allows you to set up LightFactory to respond to control change events.

**Submaster & Shortcut Channel #** - Set this option to determine the channel number that will be listened to for control change events.

**Submaster Device** – MIDI devices can be used to control LightFactory submasters in the same way as the DMX input option. Low cost MIDI fader devices can be connected to provide this functionality. To activate this function select the device from the combo box provided.

LightFactory will listen for “Control Change” messages and apply the received “Value 2” to the submaster defined by “Value 1”. To set the first control change identifying number, use the “First Control #” option to the right of the device selection box. For example, setting First Control # to 21 would mean Control Change message 21 would control submaster 1, 22 would control submaster 2, etc.

**Shortcut Device** – The same function as above can be applied to shortcuts also. Select the device to listen to for control change messages and set the First Control # to correspond to shortcut 1 in LightFactory.

**Send submaster change MIDI messages** – If your device supports motorized faders, then LightFactory can send MIDI control messages back to the device to change the physical sliders. This is useful when changing the submaster page in LightFactory or if you make an on-screen change to a submaster. The physical sliders will move with the changes you make. If the device you are using does not support motorized faders then it is recommended to turn this option off.

**Ignore shortcut messages except 127** – Some external MIDI devices send 2 messages for a button press, one message for down and one for up. This can trigger the shortcut twice and is undesirable. If you experience this problem, turn this option on to ignore all messages except those sending a “Value 2” of 127.

**Wide Mode** – Wide mode will map the maximum number of incoming MIDI control change messages to submasters.
Control Change mapping – Below the primary options is a grid that can be used to map control change message directly to shortcuts, commands, submasters or encoders. Use the Add button to create a new event listener and set the channel, device and control change number to listen for.

Use the action field to set what will happen when the CC message is received. The options for this field are Shortcut, Submaster, Command or Encoder.

As with the MIDI note message, the Import and Export options can be used to save and load the setting to and from a .CSV file.

TIMECODE (MTC) / CLOCK

The “Timecode (MTC) / Clock” tab allows you to set up LightFactory to listen to incoming MIDI timecode data and MIDI clock signals or send MIDI timecode data to other devices.

The MIDI timecode read by LightFactory can be used to trigger timecode events.

The MIDI clock signal can be used to setup the tap tempo function in the software and synchronize your show to a common tempo.

Timecode Device – Select the device that timecode data will be read from or sent to. A separate device can be selected for input and output.

Receive MIDI Timecode (MTC) – Enable this check box to begin receiving MIDI timecode from the selected device. When turned on, the Send option below it will be turned off automatically.

Receive MIDI Clock – Enable this check box to begin processing of MIDI clock data. The incoming clock messages will be used to set the timing of the tap tempo within LightFactory. If the timing of the incoming clock changes, the tap tempo will be updated automatically.
**MIDI Clock Divisor** – The value of the MIDI clock divisor is used to slow down the internal tempo relative to the incoming clock signals. The incoming beats per minute will be divided by this number when calculating the actual Tap Tempo. For example, if the incoming clock is running at 120 beats per minute and the divisor is set to 2 then the Tap Tempo will register 60 beats per minute.

**Send MIDI Timecode (MTC)** – If this option is turned on, then the receive option will be turned off. When using any of the other timecode options (found in the Timecode tab), the timecode will be sent to the selected MIDI device to allow other systems to synchronize with LightFactory.

**Sending MTC Type** – If you are sending MIDI timecode from LightFactory, you will need to set the frame rate that you want to generate. This is typically defined by the application (film, NTSC/PAL television, etc.), but if you are unsure set this to 25 fps.

Changes to the frame type will apply immediately so you can try different settings to see how it effects other equipment that might be reading the timecode LightFactory is generating.

**MIDI SHOW CONTROL**

LightFactory can send and receive MIDI Show Control (MSC) messages. Use this tab to set up the sending and receiving devices. Click “Enable MIDI Show” to turn on this function. Checking “Auto send MSC on cue execution” will cause LF to send a message automatically every time a Cue GO command is executed.

**DEBUG MESSAGES**

The “Debug Messages” tab can be used to help identify any problems with receiving MIDI messages.
**Line in**
The PC Line-in triggers can use any audio source to control LightFactory. An audio event can trigger a cue GO, fire a shortcut, flash a submaster or run a command.

The “Line in” tab provides the ability to set the audio source and then create multiple events. Each event is determined by the frequency range, trigger level, level type and minimum time between events.

For LightFactory to listen to the selected audio source you must enable it by clicking on “Enable Audio Triggers”.

Above the event grid is a graphic display of the incoming audio frequencies. This is known as the audio spectrum and shows the response to frequencies from 0 to the maximum frequency set.

![Image of audio trigger settings](image)

**Input Audio Device** – Select the audio source device you want to use to trigger the system. This is the system device that will be listened to and shown in the display.

**Maximum Frequency** – The maximum frequency determines the upper sample limit the software will listen to. The default is just over 5kHz. A higher maximum frequency will require more CPU to sample continuously.

**Creating an Event**

An event in the audio trigger system is a list of conditions that when met will trigger the event. The event itself will also have settings that determine what will happen.

**Frequency Range (Low Freq, High Freq)** – The frequency range for the event will limit the area of the spectrum that is listened to. This is best understood by looking at the red lines in the spectrum display. The left red line is the low frequency and the right red line is the high frequency. You can also use your mouse to click and drag either red line to adjust the frequency.

**Trigger Level** – Select the audio level in percentage of the maximum that will trigger the event. This is represented as the yellow line running across the spectrum display. You can also use your mouse to click and drag to move the line and adjust the level.

**Level Type** – Use the level type to select how the trigger level is used. You can select between “Average Frequency” or “Any Frequency”. If the level type is set to average frequency then all of the levels between the
frequency range specified are averaged. If the average exceeds the level set then the trigger is fired. If the level type is set to any frequency then the trigger will fire if any level between the frequency range exceeds the trigger level.

**Min Time Between** – Set the minimum time between trigger events. This option stops the trigger from firing continuously if the level is exceeded for a long period of time.

**Action** – The action setting specifies what will happen when the trigger occurs. This can be set to Global, Shortcut, Submaster Flash or Command. Setting this to **Global** will run any cue that is primed with “Line in” as its trigger. **Shortcut** will run the shortcut specified in the Shortcut/Submaster field. **Submaster Flash** will set the specified submaster to full for the Flash Duration and then return it to its previous level. **Command** will execute the command line text specified in the Command field.

**Enabled** – You can create several events and then enable only those that work for the input source being used.

**Timecode**

In addition to using MIDI Timecodes to trigger events, LightFactory can receive timecodes from other programs and devices or generate its own timecode signal.

The timecode configuration provides the ability to set up shortcuts or commands that are triggered by the timecode values being reached.

![Timecode Configuration](image)

**Note:** In addition to defining global or specific cue “Go” commands, cues can be set to trigger automatically when specific timecodes are reached. See the section on the **“Cue List Editor”** for more information on setting up cues and cue lists to receive timecode triggers.
To enable listening to timecodes, check the box marked with the appropriate timecode device you are using:

- **Enable DirectX Timecode** – Uses the internal Windows timecode functions provided by the DirectX components.
- **Enable Winamp Timecode** – Winamp is a popular free media player that is capable of playing video and audio files. LightFactory can read timecodes directly from this software when running on the same PC.
- **Enable Adrienne Timecode** – The Adrienne devices are a collection of internal and USB devices that support a number of timecode formats. For more information visit [www.adrielec.com](http://www.adrielec.com).
- **Enable Internal Timecode** – LightFactory can also read its own internal timecode produced by the media playback effects.
- **Generate Internal Timecode** – This option will start the internal timecode generator. As soon as this option is checked you will see the timecode clock start counting. See the timecode command line options for more information about controlling the internal timecode. If you are using the internal timecode generator you can set a shortcut to reset the clock back to 00:00:00:00.

To add a new timecode trigger, click on the “Add” button and edit the fields provided. To remove any trigger, select the event from the list and click on the “Remove” button.

**Description** – This provides a way to identify the trigger by entering a description for your reference.

**Timecode** – Set the time code in the format HH:MM:SS:FF that will trigger the shortcut or command. The shortcut or command will only trigger once when the time is reached.

**Shortcut** – This field is used to specify which shortcut number you want this trigger to execute.

**Command** – To execute any other system command simply type the command into this field.

**Global Offset** – If the timecode being received does not start at zero you can apply a global offset. The offset will be added to the incoming timecode value at every frame. Use negative values to remove time from the incoming values.

**Reset all events if the previous timecode is greater than the current** – When this option is turned on, all events will be flagged as “waiting to fire” if the timecode loops or the previous timecode received is greater than the latest timecode received.

**Don’t trigger timecode cues prior to the current live cue** – When on, prevents the system from jumping to cues prior to the current live cue.

**Import / Export** – To help manage a large number of timecode events you can import this information from a comma separated text file (.csv). Click on each of these buttons to open a standard Windows file dialog to select the file you want to import from or export to. When choosing the import option a dialog will pop up asking you if you want to remove existing entries before importing the new data.
**ChilliNet**
The ChilliNet interface provides the ability to send and receive ChilliNet messages over a standard RS232 connection.

For more information about ChilliNet please visit: [www.zero88.com](http://www.zero88.com)

ChilliNet can be used to control shortcuts and submasters from wall panels. To enable ChilliNet message sending and receiving, check the box at the top of this tab.

Use the **Com Port** combo box to set the physical port that ChilliNet is connected to.

The **Zoning** selection can be used to send zone messages to the system for initial setup of the wall panels. Place the wall panel into programming mode and then select the zone you want to program from the drop down box.
**iCAN**

The iCAN interface provides the ability to send and receive iCAN messages over a standard RS232 connection. iCAN is configured in the same way as ChilliNet but the communication speed is not fixed and can be changed.

To enable iCAN message sending and receiving, check the box at the top of this tab.

Use the **Com Port** combo box to set the physical port that iCAN is connected to. The **Port Speed** combo can be used to set the communication speed of the connection.
**mySQL**

The mySQL interface provides the ability to run LightFactory macro scripts from a mySQL server. mySQL is an industry standard database often used by web servers. This option will allow you to trigger LightFactory from a website or any external application.

The mySQL interface is designed for advanced use of the software in specific applications. Please contact LightFactory support (support@lightfactory.net) for more information about this option.
Vision.net
Vision.net is a fully integrated lighting management system from Philips Strand Lighting. More information is available at the Philips Strand [website](#) or by contacting LightFactory support ([support@lightfactory.net](mailto:support@lightfactory.net)).
Contacts
LightFactory can use the modem handshake signals present in a full-function serial line to detect switch closures and openings which can cause shortcuts to be fired. LightFactory can respond to switch events from a local serial port or a networked serial port using the Simple Network Management Protocol (SNMP).

To set up contact events, specify the "Com Port" to use. There are 4 signals that can be detected (Clear To Send (CTS), Data Set Ready (DSR), Ring Indicator (RI) and Carrier Detect (DCD)) and each can be linked to a shortcut for a closure event and/or an opening event. Additional com ports can be configured by using the "Add" button.

The following diagram shows an example of how to wire switch contacts to a 9-pin serial port connector.

- **Blue** = CTS (Clear to send)
- **Orange** = Ring Indicator
- **Green** = DSR (Data set ready)
- **Black** = CDC (Carrier Detect)
**OSC**

LightFactory can be set to receive “Open Sound Control” (OSC) messages via the network when enabled.
Scheduled Tasks
Scheduled tasks allow you to set up recurring lighting events using the real time clock of Windows. Each task can be scheduled to run daily, weekly, monthly, one-time only, every hour, every X seconds or on astronomical events such as sunrise and sunset based on your location. Each task executes a LightFactory shortcut.

![Scheduled Task Table]

CREATE A SCHEDULED TASK

Before a task can be scheduled to run, one or more must be created. To create a new task click on the "New Task" button at the top left of the window. A wizard will be invoked to guide you through setting up a task. In the window above are examples of tasks created by the "New Task" wizard.
MODIFY A SCHEDULED TASK

Created scheduled tasks can be modified. You can modify the shortcut to run, the schedule, or the specifics of a particular task. To modify a task double click on the desired entry or click once and select “Properties” from the options at the top of the window. The list of entries can be sorted by clicking on the column headings.

This will start the same wizard you used to create the task. Follow the same procedure to change any of the options or click “Cancel” at any time to return to the task scheduler window.

REMOVE A SCHEDULED TASK

For scheduled tasks that are no longer needed, you can remove them entirely by selecting the corresponding row and clicking on the “Delete” button at the top of the window.

TEMPORARILY TURN OFF A SCHEDULED TASK

You can temporarily turn off or pause scheduled tasks from running using the “Pause Task” button provided. The status field will show paused tasks. To turn a task back on simply click on the “Pause Task” button again.

In the “Special Shortcuts” tab of System Properties you can assign shortcuts to toggle the pause state of all schedule tasks.

Sunrise / Sunset

When using the built in scheduling feature of LightFactory, you can create schedule items that will operate on sunrise and/or sunset. The software will calculate the time of the day for these events based on your location.

In order for this feature to work you must set the latitude and longitude information. To make this easier you can select your closest city from the drop down combo provided and latitude and longitude information will be populated automatically.

You are still able to adjust these numbers if you know more precisely your global position. A GPS may be used to set these numbers.
**User Permissions**

To control access to various parts of the software you can set up users and passwords from the “**User Security**” window.

Once a user has been added to the software, the security feature will become active and require a login each time the software starts. By default no users will be defined in the system. An empty user list is the equivalent of turning off the security feature.

**Note:** The software will not allow you to disable the “Edit User Security” option if the selected user is the last one with this privilege.

To create a new user click on the “**Add User**” button in the bottom left of the window. A new line will appear in the grid above with the default name “New User”. Once the user has been added you can edit the name, password and define the security privileges.
Most of the security features center around allowing or denying access to the various windows within the software. For example, if you would like to prevent a user from opening the “Cue List” window uncheck the option in the right hand panel of the window. The “Record” privilege is a special option that can be used to prevent a user from modifying the show while still providing access to windows like the “Cue Playbacks” and “Channel Display”.

New for V2.22 is the ability to set an “Administrator” flag for each user. If the flag is set to “Off” for a user, they will not have access to the security screen. At least one user must have the flag set to “On” and the last user with that privilege cannot set it to “Off”.

By default a new user will have all privileges enabled. Use the "Uncheck All" to remove all access to the user. You can then add access to the user as required.

Once you have set up a user in the software, the security will become enabled. The next time you start the software you will be asked to login with a username and password.

The user name will default to the last name used to login to the software and will automatically place the cursor into the password field. Enter the password for the user and press the enter key or click “OK” to proceed to the main interface.

If you wish to log in a different user, open the selection list (arrow) to see the list of registered users. Once the software is running the current user may be logged out and a new user logged in by clicking the "Logout" button at the bottom of the Options Menu.
5 System Properties

The "System Properties" window can be accessed by selecting from the "Options" menu. Also, this window can be accessed by pressing <SHIFT>+F6 on the keyboard.

The System Properties window has two modes called "Basic" and "Advanced". In Basic mode, there are two tabs:

**Basic Settings** – Provides a subset of system properties that can be configured with the others assuming default values. These settings are adequate for simple shows and provide a way to start using the software quickly.

**Registration** – Options for registering your LightFactory software. Without a valid registration, LightFactory will run in Demo Mode which will output DMX for 30 minutes only.

Details about the options available on this tab are covered in a separate document: "Installing LightFactory".

In Advanced mode, there are ten tabs of settings that you can configure in this window:

**System (DMX)** – Provides access to settings affecting the flow of DMX data and system channels. This is primarily related to external DMX hardware installed with your software.

**System Settings** – Provides settings that effect the operation of the software.

**Show Defaults** – Settings in this tab provide default options for cue lists, channel groups and recording.

**Network Access** - Allows the enabling/disabling of network protocols and tracking backup options.

**Appearance** – The appearance tab allows you to change colors and fonts used throughout the software.

**Registration** – Options for registering your LightFactory software. Without a valid registration, LightFactory will run in Demo Mode which will output DMX for 30 minutes only.

Details about the options available on this tab are covered in a separate document: "Installing LightFactory".

**Visualizer** – Configures integration with various commercially available visualization tools.

**Remote Options** – Options in this tab control how remote connections affect the local system.

**Media Settings** – Settings that control the global output of media playback.

**Special Shortcuts** – Set up special shortcuts to control miscellaneous functions.
5.1 Basic Mode Settings

DMX Output Options
If a USB powered DMX device is active when LF is started, it will be assigned as an output device for Universe 1. The pull-down list may be used to assign a different device or protocol depending on what hardware you have.

Console Ports 1-4 are a NEO console feature and thus not applicable to a stand-alone instance of LF.

System Settings
On Level
Use this to specify the intensity value (in %) fixtures will be set to when clicking on the “ON” or “Rem Dim (Solo)” buttons in the channel window. This also applies to the ON command in the command window.

Show command syntax help
Default On – This option will toggle the balloon popup that provides context sensitive help about the commands being entered. As you enter a command in the system, the popup will appear telling you what commands are valid in the context of what has been typed so far.

Note: The Up/Down Level, GM1, GM2, A/B Fader Mode, and Preset Fader Mode options are for the NEO console only.
Automatic show file backup service

Backup Location 1 & 2
By default LightFactory will store the backups in a sub folder of the “LightFactory Shows” directory. Use these fields to change this location. Backups can be sent to two locations. This can be useful for automatically storing the backup on a remote system in addition to the local drive.

Number of Automatic Backups
Each backup file created will have the date and time encoded into the name of the file. Use this option to determine how many of these backups should be kept before automatically deleting older ones.

Backup Interval (Minutes)
When a change is made to the current show, an automatic backup will be generated after the interval specified here has passed. The number of backups retained is still the number set above. If the interval is set to zero, no backups will be created until LightFactory is shut down.

Show Defaults

Cue List Defaults
The cue list default time values will apply every time a new cue is created. Set a cue default by either typing the desired time or using up and down arrow controls to the right of the edit box. These default times can be modified on a cue by cue basis during the record operation.

By default, effects, submasters and palettes are included when cues are recorded. These defaults can be turned off by unchecking them as desired and can be overridden on a cue by cue basis.

Default Tracking Record Mode
Sets the default mode which can be overridden on a cue by cue basis.

- **Cue Only** – Records any changes to the cue being recorded or updated only.
- **Cue Only (Int)/Track (Atts)** – Records changes to intensity to the cue only while propagating changes to attributes forward through the cue list until a new value or block is encountered.
- **Tracking** – Propagates all changes forward through the cue list until a new value or a block is encountered.

Set Auto Mark
Sets the point where marked attributes take effect. The choices are:

- **None** – Auto marks will not be executed when cues are run.
- **Mark as early as possible** – Auto marks are executed as soon as a fixture reaches an intensity level of 0.
- **Mark as late as possible** – Auto marks are delayed until the cue prior to a fixture becoming active (i.e. has an intensity value increasing from 0).

Mark in Cue Time
If checked, mark times are controlled by Fade In (Cue Time) and Dwell (Down Delay) times in each cue.
5.2 Advanced Mode Settings
**System (DMX) Tab**

The System (DMX) tab provides access to settings affecting the flow of DMX data and system channels. This is related primarily to external DMX hardware installed with your software.

**Number of Desk Channels**

LightFactory can support over 10,000 desk channels (also referred to as system channels). Each desk channel can control multiple DMX addresses either by patching several DMX addresses to a desk channel or by patching an intelligent fixture that requires multiple DMX addresses for operation.

The more desk channels you configure in the software, the more CPU and resources will be required. By default the software configures 1000 desk channels as this will run without issue on the minimum specification for the software. Any PC purchased in the last couple of years will easily run a lot more than 1000 channels.

This number will also define the number of cells in the channel display window. Some may find it easier to view this window will only the number of channels they need for a show.

Enter the number of channels you want the software to use and restart LightFactory for the change to take effect.

**Max DMX Universes**

By default the software will be set up for 10 DMX universes. A DMX Universe is a block of 512 DMX addresses. You can think of a DMX Universe as a physical cable running out from the system.

Although any number of Universes can be configured, output will always be restricted to the limit of your registration. You can configure as many universes as you want but only the universes registered will be active. This allows you to program any size show you want without the registration being required until output is needed.

**Merge DMX Input with Output**

LightFactory is capable of receiving a universe of (up to 512) values from a hardware interface that can operate in receive mode. The most common use for DMX input is the ability to add external physical sliders to the software. The values received can be used in several ways and this control provides a list of options.

- **None** – Maps to the number of submasters per page (Example: If the number of submasters per page is set to 10, then DMX values 1-10 will control the block of submasters set by the current submaster page in the Command Window.

- **HTP (highest)** – Merge the input values with the output values of the selected universe (see below) on a Highest Takes Precedence basis.

- **LTP (lowest)** – Same as above except Lowest Takes Precedence. This only works for input values above zero (0).

- **Build** – Add the incoming values to the output.

- **ITP (input)** – Input Takes Precedence, i.e. override the output values. This only works for input values above zero (0).

- **Desk Channels** – DMX input controls desk channels directly (intensity value only). The input takes precedence when a change in value is received and can be overridden by any other control affecting a channel.
**Note:** For the output merge options (HTP, LTP, Build, ITP and Desk Channels), the input values can control submasters as well. See the option “Apply Submasters for Merged Channels” in the System Settings section below.

**Merge with Universe**
Use this spin edit option to set which LightFactory universe will be merged with the input.

**Strand Advantage DMX**
Default: On - This allows you to patch Vari-Lite, Strand, Selecon, Showline and Color Kinetics brand luminaires without consuming the purchased DMX outputs. It does not matter if you own or rent the luminaires; as long as they are one of the supported brands.

**Configuring DMX Universes**
There are three tabs for this section, “Network/USB”, “Console Ports” and “Advanced Routing”.

The “Console Ports” and “Advanced Routing” tabs are for the NEO Console only.

The “Network/USB” tab shows a grid that allows assignment of the physical hardware the software will use to send DMX data to each universe.

The first column of information cannot be edited and identifies the universe by a number. The first row is different from all of the rest as it defines the input configuration for the merge options described above.

**Device**
Use the drop down boxes provided in the device column to configure the input or output hardware used by the software to communicate with your DMX system. There are two types of hardware interfaces: USB and Ethernet. The list contains the brands/models or the protocols currently supported.

**Port/Universe**
Some device options have several output ports available. Each port is a separate DMX universe. In the case of USB hardware this will refer to a physical connector on the device. For Ethernet hardware the number of ports can be as many as the protocol supports.

The drop down box in this column will only list the available ports for the selected device. For USB hardware you must have the device connected for the port to be selected.

When selecting the device the next available port number will be chosen automatically and populated into the port/universe field.

**Network Interface**
When using any of the Ethernet based protocols you may need to configure the network interface that the software will use to communicate with the DMX system.

By default the system will be set to output to all available network interfaces. However if you want to restrict the output to a specific device, use the Network Interface drop down provided. A network interface is identified by the IP address to which it is bound.
Frame Rate
Some of the USB hardware also provides the ability to set the DMX frame rate. Use this control to define the frame rate you want to use. You should not change this from the default (40 fps) unless requested to by support staff. Changing this frame rate may stop your DMX output from working correctly.

Priority
Streaming ACN only. As in [DMX] systems, the most recent E1.31 Data Packet from a single source supersedes any previous packets from that source. However, a receiver conforming to this standard may receive data for the same universe from multiple sources, as distinguished by examining the CID in the packet. This is a situation that cannot occur in conventional [DMX] systems. The priority value is used by receivers in selecting between multiple sources of data for a given universe number. The legal range for this field is 0 to 200. Priority increases with numerical value, e.g., 200 is a higher priority than 100.

For a given universe number, an E1.31 receiver gathering data from multiple sources shall treat data from packets with the highest priority as the definitive data for that universe.

Information
The “information” column of the grid will display any additional data that could be obtained about the port. For USB devices, this will often show the firmware version and device serial number. For Ethernet options this will usually show the official name used to identify the port on the network.

Description
An editable field to add user information about the interface (its location or purpose, for example).

ArtNet & sACN Unicast Options
The ArtNet and sACN DMX over Ethernet protocols also support a unicast option. By default these protocols broadcast the data onto the network, meaning that all devices on the network receive all data. For large installations this can mean that all devices are receiving and handling a lot of data.

Unicast transmission of the DMX data means that the data packets are sent only to the devices that need it. The data packets for Universe 1 for example will only be sent to the devices that need Universe 1. This mode also helps with network management as many Ethernet switches can struggle with continuous broadcast data.

In order to use Unicast transmission LightFactory needs to know what devices are outputting each DMX universe. The ArtNet protocol has a discovery process that can configure this automatically (assuming the device supports the ArtPoll message). For sACN the Unicast routing must be configured manually by editing a file.

To turn on Unicast communications double click on any line of the device settings page that is set to ArtNet or sACN to open the advanced protocol options. If you are using both protocols you must configure each one separately.

Tick the check box labeled “Use unicast communications” to enable this system. Below this check box any devices found or configured will be shown.

To manually configure Unicast routing, create a .CSV file in the LightFactory install directory called “unicast_list.csv”. Each line has 3 fields – IP Address, DMX Universe and Description.

e.g. 10.27.34.73,1,"Desc 1"
System Settings Tab

The system settings page provides options that effect the operation of the software. There are three sections to this page: Basic, Intermediate and Advanced.

The screen shot above shows the default options that are set when the software is installed or you click on the “Restore Factory Defaults” button in the lower right corner.

**Basic Settings**

**On Level**

Use this to specify the intensity value fixtures will be set to when clicking on the “ON” or “Rem Dim (Solo)” buttons in the channel window. This also applies to the ON command in the command window.

**Grand Master Submaster**

To assign a physical submaster to control the grand master, set the submaster number in the box provided. Setting this value to 0 will disconnect the grand master from a physical submaster.

**Invert GM Submaster**

Checking this option will invert the operation of the submaster assigned to the grand master. Setting the submaster to 0 will result in the grand master being set to 100%. The flash button can now be used as a Dead Black Out (DBO) function.
Show Command Syntax Help
Default On – This option will toggle the balloon popup that provides context sensitive help about the commands being entered. As you enter a command in the system, the popup will appear telling you what commands are valid in the context of what has been typed so far.

Command Line Single Digit Entry
Default On - In most cases when entering commands, the channel intensity values are in multiples of 10 (e.g. 10%, 20%, 50%, etc.). To save the typing of an extra digit, this mode allows you to enter just the first number and the additional 0 will be added automatically on command completion.

With this mode on you can still enter values below 10 by putting a 0 in front of the number (e.g. 03%, 05%, 08%).

Two Digit Entry
Default Off - Whether or not you have the single digit option set, you can still enter two digits to set an intensity level. With this option set, command completion will be automatic when the second digit is entered.

Note: The Up/Down Level, GM1, GM2, A/B Fader Mode, and Preset Fader Mode options are for the NEO console only.

Backup Location 1 & 2
By default LightFactory will store the backups in a sub folder of the “LightFactory Shows” directory. Use these fields to change this location. Backups can be sent to two locations. This can be useful for automatically storing the backup on a remote system in addition to the local drive.

Number of Automatic Backups
Each backup file created will have the date and time encoded into the name of the file. Use this option to determine how many of these backups should be kept before automatically deleting older ones.

Backup Interval (Minutes)
When a change is made to the current show, an automatic backup will be generated after the interval specified here has passed. The number of backups retained is still the number set above. If the interval is set to zero, no backups will be created until LightFactory is shut down.
Intermediate Settings

Wheel Sensitivity
The mouse wheel sensitivity allows you to alter the percentage increment that will apply for each ‘click’ of the wheel when used to set levels. By default, rotating the mouse wheel by one increment will change the level by 4%.

Note: Depending on the mouse, this value may need to be adjusted to get the desired increment. For example, you might need to set this value to 10 to get a 5% increment.

Fine Movement Sensitivity
The fine movement sensitivity determines the resolution of the graphical Pan/Tilt control when the fixture control is set to fine mode. The default value is 1, which is the finest sensitivity. For fixtures with 16-bit pan and tilt controls, this value may be too low and require excessive mouse movement.

Number of Submaster Pages
This setting will allow you to configure the maximum page number for the onscreen submasters, external submasters connected via MIDI, DMX or the Playback wing.

Number of Submasters per Page
The software will allow up to 100 submasters per page. Use this option to configure the submasters per page count to match the number of physical handles on the device you are using.
For example if you have an external 24 channel DMX lighting board connected to DMX input, then it is recommended that you set the number of submasters per page to 24. This means that when you change to the second page in LightFactory channel 1 on your physical lighting desk will correspond to submaster 25 and so on.

**Submaster Debounce Level**
The submaster sensitivity option will determine how much the DMX value of an external or hardware submaster must change before it is registered by the system. In most cases this option should be left at 1 so the software will register a change every time the submaster moves.

In some cases the external submaster can be set just between 2 values and the output may jump between these values continuously (This is known as bouncing or jitter). To get around this problem, set the submaster debounce to 2 and the system will not update the submaster unless the value moves by 2 or more.

**Automatically Manage Relays**
Default: Off – A new feature for V2.22 (see section 6.2, Patch Detail), if a channel has an associated relay control, setting this option on will cause the relay state (open/closed) to be coordinated with the level of the channel. Initially, the relay will be closed (i.e. "Power On") when LF is started and whenever the channel level is above zero. It will open (i.e. "Power Off") after a set time period (see below) if the channel level subsequently goes to zero.

**Turn Off Relays After (min)**
Default: 20 minutes – See above. When the option “Automatically Manage Relays” is on, a relay associated with a channel will automatically open after the time set here when the channel level goes to zero.

*Note: If there are multiple relays patched, all associated channels must be at zero for the time period before all relays will power off (open). Individual relays will power on as its associated channel level goes above zero. For a simpler option, see below.*

**Turn Off Relays on Shutdown**
Default: Off – Setting this option on will cause any relays associated with channels to open when the LF application exits. Thus, with the “Automatically Manage Relays” option set to “Off”, the relays will be closed (“Power ON”) when LF is started and open (“Power Off”) when LF is shut down.

**GM Affects Record**
Default: Yes - The Grand Master (GM1) scales intensity values being output on DMX by the percentage of its level. For example, if you set a channel's intensity at 60% and GM1 at 50%, then the DMX value on that channel would be 30% (60% x .5 = 30%). If this option is on when you record cues, the GM1 scale factor is applied to the values that are stored (i.e. the channel's value would be stored as 30%). If this option is off, then the GM1 scale factor is ignored (i.e. the channel's value would be stored as 60%).

**Blind Follows Live**
Default: Yes – When this option is set and the “Blind View” on the Channel Display is selected, the cue displayed will be the current live cue. If this option is not set, the “Blind View” will return to the last cue viewed in blind. The first time “Blind View” is selected, the current live cue will be displayed regardless of the setting of this option.

**Disable Double Click Function**
Default: No – Double clicking on a channel or fixture will toggle it between the “ON” value and off. Use this option to disable this function to prevent accidentally performing this operation.
**Wheel Changes Ignore Master Fade Time**
Default: Yes - When using the mouse wheel, on-screen graphical wheel or NEO console intensity wheel to control the dimmer level of a channel, the master fade time will not be used if this option is set.

[Note: See section on Command Interface window for a description of Master Fade Time.]

**Use Attribute Default Values when Nothing is in Control**
Default: Yes - If all control of a fixture is released and no instruction is currently active, the DMX outputs will default to a zero (0) value. With this option set, the default output values set by the fixture profile will be used instead. The most common use of this is the pan and tilt settings that would typically have their mid points set as the defaults.

[Note: A restart of LightFactory is required for changes to this option to take effect.]

**Show Palette Options when Updating a Cue**
Default: Yes – If you’ve made manual changes to attributes of fixtures that are set by palettes and then update a cue, a dialog is displayed asking whether you’d like to update the palettes with new information or just record the changes (hard data) to the cue. The dialog has a “Don’t show this message again” option, which if checked, will set the default to No. Reset this option to cause the dialog to appear the next time it’s needed. This is used primarily so that the action chosen the last time the dialog was displayed can be changed.

**Group Updates Record Dimmer Proportional to Group Level**
Default: No – Normally when a group is updated, the current levels of any changed channels are recorded. With this option set and if the group is being applied at less than 100%, the changed channels are recorded at the level they would be at if the group value was at 100% up to a maximum of full level.

**Use Advanced Color Heuristics**
Default: Yes - LightFactory has a unique feature that allows the software to calculate color matching for fixtures that have more than the 3 primary colors (RGB, CMY or HSI). The advanced color heuristics system of LightFactory attempts to overcome this problem by applying an advanced algorithm to calculate how much of the other colors should be applied. It should be noted that this algorithm is not perfect and is an approximation of the maximum output for a selected color. Because you may need to work with this option frequently you will find the same check box in the attribute color picker. You can change this setting in either location.

**Virtual Dimmer to Inhibit Colors**
Default: Yes - When a fixture does not have a dimmer (RGB LED fixture for example), LightFactory will create a virtual dimmer to make working with that fixture easier. The way the virtual dimmer operates can be changed between an inhibit function and a build operation.

With the virtual dimmer in inhibit mode, the fixture will not output any color without the dimmer on. Each of the colors in the fixture will be scaled by the value of the virtual dimmer such that when the dimmer is at full the set colors will be fully realized.

With this option set to No, the virtual dimmer will add to each of the color values eventually making it white (all colors at full). Each of the colors will be adjusted proportionally to maintain the color hue until one of the colors reaches 100%. Continuing to increase the virtual dimmer will result in the color moving towards white.
**Apply Color Selection to All Color Mixers**  
Default: Yes - If the fixture used has more than one color mixer, then selecting a color using a color picker will be applied to all of the color mixers in the light. If this option is set to No, then the selected color will only apply to the first mixer in the fixture.

This option can also be changed in the generic color picker that is shown with color mixing fixtures.

**Multi Shortcut and Submaster Windows**  
Default: No – With this option set to No, only one shortcut and one submaster window can be opened at any time. Clicking on the “Shortcuts” or “Submasters” buttons in the Command Window will cause the window to be opened and/or brought to the foreground and given the current focus.

When this option set to Yes, clicking on the buttons will cause additional copies of the windows to appear. This can be convenient for running the submasters or shortcuts on multiple pages if you have the screen real estate for it.

**Disable Fader Move with Bump Buttons**  
A NEO console only option.

**Immediately select after pressing @**  
Default: Yes – When using the command line to set channel values, this option will allow you to perform a selection at the same time. The channels set will automatically become selected after typing the “@” key. This is useful if you use the mouse wheel to adjust levels rather than entering the level on the command line.

**Start New Shows with Nothing Patched**  
Default: No - When you create a new blank show, LightFactory will patch all of the available desk channels 1:1 with DMX addresses. Set this option to stop this happening and start all new shows with no channels patched.

**Cue Command Switches Selected Playback**  
Default: Yes – LightFactory supports multiple cue lists within a show. When multiple cue lists are present, one of them will be loaded into the master playback. If you use the “Cue” command to select channels in a cue from a cue list other than the one in the master playback, that cue list will be loaded into the master playback with this option set. With the option set to “No”, the current list in the master playback will not be switched.

**Submasters Must Return to the Current Position after a Page Change**  
Default: No - Use this option to avoid unexpected jumps in stage output after changing the submaster page. Normally if an external physical slider is moved after a page change the output will take effect immediately. With this option set, the level of the onscreen submaster will not change until the physical slider is returned to the current value of the submaster.

**Selected Cue to Always Follow Current Cue**  
Default: Yes – When working in blind mode or with the Cue List editor, the selected cue will follow the active cue. By setting this option “Off”, the selected cue can be set manually and will not follow the active cue.

**Scroll Wheel Adjusts Group Level in the Group Window**  
Default: Yes – Normally, the scroll wheel would be used to navigate through the list of defined groups/palettes, but with option set, the wheel can be used to control the selected group/palette level in the same manner that channel levels can be controlled in the channel display.

**Filter Group Selection Switches**  
Allows setting the default state of the group selection filter switches. The initial states of these switches may be overridden in the “Select” and “Groups” menus on the Channel Display.
Primary Database Server & File
By default, LightFactory sets up the database containing the current show on the system where it was installed and in a subdirectory of the user’s Documents folder. These options allow you to set up the database on an external server and/or a drive and directory other than the default.

External Joystick Sensitivity & Threshold
These options are used to calibrate an externally connected joystick.

Special Fixture Control Wait Time
Some fixtures have a standardized method for lighting or extinguishing their lamps and LightFactory has built-in macros to perform these functions plus resetting fixtures to their default values. These functions usually require that a channel be held at a certain value for a specified time for them to take effect. This option sets the amount of time the value will be held. The default of 6 seconds is usually sufficient.

Lamp On Fixture Interval
If you have many intelligent fixtures in your rig, it might be desirable to stagger the lamp on procedures to avoid drawing excess power during startup. The value set in this option will space out these procedures by the amount specified.

Cue Playback Rate Override Limit
A cue playback may have a submaster assigned that overrides the times set in the cue file by a scale factor. This option allows you to set the maximum scale factor that would be applied if the rate override submaster is set to 100%.
**FX Length Override Limits**
Similar to the above, an effect may have a submaster assigned that overrides the rate at which it operates. These options set the upper and lower limits of the rate override applied by the submaster.

**Log Incoming Telnet Data**
Default: No - If you are sending commands to LightFactory using an application that sends telnet messages, enabling this option will record the telnet traffic into a text file. The file created is named “TelnetLog.txt” and can be found in the Application Data area. See the section on the Command Window for information in accessing this directory.

**Show ‘First Time Software is Run’ Dialog**
Default: No – Normally the following dialog is shown only once the first time LightFactory is run after being installed. Set this option to have it appear the next time LightFactory is started.

**Check for Software Updates Online**
Default: Yes – LightFactory will attempt to connect online and check if a newer version is available. When a new version is released a popup will notify you soon after startup.

**Prompt to Close Software**
Default: On - If you are using LightFactory in an automated shutdown environment, turn this option off to prevent the software from prompting the user to confirm closing.

**Show Startup Failure Warning**
Default: Yes - If LightFactory does not start correctly, the following dialog will be displayed. To disable this dialog, turn this option off.
**Apply Submasters for Merged Channels**
Default: No - If you have configured a device/port to receive DMX from an external source, the incoming values would normally affect a specified output universe or the desk channels (see section 5.2). If this option is set, the incoming values would also control submasters. The submasters affected would be determined by the submaster page setting (see section 6.12).

**Remember Cue Update History**
Default: Yes - The cue update history is a powerful system to enable you to retrieve a cue state from any previous record operation. At any time you can revert to a previous cue state. To do this the software will store the cue state into an update history table. This feature can cause the show file to grow in size much faster than normal. If you do not want to keep this historical information (to save space) turn this option off. See section 6.6 Cue List Editor for more details. There is also a button on this window labeled “Purge cue update history” which can be used to clear the history if desired.

**Disable Undo in the Cue List Window**
Default: No - If you are using a very high channel count then the undo system can result in sluggish performance. If you find that modifying a cue is taking a long time, then disable the undo using this option.

**Reset Chase when Submaster Reaches Zero**
Default: No - By default a chase will be paused when an assigned submaster reaches zero (0). Turn this option on to perform a Reset rather than a pause.

**Shutdown System on Exit**
Default: No – If this option is enabled, the PC will shut down after closing LightFactory. The option is primarily of benefit to the NEO console, which has an embedded processor.

**Restore Running Playbacks on Startup**
Default: No – When set, restores playbacks that were running at the time LightFactory was shut down.

**Show Patching to Multiple Channels Dialog**
Default: Yes – A warning dialog will be shown if an attempt is made to patch a DMX address to multiple channels. Set this option Off to suppress the warning.

**Command Line Prediction (Experimental)**
Default: No - This feature is still under development and may be enabled at the user’s discretion. This is an experiment in using AI to predict what the next command the user will enter based on the history of past commands.

**Auto Revision Saved Show Files**
Default: Yes – Performing a “Save” operation will create a snapshot of the current show with the name of the show file appended with “_REVn”, where “n” will automatically increment from 1 to 10. If not set, the save operation will overwrite the current show file.

**Auto Save Current Show File on Close**
Default: No – When LightFactory exits, a zip file of the current show is automatically created. With this option set, the original .NEO show file is also updated.

**Enable Matrix TP Protocol**
Please contact LightFactory support if you would like to use this feature.

**Show “Command Waiting” Dialog when Changing Windows**
Default: Yes – If there’s an uncompleted command entered into the command line of the main window when focus is moved to a new window, a dialog will be displayed to inform you. This feature can be disabled here.
**New Profile FX Default with “Soft Start”**
Default: Yes – When a profile effect is created, there’s an option to have it ramp up over the first cycle (soft start) or start immediately at the programmed levels. This is a global switch that determines the default setting of this option in the FX Editor. The option may changed on an individual effect basis in the FX Editor.

**Make Database File Smaller**
This option will perform a database pack on the active show database file. Packing the database removes dead space from deleted allocations and makes the allocations for tables, blobs and indexes contiguous in the database. The result of this operation is often a significantly smaller file.

When you click on this option you will see a new window appear (external to LightFactory) that will perform this operation. When complete, the following dialog will appear:

![Pack main database dialog](image)

**Purge Cue Update History**
If the option “Remember Cue Update History” is set, LightFactory saves every version of every cue since the show file was first created. Over time, the amount of data increases and remains even if cue lists are deleted. This option will remove this historical data, thus reducing the size of the show file.

The “Soft Start” option for each profile effect determines if the effect starts abruptly or slowly. When an effect is set to start slowly (soft), then it will ramp up the scale from 0 to whatever value is set over one complete cycle of the effect. If this option is turned off, the effect will immediately start at the scale factor set.
Show Defaults Tab

Use the **Show Defaults** tab to provide default options for cue lists, channel groups and recording. The settings on this page are stored with the show file and can change when you load a show or create a new show.

To make the current settings the default for future shows, click on the “**Set as default settings**” button at the bottom of this tab. Any new show created will have these settings automatically.

There are four sections to this page: “**Cue Lists**”, “**Groups/Palettes/Submasters**”, “**Partitions**” and “**Other**”.

**Cue Lists**
The cue list default values will apply every time a new cue is created. Most of these defaults can be modified on a cue by cue basis during the record operation.

![System Properties](image)

**Cue Time**
Factory Default: 3.00 seconds – Also known as **Fade In** time.

If fade mode is “In/Out” (see below), then this time is applied to changes in value of all channels staying active from the previous cue and any new channels.

If fade mode is “Up/Down” (see below), then this time is applied to any channels whose values are increasing from the previous cue.

**Down Time**
Factory Default: 3.00 seconds – Also known as **Fade Out** time.
If fade mode is “In/Out” and “Cue ‘Fade Out/Down’ Applies to Outgoing Cue” is not checked (see below), then this time is applied to any channels that are going out (i.e. to value 0) when the next cue is triggered. If “Cue ‘Fade Out/Down’ Applies to Outgoing Cue” is checked, then the Down Time (Fade Out) set in the next cue controls this action.

If fade mode is “Up/Down”, then the Down Time (Fade Out) set in the next cue applies to any channels whose values are decreasing from the current cue.

**Delay**
Factory Default: 0 seconds – The time between a cue receiving a GO command and the actual start of fades within the cue.

**Delay Down**
Factory Default: 0 seconds – Also known as Dwell. If this value is other than 0, a cue when triggered would start the Fade In time and after the dwell has counted down to 0 would start the Fade Out time. If the value is 0, the cue will stay active indefinitely until the next cue is triggered.

**Fx Delay Time**
Factory Default: 0 seconds – The time between a cue receiving a GO command and the start of any effects recorded into the cue.

**Tracking Mode Switch**
As described in Chapter 2, LightFactory can operate as a full tracking desk or as a preset desk for intensity parameters only. When creating a show, the designer should decide which mode to use and set this switch accordingly. If the switch is set to “Tracking Mode”, the mode is “Full Tracking” and only changes to channels will be recorded into cues. If the switch is set to “Hybrid Mode”, the mode is “Hybrid Tracking” and intensity values for all active channels will be recorded in each cue with attributes recorded depending on the setting of the “Default Tracking Record Mode” described below.

**Warning:** This switch should not be changed for an existing show that has cues recorded. This would result in unintended operations occurring in a live lighting rig. A warning message will be displayed.

**Cue Default Record Mode**
Full Tracking default is “Live”; Hybrid Tracking default is “Active”. The choices are:

- **Live** – Record all channels whose intensity is above 0 and/or have changed plus any channels having attributes that have changed from the previous cue.

- **Selected** – Record only the channels currently selected in the Channel Display.

- **Active** – Record all channels whose intensity is above 0 (hybrid mode) or channels whose intensity has changed (full tracking mode).

- **Changed Only** – Record only the channels with any changes from the previous cue.

The Record Mode can be changed on a per cue basis as each cue is recorded.
Note: It is recommended that you use the default mode associated with the tracking method chosen. This is particularly true for “Hybrid Tracking” mode as “Live” recording would cause a lot of unnecessary data to be stored in cues and make editing cues more difficult. “Live” recording in “Full Tracking” mode is the way most tracking consoles operate. “Selected” and “Changed Only” can be chosen on a per cue basis during the record operation and are most convenient when updating existing cues.

Default Tracking Record Mode
Full Tracking default is “Tracking”, Hybrid Tracking default is “Cue Only”. The choices are:

- **Cue Only** – Records any changes (intensity & attributes) to the cue being recorded or updated only. The following cue (if any) will return any values that would have tracked through to their original levels.

- **Cue Only (Int)/Track (Atts)** – Records changes to intensity to the cue only while propagating changes to attributes forward through the cue list until a new value or block is encountered.

- **Tracking** – Propagates all changes forward through the cue list until a new value or a block is encountered.

- **Track Back** – Propagates changes backward through the cue list until a new value or block is encountered.

- **Smart Block** – This is a cue-level block that applies a block flag to all currently active fixtures.

- **Block** – Apply a cue-level block flag to every fixture patched into the show.

Set Auto Mark
Factory Default “None” - Sets the point where marked attributes take effect. The choices are:

- **None** – Auto marks will not be executed when cues are run.

- **Mark as early as possible** – Auto marks are executed as soon as a fixture reaches an intensity level of 0.

- **Mark as late as possible** – Auto marks are delayed until the cue prior to a fixture becoming active (i.e. has an intensity value increasing from 0).

Mark Time Switch
If set to “Mark in default time”, mark times will be controlled by the “Mark Time” and “Mark Delay” time fields below this switch. If set to “Mark in cue time”, mark times are controlled by Fade In and Dwell times in each cue.

Mark Time
Factory Default: 0 seconds – Controls the timing of marked attributes when “Mark Time Switch” is set to “Mark in default time”.

Mark Delay
Factory Default: 0 seconds – If you set a Mark Time, you can specify a delay time before the mark action occurs.
**GOTO Timing Switch**
Factory Default: “Use default goto timing” - GOTO command timing will be controlled by the “Default GOTO Time” field below. If set to “Use cue timing for goto”, GOTO command timing will use the Cue Time stored in the cue.

**Default GOTO Time**
Factory Default: 1.00 seconds – When “GOTO Timing Switch” is set to “Use default goto timing”, this time will be used to run the cue rather than the Cue Time stored in the cue.

**Default Release Time**
Factory Default: 0 seconds – Controls the time it takes to release channels from cue control.

**Include Running Effects**
Factory Default: On – If an effect is running when a cue is recorded, a trigger for this effect will be added to the cue. This option can be set on a per cue basis when recording.

**Include Submasters**
Factory Default: On – If any channels/attributes are being controlled by a submaster, the levels will be stored in a cue when recorded. If Off, the values contributed by a submaster will not be stored. This option can be set on a per cue basis during recording.

**Include Palettes**
Factory Default: On – If any channels/attributes are set as the result of applying a palette, the reference will be stored in the cue. If Off, then the actual data will be stored. This option can be set on a per cue basis during recording.

**Default Attribute Family Timing**
Allows delay and execution (fade) times to be specified for each attribute family. When clicked, the following popup window will appear:

![Attribute Family Timing](image)

Delay and Fade times may be entered for each attribute family as required and these values will be recorded in cues where applicable. The Cue List editor may be used to modify the default values.
**Make Cue Active after Record Live**
Factory Default: On - When this option is selected the cue that was just recorded or updated will automatically become the active cue if the record mode is “Live”. Otherwise whether or not a cue is active is controlled by a cue runner.

**Release Channels after Record/Update**
Factory Default: On – If this option is On, then after a cue is recorded, all of the channels will become unselected.

**Release Channels on Cue Go**
Factory Default: On - When you press “Cue Go”, the system will release all channels not being controlled by cues.

**Fade Mode**
This switch appears only if “Hybrid Mode” is set. This option allows you to work the way you are familiar with on other consoles. “In/Out” fade mode applies the “Cue Time (Fade In)” to changes in value of all channels staying active from the previous cue plus any new channels and applies the “Down Time (Fade Out)” to any channels that are going out (i.e. to a value of 0). “Up/Down” fade mode means that the channels or attributes increasing in value will fade in the “Up (In)” time and channels or attributes decreasing in value will fade in the “Down (Out)” time. In “Tracking Mode”, this is always set to “Up/Down”.

**Cue “Fade Out/Down” Applies to Outgoing Cue**
This switch appears only if “Hybrid Mode” is set. This option controls which cue’s “Down Time (Fade Out)” value is used when a cue is triggered. Normally in LightFactory, the “Down Time (Fade Out)” time stored in the currently active cue is used when a new cue is triggered. Some lighting systems such as Strand apply the fade out time of the triggered cue instead. Setting this option “On” will cause LightFactory to use the latter method. In “Tracking Mode”, this is always set to “Off”.

**Force Fixture Block**
This option is active only if the Tracking Mode is set. The Factory Default: is “Off”. If “On”, causes all fixture attributes to be recorded when any attribute is changed.

**Follow to Run Switch**
Factory Default: Next Cue – Most consoles use the convention that the follow time for an autofollow cue is entered in the “triggering” cue rather than the “triggered” cue. If switched to Current Cue, the convention reverts to the original LightFactory mode where the follow time is entered in the “triggered” cue.

**Last Cue Links to Cue 0**
Factory Default: Off – Most consoles remain in the last cue in a playback list when reached. Turning this option On will cause a Go after the last cue to loop back to the top of the list and execute Cue 0 (which is always present in every cue list).

**Auto Set Out/Down**
Factory Default: On – When cues are first recorded, the default Cue Time (Fade In) and Down Time (Fade Out) values are set or the user can modify them as the cue is recorded. If changes to times are later made using the cue list editor, this option if On will cause a change in Cue Time to be copied to Down Time.

**Looping Cue Lists to Apply State (Tracking Mode Only)**
This option appears only if the “Tracking Mode” is set. Factory Default: On – For cue lists that have a loop programmed and when the loop cycles back to an earlier cue, the state of that earlier cue is recalculated. If this option is Off, the state is not recalculated and thus attributes from the last cue in the loop may “track” through.
Groups/Palettes/Submasters

**Default Group Fade Time**
Factory Default: 0 seconds – Sets the fade time for when a group is applied. This time can be changed on a per group basis using the Groups editor.

**Group Behavior**
Factory Default: Override (LTP) – Sets how applying a group affects the output values of the channels recorded in the group. This can be changed on a per group basis using the Groups editor. The choices are:

- **Override (LTP)** – Also known as “Latest Takes Precedence”. This is the default behavior of channel groups. This behavior will apply the channel levels set in the group to output channels and take over control until something else changes a value or when the group value reaches 0.

- **Build** – The values set in the channel group will be added to the current output.

- **Exclusive** – When the group is applied, all channels levels that are in the group will affect the output and other controls will be locked out until group (submaster) control is released.

- **Highest Takes Precedence** – If a value set in the group is higher than the current output, the group value will be applied. Otherwise the output value will be unaffected.

- **Independent** – When the group is applied, all channel levels that are in the group will affect the output and other controls will be locked out until the group level goes to 0.

- **Inhibit** – When the group is applied, the channel levels set in the group act as upper limits for the output values.
• **Subtract** - The values set in the channel group will be subtracted from the current output.

• **Intensity HTP / Attributes LTP** – When the group is applied, intensity (dimmer) values will operate in a *Highest Takes Precedence* manner while non-intensity (attribute) values will operate in a *Latest Takes Precedence* manner.

**Submaster Behavior**
Factory Default: Intensity HTP / Attributes LTP – If when recording a group you assign a submaster, the default group behavior will be set according to this option rather than the default **Group Behavior** option above. The same modes of behavior as listed above for groups can be set for groups with submasters.

**Group Default Record Mode**
Factory Default: Selected – Determines what fixtures/channels are recorded into the group. The choices are:

- **Selected** – Record the selected attributes of the selected fixtures.
- **Selected & Changed** – A combination of “Selected” and “Changed”.
- **Active** – Records all changes to the selected attributes.
- **Changed Only** – Records only the selected attributes of the selected fixtures that have been modified manually.

**Submaster Default Record Mode**
Factory Default: Active – If when recording a group you assign a submaster, the default record mode will be set according to this option rather than the **Group Default Record Mode** option above.

**Group Default Snap Prop**
Factory Default: Manual – Sets the behavior of non-intensity attributes when the group is applied. The following choices are available:

- **Manual** – Attributes will change levels in proportion to the group value.
- **Snap off zero** – Attributes will snap to the value stored in the group as soon as the group value rises above 0.
- **Snap at full** – Attributes will snap to the value stored in the group when the group value reaches 100%.

This setting can be overridden on a per group record basis.

**Include Running Effects when Recording Submasters**
Factory Default: On – Similar to including running effects in cues, with this option set running effects will be included with submasters (groups) when recorded. This setting can be overridden on a per group record basis.

**Auto Assign Next Available Shortcut**
Factory Default: On – If checked, the apply shortcut field will be populated automatically with the next free shortcut when recording a new channel group.

**Auto Assign Next Available Submaster**
Factory Default: Off - If checked, the submaster field will be populated automatically with the next free submaster when recording a new channel group.
**Default Group Release**
A NEO console only option.

**Allow Shared Submasters**
Factory Default: Off - By default a submaster can only control a single element within the software. If you try to assign a submaster to more than one control element an error will be reported. Turning this option on will allow a submaster to control multiple elements.

**Apply Channel Group Shortcuts/Palettes to Selection Only**
Factory Default: On - When set, channel groups and palettes will only apply to the channels currently selected. If this option is turned off, then all channels recorded in a group or palette will be affected whether selected or not. This option is available also in the “Palettes” menu in the Channel Display.
**Partitions**

A partition is a special type of group that can define a list of channels to be operated on exclusively while all other channels are blocked. For more information on defining and using partitions, see section 6.4.

**Active Partition**

If partitions have been created, clicking on the arrow will show a list from which you can choose or change the active partition. At a minimum, only the channels defined in the partition may be selected and manually controlled. Further restrictions may be set using the switches below.

**Playback Partitioning**

Factory Default: Off – If set, restricts cues run in a playback to affect only those channels defined by the active partition.

**Display only Partitioned Channels**

Factory Default: Off – If set, removes all channels not defined by the active partition from the Channel Display.
Other

**Default Filter Library**
Color filters (gels) are available from a number of suppliers. Use this option to choose the filter manufacturer used in commands.

**Run Shortcut on Startup**
Default: None – A shortcut that performs some action (such as initializing fixtures) can be triggered when LightFactory is started. Use this option to specify the shortcut to be triggered.

**Run Shortcut on Shutdown**
Default: None – A shortcut that performs some action (such as resetting fixtures) can be triggered when LightFactory is shut down (exited). Use this option to specify the shortcut to be triggered.

**Console Shortcut Page**
A NEO console only option.

**Lock Code**
LightFactory can be locked to prevent accidental changes while unattended. Use this option to enter a (numeric) code that would need to be entered to unlock the software. An image file can be chosen that will be displayed when the system is locked.

**Override Takes Precedence over HTP**
Factory Default: On – Normally, override behavior will not apply to HTP channels if the override value is less than the HTP value. With this option set, the LTP value will take priority over the HTP value.
**Don’t Record Parked Channels**
Factory Default: On – Typically, channels are parked expressly to exclude them from being recorded into cues. An example would be the house lights being on while cues are being recorded but they would be off when running the show in a performance. However, you can set this option off if you really want to record parked channels. An example would be a dimmer parked at full to provide constant power.

**Trim Height**
Here you can enter a value in either meters or feet that represents the height of moving fixtures above the stage. This value is used along with a special position palette to calculate relative offsets when positioning moving lights. See section 6.4 for more information.
Network Access Tab

Telnet & Remote Device Access

Enable Telnet Command Line Interface (Remote Device Access)

Factory default: On - To access the command interface remotely from any computer or Wi-Fi device on the network, enable the telnet interface. Once checked you can connect to LightFactory through port number 3100 or user-specified port.

If you do not see the characters you type in your telnet client, enable the “Echo Telnet Characters” option. Use the “Telnet & UDP Port Number” edit box to set the IP port number that the software will bind to.

**Note:** The Telnet interface must be enabled to use any of the remote applications (e.g. LFRemote for iPad) with LightFactory.

“Enable Discovery by Remote Systems” will cause LightFactory to broadcast a message onto the network at regular intervals so that the system can be discovered automatically without needing to know the IP address. The default for this option is On.

LightFactory can also receive commands via a direct UDP message. Unlike the Telnet interface the UDP system is connectionless and no acknowledgement of the message is sent back to the sender. Turn on “Enable Receiving UDP Based Commands” to allow LightFactory to listen for commands via UDP messages.
By default, LightFactory will use TCP to transfer large amounts of data such as show files and remote apps between systems. This service may be disabled by setting the “Enable TCP bulk transfers” switch to Off.

**Remote Commands are Separate User** – Factory default: On - When this option is on it means that any commands that are sent will run as if they are an external user. Selecting channels for example will not show as selected on screen. Any changes to levels or attributes will show as green indicating they have come from a remote. Releasing channels on the system will not release channels that are controlled by the remote. They must either be released by the remote or using the “Release All Control” option. If this is tuned off then all commands will operate as if they are typed locally on the system.

**Send Cue Execution Messages to Telnet Clients** - With this option set (default), connected telnet clients will receive a message each time a cue is executed.

**Broadcast Channel Data** – Default: Off. When enabled, LightFactory will broadcast the state of channels which can be received by a remote application.

**Enable SNMP Event Messages** - LightFactory can send “Simple Network Management Protocol” messages to another system that’s monitoring network activity. If you select this option, you need to supply the IP address of the SNMP host.

**Enable Remote Viewing (RDP) & Shared Monitor** - NEO console only options.

**Enable HTTP (Web) Server** - LightFactory can be controlled from a web browser. Enable this option to allow a browser to connect. The standard HTTP port number can be changed if needed.

**Run Shortcut when Client Connects** – Specify the number of a shortcut to run when a remote client connects to LightFactory. This could be used to set up special conditions useful to the remote application, for example. Entering a 0 means no shortcut will be run when a remote application connects.

**Tracking backup settings**
A tracking backup is a second copy of the software running on a separate computer. This backup copy of the software mimics the master system so that in the event of something going wrong with the master, the backup can take over.

The tracking backup options should only be turned on for the secondary system. The only option needed on the master system is the Telnet interface must be enabled.

Set the option “**Run as a tracking backup**” to identify the system as the backup.

Set the **Master IP address** to identify the master system. The IP address of the master can be found on the command window when the software starts.

It is also recommended that you set “**Disable output until a failure is detected**”. This option will temporarily stop DMX output until the operator tells the software to start outputting DMX or the auto failure detection is activated.

Restart the software and you will see a dialog identifying that the system is running as a backup.
To insure the backup system has the same show file as the master, click on the “Synchronize Show File” button.

To manually take control, click on either of the buttons “Start DMX output” or “Start DMX output and run the next cue”.

By default, the backup system will take control automatically when failures are detected in the remote system which is being monitored (polled) by the backup system.
Appearance Tab

Use the options in the appearance tab to define how the software looks on screen. This provides the ability to set up the software to your own personal look and feel. This tab is divided into three sections. Below are descriptions of some of the options in each section.

Channel Display

These settings affect the Channel Display window only. Custom colors can be chosen for several features of the display plus the other settings described below.

Skip Over Unpatched Channels
With this option on the software will not draw a cell for every channel unless it is patched. Unpatched channels will be ignored. When turned off the unpatched channels will appear as a grey cell in the channel display.

Return Focus to Channel Grid when Opening Fixture Control
When an intelligent fixture is selected the fixture control window will appear automatically. This option determines if the focus is retained in the channel display or moved to the new fixture control window.

Show Help Balloon for Keyboard Shortcuts
If checked, a list of keyboard commands available for the Channel Display when the CTRL key is pressed will be displayed.

![Image of Channel Display settings](image-url)
Auto Switch the Sidebar when Selecting Fixtures
If you have chosen to display the sidebar in the channel display, it will have tabs labeled “Current Playback” and “Fixture Control”. Setting this option will cause the sidebar to switch automatically to the “Fixture Control” tab when an intelligent fixture is selected.

Show Color Block for RGB Fixtures
By default a color-only fixture will not display an image of the fixture like other intelligent fixtures but rather a block representing the color set. Turn this option off to show the image instead of the color. The color will still be shown but in a small bar below the image.

Show Pan and Tilt Position within Fixture Image
By default LightFactory will draw a small crosshair inside the image of fixtures having pan and tilt capabilities to represent their position. Turn this option off to disable this feature. Note: This only applies if the option “Show Picture of Intelligent Fixtures” (see below) is set.

Show Graphic Bar Representation of Dimmer
The “fade bar” is a blue (default) bar that displays the current channel level and appears just under the text. Toggle this option to determine if the software displays this bar.

Show Picture of Intelligent Fixtures
If you have patched an intelligent fixture you can display a picture in each cell of the channel view. Toggle this option to turn this on or off.

Show Picture of Basic Fixtures
A basic fixture is a fixture with only a single dimmer attribute. Use this option to toggle if the software will display a picture in each cell of the channel view.

Make Active Color Proportional to Dimmer Level
Use this option to make the active channel color’s intensity proportional to the current output level. When the channel is at full the background will be the defined active channel color. At 50% the background will be a half shade of the defined color.

ML View Grouped by Fixture Type
Normally, the “Intelligent Lights (ML)” view is arranged by fixture number. Setting this option will cause the fixtures to be grouped by type, each separated by a banner that can be double-clicked to expand or collapse the type.

ML View will show Simple Color Fixtures (RGBs)
If you have a lot of RGB-type fixtures patched into your show, you can choose not to include them in the “Intelligent Lights (ML)” view by setting this option Off.

Use Minimal Text in ML View
When set to On, minimizes the column labels in the “Intelligent Lights (ML)” view so more columns are visible on screen.

Magic Sheet Channel Text Scale
The size of the channel number text displayed for each fixture shown on a magic sheet can be adjusted to make them more visible.

Fixed Column Count
If this value is set to zero, then the channel view will adjust the number of columns depending on the width of the window. Setting a fixed column count will automatically adjust the width of each of the cells but maintain the same number of columns per row. This value can be set in the View menu of the Channel Display also.
Channel View Font
Click on the “Grid Font” button to set the text style used in the channel display. A sample of the font will be displayed beside this button.

Reset Colors
Click this button to restore the Channel Display colors to the factory defaults.

Language

Note: Only English available at time of release.

General Grid Settings
Defines the background and selected row colors as well as the font of all grids other than the channel display. Also, a color for Scene Breaks in the Cue Lists window can be set.
Other Appearance Settings

Use Dark Styling
Default: On - All the windows and controls will adopt a color scheme that is dark (black, dark grey, etc.). Dark styling is useful in low light situations such as control rooms. When this option is enabled, a new option labeled: Use Metro Style Scroll Bars appears and is enabled by default. Metro style scroll bars are thinner than the traditional controls and thus take up less screen real estate. If you change this option, the software must be restarted to take effect. A warning message will be displayed.

Enable Advanced Docking System
Default Off – When enabled, this option provides the ability to dock auxiliary windows (Cue Lists, Shortcuts, Palettes, etc.) on multiple monitors. See Section 6.3, Advanced Docking System for more details.

Note: A restart of LightFactory is required for changes to this option to take effect.

Reopen Windows on Startup
Default On - For V2.16 and above, LightFactory has a new facility for storing and retrieving screen layouts. However, if you don’t use the new “Window Layout Manager”, you can enable this option and the current screen layout will be restored when LightFactory is restarted. If you do use the layout manager and you set one of the layouts as default, it will override this option.

Keep command window on top of all other windows
By default, whatever window is active will draw itself on top of all other windows including the command interface. Turn this option on to make sure that the command window stays on top of all other windows regardless of its focus status.
Create a Taskbar Button for Every Window
By default LightFactory only creates a taskbar button for the complete application. If this option is checked, a button will be added to the taskbar for each LightFactory window as it is opened.

Always Dock the Patch Window to the Main Display
Default: Off. This option when enabled and in conjunction with docking the Channel Display to the Command Window allows the Patch Window to overlay the Channel Display rather than opening a separate window.

Show AB Faders in the Submaster Window
A NEO console only option.

Invert Flick Gestures
A NEO console only option.
Visualizer Tab

LightFactory supports integration of visualization software packages. For more information, use one of the following links:

- Wysiwyg – Website
- Capture - Website

Enable Visualizer
Default: Off – Set to On to use this feature.

Enable Live Output to Visualizer
Default: On – Set to Off to temporarily disable output from LightFactory.

Accept Incoming Patch Information
Use this option to enable or disable receiving patch information if the visualizer supports sending it.

Send Fixture Selection
With this option turned on, LightFactory will send messages to the visualizer to indicate if a fixture is selected or not.

Receive Fixture Selection
With this option turned on LightFactory will select and de-select fixtures in the channel display when they are selected or de-selected in the visualizer.
**Enable Auto Focus Exchange**
Auto focus is the term used for transfer of fixture state between the visualizer and LightFactory. If enabled, changes made to the fixture in the visualizer will be transferred back to LightFactory. For example setting the position of the fixture in the 3D environment can be translated automatically into pan and tilt information in LightFactory.

**Add Snapshot of Live View to Cue Notes When Recording**
Cue Notes can be stored in cues as described in Cue List Options Menu: Notes. If you are recording cues into LightFactory from a visualizer, a screen shot of the live view will be added to the cue note with this option enabled.
Remote Options Tab

LightFactory can connect to a remote database server to allow multiple users to manipulate the same show. Details of how to set up the database server and connect to it with LightFactory is available in the document titled “LightFactory V2 Multi User Setup Guide” which is supplied with the installation kit.

The following options can be set to control certain features of the remote connection.

Remote ID
Multiple remote connections to the master are permitted, but each connection must have a unique ID. If only one remote is connected, the default ID of 1 may be used.

Network Adapter
Use the pulldown menu to select the network adapter (by IP address) that will be used connect to the master. If you wish to connect to the server running in the local PC, choose the 127.0.0.1 address.

Force Active Partition
If the show file loaded on the master has defined partitions, the remote system can be set to restrict access to the channels defined in the chosen partition.

Disable Output on Remote Startup
Default: On – If the local PC being used as a remote also has DMX hardware attached to it, the output will be disabled and the message “Output Muted” will be displayed at the bottom of the main window. By setting this option to “Off” before connecting to the master, the DMX output will be enabled on the local system in addition to the master. Once connected, this option may be toggled with the “Mute Output” button found at the top of the Patch window.
**Receive Channel Updates**  
Default: On – If manual changes are made to channels on the master they will be shown on the remote(s).

**Send Channel Updates**  
Default: On – Manual changes made to channels on the remote will be reflected on the master.

**First/Last Channel**  
In lieu of or in addition to partitions, the range of channels on the master controllable by the remote can be set with these controls.

**Track Master Cue List**  
Default: On – Keeps the Cue List Master Playback on both systems synchronized. If Off, cue commands executed on the master will not be reflected on the remote.

**Send Shortcuts**  
Default: On – Shortcut commands executed on the remote will be sent to the master.

**Send Submasters**  
Default: On – Operating a submaster on the remote will be reflected on the master.

**Track Effects**  
Default: On – Synchronizes running effects on both systems. If Off, effects run on the master will not be reflected on the remote.

**Allow Show File Changes from Remotes**  
Default: Off – This control is active only if not connected to a remote system. If On when a connection to a master is established, allows the ability to load show files from the remote.
Media Settings Tab

The settings in the media tab are used globally to control the output of media playback when using the media effect.

**Video Output Monitor**

Use this option to define what display on your computer to use for all video content. If you only have 1 monitor or you select your primary monitor then the video will play in a sizeable window. If you are using a secondary display, the video output will be played in full screen.

**Video Capture Device**

The video capture is used to map live video into a matrix effect and also can be used to capture an image when recording cues. This setting determines the device that will be used.

**Video Scaling**

LightFactory supports a number of advanced scaling routines to improve the output quality when the video size does not match the output size. These options can require a lot of CPU to work at full frame rate so it is always recommended that your video be pre rendered to the size you need.

**Width & Height**

Used to set the output size that the video will be scaled to when using the advanced scaling routines.

**Audio (Video) Output Device**

Used to set the audio device where all video sound will be sent.
Use Media Codec for Internal Timecode Clock
When set, uses the video’s timecode rather than LightFactory’s internal timecode.

Connect Audio Output to Media Used in Matrix Effects
By default a matrix effect does not output any audio from the playing media. Turn this option on to connect the audio channels when the effect is played.

Brightness
The Brightness property defines the luminance intensity.

Contrast
The Contrast property defines the relative difference between higher and lower luminance values.

Hue
The Hue property defines the phase relationship, in degrees, of the chrominance components.

Saturation
The Saturation property defines the color intensity, in IRE units.

Lightness
The Lightness property varies the perception of a color’s brightness.

Volume
The volume property defines the default audio level of the playback.
Special Shortcuts Tab

Special system shortcuts are miscellaneous functions in the software that you may want to assign to a shortcut. Most of these functions are related to the channel view such as the options in the right click menu and at the bottom of the window.

The special shortcuts also allow you to set shortcuts to open various windows.

The attribute shortcuts also serve a dual purpose depending on the window that currently has focus. If you are in the channel display and have an intelligent fixture selected, then the attribute shortcuts will shift focus to the control appropriate for the attribute. Pressing the shortcut while in the command interface will bring up the appropriate word to use in the command line.

Below is a screenshot of the Special Shortcuts tab. Additional shortcuts not shown are available by using the scrollbar to the right.
6 Window Reference

“In theory there is no difference between theory and practice. In practice there is.” — Yogi Berra

This section is divided by the various windows in LightFactory. To find information about a particular section of the software start by identifying the window you are currently in. The window you are in may have been opened from a parent window. Start with the top most window to jump to the appropriate section.

For example the “Track Sheet” is found in the options menu of the **Cue List** window. To find more information about the track sheet, start by going to the section for the cue list window and scroll to the section covering the “Options” menu.

Each major window is described in its own section as listed below:

- 6.1 - Command Interface
- 6.2 - Patch
- 6.3 - Channel Display
- 6.4 – Groups (Specific Palettes) Editor
- 6.5 – Palette Windows
- 6.6 - Cue List Editor
- 6.7 - Cue Playbacks
- 6.8 - FX List Editor
- 6.9 - FX Playbacks
- 6.10 - Macro Editor
- 6.11 - Shortcuts
- 6.12 – Submasters
- 6.13 – DMX View
- 6.14 – More Menu
6.1 Command Interface

The LightFactory command interface is the first window you are presented with when you start the software. This window is where you can access all the other features in the software such as the cue lists or effects editor.

The command window can be attached to the bottom task bar of your windows environment to make it easy to access regardless of how other windows are arranged. Select “Attach to task bar” in the “Options” popup menu to activate this option. When the software is restarted it will remember the setting and always run attached or detached from the task bar.

Clicking on the LightFactory icon to the left of the command entry edit box will turn on or off the command history part of the window. When used in conjunction with the “Attach to task bar” option you can create a thin window at the bottom of the screen for easy access.

**Note:** There are new layout and docking options available for the command window and the channel display. See section 6.3 for more information on these options.
Command Window Features

Command History Options
Right clicking in the command history panel will pop up the options menu as shown below:

Clear command history window – Select this option to remove all of the text from the command history.

Copy command history to the windows clipboard – This is a useful option to help with support when using the command interface. You may be asked email a copy of the commands you are using and this menu item will simplify this task. Once copied to the clipboard you can paste it directly into an email.

Set background color – Use this option change the background color of the command history panel. The standard LightFactory color chooser will allow you to select any color from a palette. Be aware that it is possible to choose a color that will make the text unreadable.

Grand Master & DBO Button
The Grand Master (GM1) slider on the right-hand side of the window provides overall control of all fixture intensity levels. The DBO (Dead Black Out) button will toggle the Grand Master between 0 and the last level set.

Command Line Edit Box
This is where text commands are entered. The allowable commands are documented in Chapter 7 – Command Reference. An option in the System Settings tab of the System Properties window will enable context-sensitive help to be displayed as commands are entered. Also commands may be recalled from the history panel for repeat operations. Commands are executed by using the <ENTER> key on the keyboard.

Command Line Target
This box indicates which function will receive commands when entered (Live, Blind, Patch or Group). This box also displays the current cue in Live or Blind mode. This is also a clickable button which toggles the Command Line Edit Box between normal text entry mode and Keyboard Shortcuts. When in shortcuts mode, the legend "Console Keys" will appear on the right side of the Command Line Edit Box as shown below:
A list of keyboard shortcuts can be found in Chapter 7 – Command Reference.

**Master Fade Time**
The master fade time can be set for all channels by entering a value into the spin box to the left of the shortcut controls. Once you have set the desired time, all changes made to fixture intensity levels will apply over this time.

> Note: The master fade time applies to manual level changes only. This value will be overridden by cue and effects controls when running a show.

**Page Controls**
The Shortcut, Submaster and Playback Page spin boxes control which page will be displayed when the respective windows are shown. See sections 6.11 - Shortcuts, 6.12 - Submasters & 6.7 – Cue Playbacks for details of these windows.

**Window Display Buttons**
The bottom row of buttons can be used to display the other LightFactory windows and menus. Note that some windows can be displayed by using the Function keys (F1-F12) along the top of the keyboard and are so indicated in the button’s legend. The “^” character indicates using the <SHIFT> key with the function key. The remainder of this chapter describes the features of each window.

> Note: The features and settings available by clicking the “Options” button in the lower left corner are described in Chapter 4 – Options and Chapter 5 – System Properties.
6.2 Patch

To patch dimmers or intelligent fixtures to channels, open the patch window by clicking the **Patch** button on the command window or pressing **F7** on your keyboard.

**Note:** An option under the Appearance tab of System Properties allows the Patch Window to be docked to the Main Window rather than opening a separate window.

The “Patch” display is divided into three panes:

**Patch Detail** – Left side of the window. This shows all of the channels (fixtures) and how they are currently patched.

**DMX Outputs** – Upper right side of the window. This shows the status (patched or unpatched) of all DMX addresses (by universe).

**Fixtures** – Lower right side of the window. Contains a list of the fixtures that can be patched. The list is alphabetical by manufacturer and can be expanded to list the available models from each.

The patch display is highly customizable. The relative sizes of the left and right sides can be adjusted by moving the divider between them as well as the relative sizes of the DMX Outputs and Fixtures panes on the right side. The Patch Detail pane can display a selectable list of columns which can be resized and repositioned within the pane. In addition, there is a search bar that can be displayed or hidden at the bottom of the Patch Detail pane. The following screen shot shows an example of a customized patch window. The arrangement of the patch window will be remembered and restored each time LightFactory is started.

When working in the Patch Detail or Fixture List panes, the standard keyboard navigation keys (arrow keys, **PGUP**, **PGDN**, **HOME**, **END**) may be used to position the display to the desired location.
When LightFactory is started for the first time or when a new show is created, all channels will be either patched 1 to 1 or blank (user option).

**Patching Standard Dimmers**

By default the “Standard Dimmer” fixture is selected. Standard dimmers use only one address to control the circuit for a luminaire.

To associate the dimmer (address) with a channel (Drag & Drop Method):

1. In the “DMX Outputs” pane, click on the desired address and hold the left mouse button down.
2. Drag the mouse over to the “Patch Address” column of the control (fixture #) to assign and release. When you release the mouse, the address will be patched to the control and appear in the “Patch Address” column. Also, the “Fixture Make/Model” column will be populated with “Standard Dimmer”.

By default, assigning new DMX outputs to a control channel will replace any already assigned and those outputs will become “unpatched”. There’s an option labeled “Replace dimmers when drag and drop patching”, which when unchecked will allow multiple dimmers to be patched to a single channel or allow the assignment of a single address to multiple channels.

Multiple dimmers can be patched to a single channel also by clicking in the “Patch Address” field and entering a list of addresses separated by commas (,) and/or a range of addresses separated by a slash (/).

![Image of LightFactory interface showing patching standard dimmers](image)

By default the “Standard Dimmer” fixture is selected. Standard dimmers use only one address to control the circuit for a luminaire.

To associate the dimmer (address) with a channel (Drag & Drop Method):

1. In the “DMX Outputs” pane, click on the desired address and hold the left mouse button down.
2. Drag the mouse over to the “Patch Address” column of the control (fixture #) to assign and release. When you release the mouse, the address will be patched to the control and appear in the “Patch Address” column. Also, the “Fixture Make/Model” column will be populated with “Standard Dimmer”.

By default, assigning new DMX outputs to a control channel will replace any already assigned and those outputs will become “unpatched”. There’s an option labeled “Replace dimmers when drag and drop patching”, which when unchecked will allow multiple dimmers to be patched to a single channel or allow the assignment of a single address to multiple channels.

Multiple dimmers can be patched to a single channel also by clicking in the “Patch Address” field and entering a list of addresses separated by commas (,) and/or a range of addresses separated by a slash (/).

| Note: Multiple dimmers connected to a channel will output the same value dependent on the channel value and the channel profile curve. This can be modified on a per dimmer basis. See “Edit Dimmer Profiles” in the Options Menu section below for more information. |

Also you can patch multiple dimmers at one time (consecutively) by changing the quantity (Qty) value at the top of the “Fixtures” pane. If more than one dimmer is patched then additional dimmers will occupy the channels following the first one you drag the patch to.
Patching Intelligent Fixtures

Intelligent fixtures use more than one DMX address to control various aspects or attributes of the luminaire. A channel can be patched to only one intelligent fixture at a time and can be identified by the name of the fixture in the “Fixture Make/Model” column.

To patch an intelligent fixture to a channel (Drag & Drop Method):

1. Select the desired luminaire from the tree view under the title “Fixtures”.

   Note: All of the fixtures are grouped under the brand name and can be accessed by clicking on the small arrow to the left of the brand name. The brand will then be expanded showing all of the models available.

2. Click on the fixture model you want to patch and you will see a picture of it on the right.

3. Move the mouse over the “DMX Outputs” pane of the window and click on the address where the fixture starts and, while holding the mouse button down, drag it over to the “Patch Address” column of the control (fixture #) to assign and release. When you release the mouse, the address range will be patched to the control and the starting address appear in the “Patch Address” column. Also, the “Fixture Make/Model” column will be populated with the relevant information.

   Note: When intelligent fixtures are selected, the block of addresses it needs will be highlighted to show the number of addresses that the fixture uses.

You can patch multiple intelligent fixtures at one time (consecutively) by changing the quantity (Qty) value at the top of the “Fixtures” pane. If more than one fixture is patched, then additional fixtures will occupy the channels following the first one you drag the patch to.

As additional fixture models are selected, they are added to the pulldown list at the top of the “Fixtures” pane.

This list will contain all the fixture types patched into the show to date and provides an easy way to select them if needed to add more of a particular fixture type to the patch.
Command Line Patching

There is an alternative method of patching that's available if the Patch Window is docked to the Main Window as described in Chapter 5 – System Properties. Below is an example of the docked Patch Window:

To patch channels/fixtures (Command Line Method):

1. Select the desired fixture (including ‘Standard Dimmer’) and quantity as described above.

2. Under the picture of the selected fixture is a switch with two positions which determine the order in which the command is entered. The default is “Channel @ Output” but can be set to “Output @ Channel”. The examples below assume the default.

3. Click on the Command Line Entry box and enter the desired channel/address mapping. The syntax of the command (assuming the default setting of the switch in 2 above) is:

   \{channel list\} @ \{address list\}

   A list can use a combination of commas to separate individual values and slashes to indicate an inclusive range of values.

Example: “2 @ 15 <Enter>” would patch DMX address 15 to channel 2.

Example: “1/4 @ 13, 15/17 <Enter>” would patch DMX address 13 to channel 1 and addresses 15 through 17 to channels 2 through 4.

Entering “\{channel list\} @ <Enter>” with no address list will clear the patch from the listed channels.
Adding Other Information
The Patch Detail pane allows more information about the patch to be stored. Some of the fields directly influence the output of the channel while others are used for reference to help program your show.

Note: The following lists all the columns that could be displayed in the default order. The columns that are visible, their widths and their positions in the grid are customizable by the user.

P/T Adjust
These options give you the ability to reverse the operation of the pan and tilt control of moving lights. If you find that a moving light has been hung in reverse to the logical movement of the light then you can correct it without having to physically change the position of the light. Use the drop down combo to select the adjustment you want.

- Flip Pan – The pan function of the fixture will be reversed
- Flip Tilt – The tilt function of the fixture will be reversed
- Flip Pan & Tilt – The pan & tilt function of the fixture will be reversed
- Swap Pan & Tilt – The pan function will operate tilt and the tilt will operate pan.

Profile
Use the drop down combo box to select the default profile for the channel. See Edit Profiles below for more information about this option.

Defaults
When a fixture is patched, the default values of its attributes are determined by the values read in from the fixture library. This field allows you to change the standard defaults on a fixture by fixture basis. The following screenshots show an example of changing the defaults for a patched fixture. To see the list of attributes and their current values, click on the Defaults box of the desired fixture:
Next, click on the attribute value (right hand column) whose default you wish to change. For this example, the default position will be set by clicking on either the value of **Pan** or **Tilt**. To help you set the correct default value(s), any **Groups** or **Palettes** stored in the show file will be displayed as shown below:

Since in this example we’re setting the default position, select the **Position** tab to display palettes that have position information and click on the desired default, such as “US Special”. The resulting values for Pan & Tilt are shown below:
Any values read in from the palette will be shown in **red**. You can also select an attribute and enter a value manually.

A special palette called the “Home Palette” can be defined in the **Groups Editor** and accessed by clicking the **Home Palette** button. The attributes of the target fixture can be returned to their original default values by clicking on the **Reset All** button.

Defaults may be set and reset also via the “Command Line Method”. The syntax of the commands is:

```
{channel list} SET DEFAULTS {palette type} {palette ID}
```

```
{channel list} CLEAR DEFAULTS
```

Example:

```
37/40 SET DEFAULTS COLOR 5 <RETURN> - Set the color defaults of fixtures 37 through 40 to the values stored in color palette 5.
```

**Aux Dimmers**

Some fixtures require a separate DMX address for dimmer control. The Vari-Lite VL5, for example, does not have the dimmer included in the list of control channels. This is because the dimmer is a separate power feed to the fixture. The Aux Dimmer column can be used to set the address of the external dimmer for this type of fixture.

Use this option when working with color scrollers where the dimmer is not located at a fixed distance from the control channel.

You can enter any list of dimmers required into this field.

**Relay**

LED, moving light and other intelligent fixtures require non-dimmable power for their operation. This power is sometimes supplied by adding or replacing standard dimmer modules in a lighting rig with special relay modules that can switch the power on and off. Like “Aux Dimmers” above, this column can be used to associate the address(es) of the relay module(s) supplying power to the fixture(s) patched to the selected channel(s).

Addresses entered in this column will be labeled “**Relay**” in the “DMX Outputs” section of the patch window and be set to an “Inverse Non-Dim” profile. When LF is started, these DMX outputs will be set to “full”, meaning the relays will be energized (i.e. “Power On”).

There are user-settable options that can be set to control the operation of these relays. See “**System Settings Tab**” in Chapter 5.2 for more detail.

**Vis Patch**

LightFactory supports having a separate patch for the visualizer output. If nothing is set in this field the software will default to the same patch information shown in the “Patch Detail” column and the information will be displayed in a light grey color.

To change the visualizer patching for any channel, simply edit the data in the same way as the “Patch Detail” column.

To return the visualizer patching on individual channels to the default, simply delete the contents of the field. As soon as you press **<ENTER>**, the default information will be displayed in a light grey color. To reset the entire visualizer patch, select **Clear Patch -> Clear Visualizer Patch** from the Options menu.
**Position**
Use the position field to describe where the fixture is located in the lighting rig. This field will be displayed in the verbose or classic views of the channel display.

**Unit #**
The unit number can be a number that stays with the fixture. Use the unit number field to store any number you find useful to identify the fixture.

**Purpose**
The purpose field should describe what the fixture is being used for. For example – general wash, actor special, etc. This field will be displayed in the verbose view of the channel display.

**Color Description**
The color description field can hold any text you want to describe the color filters that may have been added to the light. This field will be displayed in the verbose view of the channel display.

**Color**
The color field is used for a real-world representation of the color used in the fixture. This color will be shown in the channel display for easy reference. To set the color you can type any known color description (e.g. Red, Yellow, RE202, L194) into this field. If the color description is not known then the color will be set to “None”. You can also select the color from the standard LightFactory color chooser by clicking on the button to the right of the field or by double clicking on the field.

**Fixture Type**
The fixture type field will be populated automatically by patching a fixture from the library. The fixture type is referenced to determine the symbol used in the layout (magic sheet) view for the channel. This field is read-only except for those channels patched to a “Standard Dimmer”.

The default Fixture Type for “Standard Dimmer” is ELLIPSOIDAL, however a pulldown list of other types is available to allow a better description of the kind of fixture patched to a given address to be chosen. Examples are: FRESNEL, PAR, PRACTICAL, etc.

**Power**
The power field will be populated automatically by patching a fixture from the library. This field should show the power consumption of the light.

**Weight**
The weight field will be populated automatically by patching a fixture from the library. This field should show the physical weight of the fixture.

**Circuit Name, Circuit # & Dimmer Phase**
Use these fields to record the power source to the fixture. This information may be needed later to debug power problems.

**Accessories**
If the fixture has any accessories added to it (top hat, barn doors, etc.), the information can be recorded into this field.

**Generic Data 1, 2, 3**
Any other information you want to record with the fixture can be stored in any of the three generic fields. Information in these fields will be displayed in the verbose view of the channel display.
**VN Areas, VN Rooms, VN Channels**
Information pertaining to Philips Strand VisionNet. See the Strand Lighting [website](#) for more information.

**DMX Setting**
The DMX settings column is a read only display of the dip switch settings for the patched address. If the fixture’s address is set by dip switches, then this field can be used as a handy reference.
**Options Menu**

A drop down menu at the top of the patch window provides access to various miscellaneous options.

<table>
<thead>
<tr>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insert (Move all fixtures down a channel)</td>
</tr>
<tr>
<td>Reset patch</td>
</tr>
<tr>
<td>Clear patch</td>
</tr>
<tr>
<td>Swap universes</td>
</tr>
<tr>
<td>Fixture Type Exchange</td>
</tr>
<tr>
<td>Swap Selected Fixture</td>
</tr>
<tr>
<td>Move Selected Fixture</td>
</tr>
<tr>
<td>Copy Selected Fixture</td>
</tr>
<tr>
<td>Edit dimmer profiles</td>
</tr>
<tr>
<td>Export patch to csv file</td>
</tr>
<tr>
<td>Import patch data from csv file</td>
</tr>
<tr>
<td>Import patch from Lightweight® (csv)</td>
</tr>
<tr>
<td>Print patch</td>
</tr>
<tr>
<td>Release all captured dimmers</td>
</tr>
<tr>
<td>Display Options</td>
</tr>
<tr>
<td>Patch Options</td>
</tr>
<tr>
<td>Reset grid layout to default</td>
</tr>
<tr>
<td>Save patch</td>
</tr>
<tr>
<td>Save patch &amp; close window</td>
</tr>
<tr>
<td>Revert to last saved patch</td>
</tr>
<tr>
<td>Save current patch as system default</td>
</tr>
<tr>
<td>Close window without saving</td>
</tr>
</tbody>
</table>
**Insert (Move all fixtures down a channel)**

Use the insert if you need to add a fixture to the patch and want to add it between two other patched channels. The insert option will move all of the patch information down one channel from the currently selected channel.

**Warning:** Use this option with care. If cues have already been recorded, the new and shifted channels are not updated, thus cues will need to be manually updated.

**Reset Patch**

This option has a submenu with the following choices:

- **All Channels**

Selecting “All Channels” from the submenu will return all of the channels (fixtures) back to a 1:1 patch. Each channel will be patched to the corresponding dimmer address. A warning and confirmation dialog will be displayed.

- **Reset Patch by Range**

To reset a range of channels (fixtures), select the desired channels by clicking on the first channel row and then clicking on the last channel row to be reset while holding down the <SHIFT> key. Select “Reset Patch by Range” from the submenu to reset the selected channels. A warning and confirmation dialog will be displayed.

- **Set Visualizer Patch 1:1 (Conventions)**

In some cases where you have a show that runs at different venues, the patch you’ve set up for the visualizer may be different than the patch in LightFactory. Setting this option will allow the visualizer to use a 1:1 patch while LightFactory is patched to match the venue’s dimmer assignment.

**Clear Patch**

This option has a submenu with the following choices:

- **All Channels**

Selecting “All Channels” from the submenu will remove all of the patch information from the system.

- **Clear Patch by Range**

To clear a range of channels (fixtures), select the desired channels by clicking on the first channel row and then clicking on the last channel row to be cleared while holding down the <SHIFT> key. Select “Clear Patch by Range” from the submenu to clear the selected channels. A warning and confirmation dialog will be displayed.

- **Clear Patch by Universe**

You can clear the patch by universe by selecting its number from the sub menu. A warning and confirmation dialog will be displayed.

- **Clear Visualizer Patch**

If you have altered the visualizer patch detail, the default can be restored by selecting this option.
**Swap Universes**
Use this option to move fixtures from one DMX universe to another.

**Fixture Type Exchange**
This option may be used to replace some or all instances of one type of fixture already patched for another type. When clicked, the following dialog window appears with the “Select Fixture” tab selected:

In the example above, all instances of the Vari-lite VL3000 Spot are to be replaced with Martin MAC 700 Profile fixtures. The “Source Fixture” is a pulldown list of all fixture types currently patched into the show from which one may be picked to be exchanged for the “Destination Fixture”. The destination fixture may be one that’s already patched or a new type may be selected from the list below the pulldown.

---

**Note:** Care must be taken that the number of DMX addresses used by the destination fixture is equal to or less than the source fixture to avoid patching errors.

If not all source fixtures are to be replaced, a list of channels to be exchanged may be entered into the “Channel Filter” box. When all information has been entered, Clicking “Next” will switch the window to the “Adjust Mapping” tab.
The software tries to match the attributes of the source fixture with those of the destination fixture. Depending on the fixtures chosen, not all attributes of the source may be matched by the destination and some attributes of the destination may have no equivalent match to the source. In addition some attributes between the source and destination may be incorrectly matched. This may be adjusted by moving attributes of the destination fixture to more closely align them with the source fixture.

As an example from above, perhaps the one rotating gobo wheel of the MAC 700 more closely matches 'Rotating Gobo 3' of the VL3000. To adjust the mapping, click on Attribute 6 of the MAC700 and drag it to position 10. Likewise, drag Attribute 7 to position 11. The resulting screen is shown below:
After checking the mapping of attributes, the third tab labeled “Gobo & Color Wheel Mapping” may be selected for more refined adjustments of those attributes. Below is an example:

In Item #5 for example, the ‘Orange’ positon of the VL3000 color wheel got mapped to a ‘Green’ on the MAC 700 wheel. To adjust, click on the MAC 700 side for Item #5 and choose a color from those presented that more closely matches the VL3000 side. Likewise, a gobo wheel may be chosen from the pulldown list and adjustments made to its mapping.

When all adjustments have been made, return to the “Adjust Mapping” tab and click on “Exchange Fixture” to complete the exchange. After acknowledging the warning message, the software will first re-patch the selected (or all) source fixture channels with the destination fixture, then proceed through all cues, groups, palettes and effects to remap the stored data.

**Swap Selected Fixture**

This option may be used to swap the fixture patched to one channel with that of another. First, select one of the channels to be swapped in the Fixture Details pane, then choose this option which displays the following dialog:

As instructed, enter the destination channel for the swap and click OK. You have the option to update the show data also by clicking on the check box before proceeding.
Note: Care must be taken that the number of DMX addresses used by the channels to be swapped are equal to avoid patching errors.

**Move Selected Fixture**
This option is similar to “Swap Selected Fixture” except the destination channel must be empty. If the destination channel already has patch information, a warning is displayed and the operation is cancelled.

**Copy Selected Fixture**
Use this option to copy single a channel or a range of channels and paste it/them into the patch specifying the starting channel, an offset for the universe and an offset for the DMX address.

![Copy patch](image)

**Edit Dimmer Profiles**
When patching standard dimmers, it’s possible to patch more than one to a channel and all will output the same level according to the profile selected for the channel. Use this option to adjust the profile of each individual dimmer patched to the same channel. When this option is selected, a new window will be displayed allowing you to select a dimmer and change its profile.

**Export Patch to CSV**
Use this option to create a Comma Separated Values (CSV) file of the patch that can be imported into Excel or other application. This is also a good way to get the correct fields to use for importing patch data.

**Import Patch Data from CSV File**
To import patching from a delimited file format (CSV), select “Import Patch Data from CSV File” from this menu. An “open file” dialog will be displayed to select the file to import.

The format for the imported data is channel, dimmer, fixture brand, fixture name. To supply a list of dimmers for a channel enclose the list in quotation (") marks. If you are including an intelligent fixture in the patch information it is recommended that the brand and fixture name be enclosed in quotation marks.

**Import Patch from LIGHTWRIGHT® (CSV)**
Patch information can be imported from a LIGHTWRIGHT® file. You would first need to export a CSV file from LIGHTWRIGHT® and keep all default column settings and assignments.

Note: LightFactory needs the first record to be the export field labels. The first 3 are the important ones and must be Purpose, Channel, Dimmer in that order, otherwise the import will fail.
Print Patch
Select “Print Patch” to print all patched channels to a system printer.

Use the print preview and printer settings to adjust the look and layout of the patch information that will be sent to the printer.

Release All Captured Dimmers
If a DMX output has been set manually to a value, it is considered captured. This means that regardless of the desk channel setting the output will remain at its captured value. Captured outputs are identified by a red number showing in the top right hand corner of the address box in the DMX Outputs pane.

To release all outputs back to regular control, select this option from the menu. Also, this can be achieved by entering “dim rel” in the command line interface.

Display Options

SHOW PATCHED ADDRESSES AS ABSOLUTES

Normally DMX addresses in the Patch Detail are shown in the form U.Address, where U is the universe number and Address is in the range of 1–512. Setting this option changes the format to Address, where the range is 1–(512 X # of Universes). For example, if the system is set for 2 Universes, the address range would be 1-1024.

Note: The addresses in the DMX Outputs pane are always shown as 1-512 for each universe. If you patch an address from a universe greater than one, it will be translated to the proper absolute address. Example: Patching Address 10 in Universe 2 would be translated to 522 in the Patch Detail pane.

AUTOMATICALLY LOOKUP TEXT WHEN TYPING

When entering information into Patch Detail cell grids that accept text, this option when set will attempt to complete the entry in a manner similar to the way Microsoft Excel™ works.

FIRST DIP SWITCH VALUE IS 0

The DMX Setting column of the Patch Detail grid shows a graphical representation of a DIP switch pack that some fixtures use to set their DMX address. In rare instances the representation may not match the actual settings on the fixture itself and selecting this option may correct that issue.

AUTOSIZE “PATCH ADDRESS” COLUMN

This option is set by default. When set, adjusts the “Patch Address” column so the complete addresses are always visible.

SHOW/HIDE SEARCH BAR

The search bar at the bottom of the Patch Detail pane can be displayed or hidden if not used. When hidden, the grid is expanded into the space it normally occupies.

Patch Options

REPLACE DIMMERS WHEN DRAG AND DROP PATCHING

This option is set by default. If you drag a new address and drop it into a channel that’s already patched, the new address will supersede the original. If this option is unchecked, a new address would be added to the original, so both addresses would be under the control of a single channel.
For patching multiple fixtures using the drag & drop method. If set this option would place the fixture with the highest address first in the target range.

**COMMAND LINE ALWAYS OVERWRITES EXISTING PATCH**

If the Patch Window is docked to the Main Display thus enabling the Command Line Method of patching, setting this option will cause any patch information entered via the Command Line to overwrite any existing Patch Address(es) regardless of the state of the “Replace Dimmers…” option above.

**Reset Grid Layout to Default**
If you’ve deselected some of the columns in the Patch Details grid and/or rearranged them, this option will restore them.

**Save Patch**
The patch information is the only data in LightFactory that must be saved explicitly. You can use this option to save the patch at any time.

**Save Patch & Close Window**
Similar to the above, saves the patch and also closes the patch window. If you close the window by use of the X in the upper right corner of the window, a dialog will be displayed to give you the option of saving the patch before closing the window.

**Revert to Last Saved Patch**
If you’ve been re-patching a show file and decide you’d like to return to the original configuration, you can use this option to restore the patch to its previous state.

**Save Current Patch as System Default**

**Close Window without Saving**
You can close the patch window without saving the current state to remove it from the screen and recall it later from the Command Window.

**Warning:** If you close the patch window without saving the current state and then exit LightFactory, the patch will be restored from the previous configuration when LightFactory is restarted. All changes made since that last save will be lost.
**RDM**

RDM is an extension to the DMX protocol that provides bi-directional communications with RDM compatible devices and fixtures.

Clicking on the RDM button will bring up a separate window for RDM control.

![RDM Button](image)

**Note:** Not all output devices support RDM functionality. The universe selection in the RDM window will only display hardware that supports RDM. If your device is not listed then you will not be able to use the RDM functionality.

The RDM window can be used to find devices connected to the DMX network, change their label and set the start address and personality. If the fixture supports identifying its attribute list, LightFactory can build a fixture and store it in the fixture library the first time it is patched.

To start the discovery process, select the DMX universe form the menu in the top left corner and click on “Find All”. The discovery process may take some time to return and if possible LightFactory will notify you of its progress. This is not always possible and it may appear as though nothing is happening. When the discovery process has finished the “Find All” button will become active again. If you add devices to the system you can use the “Find Additional” button to find those not already found.

Once the devices have been found they will be listed in the grid as shown. If not all the information is found correctly, you can use the small button to the right of the “Number” to attempt a second retrieve.
**Model** – The model field is a read only field that typically will tell you what the device is.

**Device Label** – The device label is a changeable field stored on the device. You can use this to store your own information on the fixture itself. When the device is patched into LightFactory, the label will be placed into the first generic data field automatically.

**Channel** – When the devices are discovered, LightFactory will work out what channel is currently assigned to the DMX start address and display it in this field. If the channel number has an asterisk (*) attached to it then this indicates that the fixture definition does not match the model and footprint. This simply means that while the start address is patched the fixture is not.

Note: Any changes made to the channel field will not apply until the “Patch” button is pressed.

**DMX Addr** – The first DMX address that the fixture or device will use for control. Changing this field will update the device with the new value. If the value returns to the previous setting, then the change was not successful.

**Footprint** – The footprint is a read only field to indicate how many DMX addresses the fixture uses for control.

**Personality** – Setting the personality will change how the fixture or device is controlled. Changing the personality by selecting from the drop-down list will update the device/fixture. If the value returns to the previous setting, then the change was not successful. Changing the personality may change the footprint of the fixture.

**Identify** – Use the identify button to find the fixture or device. The device/fixture shall identify itself using a visible or audible action. For example, strobing a light or outputting fog. Clicking on this button will put the device/fixture into identify mode and change the label to “Identify Off”. Clicking again will turn off the identify mode.

**Clear Channel Assignment** – Click on this button to clear all the channel numbers currently assigned to the devices. No changes will be made to the actual patch at this point. All the devices/fixtures will show “Not Patched”.

**Clear DMX Address** – Click on this button to clear all the DMX addresses shown. This will not change the assigned DMX start address on the device/fixture. Use this option when you want to patch all the fixtures found using the instructions below.

**Automatic Patching**
The LightFactory RDM window provides a quick and easy way to patch all the RDM devices that have been found. Before starting this process click on the “Clear Channel Assignment” and the “Clear DMX Addresses” buttons.

Next, use the “Identify” button to find the first fixture you want patched. Once you have found the first fixture, click on the “Patch” button. The selected fixture will be patched to the first channel and the first DMX address.

If the fixture (referenced by the Manufacturer and Model information) is not found in the LightFactory fixture database, then the software will interrogate the fixture using RDM and build a suitable fixture profile. The amount of detail contained in the new fixture profile will depend on the RDM commands supported by the device/fixture.

To patch the rest of the devices/fixtures use the “Identify” button to find the next fixture and click “Patch” to patch it into LightFactory. The software will assign the next channel and the correct DMX start address to fit the fixture.
**Edit Menu**
The edit menu provides access to the following windows:

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**EDIT FIXTURE LIBRARY**

The fixture library is the list of all available fixtures that can be patched in the software. Each fixture has an associated definition file that contains information about how LightFactory can manipulate the features of the light.

The fixture editor is a separate program provided with LightFactory. You can use the graphical interface to add, remove or modify fixtures.

See the "LightFactory Fixture Editor User Guide" for a detailed description of how to work with this application.

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**EDIT PROFILES**

The channel profile is a way to adjust the relationship between the channel value and the final DMX output. The default relationship is called linear (1:1), meaning that if the channel is set to 0 then the output is 0, if the channel is set to 50 then the output is 50 and if the channel is set to 255 then the output is also 255.

Changing the profile allows you to correct for older lamps or make special channels for fixtures that do not have full dimmer functions. (E.g. A smoke machine)

Profiles are also used in the "Profile Effect" as the path that the effect will apply to an attribute. See the Profile Effect in section 6.8 for more information. The same editing window is used for both the channel profile and the profile effect.

To select a profile for a channel, simply use the drop down list in the “Profiles” column of the Patch Detail. The list that appears will show a small image of the profile and its name.

To adjust a profile or to make a new one, choose “Edit Profiles” from the drop down menu attached to the “Edit” button. You can also access the profile editor from the main command window from the “More” menu.
On the left side of the window is the list of profiles in the system. Profiles are not stored with the show information and will remain in the system until deleted using the profile editor.

When the software is first installed a number of default profiles will be created. The default profiles cannot be edited and are identified by the small padlock that is shown in the bottom right corner of the window. To edit a default profile you will first need to make a copy of it using the button provided.

To create a new profile click on the “Create New Profile” button under the list of available profiles. A dialog will appear asking for the name of the new profile. Enter a short description of the profile you plan to create and click on the “OK” button. The new profile will default to the “Linear” path.

To make a change to this, click anywhere on the grid and a small red dot will appear. The path will now go smoothly through the point just created. You can move this point by clicking and holding your mouse button down to drag the point around the window. Repeat this process to create more points.

By default the system will draw a curved path between every point created. Use the “Elasticity” spin edit to adjust the flatness of the curve. Setting the elasticity to 1 will draw straight lines between each point without a curved fit.

EDIT MATRICES

Before creating matrix or LED effects, you must define how the fixtures and lights are laid out in the real world. The “Edit Matrices” window provides a simple interface to create a rough layout of the fixtures.

You can also access this window from the “More” menu on the LightFactory command interface window.

A lighting matrix is a simple two dimensional grid where each cell can be assigned a channel or fixture from the system. On the left of the window is a list of available matrices that have been created previously. To edit any matrix, click on the name and the right hand grid will change to show the definition.
To create a new matrix definition click on the “Add Matrix” button in the bottom left corner of the window. A dialog will ask you to enter a name for the new matrix. Click on the “OK” button and the new definition will appear in the list on the left hand side of the window.

To delete a matrix, click on the “Remove Matrix” button in the bottom left corner of the window. A dialog will ask you to confirm the operation. Click on the “OK” button to delete it from the system.

The size of the matrix can be changed at any time by setting the columns and rows spin edit boxes along the bottom of the window. Use the “Zoom + & -” buttons to expand or shrink the matrix to fit the edit window.

By default a matrix will be empty with no fixtures assigned. In order to output a matrix effect to fixtures you must identify where the fixtures are in the grid. To do this click on the desired cell and a fixture number will appear. The “Next Fixture” edit box at the bottom of the window will increment automatically so that the next fixture can be assigned.

At any time you can change the “Next Fixture” number to any desired system channel.

By clicking in the grid (holding the mouse button down) and dragging the mouse over several cells you can assign a number of fixtures at the same time. Each cell will be assigned a unique fixture and the “Next Fixture” value will be incremented.

The “Highlight Next Fixture” checkbox will cause the channel in the “Next Fixture” spin box to be set at full value. If you have the real matrix, the light assigned to that channel will be illuminated.

Use the “Load” & “Clear” options to assign a picture of the matrix for future reference. The image assigned to the matrix is displayed behind the matrix editor and can be used to align the position of fixtures in a real environment.
Click on the “Load” button to open an image dialog. Select any image that represents the matrix of fixtures and click “Open” to complete the operation. The image should appear in the window just above the load and clear buttons.

Click on the “Clear” button to remove the image from the system.

If the predominant color of the image makes the text unreadable in the matrix view, tick the “Use White Text” option below the Load and Clear buttons.

The “Auto Patch” menu makes it easy to set up simple matrix situations such as filling the entire matrix, creating bars and checker patterns or rotating the matrix.

This menu also provides an option “Clear Patch” to remove all channel assignments from the matrix.

The option “Match rows and columns to the image size” will set a 1:1 relationship between the pixels in the image and the matrix itself. This option should not be used on images bigger than 500 pixels wide and high.

Use the “Number Vertically” check box to have increasing numbers vertically rather than horizontally when automatically assigning channels.

**LIGHTSHOP ONLINE**

LightShop™ is an online database of fixture profiles that can be accessed directly from within LightFactory.

**SET P/T ADJ ON SELECTED CHANNELS**

While you can use the “P/T Adj” pulldown menu in each cell of the Patch Detail grid, this option allows the operation to be performed on a block of channels. First, select the channels you wish to adjust and then select the operation to be performed in the submenu.

**SET PROFILE FOR SELECTED CHANNELS**

Likewise, you can set the dimmer profile for a block of channels with this option.

**Soft Keys**

When clicked, displays a menu of clickable keys that can aid in entering commands on the command line.

**MUTE Output**

The mute button will temporarily stop all DMX output from LightFactory at the hardware level. If you want to use another DMX controller temporarily you can mute LightFactory so that the output streams do not fight for control.

This button will toggle the MUTE state so clicking again will unmute the system. When the system is muted the button is displayed in red.

**Visible Columns**

This pull down menu lists all of the columns that can be displayed in the Patch Detail pane. Columns that are visible have a check mark preceding the name. Unchecking a name removes that column from being displayed.

**Search Bar**

The search bar at the bottom of Patch Detail pane (if displayed) can be used to locate cells in the grid by row number or text. As entries are made in the edit boxes, the first row to contain the matching string typed in at that point will be highlighted. Use the “Channel” box to scroll quickly to a section of the grid not visible currently.
Use the “Search all fields” box to locate text in any of the columns other than the Fixture Number. Once the item of interest is found, additional instances can be located with the “Find Next” and “Find Previous” buttons.

The “X” button will remove the search bar from the display. It can be redisplayed by choosing the “Show/Hide Search Bar” item in the “Options” menu.

### DMX Outputs Pane

The DMX Outputs pane shows a grid of the DMX addresses for the selected universe (tabs along the top). The squares in the grid show the patch status of each address and can be used to capture and set the DMX value. Below is a partial view of the pane showing some of its features:

As shown above, the first 8 addresses (outputs) of DMX Universe 1 are standard dimmers patched 1:1 and each square shows the channel to which it is assigned. Addresses 9-12 are assigned to Channel 9 and are the attributes of a simple RGB LED fixture chosen from the Fixture List. The function of each address is shown in the grey box that spans the address squares with the fixture type in blue on the top.

Address 13 is shown with an asterisk in the upper left corner and is labeled “Relay” to indicate it has been assigned to at least one channel in its “Relay” column. See the section on “Patch Detail” for more information.

Address 14 is highlighted with a red background as a warning to indicate that it is being controlled by more than one channel. The output level of such an address will be determined by whichever channel is the latest to set its value.

Addresses 15-16 have not been assigned and are therefore shown as “Unpatched” in red.

Address 4 shows a number in red in the top right corner of its square. This indicates that the Address (Output) has been “captured” and the number indicates the DMX value (range of 0-255) to which it has been set. An address can be captured by right-clicking on its square and then using the mouse’s scroll wheel to adjust the level, which starts at the “ON” level set in System Properties. In a live lighting rig, capturing an address can be used to identify the instrument connected to the selected dimmer.

Captured outputs are locked out of any control by other means from within LightFactory and must be released to regain control. An individual output can be released by right-clicking it again. To release all addresses from the patch window, select “Release All Captured Dimmers” from the Options Menu in the Patch Detail pane.

**Note:** Dimmers may be captured and released from the Command Line. See Chapter 7 – Command Reference for more information.
If you have more universes configured than can be shown across the top, there will be arrow buttons on the right to shift the list. In addition, the “Jump To” button will display a dialog where the desired universe may entered which will shift the list and select it.

**Fixture List Pane**

The fixture list pane is where you can select profiles for the fixtures you are patching into your show. LightFactory comes with a library of profiles that represent the available fixtures at the time of release. They are organized as an indented list by manufacturer, model family, variant, mode, etc.

![Fixture List Pane](image)

The default fixture is a standard dimmer that only needs a single DMX address to set its value. To select a different fixture, scroll the list to locate the manufacturer and click the arrow to the left to expand the list of models available and any further expansions to find the exact fixture. When highlighted, a picture of the fixture (if available) will be displayed to the right.

The “Fixture Make/Model” box at the bottom can be used to locate fixtures also. Click on the edit box and start typing the model number and as matches are found, a list will appear and become more refined as additional characters are entered.

As fixtures are selected and patched, a list is built that's available from the pulldown next to the “QTY” box. Thus, if you need to patch more fixtures of a type you’ve patched earlier, select it from the short list rather than having to scroll through the manufacturer’s list again.

Once the desired fixture has been selected, follow the **Patching Operations** section above to assign DMX addresses and a control channel (fixture #) for it.

If you have a fixture that does not have a profile in the library, there are some options for obtaining it:

1. Create your own profile using the Fixture Editor supplied with LightFactory. The fixture editor can be launched from the “Edit” menu in the Patch Detail pane.

2. Check the LightFactory Users forum to see if other users have already created a profile. If you have created your own, offer it to the user community.
6.3 Channel Display

The channel display is your primary access to fixtures and lights. This window can be called up or brought to the front from the Command Window by clicking the Channel Display button or pressing <F2> on the keyboard.

Note: The Channel Display can be docked to the Command Window for a combined display (see section on "View" menu below). The descriptions and options for the channel display in the following sections apply equally to either mode of display.

The information about channels and fixtures can be displayed in several ways. The view style can be selected from the "View" menu. Unless a different option has been set by the user, the default view is called "Classic". An example of the classic view of a show patched 1:1 with standard dimmers is shown below.

As you can see, the display is a grid of rectangles, each containing the information for one control. The number of rows is adjusted automatically based on the size of the window. The number of columns can be set automatically or you can fix the number by selecting "Enter the column count" from the "View -> Display Options" menu. If a fixed column count is set, then the column widths will resize to fit across the page. Setting this to 0 will return it to a dynamic column count. If there are more channels than can be shown, a standard Windows scroll bar will appear on the right side.

In the channel display you can:

- Select and modify the dimmer of each channel.
- Select and modify attributes of intelligent fixtures.
- Record Cues, Groups, Palettes and Effects.
- Run library effects.
- Apply groups (specific) and generic palettes.

**Sidebar**
To the right of the channel grid is a section called the sidebar. This section can display the Fixture Control window and FX controls when appropriate also. Below is a screen shot of the sidebar showing the “Current Playback” tab.

![Sidebar Screenshot]

The sidebar shows the selected cue list and has playback controls (Run, Go, Stop/Back & Reset) along the bottom. The current cue is highlighted and surrounded by a yellow border. When cues are executed, the fade in and fade out times are shown as progress bars and the border changes color to green.

As cues are recorded, they will be added to the list. A cue may be selected with the mouse and run at any time. The Go button will run cues in sequence starting from whatever cue is current. While a cue is fading in, it may be suspended by clicking the Stop/Back button once. Then clicking Go will resume the cue or the previous cue may be run by clicking the Stop/Back button a second time. Reset will release control by the cue list.
The top line provides information about the current default settings used when recording cues. The options shown are: Default record mode, Default tracking record mode (if full tracking selected), and the Set auto mark option. The FX, Sub, & Pal flags are clickable buttons to select whether running effects, submasters and palettes are included in recorded cues. The text changes to red if disabled. These options can be overridden on a cue by cue basis from the cue recording dialog.

When an intelligent fixture is selected in the channel display grid, the fixture controls will be available by clicking on the “Fixture Control” tab. An option in the Appearance tab of the System Properties window can be set to cause the sidebar to switch automatically to the fixture controls (see Chapter 5.5). Below is a view of the sidebar with the Fixture Control tab selected:
View Menu
To change the view, click on the “View” button and select the desired option(s).

Note: Some of the features of the views are user-selectable options. See Chapter 5.5 – Appearance for more information.
**Blind View**

Selecting this mode allows cues to be modified without affecting the live output. The currently selected cue is shown in the banner above the sidebar and may be changed by clicking on the desired cue in the cue list (the selected cue will be highlighted in gold).

**Note:** The Blind view can switched directly from the keyboard by pressing `<SHIFT>`+`F2`. To return to the live view without making any changes, press `F2`.

The Blind view is shown below with the optional sidebar attached to the Channel Display. The sidebar shows the current cue list and can be used to select cues for blind editing.

Fixtures may be selected and modified using the same methods as in live mode, although some functions are not available as indicated by the greyed-out buttons in the figure above. A special set of buttons (outlined in red above) is provided for instructing the software in applying any changes to the cue list. The number of buttons and their labels are different depending on the tracking mode.

**Full Tracking Buttons (shown above):**

- **Exit Blind (Abandon)** – Return to live mode without recording any changes to the cue list.
- **Exit Blind Track Fwd** – Record any changes and track them forward.
- **Exit Blind Track Back** – Record any changes and update previous cues with tracking information.
- **Exit Blind Cue Only** – Record changes to currently selected cue only.
Hybrid Tracking Buttons:

- **Exit Blind (Abandon)** – Return to live mode without recording any changes to the cue list.
- **Exit Blind (Update)** – Record changes to currently selected cue.

**Display fixture/complex timing**

This feature displays timing information in the Classic view only and when selected will change the view to “Classic” automatically. For more detail, see the description of the Classic view below.

**Expanded (Verbose) View**

When fixtures other than standard dimmers are patched (usually called “intelligent” fixtures), the sizes of the rectangles in the grid change to show the attributes of the fixtures and their current values. For intelligent fixtures, a small picture of the instrument can be shown (user option). In some cases, the information will be graphical (like the color of an RGB LED fixture, for example). An example of the expanded view of a show with a combination of standard and intelligent fixtures is shown below.

Note: In the Expanded view, standard dimmers have the label “Channel” and intelligent instruments have the label “Fixture”. In this chapter, the terms “channel” and “fixture” will be used interchangeably.
**Compact View**
Use the compact view to maximize the number of controls visible on screen at once. This view will show the least amount of information per fixture and is limited to the basic channel number and dimmer level. It will also show graphically a moving light position and color.

**Classic View**
Similar to the compact view but will show color coded values to indicate what is controlling the channel and what the channel is doing. For LightFactory V2.18 and higher, this is now the default view after installing the software.

**Color Coding:**
- Increasing – Light Blue
- Decreasing - Lime
- Tracked - Purple
- Attribute Changed - Blue
- Blocked - White
- Submaster Control - Yellow
- Effect Control – White

If the option “**Display fixture/complex timing**” is active, the normal information displayed in the Classic view is replaced with dynamic timing information. When cues are run, the display will show times set in the cue (such as Up, Down, Channel & Attribute) counting from their initial to final values and fixed times (such as delay) in bold. The following screen shot shows some timing information as a result of running a cue:
**Magic Sheet**

This view allows you to place fixtures arbitrarily in the window to more resemble the placement of the fixtures in reality. The following screen capture is an example of a simple magic sheet layout:

The magic sheet view is a free form that by default has nothing on it. Before using this view you must place fixtures in the desired locations. Once you have placed fixtures on the form you can then control them by selecting them in the same way as the grid view.

When placed on the layout window, each fixture is represented by a symbol of the fixture, its channel number, name and the current intensity level. If the fixture is an intelligent fixture, the position and color is shown also. The symbol shown is defined by the “Fixture Type” in the dimmer patching window. If no type is specified, the fixture is assumed to be a standard dimmer.

Just above the layout panel (black area of the window) is a tool bar that is used to edit the layout and insert fixtures onto the view.

By default the layout view is in control mode, meaning it is expecting the user wants to control and modify the fixtures’ outputs. When you click on a fixture it will highlight it exactly as it does in the grid display. To add or remove fixtures and change their positions, click on the “EDIT” tab whose legend will change to “HIDE”. During an edit session, you cannot select fixtures for control as your mouse is now used to move the fixtures where you want. To return to control mode, click the “HIDE” tab.

The following screen capture shows a magic sheet in edit mode and illustrates the symbols available to create layouts:
Tool Bar:

**Sheet Tabs** – Layouts can be customized and spread over several sheets. Each sheet can be labeled separately. To add a sheet, click on the “+” symbol which will call up a dialog box where the tab can be labeled and a shortcut to display the sheet can be assigned. The tabs may be reordered by clicking and dragging them.

**Zoom** – Use this spin box to increase or decrease the layout shown on the sheet. Also, the mouse wheel can be used to adjust the size of the sheet (see Mouse Wheel Zoom description below).

**Fit Layout to Screen** – Clicking on this icon will set the zoom to the optimum value so that all fixtures on the sheet are shown.

**Pan Tool** – Click and hold this icon to move the layout around on the screen. This can be done by moving the mouse while holding down the left button or using the following spin boxes which will appear just below the icon:

There’s also a “Zero” button to reset the position. These controls will fade out after a few seconds of inactivity.

**Print** – Print current magic sheet on selected printer. Black background will not be printed.
Editor Panel:

Tab Name – Shows the name of the currently selected tab. The name can be edited if desired.

Shortcut – Shows the currently assigned sheet display shortcut. The shortcut can be changed if desired.

Apply – Click on this icon to apply any edits made to the above.

Grid – Setting this switch to On will display a grid of dots in the layout area and change the behavior of mouse moves to snap symbols to the nearest grid marks.

Fixture List – This is a grid of all the channels/fixtures patched into the show. An individual fixture may be selected by clicking inside its box or multiple fixtures by click and drag, <shift> and click or <ctrl> and click.

Add – Once you have selected the desired fixture(s), clicking this button will place the selection on the sheet. The type of graphic symbol displayed is determined by the symbol type set below:

Fixture Symbols – If this option is set when the “Add” button is clicked, the symbol for a channel is determined by what is set in the “Fixture Type” column in the patch table. The screen shot on the previous page shows an example of the available symbols for each fixture type. If there’s no match for a given fixture type, the default symbol will be displayed.

Fixture Blocks – If this option is set, the selected channels will be displayed as rectangles similar to the “Classic” view with the difference being they may be arranged in any order on the sheet rather than in a grid.

Matrix – If this option is set, a list of the available matrices will be shown instead of the fixture list. Select the desired matrix and click the “Add” button to add it to the magic sheet.

Misc – If this option is set, a list of auxiliary objects that may be added to the layout will be shown. The objects available are:

Add Picture – Include a picture from a file on the sheet.

Add Text – Create a text box on the sheet which can be adjusted for size, font, and color.

Add Group Box – Place a border on the sheet which can be adjusted for size and position plus line size and color. After the box is positioned on the sheet, select it, right-click the mouse and choose “Send to back” to allow objects enclosed in the group box to be selected.

Add Shortcut Button – When clicked, displays a dialog box where the desired shortcut number can be entered. The button will be added to the sheet and can be adjusted for size, position, font, caption and color.

Add Group Button – Similar to above but for creating a button with a group number.

Add SVG Graphic – Include a Scalable Vector Graphics object from a SVG file on the sheet. The fixture symbols shown on the previous page are examples of SVG objects.
Add Truss – Add a graphic representing a simple truss that can be sized and positioned anywhere on the sheet.

Sheet Panel:

After objects have been placed on the magic sheet, there are several operations that can be performed to arrange and size them. When an object is selected (outline changes to green), the editing options are shown in the Editor Panel above the channel(fixture) grid. A typical edit block is shown below:

![Magic Sheet Editor](image)

Delete Selected – Remove selected object(s) from the sheet. A confirmation dialog will be displayed.

X & Y; W & H – In addition to dragging the object on the sheet, its coordinates and size can be adjusted using the provided spin boxes.

Rotation – The selected object(s) can be rotated using this spin box. Positive numbers cause clockwise rotation and negative numbers cause counter-clockwise rotation.

Size Buttons – The overall size (Small, Medium or Large) of the selected object(s) can be adjusted using these buttons.

Right Click Menu – While an object is selected, clicking the right mouse button will display the following menu:

![Right Click Menu](image)

As objects are added and positioned on the sheet, they might obscure all or part of existing objects and prevent them from being selected. To access an obscured object, select the obscuring object, right-click and select “Send to back”. This will change the stacking order of the objects so that a previously obscured object can be selected and moved if desired. Selecting “Bring to front” will restore an object to its original stacking order.

As an example, if you surround some fixtures with a Group Box, the objects enclosed will not be selectable unless the group box is “Sent to back”.

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Selected objects can be cut, copied and pasted as needed.

In addition, magic sheets can be saved by exporting them to a file (type .MSF). Exported sheets may be imported to a new layout as well. An imported sheet will always be added to a new tab so as to not overwrite any existing layouts.

**Mouse Wheel Zoom** – In addition to using the zoom spin box control in the tool bar, rotating the mouse wheel will set the zoom level of the current sheet. The zoom operation uses the current position of the mouse pointer as the center of the area that gets expanded or contracted.
**Color Table**
This view is similar to the Compact View but only shows color values. This view can be used to see a quick status of all color fixtures in your plot.

**Faders View**
The faders view is a simple view designed for small installations where only a few fixtures are being controlled. Each fixture is shown as a fader.
To change the intensity levels for any channel, simply drag the bar up and down the control. If the fixture supports pan and tilt control you can click anywhere in the fixture image to set its position. Likewise you can also select the color from the palette shown below the image.

Click on “Open Control Window” to open the standard fixture control window for all other attributes.

At the bottom of this view is a page up and page down control to set the group of faders that are shown. Use the “View -> Display Options -> Set number of channels per page” menu to set the number (column count) of faders (channels) shown on each page.

**Intelligent Lights (ML) View**

The Intelligent view (sometimes called the ML View) is designed to work specifically with intelligent fixtures (moving lights) and groups of fixtures by their type.

There are two options in the Appearance tab under System Properties (see Chapter 5.5) that affect the types of fixtures displayed and how they are grouped. The following screen shot shows the fixtures grouped by type and also shows simple fixtures like the RGBs at the top. With this format, each fixture type is separated by a banner that can be double clicked to collapse or expand the listings for that type.

**Note:** You should set the desired display options in the Appearance tab of the System Properties window before selecting this view for the first time. LightFactory will remember your preferences for the next time it’s started.
Any of the attributes shown in this view can be directly edited by clicking on the cell. An appropriate popup control will appear.

If a palette is in control of the attribute, it will be shown in green under the attribute value.

**Open a new view of channels**
This option allows you to open additional Channel Display windows in many of the view styles described above (Expanded, Compact, Classic, Faders, Intelligent Lights and Magic Sheet). This is useful particularly if you have multiple monitors where you can arrange the additional windows so all are visible. These additional windows will show all patched channels. When one of these sub-windows has focus, fixtures shown on it can be selected and controlled the same as on the main Channel Display.

**Open a new view of selected channels**
Similar to the above, this option will open additional Channel Display windows showing only those fixtures which have been selected in the main Channel Display. Thus, you can create sub-windows with groupings of fixtures for easy control. The following is an example which shows only the intelligent fixtures.
**Open a split view of channels**

For shows with a large and varied number of fixtures, using this option will allow you to arrange the visible fixtures in a more convenient layout. The channel display area is split vertically and the bottom half is shown in the view style selected (Expanded (Verbose), Compact, Classic or Intelligent Lights (ML)). Each half can then be positioned separately with its scroll bar. The relative sizes of each half can be adjusted by dragging the divider bar between them. In the example below, the top half is in Intelligent Light (ML) view and the bottom half in Compact view showing the standard channels and RGB fixtures.

To return to a single view, click on “View -> Open split view of channels” again and deselect the view style with the check mark beside it.
**Open BLIND VIEW of channels**
This option allows you to open additional blind mode windows (grid only) in many of the view styles described above (Expanded, Compact, Classic, and Intelligent Lights). This is useful particularly if you have multiple monitors where you can arrange the additional windows so all are visible.

The currently selected cue is shown in the banner above the channel display and may be changed by clicking on the desired cue in the cue list (the selected cue will be highlighted in gold).

![BLIND MODE - Cue List: Dance Rehearsal - Cue: 4 Add Cyc](image)

**Note:** This window is essentially read-only. Any changes made to fixtures will not be recorded nor effect the live output. To make blind edits, use the BLIND VIEW of the main Channel Display.

**Open Color Picker**
This option opens a separate window containing the standard LightFactory color picker.
This window can be dragged into the layout for a second monitor to make it easily accessible.

**Channel Formatting Submenu**
The top three options are radio buttons, i.e. only one can be set at a time.

**View Fixtures Used in this Show**
Normally, all patched channels/fixtures are shown. This option removes any channels/fixtures that don’t appear in any cues.

**View Fixtures in the Current Cue**
Similar to above, this option will remove any channels/fixtures that are not recorded in the current cue.

**View Only Changed Fixtures**
Show only those channels/fixtures that have been selected and/or have been changed since the current cue has been run.

**Show Only Selected Fixtures (View)**
This option is a pushbutton and when clicked will show only those channels/fixtures that have been selected. This control has no effect if no channels/fixtures have been selected. The display returns to its previous state when the selection has been cleared.

**Display Options Submenu**

**Sidebar Cue List / Fixture Control**
By default, the sidebar showing the current cue list or fixture control when appropriate is attached to the right side of the channel display. Unchecking this option will dismiss the sidebar, allowing more space for the channel grid.

**Quick Select Bar**
When selected, a small window is attached on the left side of the channel grid showing lists of selection buttons generated automatically from the patch detail columns “Fixture Make/Model”, “Color”, “Position” and “Purpose” if entries have been made in them. If the “Auto Filter” switch is “On”, the channel display shows only the selected fixtures. The <CTRL> key can be used to make multiple selections as described in the “Select Active” section below.

**Enter the Column Count**
Click on this option to set the number of columns to display in the Channels area. If set to zero (0), the number of columns will be determined dynamically.

**Show 3rd line of text**
This option applies to the Classic view only. Normally, only two lines of information from the “Position”, “Purpose” and “Color” columns of the patch window are displayed. With this option set, all three lines will appear in each control if populated in the patch.

**Filter ML View by Selected Family**
A NEO console only option.

**Use Compact View for Sidebar Cue List**

For Version 2.19 and up, the sidebar cue list uses a larger font than previous versions, thus showing fewer cues in the visible area. Setting this option reverts the cue list to the smaller font so more cues will be visible.

The following options are available only if the sidebar is visible on screen:

**Show Clock**

If the sidebar is being displayed, this option will add a real time clock to the bottom of the sidebar along with the date and name of currently loaded show.

**Show Timecode**

If the sidebar is being displayed, this option will add a timecode display to the bottom of the sidebar.

**Show Stopwatch**

If the sidebar is being displayed, this option will add a stopwatch display to the bottom of the sidebar.

**Show Cue Notes**

If the sidebar is being displayed, this option will add a text box to the bottom of the sidebar and when a cue is run that has a cue note, the text will appear in the box.
Dock to main window and display full screen
This is another new display option that combines the Command Interface (Main) window with the Channel Display window into one display that is expanded to full screen size. This can be combined with the sidebar as shown by the example below. This one window gives you access to all the features of LightFactory. When this option is selected, the combined window is attached to the Windows taskbar automatically which results in a window with no title bar at the top. Depending on the size and resolution of the monitor, the buttons at the top may be displayed as one row and more buttons may be displayed in the bottom row.

With the full screen display, other screens such as the Cue List or Groups can be displayed one at a time on top of the main display. However, if you have multiple monitors, you can drag, resize and arrange these auxiliary screens onto the secondary monitor(s). There’s also an advanced system option which provides the ability to dock the auxiliary windows, which is described below.
**Advanced Docking System**

When enabled and when LightFactory is started, any secondary monitors will display the following navigation panel when an auxiliary screen is dragged onto it:

Drag the floating window onto the second monitor and "lock" the window into the docking system by hovering over one of the individual tabs.

Once you have a floating window docked into either the top, bottom, left or right, you can open and dock other windows. Once you have this docking system filled, you can then drag existing windows within each ¼ section and break it down further. Just use the 4 up tab to arrange them to your preferences.

You can save the layout for future reference using the [Window Layout Manager](#).
Along the top of the Channel Display (or combined display) are buttons with some having pulldown menus. The following sections describe the commands and options available.

**Selection Options**

Channels can be selected for control by clicking on the desired grid cell. By holding the left mouse button down you can drag an area of the grid to select multiple channels or fixtures. Nonadjacent selections can be made by holding down the `<CTRL>` key while clicking and dragging.

Note: Channels that are selected are indicated by some feature of the channel display depending on what view mode is selected. For the Classic, Magic Sheet and Intelligent Lights views, a selected channel is indicated by a red border around the control; For Expanded, Compact and Faders views, the background color of the control is changed to a user-selectable color (default: light blue).

In addition there are selection buttons and options that can select or refine groups of fixtures:

**Select Active**

Click on this button to select all of the channels whose intensity is above 0. This button also has a menu that can be accessed by clicking the arrow to the right of the button. Use this menu for the following options:

- **Select active fixtures excluding subs** – Select any active fixtures not currently under the control of a submaster.
- **Select all fixtures** – All of the patched fixtures in the system will be selected.
- **Select inactive (off) fixtures** – All of the fixtures whose intensity is 0 will be selected.
- **Select changed fixtures** – Selects any fixtures whose values have changed as the result of manual adjustments.
- **Select active (submasters)** – Selects all fixtures currently being controlled by a submaster.
- **Select last updated fixtures** – Select any fixtures whose values have changed as the result of updating a cue.
- **Select dark moves** - Select all channels with attributes moving in the current live or blind cue that do not have intensity. The resulting selection will exclude any changes resulting from marking.
- **Select redundant data** - Select all channels in the current live or blind cue that have instructions redundant to the previous tracked state.
- **Invert current selection** – All of the fixtures currently selected will become unselected and the ones that were not selected will become selected.
- **Select previous** – If a new group of fixtures has been selected, this option will return the display to the previous selection.
**Note:** The following options are available also in the “Tools & Macros” tab of the “Select” button and are described in the section titled “Tools & Macros Tab” below:

- Select odd fixtures of currently selected
- Select even fixtures of currently selected
- Interleave Selection
- Mirror Options

**Inclusive selection mode** – This is a toggle option that will have a small check mark next to it when turned on and the button will display a small “Inc” flag. If the “inclusive selection” option is active, then each selection made will be added to the previous selection. All fixtures currently selected will remain selected unless they are in the new selection area. Any selection will toggle the selection state of a channel/fixture.

If this option is not active, then each selection made will unselect any currently selected fixtures. If the selection overlaps any currently selected fixtures, then they will remain selected. If you hold down the control (<CTRL>) key while making a selection in this mode, you are able to add channels as per the inclusive mode.

If this option is active, a new option “Clear selection after setting channels” will appear. When enabled, this option overrides the inclusive selection mode if a new selection of fixtures is made after the previously selected channels’ level has been altered.

**Active selection mode** – This is a toggle option that will have a small check mark next to it when turned on. Turn on the active selection option for fixtures to go to the ON level whenever selected. The fixtures will also turn OFF if the fixture is unselected. When active selection mode is enabled the “Select Active” button will be highlighted in red as a warning.

**Clear Selected**
Click on this button to unselect all fixtures in the grid.

**Select Last & Select Next**
These buttons perform several operations depending on the following conditions:

- If no fixtures are selected in the grid, these buttons will select the previous or next cue in the current cue list assigned to the master playback.
- If a single channel/fixture is selected, then these buttons will select the previous/next patched channel relative to the current selection. This behavior only works if “Inclusive selection mode” is off.
- If a range of fixtures is selected, then these buttons will select the previous/next channel/fixture in the range and will loop past the end/beginning. The “Clear Selected” button must be clicked to reset this behavior.
Select (formerly Selection Shortcuts)

Clicking on this button brings up a dialog box, an example of which is shown below.

**Selection Tabs**

The "All" tab shows all the selection shortcuts that have been generated as the result of recording groups and filling in certain detail columns in the patch window. The first set of numbered buttons (in this example, the ones labelled “Area A”, “Area B”, etc.) are selection shortcuts that were assigned when recording groups and can be used to select the fixtures in a group in the same way as using the buttons in the Shortcut window (see section 6.11 – Shortcuts). Additionally, calling up this dialog again and clicking the same selection shortcut as before will cause the group fixture values to be applied.

For additional convenience the first 9 selection shortcuts can be activated also by holding down the control (<CTRL>) key and pressing the corresponding number on your keyboard.

The lower sets of numbered buttons are generated automatically from the patch detail columns “Color”, “Position” and “Purpose” if entries have been made in them. These selections may be made also from the “Quick Select Bar” described in Display Options Submenu above.

The “Groups”, “Positions”, “Purpose”, “Color” and “Fixture Type” tabs can be selected to filter the shortcuts shown to only those matching the tab.
The “Frames” tab shows a graphic representation of any gobo and color wheels present in the patched fixtures. This is provided as a quick way to set these attributes in the selected fixtures without having to use the Fixture Controls in the sidebar. There are two options at the bottom of window:

- **Clear other Gobo Wheels** – When this option is turned on any adjacent wheels to the one being used will be cleared to their open position.

- **Find closest Gobo Match** – If the gobo selected is not available in the fixtures to which it is being applied, the software will attempt to find the closest match. It will look at each gobo on all wheels and select the one that most closely matches the pattern of the gobo.

The behavior of the selection shortcuts is modified by the options at the bottom:

- Use the option “**Filter by selected matrices**” to sub-select fixtures by the currently selected matrices in the magic sheet view. If no matrices are currently selected, then the selection range will cover all fixtures in the group.

- Use the option “**Filter by current selection**” to sub-select only from what is currently selected. If nothing is currently selected, then the selection range will cover all fixtures in the group.

- Use the option “**Filter by fixtures in the active cue**” to limit the selection to only fixtures used in the currently running cue. If a fixture is not in the current cue it will remain unselected when using the selection shortcuts.

Furthermore, the selection shortcuts are influenced by the “Inclusive Selection Mode” described above. When this mode is set, each selection shortcut will combine its fixtures with those already selected and toggle their states, i.e. those already selected will be unselected and vice-versa. If this mode is not set, then all fixtures not in the group being chosen will be unselected.

The “**Edit**” button will call up the Groups (Specific Palettes) Editor to allow modification of a previously defined group. The “**Add**” button will call up a dialog to create a new selection shortcut based on the currently selected channels. The “**Detach**” button can be used to create a floating window that can be dragged and pinned to a secondary monitor using the Advanced Docking System.
## Tools & Macros Tab

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Selection Tools

- **Odd** - This will turn off the selection state of all the even fixtures.
- **Even** - This will turn off the selection state of all the odd fixtures.
- **Interleave** – This option provides a way to modify the current selection to create a repetitive pattern of fixtures. When selected, the following dialog box appears:

![Select every Dialog]

The “Select every” value specifies the repeat interval and the “Cluster by” value specifies how many fixtures within the repeat interval to select. Thus with the default values of 3 and 1, the first of every 3 currently selected fixtures would stay selected while the others would be deselected.

- **Randomize Selection Order** – When multiple selections are made, the order is recorded internally. This option provides a way to randomize the order. This can be useful when creating effects or using the fan tool.
- **Up & Down** – Selects those fixtures whose values have increased or decreased respectively from the previous cue.

Pan & Tilt Tools – For intelligent fixtures that have pan and tilt functions, the buttons of this section provide a variety of movement commands that can be performed on the selected fixture(s). The options are:

- **Mirror Pan** – Move pan position from its current location to the same offset on the other side of center.
- **Mirror Tilt** – Move tilt position from its current location to the same offset on the other side of center.
- **Mirror Pan and Tilt** – Performs both operations together.
- **Flip Pan 360˚** - Add/Subtract 360˚ from the current pan position and move fixture if within range.
- **Flip Pan 180˚** - Add/Subtract 180˚ from the current pan position and move fixture if within range.
- **Flip Pan 180˚ and Mirror Tilt** – Performs both operations together.

Fixture Macros – Some fixtures have a standardized method for lighting or extinguishing their lamps and resetting their attributes to default values. LightFactory has built-in macros to perform these functions which are activated by the buttons in this section.
Modifying Selected Channels

Once a fixture or fixtures has/have been selected, the intensity value(s) and all other attributes can be altered using the command interface or graphical controls. The command interface is described in Chapter 7 — Command Reference. The following sections describe the graphical controls.

**Note:** Once an intensity or attribute value has been changed, it is now under “Channel Control” which overrides any other control until released. In addition to the options available from the “Release” button, there are other (optional) actions that can cause “Channel Control” to be released. See the sections on “Control Options” and “Recording” for more details.

Intensity Control

The current value can be modified using the scroll wheel on your mouse (if equipped). This is a very useful way of controlling the dimmer of any lamp as its gives you a smooth control of the lamp’s intensity. The increment/decrement value can be set in the System Settings tab of System Properties.

For systems that do not have a scroll wheel on the mouse, you can provided. Click on this control and hold the mouse button down. As you move your mouse up and down the intensity of the channels will change in the same way as use the on-screen wheel.
**Intelligent Fixture Control**

If a selection includes intelligent fixtures then the “Fixture Control” window will appear on the right-hand side of the channel window or if the sidebar is visible, the control can be accessed via a tab labeled “Fixture Control”. There are several types of controls that can be displayed depending on the type of fixture selected and its capabilities. Below are some examples of fixture control windows:
If more than one type of fixture is selected, then the fixture control window will show blended control options. With the blended control, not all of the attributes available will necessarily be supported. The figure on the right above is the blended control while the left image is for a specific fixture (the VL 3000 Spot).

If the sidebar is not being displayed, this window will be docked with the channel window by default. This option will ensure that the window remains attached to the right-hand side of the channel window. Moving the channel window will move the properties window and moving the properties window will move the channel window.

To turn this option off and have the properties window floating free, un-tick the check box at the top of the window titled “Docked”

**Note:** If more than one fixture is selected, the properties window will show the state of the first fixture, however any changes that are made will apply to all of the current selection.
HELPER CONTROLS

All of the fixture attributes provide access to both a helper control and a real value control. The helper control is generated from the fixture’s definition and is typically a way to access real world representation of what the light will do. In the color example below, the DMX value of 93 can be meaningless to us but the box on the left shows us that the value 93 in Color wheel 1 will produce green.

Sometimes we do want values other than what is available in the helper control. It is optional when setting up new fixtures to provide help information such as all of the available colors in a color wheel. For this reason, LightFactory always provides access to the actual DMX value and this number can be modified to override the selection in the helper control. You can turn off the DMX values and work only with the real world values by unchecking the DMX box at the top of the window.

When the fixture properties window is displayed, the helper controls will find the closest match to the current property’s DMX value.

All of the real value controls can be operated by either typing a value into the box provided, clicking on the up and down buttons to the right of the control, or using the mouse wheel to increment or decrement the value.

MOVEMENT (PAN & TILT)

The pan and tilt helper is the large square with a picture of the selected fixture in it.

Note: If no picture is available the LightFactory logo will be displayed.

To set the pan and tilt, left click and drag your mouse around the square. You should immediately see that fixture you have selected move relative to your mouse movements.

Note: When you click and drag your mouse around the pan and tilt helper control you will notice that your mouse speed slows down. This is only a temporary change, your mouse speed will return to the windows default speed when the button is released. This is to make controlling the fixture easier and more manageable.

To the right of the pan and tilt helper are the real value controls. Below this are the DMX values and below the DMX values is an options drop down menu (the Home button). Click to the right of the button for the drop down menu to appear. Clicking on the left hand side of the button will set the fixtures to their home position.
**Movement Options**

- **Home** – Click on the button to return the fixture to exactly midway for both pan and tilt.

- **Move fixture relative to current position** – When more than one fixture is selected, this option will allow you to move the fixtures relative to where they are currently positioned. Uncheck this option to ensure all selected fixtures move to the absolute position of the crosshairs.

- **Toggle Pan and Tilt Control** – Turn this option on to change the behavior of the control so that clicking inside the pan and tilt area will toggle the movement on or off. When this mode is turned on and you click inside the control, the mouse cursor will disappear and moving the mouse will move the fixture. You do not need to hold your finger down on the button to move the fixture as the control will remain on until you click again on the control.

- **Fine Movement** – Fine movement will slow the response of mouse moves so that the fixture moves only a very short distance with each movement of the mouse.

  **Note:** You can also access the fine movement option on a temporary basis by holding down the control (<CTRL>) key and clicking inside the pan and tilt area.

- **Lock Pan / Lock Tilt** – This is a useful option to ensure that a fixture is only moved in one direction. If you lock the pan for example, only the tilt value will be changed when moving the mouse in the window

  **POSITION (XYZ)**

The position control is very similar to the movement control but has a 3rd degree of movement. You can think of the X and Y coordinates in the same way as the pan and tilt of the previous control. The Z coordinate is the additional control provided by the “position” attribute.

![Position Control](image)

Unlike the movement control, the position control does not display a picture of the selected fixture. Instead the XY control has grid lines. Use the slider in the middle of the control area to set the Z value for the attribute.

**Dynamic Color Control**

The dynamic color control refers to any attribute that can set the output color of the fixture to a dynamic range of values. LightFactory uses a unique attribute model that allows you to define these attributes with any combination of colors. When the color mixing is defined in the fixture editor, the attribute is given a base mixing type of RGB, CMY or HSI.

- **RGB (Red, Green, Blue)** - The RGB color model is an additive color model in which red, green, and blue light are added together in various ways to reproduce a broad array of colors.
• **CMY (Cyan, Magenta, Yellow)** – The CMY color model is a subtractive color model in which cyan, magenta, and yellow light are removed in various ways to reproduce a broad array of colors. This is the most common mixing system in a moving light as the CMY filters are used to remove color from the lamp source to produce a resulting color.

• **HSI (Hue, Saturation, Intensity)** – HSI, HSB, HSL and HSV are all related representations of points in an RGB color space, which attempt to describe perceptual color relationships more accurately than RGB, while remaining computationally simple. HSI describes colors as points in a cylinder whose central axis ranges from black at the bottom to white at the top with neutral colors between them, where angle around the axis corresponds to “hue”, distance from the axis corresponds to “saturation”, and distance along the axis corresponds to “intensity”, “value”, or “brightness”.

When working with colors in LightFactory you are able to switch to whatever color space you want to work in and the software will calculate the correct values to apply to the fixture.

![Color Control Interface](image)

In the example above the primary mixing model for the fixture is CMY but additionally the fixture has a 4th color mixer control for color temperature correction (CTO). In the top half of the attribute we can individually change the values of each of the 4 colors using either the slider, the percentage spin edit or DMX value.

Buttons are also provided to quickly take the value to full or off. The full value button is labeled with the color while the off button is labeled “0%”.

The bottom half of the color control allows you to pick from a palette of common colors. Clicking on any of the colors will automatically set the top sliders to the correct value.

**Use Advanced Color Heuristics** – If the option “Use advanced color heuristics” is checked, then the software will attempt to map the selected color across all of the color controls (CMY and CTO in this example). With this option turned off only the first 3 will be adjusted to match the color.

The reason for this option is that only the first three colors have a clear and simple algorithm for calculating the mix. Additional colors require significantly more advanced calculations to work out the setting. This is also not an exact match and may not work 100% of the time.

**Apply to all color mixers** – If the fixture has more than one mixing system then use this option to apply the selected color to all of the color mixers. If this option is off the color will only be applied to the first color mixer.

In the middle of the attribute control is a button to open the **Generic Color Chooser**. This will open a separate dialog box with more options for picking a color. The generic color chooser will allow you to pick colors from the built-in library of filters also.

**Note**: If the fixture selected only supports color mixing control then the Generic Color Chooser will be displayed in place of the fixture control window.
This window is organized into eight or more tabs depending on filters that the fixture may have. Below are examples of some of the tabs.

When the generic color chooser is created it will add additional tabs for the filter wheels that a fixture may have. In the example above, the fixture has a color wheel.

The standard tabs are:

- **Show** – The show tab is designed to provide a quick access to the common colors you will be using in your show. The main grid will display all of the colors currently defined in the show’s generic palettes. By adding a color to the “Show” tab you will also be creating a new generic palette. To do this, select the color you want using the other tabs and then click on the “Add current color to show” button. The “Auto create” button can be used to add 16 saturated colors most common to all shows. For fixtures that have color mixing ability, the apparent color can be adjusted to match other fixtures by selecting a color temperature from the pull down list “Temperature Adj.”.

- **Palette** – A grid of discrete colors.

- **HSI** – Use the HSI tab to choose a color in the Hue, Saturation, Intensity color space. You can pick the color using either the 3 slider controls or by clicking and dragging in the circular color wheel.

- **RGB** – Use the RGB tab to choose a color in the Red, Green, Blue color space.

- **CMY** – Use the CMY tab to choose a color in the Cyan, Magenta, Yellow color space.

- **Filters** – The filters tab provides access to a range of gel filters commonly used in the lighting industry. You can choose from Apollo, Lee or Rosco filters.
• **Spectrum** – The spectrum tab provides a continuous range of colors. Click in the color display and drag the mouse around until the desired color is found.

• **CIE** – Allows selection of color from either the 1931 or 1964 version of the CIE color chart. There are also several different color systems from which you can select.

For fixture-generated tabs, there is an “**Exclusive**” check box that can be used to remove all other filters when a filter from this tab is selected. When a gobo or color is selected, the other gobos, color wheels and CMY flags will get removed making this the only filter active.

Use the “**Edit**” button to open the attribute item editor and make changes to the gobo or color list. This can be useful if the fixture is not set up correctly and you need to modify or set the position of colors and gobos. This is particularly useful when working with color scrollers to define the colors that are in the string. Making changes to this list will change the fixture definition file.

For more information about using this window, see the **LightFactory Fixture Editor User Guide** installed with the software.

**GENERIC ATTRIBUTES**

There are two types of generic attribute controls, continuous and discrete. The continuous control provides a slider to set the attribute.
The discrete control provides a list of items from which to choose. To open the list, click on the down arrow to the right of the control. After making a selection, use the up arrow to close the list.

**Rotation Control**

The rotation control can be used independently or associated with a generic control as described above. When operating in connection with a generic control, the options available can change depending on what values are selected.

**Indexed mode** – Indexed rotation refers to positioning the gobo at a specific angle to the light source. In this mode you can set the exact angle that the gobo will appear in the fixture.

**Continuous Rotation mode** – In continuous rotation mode, the gobo will be spinning continuously at a set number of revolutions per minute. Continuous mode has 3 settings: clockwise rotation, counter clockwise rotation and stopped.

In continuous rotation mode use the buttons to set the rotation direction and then the RPM spin edit to set the rotation speed.

The link between this control and the corresponding generic control is a 2-way link. When you change from an indexed filter to a rotating filter, the rotation control will automatically change. Likewise changing the rotation mode in the “Rotation Control” will cause the filter to change to the corresponding mode.
FRAMING CONTROL

The framing control is a graphical interface to shutter and framing systems implemented by some fixtures. There are typically two different modes that framing shutters operate: position or position/angle. With the LightFactory graphical interface you do not need to be aware of the way the fixture is controlled as the attribute controller will calculate the appropriate DMX values for the changes made.

Use the red points around the white circle to move the framing shutters in and out or change the angle of the blades. The middle red dot will move the entire blade in or out. The two red dots on the outside of the blade can be used to move just one side of the blade in or out.

As the blades are moved in the graphical interface you will see the angle values being used to control the fixture.

The rotation angle must be set as an angle value and will not be shown in the visual representation of the shutters.

JOYSTICK CONTROL

If you have a windows compatible joystick connected to your system, then LightFactory will make this available to control your fixtures. There is no setup required to use the joystick and the functions will be mapped automatically.

The pan and tilt of the fixture will be controlled by the yoke of the joystick while the Z control available on some joysticks will set the dimmer level. Up to 16 buttons on the joystick will map to the first 16 shortcuts in every page of the system.

To adjust the sensitivity of the joystick, use the “Advanced” options in the “System Settings” tab of “System Properties”.
Sub Fixtures
Some fixtures (LED strip lights, for example) consist of multiple cells of control (color, for example) that are individually addressable. Patching such a fixture to a single control makes it difficult to set the individual cells. Previously, the recommended solution was to patch each cell to a separate control plus a master control for the other attributes. V2.18 introduced the concept of defining this type of fixture with built-in subsections, so it can be patched to one control but allow access to the individual cells if desired.

The fixture editor bundled with LightFactory has been enhanced to allow individual attributes to be assigned a Sub Fixture number. When such a fixture is patched, special features are enabled that allow access to the attributes that have been assigned a sub fixture number.

An example is the “Elation Pro ACL Curtain” fixture:

This fixture consists of 14 individually addressable RGBW LED cells, each of which could be set to a different color or all the same. The following is a screen shot from the fixture editor showing the assignment of Sub Fixture numbers to the color cells of this fixture:
As shown above, each of the 14 color cells has been assigned a sub fixture number sequentially.

The following screen shot shows an instance of this fixture patched in a show file and selected to show the fixture control sidebar. If you choose a color under the tab labelled “All Sub Fixture Control”, all 14 cells of the fixture would be set to that color.
The arrow points to a dot in the lower right corner of the channel display for the fixture. Clicking on the dot will change the dot to red and result in the following display:

The individual cell controls can be selected and modified as is shown in the following screen shot:
In this example, the cells have been set in a repeating pattern of **Red, Green, Blue & White**.

As illustrated, the sub fixture controls are numbered as `<Fixture>.<Sub>`. This numbering scheme can be used throughout LightFactory for such features as effects, matrices, etc. The following is an example of applying the **Fan** tool to a selection of sub fixtures:

Clicking on the red dot in the master control will collapse the display.
Control Options

Once fixtures have been selected, you can perform some operations using the control options along the top of the channel display.

On
Use the “On” function to set all selected channel/fixture intensities to the “On” level as determined by the system properties setting. By default the “On” level is 100%. The “On” level will be applied to all the primary dimmers of the selected fixtures.

This button also has a drop down menu that can be accessed by clicking to the right of the button. Use this drop down menu for the following options:

- **Rem Dim (Solo)** – The solo function will set the selected fixtures to the “On” level while simultaneously turning all fixtures that are not selected off.

- **Hi Light** – This function will put all selected fixtures in highlight mode and set the “Hi light” button to red. To cancel this function, click on the “Hi light” button again.

- **Full** – Similar to the On function, selecting “Full” will set all selected fixtures to 100%.

- **Lamp On** – Run the “Lamp On” built-in macro on the selected fixtures. Some fixtures have a standardized method for lighting their lamps and if the selected fixtures conform, the macro will initialize the lamp.

- **Lamp Off** – Run the “Lamp Off” built-in macro on the selected fixtures.

- **Fixture Reset** – Run the “Fixture Reset” built-in macro on the selected fixtures to restore their attributes to the default values.

- **Pull Remote User Data to Live** – If level information is showing with a green background (classic view) then the channel is being controlled live by a remote user. Selecting this option will keep the level the same but set control of the channel to the local user. The background color of the level will change from green to red.

- **Touch Selected Channels** – For recording and updating purposes, the software internally flags any selected fixtures that have been manually adjusted from the state they were in from the current cue. This function will set the “changed” flag for all selected fixtures even if no manual changes have been applied.

Out
Use the “Out” button to set all of the selected channel/fixture intensities to 0%.

Home
The “Home” function is designed for use with intelligent fixtures and will set all of the attributes of the fixture to their home values.
This button also has a drop-down menu that can be accessed by clicking to the right of the button. This allows you to set individual types of attributes to their home values without disturbing others. The choices are Intensity, Position, Color, Beam, Edge and Utility.
**Fan**
The “Fan” function is a powerful way to create organized looks on stage without having to modify a number of fixtures individually. There are a number of different looks that can be created depending on the attribute(s) you want to control.

In the examples below, all of the fixtures are fanned out across the stage or the same fixtures are crossed over each other in a two by two formation.
To use the “Fan” function, select the fixtures you want to modify and click on the button at the top of the screen.

Use the pan and tilt offset to position the moving lights into the center of the stage. Adjust the Spread option until the desired look is achieved. Use the buttons under the graph to set the starting point, direction and whether the fixtures are fanned linearly or in a crossed fashion.

You can fan the fixtures in both pan and tilt by adjusting the appropriate spread. The spread function also allows you to set a negative spread that will change the look of the fan operation.

Set the switch to control the fan from the relative or absolute position of the fixtures.

The color selection can be used to spread out the color of several fixtures across the spectrum. By default fully saturated colors are used for this fan operation. To use different saturation and intensity levels adjust the controls at the bottom of this section.
Use the spread control to “fan” out the color of each fixture selected. You will see that each fixture is represented as a triangle that points at the color being set. As you move the spread control the triangles will move out from the center. The center point can be moved using the control just below the spread.

The “Invert Colors” option will invert the color range used.

The “Mirror Colors” option will start the color range in the center and move out either side.

**OTHER ATTRIBUTE**

LightFactory will allow you to apply a fan to any of the generic attributes the system knows about. Select the attribute from the drop down combo box and then use the spread control to fan the values.

The mode selection will adjust in what order the fan is applied to the attribute:

- **Left to Right** will leave the fist fixture unchanged and fan all of the other fixtures out from the first value.
- **Right to Left** will leave the last fixture unchanged and fan all of the other fixtures in from the last value.
- **Middle out** will cause the middle fixture to remain unchanged and fixture either side of it to fan appropriately.
- **Crossed** is a mixture of middle out and outside in. Each alternative fixture will be either middle out or outside in.
- **Outside in** will cause both the first and last fixtures to remain unchanged while the fixtures in between are proportionally adjusted towards a center value.

**Hi light**

The highlight (Hi-light – abbreviated) function is designed to set the selected fixtures temporarily into a known state that will make them stand out to the operator. For a moving light, this typically means the home position and in open white.

The value that each fixture is set to when hi-light is active can be defined in the fixture library. For most attributes this is the same as the home value.

Highlight is a toggle option in LightFactory so that once you have identified the fixtures pressing the button again will return you to the previous stage look. When fixtures are in this mode, the “Hi light” button will have a red background.

Hi Light has a drop down menu with one option labelled “Lo Light”. When selected, the switch legend will change to “Lo Light” with a red background similar to “Hi Light” described above. The function of “Lo Light” is the same as “Hi Light” except the attributes are defined in a special group rather than in the fixture library. See Chapter 6.4 – Groups for more information.
**Park**

Parking selected fixtures will freeze the value of all attributes and prevent any changes. Parked fixtures are identified by red text in expanded and compact views or by grey boxes with white text for classic and magic sheet views. The “Park” button will also have red text as a reminder that there are parked fixtures.

This button also has a drop-down menu that can be accessed by clicking to the right of the button. The options available are:

- **Hold Changes** - Normally when in Channel Display mode, manual changes made to any fixtures will be reflected immediately in the DMX output, thus affecting any live instruments. Clicking on this button will allow you to make changes without affecting the output until this mode is reset. When reset, the changes will then be applied using the “Master Fade Time”. Note that cues, submasters and effects will continue to affect the DMX output.

- **Un-park selected fixtures** – Selected fixtures that are parked will be released from the park state and changes will become active.

- **Un-park all fixtures** - Release all of the parked fixtures regardless of what is selected.

- **Park selected fixtures DMX output (dimmers unpatched)** – You can use this option to freeze (capture) all DMX outputs patched to the selected fixtures but still make changes to the fixture controls and record them. An example of where this might be used is for the house lights, where you’d like to keep them on while recording cues but be able to incorporate changes into the cues being recorded. When DMX outputs are captured, the message “Dimmers Unpatch” will appear in red in the lower right corner of the channel display (or sidebar if present) to remind you.

- **Release selected fixtures from DMX capture** – Use this option to release captured DMX outputs patched to the selected fixtures. This will remove the “Dimmers Unpatch” message also.

- **Don’t record parked fixtures** – If this option is set, parked fixtures will not be included in any cues recorded. The initial state of this option is set in the Show Defaults tab of System Properties and is on by default.

**Undo**

The last operation made can be reversed by clicking on this button. This button also has a drop down menu that can be accessed by clicking to the right of the button. Use this drop down menu to undo up to the last 20 operations. You can undo any operation regardless of the order in which it was done.

For channel setting (e.g. changing an intensity value) the undo is based on a timeout between operations. To avoid an undo for every click on the mouse wheel, a change in intensity values is grouped together unless there is a 2 second gap between operations.

**Release**

When changes are made to intensity levels and attribute values via the Channel Display or Command Interface, they are said to be under “Channel Control”. If fixtures are selected, clicking on the Release button will remove channel control from them as well as clear the selection. A second click on the “Release” button will remove channel control from all fixtures. When released, a fixture will revert to the state it was in before being modified.

The “Release” button has a drop down menu that can be accessed by clicking to the right of the button. The following options are available:

- **Release Current Control** – The intensity level and/or attributes of a fixture could be under the control of a cue, a group, a submaster, a generic palette, or an effect as well as being manually adjusted (i.e. under channel control). Choosing this option will release all fixtures from the control with the highest intensity.
precedence and they will revert to the control with the next highest precedence (if any). All fixtures will be affected whether selected or not. The current selection will be preserved.

- **Release Current Control for Selected Fixtures** – Same as above but for the selected fixtures only.
- **Release All Control** – As the name implies, all fixtures will be cleared of all controls.
- **Release All Control for Selected Fixtures** – Same as above but for the selected fixtures only.
- **Release by Family** – This option has a submenu that allows attributes to be released by category. The categories are: Intensity, Position, Color, Beam, and Edge. There’s also a toggle switch labelled “Main release button to release intensity only”, which is unchecked by default, meaning all attributes under channel control would be released when the “Release” button is clicked. Setting this option will restrict the “Release” button to releasing only the intensity value from channel control.
- **Release All Channel Control** – Choosing this option is equivalent to clicking the “Release” button twice to remove channel control from all fixtures, but without clearing the current selection.
- **Release All Submaster Control** – Choose this option to remove submaster control from all fixtures.
- **Release All Cue List Control** – Choose this option to remove control by the current cue from all fixtures.
- **Release All Effect Control** – Choose this option to release fixtures being controlled by a running effect.
- **Release All Remote Control** – A NEO console only option.
- **Reset Cue Playback on Release** – A toggle option that when set causes cue list reset when “Release” is clicked. Thus with this option set, the “Release” button becomes a master reset.
- **Report (View director stack)** – This is a diagnostic tool that can aid LightFactory support personnel in tracing problems with the control stack. This option should be chosen only when directed by support.
Quick access controls

In the middle of the bottom row of buttons are three quick access controls to the effects library, groups (specific palettes) and (generic) palettes. Each quick access control will drop down a menu to provide access to the various options.

These options allow you to access different functions without having to go into the editor windows. For example instead of opening the effects editor to test a library effect you can run it directly from the “FX Library” quick access control.

FX Library

Displays a list of effects that have been saved to the effects library. Clicking on an effect will cause it to run on the fixtures that are selected currently. Clicking the library item again will turn the effect off. Effects that are currently running in the library are indicated by a green dot next to the name.

Click on the “Edit” option at the bottom of the menu to open the effects editor window. When this window is closed, the “Fx library” menu will be repopulated to account for any changes you may have made.

Stop All – Click on this button to stop all of the library effects that are currently running.
Create FX from the running library effects – To create a static effect from a library effect start the effect you want and then press the “Create” button. A popup dialog will request the name for the new effect. Once named, click on the OK button and a dialog will appear indicating how many effects have been created. The new effect will now appear in the effects editor for further editing.

Bump – Use the “Bump” button to remove selected fixtures from a running library effect.

Detach – The “Detach” button can be used to create a floating window that can be dragged and pinned to a secondary monitor using the Advanced Docking System.

Controls – The library effect controls will automatically appear in the sidebar when a library effect is started. If the sidebar is not open in the channel window, the effect controls will be displayed in a separate detached window. If this window is closed or becomes hidden behind other windows you can use this option to show the window again.

The FX library controls will display a tab on the left hand side of the window for each running library effect. In each tab will be a series of controls for each attribute contained in the effect. In the example above the “Position FX” effect has separate controls for pan and tilt.

Use the large wheels or the spin edits below each wheel to change the behavior of the running effect.
Groups
Clicking on this button displays a drop down menu of all the groups that have been defined. Clicking on a group within the grid causes the channels stored in the group to be selected. Selecting channels by using this grid obey the same rules as manual selection and whether “Inclusive selection mode” is set. The three switches at the bottom right can be used to set filters to further refine the channels that get selected.

The position of a group in the grid is determined by the Group # assigned when it was recorded or changed. The legend text & color and the background color may be changed using the editing capabilities available in the Palettes grid (see next section). Undefined cells have a dark grey background and are inactive.

The “Page Up”, “Page Down” and the page number buttons may be used to display more groups if they have been defined.

The “Detach” button may be used to create a separate window that then may be dragged to a second monitor or added to an advanced layout.
**Palettes**

The tabs along the top can be used to display the groups and palettes by type that have been defined. The grid displays 100 cells per page. Additional pages can be displayed by use of the "Page Up" and "Page Down" buttons. The groups and palettes are shown by the numbers assigned when they were created. Undefined cells have a dark grey background and are inactive.

**Apply palette to selection only** – When a group or palette button is clicked, only the fixtures that are currently selected in the channel display are affected.

**Note:** This option must be selected for the virtual palette feature to work. Virtual palettes are described in section 6.5 – Palette Windows.

The alternative is **Apply palette to all channels**. If this option is selected, then when a group or palette button is clicked, all the channels recorded into it are set to the values stored regardless whether any channels are selected.

When this option is selected, a new switch appears below it. One position is "Don't auto select" and the other is "Select fixtures after applying palette".
Options

The options that are available vary depending on which group/palette tab is currently selected. The following options appear for all tabs:

**Use 3D buttons** – Default: On. 3D buttons have a shaded appearance and are generally sharper than the normal buttons. Turn this feature off if you experience slow response in painting the window.

**Set fixed font size** – Default: 8. Sets the size of the button legends.

**Set grid size** – Default: 10x10. Controls the number of buttons appearing in each window.

The following option appears for all tabs except “Generics”:

**Virtual Palettes Active** – If this option is checked, values stored in the group or palette can be applied to any selected channels whether recorded in the group/palette or not. See 6.5 Palette Windows for more information about virtual palettes.

The following options appear when the “Generics” tab is selected:

**Create default show colors** – Creates a set of palettes with some basic colors and also adds them to the “Show” tab of the standard color picker.

**Clear page** – When clicked, will display a confirming dialog. If you answer “Yes”, all the palettes on the current page will be deleted.
Recording
This section covers recording into the four programming sections of LightFactory.

- Channel Groups
- Cues (New and Update)
- Effects (Fx)
- Palettes (Generic and Specific)

Recording a group
The “Record Group” button has 2 functions: The main button function (left hand side of the button) will record a group by taking a snapshot of the selected channels’ state. The right hand part of the button will drop down a menu with alternative recording options.

Channel groups can be viewed and edited by clicking on the “Groups” button on the command interface or by pressing <F3> on your keyboard. For more information on channel groups, see section 6.4 – Groups.
ADD SELECTED FIXTURES TO GROUP (DIMMER ONLY)

This option will add the selected channels (fixtures) to a channel group with the dimmer (intensity) level set at full and all other attributes turned off. If the group does not exist, it will be created before the channels are added.

Below are screen shots of the record dialog. The left dialog is for recording a new group while the right dialog is for updating an existing group.

Enter the name for the channel group you want to create or modify. For existing groups, you can use the arrow at the right of the name box to display a list. You can also assign a submaster and/or a shortcut at this time. Depending on the options set in the Show Defaults tab of System Properties, the boxes labelled “Submaster Number” and “Shortcut Number” will be populated or be blank. If “Auto assign next available submaster” is set, the number of the lowest submaster not already assigned will be displayed and if “Auto assign next available shortcut” is set, the word “Auto” will be displayed. Either of these values can be overridden by clicking on the box and entering new data.

Set the “Record Mode” as desired. The default is “Selected” for a new group and “Changed Only” for an update. Other choices for a new group are “Selected & Changed” and “Active”. For an update, “Changed Only” is the only option. Likewise, set the “Include Running Effects” switch (default is “Off”).

If the “Exclude Zeros” switch is set to “On”, any attributes of the selected fixtures that have a value of 0 will not get recorded or updated.

Set the “Update Existing Data Only” switch to limit any changes to channels already in the group. In the “Off” position, new channels not already in the group could be added.

Set the “Re-record (Replace)” switch to replace any channels already recorded into the group with the currently selected channels.

Click on the “OK” button to create the channel group or the “Cancel” button to exit and return to the previous screen without recording a group.
ADD SELECTED FIXTURES TO GROUP (SNAPSHOT CURRENT STATE)

This option is the same as clicking directly on the "Record Group" button (or entering <CTRL>+g). Below are screen shots of the record dialog. The left dialog is for recording a new group while the right dialog is for updating an existing group.

Enter the name for the channel group you want to create or modify. For existing groups, you can use the arrow at the right of the name box to display a list. You can also assign a submaster and/or a shortcut at this time.

Depending on the options set in the Show Defaults tab of System Properties, the boxes labelled “Submaster Number” and “Shortcut Number” will be populated or be blank. If “Auto assign next available submaster” is set, the number of the lowest submaster not already assigned will be displayed and if "Auto assign next available shortcut" is set, the word "Auto" will be displayed. Either of these values can be overridden by clicking on the box and entering new data.

Set the “Record Mode” as desired. The default is “Selected” for a new group and “Changed Only” for an update. Other choices for a new group are “Selected & Changed” and “Active”. For an update, “Changed Only” is the only option. Likewise, set the “Include Running Effects” switch (default is “Off”).

If the “Exclude Zeros” switch is set to “On”, any attributes of the selected fixtures that have a value of 0 will not get recorded or updated.

Set the “Update Existing Data Only” switch to limit any changes to channels already in the group. In the “Off” position, new channels not already in the group could be added.

Set the “Re-record (Replace)” switch to replace any channels already recorded into the group with the currently selected channels.

Click on the “OK” button to create or update the channel group or the “Cancel” button to exit and return to the previous screen without recording a group.

When using the snapshot option for recording channel groups, you can select what palette types you want to record into the group. What attributes get recorded in each palette type is determined by the “Edit Palette Type” option in the “Groups” window (see section 6.4-Groups (Specific Palettes) for more information). By default all types are turned on for a new group. A channel group can have any combination of attributes and does not
have to control the dimmer at all. If updating an existing group, the switches will reflect what was originally recorded into the group.

If “Intensity” is selected, this option will record the current state of the channels as the maximum value that a channel will reach when the group is at 100%. Likewise with each of the attributes that are recorded.

As the group’s value is adjusted from 0 to 100%, the channels’ output value is the proportion of its set maximum. By default, all fixture properties will operate the same way. However, the behavior of non-intensity attributes can be changed on a group by group basis via the “Snap Attributes” option (see section 6.4- Groups (Specific Palettes) for more information).

**REMOVE SELECTED CHANNELS FROM A GROUP**

Use this option to remove the currently selected channels from an already recorded group. A dialog will prompt you to enter or select the name of the group from which you want to remove the channels. Select it from the drop down list and click “OK” to remove the channels.

**Recording/Updating a cue**

Next to the “Record Group” button are the “Record Cue” and “Update Cue” buttons. Cues can be viewed by clicking on the “Cue List” button on the command interface or pressing <F4> on your keyboard. For more information on cue lists and the cue system, see section 6.6–Cue List.

Click on the main “Record Cue” button or click on the right side to display more options:

![Record options](image)

The default record action when clicking on the main button is determined by the “Default Record Mode” option in the “Show Defaults” tab of “System Properties”. Typically the default mode is “Live” for full tracking and “Active” for hybrid tracking. The record mode can be changed on a per cue basis from the dialog or selected from the drop down menu. In each case, the same dialog is displayed with the mode option set with the default or chosen option. Following is an example of the dialog with mode set to “Live”:
Record Mode

- **Live** – Record all channels/fixtures whose intensity is above 0 and/or any channels having attributes that have changed from the previous cue.

- **Selected** – Record only the channels currently selected in the Channel Display.

- **Active** – Record all channels whose intensity is above 0 (hybrid tracking) or channels whose intensity has changed (full tracking).

- **Changed Only** – Record only the channels that have changed from the previous cue. Note: Useful only for hybrid tracking.

Tracking Mode – Refers to the mode when recording cues, not when cues are run.

- **Cue Only** – Record changes to the specified cue only and don’t track the changes forward or backward to any other cues. This is the default for hybrid tracking.

- **Cue Only (Int)/Track (Atts)** – Records changes to intensity to the cue only while propagating changes to attributes forward through the cue list until a new value or block is encountered.

- **Track** – Record changes to the specified cue and track them forward to subsequent cues unless blocked. This is the default for full tracking.

- **Track Back** – Record changes to the specified cue and track backwards to previous cues unless blocked.

- **Smart Block** – This is a cue-level block that applies a block flag to all currently active fixtures.

- **Block** – Apply a cue-level block flag to every fixture patched into the show.
Cue List and Cue Number – If a show file has more than one cue list, the desired list to record the cue into can be selected from the pull down list. The last cue list selected will become the default for subsequent cues. The cue number will increment automatically to the next whole number available in the selected cue list. This field can be edited to change the number. Cues can be numbered to 3 decimal places. If a cue number is entered for an existing cue, a caution flag will be displayed:⚠️. If you click OK, the cue will be overwritten with the current state of all fixtures and the numbering will advance from that point.

Cue Description – This is a text field where you can add a label to the cue. The label will appear along with the cue number in the cue list editor and any playbacks.

Cue Times – These fields will be populated with any defaults set in the “Show Defaults” tab of “System Properties”. Any time can be adjusted as needed by clicking in the field and entering a new value.

Include Running Effects - The default state of this switch is determined by the option set in the “Show Defaults” tab of “System Properties”.

Include Palettes – Turn on this option to record the currently active palette references into the cue. A palette reference can be either a channel group (specific palette) or a (generic) palette. By recording the reference into the cue you can modify a single location to update multiple cues. For example a position palette can be recorded into the cue so that if the position on stage changes, you only need to update the position palette and every cue that references that palette will use the new position information. The default state of this switch is determined by the option set in the “Show Defaults” tab of “System Properties”. If this switch is off, active palette references will be replaced by the actual values in the cue.

Include Submasters – This option when off will ignore the value of attributes that are currently being controlled by a submaster. The default state of this switch is determined by the option set in the “Show Defaults” tab of “System Properties”.

Force Fixture Block – In addition to cue-level blocks, individual fixtures may be blocked to prevent all attributes from being tracked forward. Setting this option on will apply the fixture block to any fixtures being recorded with changes to their attributes from the previous cue.

Snapshot Image to Cue Notes – If you have a video capture device set up under the “Media Settings” tab of “System Properties”, setting this switch to on will cause a frame from the device to be captured and included as a note associated with the cue. See section 6.6 – Cue List for more information on cue notes.

Palette Types – You can select what palette types you want to record into the cue (reference or actual values depending on the state of the “Include Palettes” switch described above). What attributes get recorded in each palette type is determined by the “Edit Palette Type” option of the “Groups” window (see section 6.4 - Groups (Specific Palettes) for more information). By default all the types are turned on. A cue can be recorded with any combination of attributes.

Other cue recording options

- **Record/Remove selected fixtures to/from multiple cues** – Use these options to add in to or remove from multiple cues. A dialog is displayed to allow selecting the cues to be actioned and in the case of adding fixtures refining what gets added by attribute type.

- **Set selected fixture part for multiple cues** – This is mainly a NEO Console function although LightFactory does have the capability to support cue parts. If a fixture has been assigned a cue part in one cue, this option will allow you to propagate that status to other cues using the same fixture.
Updating a Cue with Stored Palettes

When updating a cue that contains palette references and the "Update Palettes in this Cue" switch is set, the following dialog will appear:

Follow the instructions in this dialog to either update the selected palette(s) including nested palettes if desired or replace the palette reference(s) in this cue with hard values leaving the palette(s) unmodified.
Recording an effect
The “Record Fx” options can only be used to record simple chases or to create a profile effect from a library effect. For more advanced effects programming options see section 6.8 – FX List.

The main button function will add active fixtures to an existing chase step. The right-hand part of the button will drop down a menu with alternative recording options.
These two options are the same except for the fixtures that get included in the step.

Add active fixtures to simple chase step

Add selected fixtures to simple chase step

Use the name pulldown to select an existing effect and enter the desired step and times. You can also limit the step to certain attribute types by setting the switches in the lower half of the dialog.

Create a simple chase from selected fixtures

This option provides a method for creating simple chases.

If the switch labeled "Interleave by fixture count" is Off, the number of steps created will be the number of channels (fixtures) selected divided by the number of "Channels per step". If the switch is On, the box to the left becomes "Number of steps" and in each step, a staggered pattern of fixtures will be included.
You can also limit the chase to certain attribute types by setting the switches in the lower half of the dialog.

**CREATE A SIMPLE RGB/CMY CYCLE FROM SELECTED FIXTURES.**

This option will create a 6 step chase with each step containing all of the selected fixtures. Each step will change the color to one of the 6 primary saturated colors in those fixtures that support color mixing capabilities.

**CMY/RGB Cycle**

- Effect Filter
  - All
- Channels per step
  - 1
- Step Time
  - 1s
- Fade In Time
  - None
- Fade Out Time
  - None

**CREATE A SIMPLE COLOR WHEEL CHASE FROM SELECTED FIXTURES.**

This option also creates a chase based on the selected fixtures. Only one fixture type can be selected for this option to work. The resulting chase will have as many steps as color wheel frames are found for the fixtures. Each step will contain all of the selected fixtures and will move the color wheel one frame per step.

**Colour wheel chase**

- Effect Filter
  - All
- Channels per step
  - 1
- Step Time
  - 1s
- Fade In Time
  - None
- Fade Out Time
  - None
CREATE A PALETTE CHASE FROM SELECTED FIXTURES

This option will create a chase with the selected fixtures where the content of each step is selected from a list of palettes. Use the left and right arrows to move palettes in and out of the available palette list.

Use the up and down arrows to move palettes in the list, thus changing the order that playback will occur.

CREATE A STANDALONE FX FROM RUNNING LIBRARY EFFECT

If you have library effects running directly in the channel view, you can turn them into show effects by selecting this option in the menu. The channels that the effect is currently running on will be used to build the effect.

A dialog will be displayed asking for a name to be given to the new show effect. Once you have entered a name for the effect click on the “OK” button to proceed with the operation. To cancel the operation at any time click on the “Cancel” button.

Labels can be added to aid in grouping and locating effects later in the effects editor.
**Recording a palette**

In LightFactory there are two kinds of palettes: **Generic palettes** contain general reference data that can be applied to any selected fixture; **Specific palettes** (AKA Channel Groups) contain attribute information for the specific fixture(s) recorded into the group.

To record a palette, first select a fixture or fixtures and set the attributes (Intensity, Position, Color, etc.) you wish to record. Then click on the "Record Palette" button to display the following menu:
Choosing “Generic Palettes” from the menu displays the following dialog:

If you are recording a new palette, enter its name in the box provided. You can assign a number or have one assigned automatically. You can update an existing palette also by selecting its name from the pulldown list which will cause a warning flag to be displayed.

You can assign a shortcut number to use for applying the palette. This is particularly useful if you have an external wing with shortcut buttons. However, palettes can be applied directly from the channel display or by calling up the appropriate palette window, so assigning a shortcut is optional.

You can select what palette types you want to record into the group. What attributes get recorded in each palette type is fixed according to the following table:

<table>
<thead>
<tr>
<th>Intensity*</th>
<th>Strobe, Shutter, Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
<td>Pan, Tilt</td>
</tr>
<tr>
<td>Color</td>
<td>Color</td>
</tr>
<tr>
<td>Beam</td>
<td>Iris, Gobos, Prism</td>
</tr>
<tr>
<td>Edge</td>
<td>Zoom, Focus, Diffusion, Frost, Edge</td>
</tr>
<tr>
<td>Utility</td>
<td>Miscellaneous fixture controls</td>
</tr>
</tbody>
</table>

Note: *A generic palette does not store dimmer levels.
RECORDING SPECIFIC PALETTES

The other items in the pulldown menu are used to record specific palettes. Selecting one of these options (Intensity, Position, Color, etc.) will record a palette with the label “{Attribute Type} {n}” (Example: Color 3). The number of each type will be assigned incrementally.

Any palettes recorded in this manner will be added to the “Groups” list, which can be sorted or selected by type. Below is a partial screen shot of the Groups window sorted by type:

Note the lines with Group Names like “Area A” & “Area C”. These were recorded using “Record Group” rather than “Record Palette” with Attribute Type “Intensity” selected and all others unselected. The two methods result in the same group being recorded. The “Record Group” dialog allows the group name to be entered as well as optionally assigning a submaster and shortcuts. The “Record Palette” method provides a quick way to record an attribute type without having to fill out fields in a dialog. Once recorded, the group editor can be used to modify any entry in the list. See section 6.4 – Groups for more information.

The attributes recorded into (specific) palettes are organized into categories called palette types. The attributes included in each type are determined by a grid accessible from the Groups Editor window. See the section titled “Edit Palette Type” in Section 6.4 – Groups (Specific Palettes) Editor.

For V2.21 and up a special palette type called Preset that supports nesting of other palette types has been added. As an example, you could select a fixture, apply Color and Position palettes and record that as a Preset palette.
Copy Options
The copy button on the right hand side of the channel display window will drop down a menu with a number of options for storing and recalling the channel state. You can use this to store and recall the channel state from a temporary memory, copy from another fixture or copy the channel state from a cue.

Store current channel state into temporary memory
If you are halfway through creating a look on stage and need to run a cue or bring up some other lighting state then this option can be used to make a temporary back up of the look you currently have. The state of every channel will be stored away in a separate memory to be recalled at any time in the future.

Store changed (programmer) state to temporary memory
Similar to above, but store only those fixtures that have been manually altered rather than every channel.

Recall channel state from temporary memory
Use the recall option to return the live channel state to the one stored in memory with the previous function. If no channel state is stored then the current state will remain unchanged.

Swap channel state with temporary memory
Use the swap function to perform both a recall and a store in a single operation. The current state of the channels will be stored in the temporary memory and then the state that was stored will be loaded into the live state.

Copy from fixture to selected fixtures
Selecting this option will change your mouse cursor to a hand pointer to indicate that you need to select a “copy from” fixture. The attribute and dimmer state of the next fixture you select will be copied to the currently selected fixtures.

If the selected fixtures are of the same type as the “copy from” fixture then an exact copy can be performed. If not then the software will apply the generic attributes to the selected fixtures.
**Copy from cue to selected fixtures**
This is a convenient option to load the state of the selected fixtures from the information stored in a cue. Selecting a cue from the sub menus found off this menu option will set the selected fixtures to the same settings as they appear in the cue. If a selected fixture does not exist in the cue then its values will remain unchanged.

**Copy selection list to clipboard**
Selecting this option will copy a comma separated list of channels to the windows clipboard representing the current selected fixtures.

**Store current channel state on cue GO**
If this option is enabled then the “Store current channel state into temporary memory” operation will occur before the next cue is run.
6.4 Groups (Specific Palettes) Editor

With the exception of generic palettes, groups and specific palettes have several functions:

- Can be assigned to a selection shortcut so the fixtures stored in it can be selected with a single click or key press.
- May contain the entire state of the fixtures or just some of their attributes (i.e. specific palettes).
- May be applied in live to recall the attributes of the fixtures stored in it. When applied, the option exists to set all fixtures or just the subset of the currently selected fixtures.
- May be used as submasters, where the outputs are proportional to the submaster (group) value. The value can be set directly or operated by a virtual or physical control.
- May be referenced in cues so that the state may be recalled multiple times. Changes made to the stored values will then be repeated for each cue where it is included.
- For V2.19 and up a new feature called "Virtual Palettes" will allow attributes to be applied to selected fixtures even if not recorded.

Generally, groups and palettes are recorded as described in section 6.3 under the headings of "Recording a group" and "Recording a palette". These can then be displayed and edited by clicking on the "Groups (Subs, Sp Palettes)" button in the command window or pressing <F3> on the keyboard. Below is a sample window. Sections of this window are expanded and described on the following pages.

The upper pane of the window is a list in the form of a grid of all the groups that have been created or recorded. The bottom pane (if present) shows details of the data stored in each group. The details shown are for the group highlighted in gold in the top half.
**Group/Specific Palette Grid**

The columns in the grid are explained below. The entries can be ordered alphabetically or numerically in ascending or descending order by clicking on the column headings. Also, columns can be rearranged by clicking and dragging the column labels.

<table>
<thead>
<tr>
<th>Number (#)</th>
<th>Type</th>
<th>Group Name</th>
<th>Channels</th>
<th>Radio Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Beam</td>
<td>Beam 1</td>
<td>37/40</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Color</td>
<td>Color 1</td>
<td>25/28</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Edge</td>
<td>Edge 1</td>
<td>42/45</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Group</td>
<td>DS Special</td>
<td>38/39</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Intensity</td>
<td>Downstage</td>
<td>1/12</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Position</td>
<td>US Special</td>
<td>37/40</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Utility</td>
<td>Utility 1</td>
<td>42/45</td>
<td></td>
</tr>
</tbody>
</table>

**Number (#) & Type**

The traditional type is labelled “Group” and can contain a snapshot of one or more fixtures and their attributes with or without an intensity parameter. The remaining types are called “Specific Palettes” and contain a snapshot of just the attributes in the named palette type. The standard types are Intensity, Position, Color, Beam, Edge and Utility. The attributes associated with each type are detailed in the “Edit Palette Type” option described later in this section. The entries for each type are numbered sequentially as they are created or recorded.

For V 2.21 and up, if a submaster is specified when recording a group, the Type is recorded as “Submasters” instead of “Group”. This allows the two types to be numbered separately without interference.

Also for V2.21 and up, a special palette type called Preset that supports nesting of other palette types has been added. As an example, you could select a fixture, apply Color and Position palettes and record that as a Preset palette.

**Group Name**

The group name is a description field that provides easy identification of the group. When a new group is created or “Record Group” in the channel display is used, the group name can be supplied. When “Record Palette” is used, the name is generated automatically as “{Attribute Type} {n}”. The name can be edited by clicking in the field and entering the new name.

**Channels**

This field lists the channels (fixtures) included in a group or palette (as many as will fit in the width). The complete list can be seen in the details pane.

If a new group has been created, the channel list (and level) can be entered using the command line syntax (see Chapter 7 – Command Reference for more details). Also, you can use the “Add/Del” tab of the details pane to enter the channels (fixtures) to be included.

**Radio Group**

This is a new feature that allows collecting groups into exclusive sets. When the group value in a Radio Group is set via a submaster, apply shortcut or toggle shortcut, the values of the other groups in the set go to zero. To create an exclusive set, enter the same number in the “Radio Group” column for the groups you wish to assign to the set. To remove a group, clear its “Radio Group” cell.
This is the current output state of the group and is a percentage value between 0 and 100%. By default the cells are drawn as graphical bars representing the value. You can adjust the value of the selected group using the mouse wheel or click on the graph which changes the cell to an edit control and type in the desired value.

The level displayed in the graph is known as the group value. In addition to setting this value directly, it can be controlled by assigning a submaster to the group. Whenever the submaster is operated, the resulting group value will be shown. The output levels of the attributes stored in the group are (conditionally) proportional to their maximum values. See the sections on Submaster and Snap Attributes below for more information.

**Fade Time**

The fade time (in seconds) specifies how long the system will take to go from the current value to a new value. When a group is recorded, the default fade time is determined by the setting in the “Show Defaults” tab of “System Properties”. The default time can be modified by clicking in the cell and entering a new value.

A channel or attribute fade time will override any value set in this field.

**Behavior**

The behavior column refers to the interaction of the group with other controls that may be setting the levels of the fixtures in the group. This applies only when the group is being “operated” with or without a submaster. Generally, the behavior takes effect the first time a group’s value is raised above 0. Group control is released under various conditions as detailed below.

<table>
<thead>
<tr>
<th>Value</th>
<th>Fade Time</th>
<th>Behavior</th>
<th>Submaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>0</td>
</tr>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>0</td>
</tr>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>0</td>
</tr>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>0</td>
</tr>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>1</td>
</tr>
<tr>
<td>0%</td>
<td>1s</td>
<td>Override</td>
<td>0</td>
</tr>
</tbody>
</table>

**Note:** When a group is applied in live or included in a cue, the behavior is always Override (LTP) regardless of the setting in this column.

The default behavior set when a group is recorded or created is controlled by two options in the “Show Defaults” tab of “System Properties”. If a group is recorded without a submaster, the default is determined by the “Group Behavior”. If a submaster is specified, the default is determined by the “Submaster Behavior”. See Chapter 5.4 – Show Defaults for more information.

The behavior of a group can be changed by clicking on the small arrow to the right of the field. The following options are available:

- **Override (LTP)** – Also known as “Latest Takes Precedence”. As soon as the group value goes above 0 or changes, the fixture outputs will be controlled (proportionally) by the group value (i.e. overridden). In turn a group value can be overridden by another control (for example, a channel level or cue). If the
group value goes from some level to 0, the fixture outputs will revert to their former levels (i.e. be released from group control).

- **Build** – The output levels of the group will be added to the current fixture outputs up to a maximum of 100%.

- **Exclusive** – Similar to Override, fixture outputs will be controlled by the group value as soon as it goes above 0. However, other controls are locked out and cannot effect the fixture output. In order to release control of the group, the option “Release all submaster control” must be selected from the “Release” pulldown menu on the Channel Display.

- **Highest Takes Precedence (HTP)** – In this mode, the fixture outputs will be set by the control with the highest value. If the output level in the group is higher than that of a fixture’s current control (such as a cue) then the group level is applied. Normally you would not be able to override a fixture level controlled by an HTP group, but there is an option in “Show Defaults” that can be set. This option is “Override takes precedence over HTP”.

- **Independent** – Similar to Exclusive except group control is released when the group value reaches 0.

- **Inhibit** – The group outputs master the fixture outputs, preventing them from rising above the group outputs. In order to release control of the group, the option “Release all submaster control” must be selected from the “Release” pulldown menu on the Channel Display.

- **Hue LTP** – This is a special type designed to be used with color mixing fixtures. As the group value changes from 0 to 100%, the output of the group will be the saturated hue value between 0 and 360°. This translates to a full color spectrum that can be set by the group.

- **Subtract** – Similar to Build, the output levels of the group will be subtracted from the current fixture outputs.

- **Intensity HTP / Attributes LTP** – Similar to Highest Takes Precedence (HTP) but non-intensity parameters will be controlled by group outputs on a “Latest Takes Precedence” basis rather than having to rise above current levels in order to take control.

**Submaster**

A submaster is a physical or virtual control for the group value. Virtual submasters can be displayed and operated in one or more separate windows and may take the form of graphical faders or a grid similar to the channel display. A submaster may be assigned to a group at the time it was recorded or added here by clicking on the cell and entering a value. If assigned when the group was recorded, the “Type” field is set to “Submasters” rather than “Group”.

See section [6.12 – Submasters](#) for more information.
**Select/Toggle/Apply Shortcuts**

A shortcut is a physical or virtual button that when activated can perform an action. Three types of shortcuts can be assigned to a group.

A select shortcut, when activated, simply selects the fixtures in the group which are shown highlighted in the channel display. Once selected, other operations can be performed on the selected fixtures.

An apply shortcut will set all attributes of the fixtures in the group to their maximum values as recorded. Any values that are changed from their current levels as the result of applying the group will transition in the “Fade Time” set for the group (except those channels/attributes set with an override time and/or delay).

Typically, select and apply shortcuts are assigned the same number automatically when a group is recorded. This is so consecutive activation of the select shortcut will first select the fixtures in the group and then apply the values stored in the group.

A toggle shortcut applies the group on the first activation and removes the group (sets the group value to 0) on the second activation. In the shortcuts window, a toggle shortcut displays an indicator for its state (red for off and green for applied).

**Snap Attributes**

This option controls the behavior of non-intensity attributes when the group is applied. The following choices are available:

- **Manual** – Attributes will change levels in proportion to the group value.
- **Snap off zero** – Attributes will snap to the value stored in the group as soon as the group value rises above 0.
- **Snap at full** – Attributes will snap to the value stored in the group when the group value reaches 100%.

Note: The columns labelled “Release”, “Bump Action”, & “Bump SC” are NEO console only options and are not documented here.
Effects
This field lists the effects included in a group or palette (as many as will fit in the width). The complete list can be seen in the details pane.

Note: Effects are controlled by the group value or submaster only. Applying a group from the channel display will not activate any effects associated with it.

Special Groups
By default, several special groups are defined and listed in the Groups Editor. In addition, special groups called partitions may be added. Each group name is preceded by the tilde character (~).

<table>
<thead>
<tr>
<th>#</th>
<th>Type</th>
<th>Group Name</th>
<th>Channels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>~Grand Master 1</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td></td>
<td>~Grand Master 2</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td></td>
<td>~Hi Light</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>~Home</td>
<td>1,2,3,4,5,6,7,8,9,10</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>~Lo Light</td>
<td>1,2,3,4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>~Partition 1</td>
<td>1,2,3,4,5,6</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>~Partition 2</td>
<td>25,26,27,28,29,30,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>~Position DSC</td>
<td></td>
</tr>
</tbody>
</table>

~Grand Master 1 & ~Grand Master 2 - A grand master (GM) is a control that scales the output (intensity values only) of the entire system. LightFactory has two grand master controls that each can be assigned to different blocks of channels. Two special groups named ~Grand Master 1 and ~Grand Master 2 are displayed in the grid and only the Channels field can be edited. By default all channels are assigned to both. Both GMs may be controlled from the Submasters window and GM1 may be controlled from the Command window and/or assigned to a submaster.

~Hi Light – As documented in Chapter 6.3 – Channel Display, fixtures can be set to a special position/value in order to make them easy to identify. Normally, Hi Light values are determined by the fixture profiles patched into a show. However, this special group can be set up to override the normal fixture library values. This and other special groups can be assigned a submaster and shortcuts to easily apply the group.

~Home – Similar to ~Hi Light, this group can be set up to override the default attribute values defined in the fixture library.

~Lo Light – Unlike the Hi Light values available from the fixture library, the Lo Light values must be set in this special group in order to use the “Lo Light” mode in the Channel Display. This provides an additional way to identify a fixture in a live lighting rig by making it stand out from the others.

~Partition – These special groups may be added and used to divide the total channel count into separate parts that can then be assigned for control by specific users. An example is a large venue that contains multiple performance spaces. Only the Channels field can be edited. Each partition will be assigned a number sequentially in the order created.
~Position DSC – This special group can be used to store the Pan & Tilt positions of all moving head fixtures aimed at “Down Stage Center”. In conjunction with the “Trim Height” setting stored in the Show Defaults section of System Properties, the system can then calculate relative positions for fixtures when applying palettes that don’t have all fixtures recorded.

Options
The Options menu button is located along the top row of buttons in the Groups window.
**Edit Palette Type**

The attributes recorded into (specific) palettes are organized into categories called palette types. The attributes included in each type are determined by this option. When selected, the following table is displayed:

The row labels (grouped as Families and Attributes) are determined by the profiles of the fixtures patched into the current show, thus may have different entries. The columns represent the standard attribute types for specific palettes. The attributes associated with each type are indicated by the green-shaded cells in the table. For example, the **Color** attribute type includes Color, CMY, Color Wheel, Color Mixer 1 and CTO Mix in the table shown.
You can customize this table to change what attributes get included in each type. Clicking on a grey cell will turn it green and thus that family or attribute will be included in the type. Clicking on a green cell will turn it grey and thus the family or attribute will be excluded.

Also, you can create new attribute types by clicking on the “Add” button and supplying a name in the dialog presented. For example, you may want to separate the color mixing attributes of your fixtures from the color wheel attributes. Thus, you could create a new type called “Wheel” which will add a column by that name. Then you could click on cells in the Wheel column to include “Color 1” and “Color Wheel” in the new type and click on the corresponding cells in the “Color” column to remove those attributes from the Color type.

To save any changes made to the table, click on the “Save” button. If you’ve added any new types, these will be added to the “Record Group” and “Record Palette” dialogs available from the “Channel Display” window and when groups or palettes are recorded, the new specific palettes will be added to the “Group/Palette Grid”.

The “Defaults” button has three options:

- **Save as defaults** will save the current table so that new shows will inherit the changes.
- **Restore defaults** will recall the last saved defaults.
- **Restore factory defaults**.

**Add Partition**

As described in the Special Groups section above, the total channel count may be divided into separate parts. Click on this option to create a new partition.

**Hide Group Detail**

By default, the window is divided into two sections. The bottom section shows details of the data stored in the selected group. Clicking this option will close this section and expand the top section to fill the window. The detail section may be recalled by clicking this option again.

**Add selected groups to a cue**

To create a new cue or add groups to an existing cue:

4. Select the groups you want to add to the cue by clicking on the row to highlight it. Use the <SHIFT> or <CTRL> key to select multiple groups.
5. Click on the options button and from the resulting drop down menu select “Add selected groups to cue”.
6. The “cue selection” dialog will pop up to select the cue into which you want to add the group. Set the “cue list” and “cue” number that you want to add the channels to.
7. If you want to add a short description to the cue being created, enter this into the field provided.
8. Select “OK” to complete this operation.

**Note:** The “cue selection” dialog will default to the last selected cue list and the next available (integer) cue number.

To cancel the operation and return to the channel window click on the “Cancel” button.

**Add active groups to a cue**

This operation will work exactly as the above option with active groups (groups with a value above zero) added to the cue rather than selected.

---

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Snapshot when adding groups
Toggle the “Snapshot when adding groups” option to record the current channel state into all newly added groups.

Show/Hide search bar
By default, the search bar is displayed when the Groups window is called up from the Command Window. The search bar is located at the bottom of the Group/Palette grid.

You can locate a group in the grid by entering a few characters in the edit box and the first group to match will be highlighted. If you have several groups with the same leading characters, you can use the “Find Next” and “Find Previous” buttons to navigate the list.

You can dismiss the search bar by clicking the “Close” button or selecting this option, which is a toggle. Once dismissed, use this option to redisplay the search bar.

Copy selected group
Select (highlight) a group and use this option to create a copy. The new group will be given the name “Copy of …” with the “…” representing the name of the original selected group.

Sort channels for selected group
If you create a new group or add channels to an existing group, the channels will be listed in the order they were added in the details tabs. Clicking on this option will order the channels in the selected group numerically from low to high.

Print
This option will bring up a preview window from which a list of the groups can be sent to a system printer.

Export to CSV & Import from CSV
These options allow you to create a Comma Separated Values (CSV) file containing the list of groups or to read in a CSV list generated from another show.

Reset grid layout to default
If you have rearranged the columns in the Group/Palette grid, use this option to restore the default layout.

Select Active Button
This button serves several functions. Clicking on the left hand side of the button will select all of the active channel groups. Once selected you can use the mouse wheel to raise or lower all of the values (option in System Settings needs to be set).

Clicking on the drop down right side of the button will pop up a menu with further options:

Select Inactive Groups
Click on “Select Inactive” to select all of the groups where the value is currently 0%.

Select All/Unselect All
To select all of the groups click on the “Select All” menu option.

To unselect all of the currently selected groups click on the “Unselect All” menu item.
**New Group Button**
Clicking this button will bring up the following dialog:

![New Group Dialog]

Enter a name for the new group to be added. This will create a blank group with type “Group” and default fade time and behavior. If you enter the name of an existing group, the following dialog will be displayed:

![New Group Dialog]

**Delete Group Button**
You can select one or more groups from the grid and use this option to delete them from the list. A confirming dialog will be displayed to allow this operation to be cancelled if needed.

**Sorting Buttons**
The remainder of the buttons along the top of the Groups window can be used to sort the list according to the labels on the buttons. All of the buttons except “All” are toggles. Thus you can combine criteria to order the list in the desired way. For example, you could list all “Position” palettes that also have “Apply Shortcuts” by clicking on both buttons. The original unsorted list can be recalled by clicking the “All” button, which cancels the other selections.

It should be noted that column ordering is also in effect. For example, after clicking the “Submasters” button to show only those groups having a submaster defined, clicking on the “Submaster” column heading will order the list from the lowest to highest submaster or vice versa.
Group Details Pane
The details pane shows all the data associated with the channels recorded into a group and is divided into various tabs.

In channel groups the attributes can have an “Off” value. Cells that are in this state will also be greyed out to make them easily identifiable. To set a value to the “Off” state simply type an O into the cell or any non-valid character. “Off” values will be ignored when the channel group is applied.

The values set in the overview and DMX tabs will determine the maximum level that the attribute will reach when the group value is at 100%. For example, if a channel’s dimmer level is set to 50% in the channel group details pane, then when the group value is at 100%, the channel’s dimmer will be set to 50%. If the group value is set to 25% then the channel’s dimmer will be set to 12.5% (25% of 50%).

Tricks for editing multiple cells at once:

This window provides a few hidden techniques to make entering large amounts of information easier.

The first step to using these features is to select multiple cells at once. By holding down the mouse button you can click and drag over any number of cells in the grid and all of the cells will become selected. You can select multiple cells by selecting the first one and then holding the <SHIFT> key down and selecting the last one. You can select multiple cells in any number of columns however it may not make sense to edit some columns together.

Once you have selected the cells you want to edit, enter a value into the first cell and press the <ENTER> key. As soon as you are done, all of the highlighted cells will receive the value you have entered.

The value in one field can be copied and pasted into other fields. Select the field to be copied and right-click on it. Choose the copy option in the popup menu. Now click on other field(s) to replace the current value(s) with the copied value. When through, right-click again and choose “Cancel Copy”.

The right-click menu also has the option to clear the selected cell(s).

Time and Delay fields – The time and delay columns will accept the same technique for entering values into multiple cells, however these fields support additional syntax for spread timing. You can enter a range of times using the “/” as a through command.

e.g. 1/10 – This will put time values into the selected cells spreading them between 1 and 10 seconds. The first cell will receive 1 second and the last cell 10 seconds. Every other cell will receive a value between 1 and 10 seconds depending on their position.

e.g. 2/15/3 – This is similar to the above example but the middle value will be placed into the middle cell of the selected range. So that the first cell will receive 2 seconds the middle cell will receive 15 seconds and the last cell 3 seconds. All other cells will receive a proportion of the range entered.

R10 – the “R” is a special modifier that means “random”. Using the “R” in front of the value means that the result will be a random number between 0 and 10. All of the selected cells will receive a different random number.
The overview tab will show the attributes values as real data. Most values will be shown as percentage information but some values may show other data. A gobo control for example will show an image of the gobo selected and the color controls will show the color that is currently assigned.

This tab also provides optional time and delay for the individual channels. For attribute level timing see the "Timing" and "Delay" tabs.

Some of the attribute tabs also provide helper controls that can be accessed by double clicking on the cell. For the color cells the standard LightFactory color picker will appear. Once you have finished modifying the value with the helper control, click anywhere in the previous window to close it. Some example helper controls:
The channel grid view displays the channels as they would appear in the channel display window. You can switch between the various viewing modes used in the main channel display by clicking on the “View” menu – this includes expanded, compact and classic views. In the same view menu you can choose to display only the channels currently in the group or all channels in the system. If all channels are shown then the ones not currently included in the group will be display with a light grey text.

In this view selected channels can be removed by clicking on the “Remove Selected” button and if all system channels are shown you can add selected channels using the “Add Selected” button.

Also, the selected channels can be set to full (100%) intensity with the “On” button or to 0% with the “Off” button.
Matrix

For groups that have channels assigned to a matrix, this view shows the cells in the selected matrix which can be changed if desired.

DMX
The DMX tab will show all of the same information as the Overview tab but all of the values will be shown as DMX values. This provides the maximum resolution when modifying the data in the group. For example, in the overview tab the dimmer is shown as a percentage, giving 100 possible values but the underlying DMX associated with the dimmer has 256 possible values (0-255). Use this tab to enter the DMX value directly. The percentage shown in the Overview tab will be the nearest whole number to the DMX value entered.

Timing
To set an individual fade time for any attribute, use this tab to enter a time value in seconds. If the value shows “Not set” then no independent fade time exists. Any fade time set here will override the channel fade time and the group fade time when the group value is set or the group applied.

Delay
To set an individual delay time for any attribute, use this tab to enter a time value in seconds. If the value shows “Not set” then no independent delay exists. Any delay set here will override the channel delay when the group value is set or the group applied.
Add/Delete

This tab provides convenient options for adding and removing channels from the group.

This window is divided into two halves. On the left hand side is a list of all the channels in the system. Additional information such as purpose, position, etc. are also provided to help identify channels. The right hand panel is the list of channels that are included in the group.

Along the bottom of this tab are the Add and Remove buttons.

Select the desired channels in the left hand panel to add to the channel group and click on the Add button (right arrow) at the bottom of the page.

To remove, select the desired channels from the right hand panel and click on the Remove button (left arrow).

You can also use the channel syntax box to enter channels to be added. If text is entered into this edit box it will take precedence over the selected channels when the Add button is pressed.

Note: In any of the tabs you can enter data into multiple cells by highlighting the cells you want to change and then typing the new value. As you type, the value will only populate the first cell. Pressing the <ENTER> key after you have finished typing will copy the value to all of the highlighted cells.
This tab appears if the group selected is of type **Preset**. Presets are a special palette type that supports nesting of other palettes to set the attributes of the recorded fixtures. The attributes of any fixture may be changed by selecting the desired palette from list on the left and dragging it to the desired fixture and attribute column.

As an example, you could set the color attribute of fixture 37 from “Color 4” to “Color 7” by clicking on “Color 7” in the **Palettes/Groups** column and dragging it over to the **Color** cell of Fixture 37.

**Palettes**

<table>
<thead>
<tr>
<th>Ch #</th>
<th>Fixture</th>
<th>Dimmer</th>
<th>Pan/tilt</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>VL3000S</td>
<td>Not Set</td>
<td>Position 5</td>
<td>Color 4</td>
</tr>
<tr>
<td>38</td>
<td>VL3000S</td>
<td>Not Set</td>
<td>Position 5</td>
<td>Color 4</td>
</tr>
<tr>
<td>39</td>
<td>VL3000S</td>
<td>Not Set</td>
<td>Position 5</td>
<td>Color 4</td>
</tr>
<tr>
<td>40</td>
<td>VL3000S</td>
<td>Not Set</td>
<td>Position 5</td>
<td>Color 4</td>
</tr>
</tbody>
</table>
When a group is recorded, you may include running effects. Here effects may be added or removed from the selected group and some of their parameters may be adjusted.
6.5 Palette Windows

**Note:** In prior versions of LightFactory (V2.12 and earlier), the Palettes (F6) button would display the Generic Palettes window which showed the list of generic palettes and allowed editing of their stored values. This button now displays a popup menu of palette types, both generic and specific. The following section describes the options available from this new menu.

Clicking on the “**Palettes**” button or pressing <F6> on the keyboard displays the following menu:
**Generic Palettes**

Clicking the **Generic Palettes** button brings up the Generic Palettes window, an example of which is shown below:

![Generic Palettes Window](image)

This window can be used to apply any of the generic palettes that have already been defined, edit the contents of or delete existing palettes, and create new palettes.

As shown above, the window has a 10x10 grid (default) displaying groups of 100 buttons on each of 10 pages. The page buttons can be modified with a description and background color by right-clicking on the desired button.

The pull-down menu under the “Palettes” button on the Channel Display can be used to apply them directly. Shortcuts can be assigned also to allow application from the shortcuts pages or physical buttons.

To edit the contents of a defined palette, right-click on its button and choose “Edit”. To record a new palette, click on an empty cell in the grid. In both cases, a dialog box with the appropriate title will be displayed:
You can enter new or changed values for the generic fixture data in the fields provided.

**Note:** Creating or updating generic palettes using the method above requires knowledge of how parameters are applied to fixtures. For instance, Position is specified in degrees of pan and tilt; Iris, Shutter, etc. is expressed in %. Rather than use these dialogs, a better method is to use the Channel Display and the Fixture Control windows to set the values you wish to record. See the section on "Recording a palette" in 6.3.

To delete a palette, right-click on its button and choose "Clear" which will display a confirmation dialog before removing the entry.

A defined palette may be relocated on the grid by right-clicking and choosing the "Move" option, then clicking on an empty cell in the grid.
Options
The following options are available:

Use 3D buttons – Default: On. 3D buttons have a shaded appearance and are generally sharper than the normal buttons. Turn this feature off if you experience slow response in painting the window.

Set fixed font size – Default: 8. Sets the size of the button legends.

Set grid size – Default: 10x10. Controls the number of buttons appearing in each window.

Create default show colors – Creates a set of palettes with some basic colors and also adds them to the “Show” tab of the standard color picker.

Create full color page – When applied to an empty page, populates the page’s grid with a selection of colors spanning the entire visible color spectrum. This provides a quick way to generate a range of color palettes that can be used in developing a show.

Clear page – When clicked, will display a confirming dialog. If you answer “Yes”, all the palettes on the current page will be deleted.

Specific Palettes
The standard types of specific palettes are Intensity, Position, Color, Beam, Edge, Utility and Preset. Each type has its own window that is of the same form as the Generic Palettes window described above. These windows can be used to apply any of the specific palettes that have been defined. Unlike generic palettes, specific palettes cannot be edited from these windows. See section 6.4 – Groups (Specific Palettes) Editor for details.

The buttons can be customized with a background color, a text color and a background image by right-clicking on them. The page buttons can be modified with a description and background color by right-clicking on the desired button.

As with generic palettes, specific palettes may be applied using these windows, by assigning shortcuts to them or directly from the “Palettes” pull down menu on the Channel Display window.

Preset Palette
This is a special palette type in that it supports nesting of other palette types. As an example, you could select a fixture, apply Color and Position palettes and record that as a Preset palette.

Virtual Palettes
Prior to V2.19, a specific palette could only be applied to the fixtures (or a subset thereof) that are stored in the palette. V2.19 introduced the concept of virtual palettes which in effect allow specific palettes to act like generic palettes.

For each palette window a new option has been added at the bottom of the “Options” menu. Following is a screen shot of the “Color” palette window showing the “Options” menu:
The new option is labeled "Virtual Palettes Active". When unchecked, the palettes function as specific palettes and can only be applied to those fixtures that are selected and also stored in the palette. When checked as in the example above, the palettes become equivalent to generic palettes and can be applied to all selected channels. Each of the specific palette windows can be set to function as the original specific palettes or as the new virtual palettes. By default, the option is not set (i.e. original function) for Intensity, Beam, Edge and Utility palettes and set (i.e. virtual function) for Color and Position.

When a virtual palette is applied to (a) selected channel(s), the following algorithm is used to determine what data currently stored in the palette is referenced:

1. The selected channel(s) is/are already present in the palette.

2. From another fixture of the same type already present.

3. From the first fixture stored in the palette that contains relevant data.

If item #3 is used on a fixture, the data applied may not contain all the necessary information. For example, if CMY color data is applied to a RGBA fixture, the Amber channel will not be affected. To correct that situation, you can use the Fixture Control to adjust the values and then update the palette which will add the changed channel(s) to the palette and this data will now be used if you apply the palette to other fixtures of the same type.

Also, recording or updating a cue after a virtual palette has been applied will update the palette with any added and/or changed channel information in the same way.
6.6 Cue List Editor

To access the cue list editor click on the “Cue List” button on the command interface window or press <F4> on your keyboard. Below is a sample cue list window (shown without the details pane). Sections of this window are expanded and described on the following pages.

Typically, a show consists of a list of cues, each of which contains a defined lighting state and/or effect sequence. A cue can be considered any point in a live show when a signal is given for a lighting change to take place. When a cue is triggered, the lighting state becomes active and the included channels will be set to the levels stored or referenced in the cue.

**Cue Lists**

LightFactory provides the ability to create multiple cue lists to help manage and run complex shows. A “cue list” is a way to collect a number of cues and assign a name or short description.

Examples of how cue lists can be used include:

- Separating different “Acts” within a show
- Managing a number of shows all running in a single venue
- Having a separate list for each song likely to play in a concert.

To create a new cue list click on the “Options” drop down menu and select “Create a new cue list”. A dialog will appear titled “Cue List Properties”.

![Image of Cue List Editor](image_url)
**Cue List Name** – This will default to “Cue List #”, where # is one number higher than the previous cue list but can be edited to provide the desired name.

**ID** – As each cue list is created, it will be assigned the next available ID number by default. However, this can be changed by entering the desired number in this box. If the number entered is already assigned, a warning message will be displayed when “OK” is clicked. This number may be used in cue commands in place of the list name.

**Tracking Enabled During Playback** – This switch appears only if in Full Tracking Mode and defaults to “On”. Normally in tracking mode, when a cue is run the values set in channels from previous cues will ‘track through’ if they are not included in the current cue. With this switch set to “Off”, those channels would be released from cue control until another cue is run that has values recorded for them. This is useful when developing loops and effects.

**Behavior** - Each cue list can be assigned a behavior type that is used when it is played back. By default, this is set to “Override (LTP)”. However you can change this to “Build”, “Highest Takes Precedence (HTP)”, “Exclusive”, “Subtract” or “Intensity HTP / Attributes LTP”. The behavior set by this option will result in playback of the cue list following the same rules as the behavior set by Groups (Submasters, Specific Palettes) as describe in section 6.4.

**Shortcuts** – Cue execution shortcuts may be assigned to the cue list if desired.

**Exe Submaster** - A “Exe(cute) Submaster” allows you to manually control the execution of a cue. This overrides the fade-in and fade-out values, making them become irrelevant. The position of the submaster determines the proportion of all channels in the cue. Once the submaster is at full, then returning the submaster back to 0 will execute the next cue.

This operation overrides all properties of intelligent fixtures and can be a useful way to track moving lights manually to follow someone on stage.

**Inhibit Submaster** - An “Inhibit Submaster” does not control the execution of the cue but simply overrides the channel values as the cue executes. You still need to use the “Go” button to execute it, but unless the “Inhibit Submaster” is above 0 then no output will be seen.

Example…If a channel in a cue is set to 50% and the “Inhibit Submaster” is at 80% then when the cue executes the channel will be set to 40%. Changing the submaster while the cue remains active will also change the output of the fixture.

**Rate Submaster** - A “Rate Submaster” can be used to modify the cue time (fade-in) value set in the cues. The time can be increased or decreased depending on the level set in the submaster. Submaster values greater than 50% increase the time, while values less than 50% decrease the time. The submaster must be set above 0 to take effect. The range of time controlled by the submaster is set in “Advanced System Settings”.

**Cue List Security** - If you have user security enabled, then a security option will be visible. Click on the security button to open the security list. This is a list of users in the system with a check box indicating if that user can modify the cue list (See User Permissions in Chapter 4 – Options for more information).

To remove a cue list, select the desired list which will highlight it, then click on the “Options” drop down menu and select “Remove current cue list”. A confirmation box will prompt you to confirm this operation. If you are sure you want to delete the list, click the “OK” button.
Cue List Grid
The cue list grid contains information about each cue such as its status, trigger mode, controls included, timing information, etc. The grid is highly customizable. The columns that are displayed can be selected from a list of available columns and they can be repositioned in relation to one another. Each column’s width can be adjusted as well as the row height. All these settings are remembered and will be restored each time the software is started.

Below is an expanded view of the left half of the cue list grid with the columns in default order.

<table>
<thead>
<tr>
<th>Cue No</th>
<th>Description</th>
<th>Status</th>
<th>Trigger</th>
<th>Channels</th>
<th>Effects (Fx)</th>
<th>Shortcuts</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Starting Cue</td>
<td>Smart Blk</td>
<td>▼</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>DS Up</td>
<td>▼</td>
<td>1/12</td>
<td>None</td>
<td>None</td>
<td>Area A (65)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Add Upstage</td>
<td>▼</td>
<td>9/28</td>
<td>None</td>
<td>27</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>2:5</td>
<td>Cue Number 2:5</td>
<td>▼</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Raise USR</td>
<td>▼</td>
<td>13/16,25/28</td>
<td>US Chase, Col</td>
<td>None</td>
<td>Area 6</td>
<td></td>
</tr>
</tbody>
</table>

Cue Number
The cue number represents the order that the cues appear in the list and by default it also determines the run order of the show. Cue numbers can be set to any number you want by clicking within the field and typing the new value. If a cue is currently active, it is denoted by a green arrow to the left of the number.

Cue numbers must be between 0.000 and 4294966.999. When editing cues it is not necessary to enter the decimal part if all you want is an integer value.

Note: LightFactory will automatically re-order the cue list as soon as you exit the field and thus save the new value.

The most common use for editing the cue number is to insert a new cue between two existing cues. To do this, change the cue number to a valid number between the two cues.

Example…
To insert a new cue between cues 2 and 3, you would create a new cue and change its number to 2.5.

Description
This field is for your own reference and provides the ability to describe the lighting state contained in the cue. This can be changed by clicking within the field and entering the new description. This field also displays cue-level blocking and marking flags.

Status
The status field is in the form of a bar graph. When a cue is executed, the bar graph (in green) shows the progress of the Fade In/Cue Time. When complete, the graph turns yellow.

Trigger
The cue trigger specifies what causes the cue to execute. By default, this is set to “Manual” indicating that the software is waiting for the “Go” button to be pressed. The previous cue will remain active until the trigger is activated.

To set the cue trigger, click the drop down combo button to the right of the field and select from the following options:
• **Manual** – The user must press a “Go” button either in a show runner or on this window (the trigger field is blank for this option).

• **Follow** – Cues set with the auto trigger will execute immediately after the Follow Time has elapsed. If the option “Follow to run next cue” in the “Show Defaults” tab of “System Properties” is set, the follow time is entered in the “triggering” cue. If that option is not set, the follow time is entered in the “triggered” cue. If a Follow Time is not specified, the Fade In/Cue Time + the Dwell/Down Delay time is used to determine when the Follow cue is executed.

| Note: For legacy LightFactory users, the option “Follow to run next cue” should be turned off to get the behavior you may be used to for autofollow cues. |

• **Midi** – The cue will be triggered by an external midi event occurring. See **Chapter 4 – Options** for information on setting up MIDI triggers.

• **Audio** – The cue will be triggered by the line-in audio source. See **Chapter 4 - Options** for information on how to set up the software for audio triggers.

• **Timecode** – The cue will trigger when the specified timecode is reached. If the timecode has already passed when this cue is reached, the software will trigger the cue immediately. Enter the timecode value into the field provided.

• **Tempo** – The cue will be triggered by the “Tap Tempo” engine.

| Note: Several of the fields described below can be edited by using tabs shown in the details pane. See section **Cue List Details Pane** for more information. |

**Channels**
This field lists the channels (fixtures) included in a cue (as many as will fit in the width). The complete list can be seen in the details pane (see description later in this section). The channel list (and level) can be entered or modified using the command line syntax (see **Chapter 7 – Command Reference** for more details). Also, you can use the “Add/Del” option of the “Channels” details pane to enter the channels (fixtures) to be included.

**Effects (FX)**
Effects are automated sequences of lighting states that run without user interaction. For more information and details on how to create effects, see section **6.8 – Fx List Editor**. A simple effect may be a traditional chase sequence or a more complex effect may perform a series of moving light changes.

Often when a cue is executed, it is desirable to run an automatic sequence until the next cue is triggered. LightFactory allows you to add any number of effects and chases into any cue.

The “Effects (FX)” field is a non-editable field that will list the effects a cue contains (as many as will fit in the width). Use the “Effects” tab of the details pane to add, delete and modify the effects for the selected cue.

**Shortcuts**
Each cue can execute any number of shortcuts when the cue runs. This allows you to run more complex operations such as executing macros, selecting channels, or jumping to another cue list.

Shortcuts can be added by simply typing a comma (,) delimited list of shortcuts. Use the “Shortcuts” tab of the details pane to add, delete and modify the shortcuts for the selected cue.
**Groups**

By adding groups (specific palettes) to a cue you can set up “stage looks” that can be edited in one place and applied to any number of cues. The groups become building blocks for the show and can make programming the entire show a lot faster by reusing common “stage looks”.

Use the “Groups” tab of the details pane to add, delete and modify the groups for the selected cue.

Below is an expanded view of the right half of the cue list grid with the columns in default order.

<table>
<thead>
<tr>
<th>Follow Time</th>
<th>Cue Delay</th>
<th>Cue Time</th>
<th>Down Delay</th>
<th>Down Time</th>
<th>Fx Delay</th>
<th>Timecode</th>
<th>Link</th>
<th>Macro</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>0s</td>
<td>0s</td>
<td>0s</td>
<td>0s</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>0s</td>
<td>0s</td>
<td>0s</td>
<td>0s</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Follow time**

The follow time can determine when an autofollow cue is triggered in relation to the cue that precedes it. If the option “Follow to run next cue” in Show Defaults is set, the follow time goes in the “triggering” cue; otherwise, it goes in the “triggered” cue. If no entry is made in this field, then an autofollow cue will be triggered when the preceding cue’s Cue Time/Fade In plus any Down Delay/Dwell time has elapsed.

*Note: For legacy LightFactory users, the option “Follow to run next cue” should be turned off to get the behavior you may be used to for autofollow cues.*

**Cue Time**

To specify a delay before the cue will execute, enter a valid time (in seconds) into this field. As an example, the delay can be used to wait for the previous cue to fade out before starting its fade in.

**Cue Time / Fade In**

The time (in seconds) entered in this field begins when the cue is triggered. If the option “Use Fade Mode Up/Down (Off – In/Out)” in the “Show Defaults” tab of “System Properties” is Off, the time is applied to each channel to go from its current value to the value contained in the cue. If this option is On, then the time is applied to each channel that is increasing in value.

The fade time will apply to all fixture attributes that are set within the cue with the following exceptions:

- An override fade time for individual channels has been set. See section on cue list details below.
- A fixture attribute has been set to “Mark in zero time” in its profile.
- Attribute family timing has been set. This is called complex timing which might be needed in rare instances to control fixture attributes more precisely. To set attribute family timing, click on the small magenta triangle in the lower right corner of the field which will display the following dialog:
Enter values for delay time and/or fade time for the desired attribute families and click on another cell to close.

**Down Delay / Dwell**
As noted above, this time plus the Cue Time/Fade In can be used to trigger an autofollow cue. If you are using Hybrid Tracking mode to record your show, the dwell time can be used also when you want the cue to operate automatically. For example if you want the cue to fade in, wait for a specific time, and then fade out without any user interaction. The dwell time (in seconds) specifies how long the cue will wait after the fade in before executing the fade out.

**Down Time / Fade Out**
The time (in seconds) entered in this field is subject to the following conditions:

- **Cue “Fade Out/Down” Applies to Outgoing Cue**
  - Off – Use time in cue.
  - On – Use time in triggered cue.

- **Use Fade Mode Up/Down (Off – In/Out)**
  - Off – Apply time to channels going out (i.e. intensity to level 0).
  - On – Apply time to channels whose intensity is decreasing.

**Fx Delay**
To specify a global delay before effects are started enter a valid time (in seconds) into this field.

**Timecode**
When timecode triggers are being used, this field will specify the timecode value that the software will wait for. See **Chapter 4 – Options** for more information about timecodes.

**Link**
The link field indicates what cue will run next and can be used to change the order that cues run. When this field is blank, the next numerically greater cue will be run.

In addition to this you can specify the number of times that a loop will occur and also what cue will be executed when the loop ends or the cue GO is executed.

For example a cue can loop back to a previous cue and loop a specific number of times and then execute a different cue when finished. If the cue GO is pressed at any time through this loop then the exit cue will be run. If
no loop count is specified then the system will loop indefinitely, however pressing the GO will exit the loop to the specified exit cue.

To set the loop information enter the details with the following syntax…

{Cue number to loop to}, {Number of times to loop}, { Exit cue number}

Example…

4,10,8   Loop to cue 4, 10 times and exit to cue 8
4,0,23    Loop to cue 4, loop indefinitely and exit to cue 23 when the GO button is pressed

Macro
A simple command can be entered that will be executed when the cue is run. Multiple simple commands can be entered by separating each with a semicolon. Execution will be immediate when the cue is run. However, the command could be delayed by entering a “Sleep” command as the first to be executed (Example: sleep 4;12/24@50 – wait 4 seconds, then set channels 12 through 24 to 50%).

Notes
Use cue notes to record any additional information about the cue that might be useful later. This is a free form field that can hold almost any amount of data. You could for example use the notes field to store the script pages associated with the cue.

Use the “Notes” tab of the details pane to add, delete and modify the note for the selected cue.
Options Menu
As well as creating, renaming, copying and deleting cue lists, the options menu has several other functions to make working with cue lists easier.
Blocking & Mark
Selecting the “Blocking & Mark” option in the menu will open up the submenu for globally setting the flags inside the cue list.

Set “Block” flag on all cues – This option will add blocking flags to every cue in the selected cue list.

Un-Set “Block” flag on all cues - This option will remove all blocking flags in the selected cue list.

Set “Mark” flag on all cues - This option will add mark flags to every cue in the selected cue list.

Un-Set “Mark” flag on all cues - This option will remove all mark flags in the selected cue list.

Cue List Behavior
Each cue list can be assigned a behavior type that is used when it is played back. By default, this is set to “Override (LTP)”. However you can change this to “Build”, “Highest Takes Precedence (HTP)”, “Exclusive”, “Subtract” or “Intensity HTP / Attributes LTP”. The behavior set by this option will result in playback of the cue list following the same rules as the behavior set by Groups (Submasters, Specific Palettes) as describe in section 6.4. Use this option to modify the current behavior of the selected cue list.

Open tracking sheet
The tracking sheet is a convenient way to view how channels are changing between cues.

The view consists of a channels vs cue grid. Each row represents a channel patched in the show. The columns with a grey background are the cues in numerical order stored in the selected cue list.

The track sheet can be opened also by pressing <shift>F4 on the keyboard.
If you have intelligent fixtures patched, you will see a small “+” sign at the start of the row. This indicates that there is more information about the fixture available. When you click on the “+” symbol the rows will expand to show all of the attributes for that fixture and what values are set for each cue. After clicking on this the “+” will become a “-” and can be used to collapse the view back down to the dimmer only.

The “Collapse All” and “Expand All” buttons at the bottom of the window can be used to open and close all of the intelligent fixtures listed.

The “Channel Range” edit box can be used to enter a range of channels that will filter the view. You can use the standard channel select syntax to filter the channels shown.

   e.g. 1/20-7  this will show only channels 1 thought to 20 except 7.

“Show unused channels when range set” – Normally, only the patched channels are shown in the track sheet. If you have specified a “Channel Range”, checking this option will show all the channels in the range regardless if they are patched or not. Thus you could add a new channel to the cue list by entering a value in one of the cue columns. It would still need to be assigned a DMX address or fixture in the Patch window in order to effect the live output.

“Show tracked values” – In full tracking mode, values are shown only in those channels that have changes in the given cue. Checking this option will show the tracked values in every cue. The values shown are color-coded as follows:

- Increasing – Light Blue
- Decreasing - Lime
- Tracked - Magenta
- Attribute Changed - Blue
- Blocked - Black
- Submaster Control - Yellow
- Effect Control – White

Printing & Exporting – Pressing the print button will print the track sheet to the selected printer. Use the drop down menu to the right of this button to change the print settings or preview the output. An Export option will save the contents of the track sheet to a comma separated file format (CSV).
Open Visual Timecode Editor

To make working with timecoded shows easier, LightFactory provides an advanced visual editor. Each timecoded section of the cue list can be viewed as an audio waveform with each timecode point represented by a line in the display.

To use this window select any cue that contains a media track. You will see a “working…” dialog while the software builds the waveform display. Once this has been displayed it will only be regenerated if a different media track is selected.

LightFactory will automatically calculate the first and last cue for this section of the show based on the media track. The first cue that contains this media is shown on the right hand panel as is the last cue with this media.

The “Next Cue” and “Prev Cue” buttons can be used to traverse through the cue list. You can also use the keyboard shortcut of <ALT>+p and <ALT>+n.

For each of the cues in the range selected, a grey line will be shown representing each of the timecode points. Note that these will only show if the trigger is set to “Timecode”.

At any time you can play the media using the playback buttons at the top of the right hand panel.

Once the media is playing you can pause the track and move the play ahead by using the mouse to click and drag the yellow line. As you move the line the audio is heard so that you can work out precisely the correct point to place a timecode point.

To move a timecode point, visually select the corresponding cue you want to edit. The line representing this cue will be highlighted in green and can be dragged using your mouse left and right along the timeline. As the position of the line changes the timecode value shown in the grid will also change.
To insert a new timecode point, right-click on the position in the waveform display and select “Insert new cue here” from the resulting popup menu.

**Report**

**Use primary playback**
Check this option if you want the master playback on the external playback wing to be used to control the master cue list playback.

You can also access this using a programmable keyboard in the same way as shortcuts. The key sequence to run this special playback:

- **Cue Go:** `<CTRL>qA1`
- **Cue Back:** `<CTRL>qZ1`

**Safety Playback Mode**
Safety playback mode is designed to prevent accidental triggering of cues during your show. When this option is checked the “GO” button will not immediately execute the next cue when an existing cue is running or the cue is set to follow-on.

If the previous cue is still running or the next cue is setup to be a follow-on cue, the “GO” button will be relabeled “Enable”. Clicking on the “Enable” will change it to “GO” and a second press will force the cue to be executed.

This mode ensures that the button must be pressed twice if the user wants to skip over the normal execution rate programmed.

**Keyboard playback options**
Use the submenu under this option to turn on various keyboard options for running cues.

- **Use “Space Bar” for cue go** – With this option on, pressing the space bar on your keyboard will execute a cue go. This will only work if the cue list window is currently active.

- **Use numeric “Enter” for cue go** – With this option on, pressing the enter key on the numeric section of your keyboard will execute a cue go. This will work globally to the software - it does not matter what window is active for cue execution.

- **Use numeric “+/−” for cue go/back** – With this option on pressing the plus (+) or minus (-) key on the numeric section of your keyboard will execute a cue go and a cue back. This will work globally to the software - it does not matter what window is active for cue execution.

- **Use right “ALT” for cue go** – With this option on, pressing the right ALT key on the keyboard will execute a cue go. Also, the left ALT key becomes the cue back button. This will work globally to the software - it does not matter what window is active for cue execution.

**Selected cue to always follow current cue**
If checked, as the cue list is advanced, the current selected cue will automatically follow the cue currently active on stage. The channel detail will automatically advance to show the information for that cue. If unchecked, the selected cue can be set manually and will not follow the active cue.
Always bring current cue into view
If you have scrolled the cue list such that the currently active cue is not visible, setting this option will cause the list to be positioned to the active cue on the next GO command.

Edit cue channels live
With this option turned on, any changes made to the channels in the current live cue will be reflected on stage. With this option turned off (default), the cue list channel detail window is a blind editor, meaning that changes are not seen until the next time the cue runs.

Record current channel state when adding cues
With this option turned on, the active channels in the channel display will be added to the cue automatically when using the “Add Cue” button.

Show / Hide search bar
Check this item to turn on or off the search bar at the bottom of the cue list.

Sort Cue Lists by ID
Depending on when cue lists were added or deleted, they may not be ordered by the ID number assigned. This is a toggle option that when set will show the cue lists in ascending order here and in the sidebar of the main screen. This option may be changed in the sidebar as well.

Print
The print option will output the currently selected cue list to the selected printer.

Print Preview
Select the preview option to open a window that will display the printed page. From this window you can choose to print.

Printing Settings
This option will open the page setup for printing the cue list.

Import / Export

Export to CSV File
Use this option to generate a standard Comma Separated Values (CSV) file.

Export to CSD (CueServer) File
Use this option to create a file that can be imported into an Interactive Technologies CueServer system for stand-alone control and operation. See “LightFactory Installation Guide” for more information on the CueServer system.

Import from CSV
Use this option to read in a Comma Separated Values (CSV) file.

Import Timecode From CSV File
Similar to above but for CSV files containing a timecode.

Reset grid layout to default
If you have hidden, resized or moved columns in the cue list grid, you can restore the default positions and sizes by selecting this option.
Visible Columns
Selecting the “Visible Columns” option in the menu will open up the submenu that will list all of the columns in the cue list window. Select each one to turn display of the column on or off in the grid.

Cue Options Menu
To assist with many tedious tasks the “Cue Options” drop down menu provides several convenient options related to creating and managing cues. This menu can be called up also by right-clicking anywhere inside the cue list grid.
Copy selected cues (Added to the end of the cue list)

One or more cues in the current list can be selected and copied to the end of the list. To select multiple cues, click on the first cue’s row to highlight it, use the <SHIFT> or <CTRL> keys to select a range of cues in sequence or independently and choose this option. The added cue(s) will be numbered sequentially starting with the next whole number higher than the last cue in the list. All of the properties of the selected cue(s) (channels, trigger, etc.) will be copied.

Copy selected cues to another cue list

Similar to the previous option, the cues to be copied are first selected and then this option is chosen which displays the following dialog:

Use the pull down to select the target list for the copies.

Normally, the copied cues will retain the same cue numbers as the originals. However, you can adjust this by setting a value in the spin box, which will be added to the original cue numbers.

The Options section allows you to select the behavior of the copy operation:

- **Do not copy if cue already exits** – This is based on cue number.
- **Merge…** - If the “copy cue takes precedence” option is chosen, the channel data from the cue being copied will overwrite the existing data. If the “existing cue takes precedence” option is chosen, any channel already in the existing cue will not be overwritten.
- **Add after existing…** - The increment number set above will be added to the copied cues.
- **Add to end…** - The copied cues will be added to the end of the existing cues and numbered incrementally from the last cue in the list.

Copy tracked state of first cue – If not set, the copied cues will have only the state of the channels in the original. If set, the software will figure out what all the tracked values for every channel would be and set them accordingly.
**Insert a new blank cue below**
This option will create a new cue directly below the currently selected cue. The cue number will be exactly half way between the selected cue and the next. The properties of the cue will be set to the system defaults.

**Insert a new cue above (Copy this cue)**
This option will create a new cue above the currently selected cue. The cue number will be half way between the previous cue and the selected cue. All of the properties (channels, trigger, etc.) will be copied from the selected cue to the new cue.

**Insert a new cue below (Copy this cue)**
Same as above except the new cue will be created below the currently selected cue.

**Insert a scene break below this cue**
A scene break is a description-only row that can be added to your cue list to help remember what is happening at this point in the cue list. Scene breaks are not cues and do not execute any lighting operation. It is a convenient way to label your cue list at key points and assist with cue list management.

After selecting this option the software will prompt you for a label. Enter the name or description into the edit box provided and click “OK” to add the scene break. The background color of a scene break row can be set in the Appearance tab of System Properties. The default color is yellow.

In the example below a scene break has been added below cue 3.

---

**Undo**
Use the undo function (alternatively you can use `<CTRL>`+`z`) to undo the last change made to the cue list. In the case of the cue list channel detail window the undo command will revert back to the channel state when the cue was selected.
Open Cue update history
The cue update history is a powerful system that remembers every state that has ever been recorded for the currently active cue. Whenever a cue is updated, an entry is added to the history. When this option is chosen, the following is displayed:

Use the “Preview” button to apply on stage what the cue looked like at the specified date and time. Click on the “Apply” button to set the state of the current cue to what it was at the selected date and time.

When a cue is reverted to a previous state the current state is also added to the history table so that no state is ever lost.

Note: If the cue update history function is turned off in System Settings, no entries will be displayed in the history window.

Block Cue & Set Mark
A block prevents values from tracking through when recording or updating cues. Channels that are marked will cause the attributes that are changing in the current cue to occur before the cue is executed. Use these options to set or unset the block and mark flags for the selected cue.

Set Trigger (Selected Cues)
To modify the trigger setting of multiple cues, first select the rows you want to change, then select the trigger from the sub menu.

Timestamp on cue go
Turn this option on to learn the timecode for a show by running it in real time. Every time the “Go” button is pressed in the playback controls, the timecode will be recorded for the next cue. As each cue is executed, the trigger will change from “Manual” to “Timecode”.

Note: A timecode generator (external or internal) must be running for this option to work.
If this option is checked, a new option appears below it:

**Only timestamp zero cues on GO** – Only record a timecode if the field for the next cue is blank or zero (i.e. don’t overwrite any existing timecodes).

**Timestamp on double click timecode field**
Choose this option if you would like to record a timestamp on selected cues without running them. With a timecode signal running, each time you double click on a Timecode cell, the current time will be added to the cue.

**Lock 1st column**
When set, the Cue Number column is locked in place and cannot be moved. If this option is checked, a new option appears below:

**Copy cue on drag and drop** – With the 1st column (the cue number) locked, a cue can be copied by clicking on its number and dragging it to the position in the list where you’d like to have a copy.

**Lock row heights**
When this option is not set, the row heights in the grid can be adjusted by clicking and dragging between any two rows with the mouse. When this option is set, the current row height will become locked.

**Cleanup “Link” numbering from this point**
If you have added entries in the “Link” column of the cue list and wish to reset the sequence in which cues are run, choose this option. The cleanup will happen from the currently selected cue down. To clean up the entire cue list, select the first cue before choosing this option.

**Re-number as whole cues from this point**
If you have a lot of decimal cues in the list from inserting cues or rearranging the order of the cues, you can use this option to quickly renumber. After this operation every cue will be a whole number with no decimal part to it.

The re-number will happen from the currently selected cue down. To renumber the entire cue list select the first cue before choosing this option.

**Timestamp next zero timecode cue**
When working with timecodes it is often useful or convenient to create your cue list without any timecode values loaded. Once you have created the cue list you must then go back and assign timecode values manually.

To aid with this operation, LightFactory provides the ability to timestamp cues with the last read timecode. Once you have created the cue list, you can then play back the timecode track and stamp each cue in real time. Because using the right click menu is not a quick enough operation when playing back media in real time, a shortcut (CTRL + t) is provided.

**Clear notes for the selected cues**
Use this option to empty the cue notes field for the selected cues.

**Reset all effects in the selected cues**
The reset effects option is used during playback of the cue list. If the cue contains effects, you can manually stop the effect execution without stopping the cue using this option.

**Force resave of this cue list**
This is a diagnostic operation and is only needed if instructed by LightFactory support.
**Visualizer preview options**
This sub menu can be used to view the state of a cue in the attached visualizer without having to run it live.

**Preview this cue in visualizer** – Choose this option and the currently selected cue will be shown in the visualizer output. The live output will be blocked until you release it.

**Release visualizer preview** – Use this release option to return control of the visualizer back to the live output.

**Always preview the next cue in the visualizer** – This option can be toggled on or off. If this option is on and a cue is run, the next cue will be shown in the visualizer and the live output will be blocked until this option is turned off or the release option is selected.
Cue List Details Pane

Channels

This pane has tabs down the left hand edge that correspond to the different information you may want to edit.

If a channel does not have an attribute for a displayed column the cell will be greyed out and cannot be edited. An “n/a” will also appear in the cell.

The values set in the overview and DMX tabs will determine the value that the attribute will reach when the cue is executed.

Tricks for editing multiple cells at once:

This window provides a few hidden techniques to make entering large amounts of information easier.

The first step to using these features is to select multiple cells at once. By holding down the mouse button you can click and drag over any number of cells in the grid and all of the cells will become selected. You can select multiple cells by selecting the first one and then holding the <SHIFT> key down and selecting the last one. You can select multiple cells in any number of columns however it may not make sense to edit some columns together.

Once you have selected the cells you want to edit, enter a value into the first cell and press the <ENTER> key. As soon as you are done, all of the highlighted cells will receive the value you have entered.

The value in one field can be copied and pasted into other fields. Select the field to be copied and right-click on it. Choose the copy option in the popup menu. Now click on other field(s) to replace the current value(s) with the copied value. When through, right-click again and choose “Cancel Copy”.

The right-click menu also has the option to clear the selected cell(s).

Time and Delay fields – The time and delay columns will accept the same technique for entering values into multiple cells, however these fields support additional syntax for spread timing. You can enter a range of times using the “/” as a through command.

e.g. 1/10 – This will put time values into the selected cells spreading them between 1 and 10 seconds. The first cell will receive 1 second and the last cell 10 seconds. Every other cell will receive a value between 1 and 10 seconds depending on their position.

e.g. 2/15/3 – This is similar to the above example but the middle value will be placed into the middle cell of the selected range. So that the first cell will receive 2 seconds the middle cell will receive 15 seconds and the last cell 3 seconds. All other cells will receive a proportion of the range entered.
e.g. **R10** – the “R” is a special modifier that means “random”. Using the “R” in front of the value means that the result will be a random number between 0 and 10. All of the selected cells will receive a different random number.

**OVERVIEW**

The overview tab will show the attributes values as real world information. Most values will be shown as percentage information but some values may show other data. A gobo control for example will show an image of the gobo selected and the color controls will show the color that is currently assigned. Attributes set by the application of a palette will have the palette label displayed with a dark grey background.

This tab also provides optional time and delay for the individual channels. For attribute level timing see the “Timing” and “Delay” tabs.

**Block** – Check the “Block” check box to force this channel to not follow tracking instructions. All of the values set in the cue will be applied to the live output regardless of the previous cue execution.

**Mark** – A marked cue will execute most of its attributes in the previous cue if the channel does not exist in that cue. It uses the fade in and dwell time of the previous cue as the time the fixtures will change, but you can override this by setting a non-zero value into the “default mark time” found in the “System Properties.” A mark can be set to instruct the attributes to change at the “Earliest” or “Latest” time.

The other attribute cells also provide helper controls that can be accessed by double clicking on the cell. For the color cells the standard LightFactory color picker will appear. Once you have finished modifying the value with the helper control click anywhere in the previous window to close it. Below are some examples of helper controls.

**DMX**

The DMX tab will show all of the same information as the overview tab but all of the entries will be shown as DMX values. This provides the maximum resolution when modifying the data in the cue. For example in the overview tab the dimmer is shown as a percentage giving 100 possible values but the underlying DMX associated with the dimmer has 255 (or in some cases 65535) possible values.
TIMING

To set an individual fade time for any attribute use the timing tab to enter a time value in seconds. If the value shows “Not set” then no independent fade time exists. Any fade time set here will override the channel fade time and the cue timing.

DELAY

To set an individual delay time for any attribute use the delay tab to enter a time value in seconds. If the value shows “Not set” then no independent delay exists. Any delay set here will override the channel delay and the cue timing.

CH GRID

The channel grid view will show the channels in a similar way as the channel display window. Editing channels in this view is similar to the channel display. You can select the channels using the mouse and control the dimmer value with the scroll wheel. Other attributes if shown are read-only and cannot be altered in this view.

The view menu can be used to change the way each channel is displayed. See section 6.3 Channel Display for information on the different view styles.

In the view menu you can toggle between showing only the channels that are recorded into the cue and showing all of the channels in the system using the “Show only channels included in this cue”. If this option is turned off, the channels not recorded into the cue will be displayed in a light grey. With this mode turned off, you can use the “Add Selected” button to add channels into the cue.

Use the “Remove Selected” button to remove channels from the cue.

PALETTES

This tab shows which fixture attributes are being set by the data stored in generic or specific palettes and is a means by which you could edit cues to change or include new palette information. This requires detailed knowledge of palette types and what attribute data is stored in each. For example, applying a position palette to a color attribute will have no effect on the fixture when the cue is run. The easiest way to work with palettes is to record and modify them from the channel display.

This tab has two panels separated by a movable splitter. In the left hand panel is a list of all the available palette references that can be added to the channels in this cue. The list is an alphabetical list of both groups (specific) and generic palettes.

The panel on the right is similar to the Overview and DMX tabs. Each row is a fixture and each column an attribute.
To add a palette reference to an attribute select it from the panel on the left and while holding the mouse button down drag and drop it onto the attribute.

Alternatively you can enter palettes by clicking in the required attribute field and start typing the name of the palette you want. As you begin to type a popup list of palettes will appear. Use the up and down arrow on your keyboard to select the palette you want and press <ENTER> to assign it to the attribute.

**ADD/DELETE**

This tab provides convenient options for adding and removing channels from the cue.

This window is divided into two halves. On the left hand side is a list of all the channels in the system. Additional information such as purpose, position, etc. are also provided to help identify channels. The right hand panel is the list of channels that are included in the cue.

Along the bottom of this tab are the “add” and “remove” buttons.

Select the desired channels in the left hand panel to add to the cue and click on the add button (right arrow) at the bottom of the page.

To remove, select the desired channels from the right hand panel and click on the remove button (left arrow).

You can also use the channel syntax box to enter channels to be added. If text is entered into this edit box it will take precedence over the selected channels when the add button is pressed.

**Effects**
On the left is a list of available effects which can be narrowed by choosing a type tab. Click on the desired effect to highlight it and then click on the “Add Selected FX” arrow to include it in the cue. Some parameters of the added effect(s) can be modified to alter the behavior when run. The available parameters (such as Direction, Step Time, etc.) will be shown and can be modified by clicking in the desired cell and entering new data. Multiple effects can be added to the cue.

The “Add FXs from previous cue” button may be used to copy the effects from the previous cue.

### Groups

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<td>Add groups from previous cue</td>
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</table>

You can add any number of groups to a cue. To add a group to the cue, select the desired group from the available list and click the “Add to cue” button. To remove a group from the cue click on the “Remove” button to the right of the row you no longer want in the cue.

Also, you can use the “Add groups from previous cue” button to copy the groups included in the previous cue into the current cue.

**Inc Ch Only** – This option can be used to set the behavior of groups in relation to the channels (fixtures) added to the cue itself. If this option is checked, then the channels (fixtures) in the group will not be applied unless they also exist in the cue’s channel list. For example, if you have a position preset group (palette) with 10 fixtures in it, you may want to use only a subset of these fixtures in a cue. To achieve this you would add the subset of channels into the cue normally and also add the group into the cue.

**Group %** - Set the group level when using groups as scenes that you want to add into the cue. You can use this option to have the same group in many cues with different levels. This applies to intensity (dimmer) levels only. Non-intensity parameters are applied at their full stored levels.
Shortcuts

To add a new shortcut, click on the “Add” button in the first cell of the last row in the grid. A new line will appear in the grid and the “Add” button will move down one row. Enter the shortcut number in the first column.

Use the “Remove” buttons on the right of the grid to delete an entry from the grid.

In this window you can also specify a delay before running the shortcut. The system will then wait for the specified time before the shortcut executes.

To run the shortcut on a recurring basis, enter a time between execution in the “Fire every” field.

To run the shortcut when the cue exits, tick the check box in the column “Fire on leaving”.

Paths

Normally when working with intelligent fixtures, you want the parameters to change while the fixture is dark like moving to a new location or changing color. However, there are occasions when you want a move or a color change to happen live. This tab provides an easy way to create these kinds of effects. You can create two types of path: movement (pan & tilt) and color. A cue may have multiple paths of each type set up for it. The figure below shows one of each.
Add Movement Path – clicking this button brings up the following window:

To create a path, first enter the channel(s) that will be used in the box marked “Channels”. Multiple channels can be specified as a comma-separated list and/or an inclusive list using the slash (“/”) character. Move the mouse over the box with the crosshairs to the X and Y coordinates for the starting position of the path and click. A red dot will appear indicating the start position. Next, move the mouse to the next waypoint in the path and click. Continue moving and clicking until the endpoint is reached. The path may be altered by clicking and dragging on any of the anchor points (red dots).

The grid may be expanded or reduced with the “Resize” buttons and moved around by use of the 4 arrow buttons. Clicking on the “X” will remove the latest waypoint. “Elasticity” refers to the curviness of the lines between points. A positive value makes the lines straighter and a negative value makes them more curved.

At any time you can see the results live by clicking on the “Test” button, which will run the path at a fixed rate. When the cue is run, the path will be traversed in the Cue Time or an override time specified for the channel(s) in the path.
Add Color Path – Clicking this button brings up the following window:

Creating a color path is similar to creating a movement path as described above. In the color spectrum diagram, lightly saturated colors are at the top and more deeply saturated colors are at the bottom. A color path of this type works best on fixtures that have color-mixing capabilities.

**Note:** While a cue can have multiple paths of both types set up, each path should operate on its own fixtures. Specifying the same fixture in multiple paths will produce unintended results.

**Notes**

After the desired text is entered, use the button or “Save” button under the “Options” menu to include the note in the cue. A note may be saved to a file and recalled for other cues or used in other show files. An image from a capture device may be added also which will be displayed in the background. This function is found under the “Edit” menu.

**Playback options** – The following may be selected from the menu:

- **Automatically show cue notes window** – Normally when a cue containing a note is executed, LightFactory will display it in a read-only pop-up window and in a small box at the bottom of the sidebar.
if the Display Option “Show cue notes” under the “View” menu on the Channel Display has been set. To stop the display in the pop-up window, uncheck this option.

**Send Notes to Telnet Sessions** – If this option is checked, then when a cue executes, the notes will be sent to all telnet sessions that are currently connected.

**Read cue notes on execute** – Using the build in speech engine of Windows, the software will read the text in a computer voice out the default sound device of your computer.

**Clear display if cue notes are blank** – If this option is unchecked, then the last note displayed will remain on screen until the next cue with a valid note is executed. With this option checked the cue notes screen will be cleared when the next cue with no note is executed.

**Preview notes for the next cue on execute** – With this option checked, the playback of cue notes will always be one cue ahead of the current cue.

**Automatically close when empty** – With this option checked, the notes window will close when the next cue with no notes is executed.
Cue List Execution

The “Cue List Editor” window provides convenient controls to allow you run and test a show. The four controls are the same as each of the cue list playbacks and operate exactly the same way. If the show you are working on has only one cue list there is no reason to use any of the additional playbacks and you can run your entire show from the cue list editor window. For more about cue list playbacks, see section 6.7 – Cue Playbacks.

Go
This will execute the next cue in the active cue list. If there is no current cue active the “Go” button will execute the first cue in the list. As soon as this button is pressed, the cue will start and its progress will be displayed in the status field of the cue.

Stop
This will stop the execution of the cue immediately. Any fades or waits will terminate and the current lighting state will be maintained. Also, this will stop the next cue from being executed regardless of its trigger.

Back
The “Back” button will execute the previous cue and terminate the current cue.

Reset
This button resets the entire cue list and sets the current cue to nothing. Pressing the “Go” after a reset will cause the first cue to start. Resetting the cue can be thought of as a “rewind to beginning” function. This will also release all of the channels from cue control.

Run Cue/Goto Cue
The “Run Cue” button allows you to execute a cue out of order. Select the cue to be run and either click the button or select from the additional options:

- **Run Cue** – Same as the main button. The selected cue will be run using the fade time(s) recorded into the cue.
- **Goto Cue** – Run the cue using the “Default GOTO Time” set in the “Show Defaults” tab of “System Properties”. The default goto time is 1 second but can be modified. This is a way to execute a cue that normally has a long fade time quickly.
**Goto cues with double click or button press** – This is a toggle and when set, changes the main button legend to "Goto Cue". In addition to running a cue by selecting it and using the button, you can double click on a cue’s Status field to start the operation.
6.7 Cue Playbacks

The cue playbacks are designed to execute multiple cue lists from one place. Each playback is a repeat of functions seen in the Cue List Editor window (see section 6.6 above).

Open the “Cue Playbacks” window by clicking on the button at the bottom of the command interface or by pressing <F8> on your keyboard. When first called up, the window is blank as shown below:

LightFactory provides the ability to assign cue lists to a virtually unlimited number of playbacks. The number of playbacks that appear on each page can be adjusted. Use the page control at the bottom left corner of the window to move between pages.
To assign a cue list, click inside the number box for the playback you want to assign. The following example dialog will be displayed:

Click on the Cue List you wish to assign to the playback. If the list you choose is already assigned to a different playback, it will be reassigned to the current playback.

Note you can also assign an effect to a playback by clicking on the "Effects" tab and choosing from the list presented.
Below is an example playbacks window showing 3 cue lists and an effect assigned. The cue list currently loaded into the master playback is shown with a yellow stripe.

![Playback Window](image)

Additional pages of playbacks may be displayed using the “+” and “-” buttons.

**Playback Control Buttons**

Each playback has a set of buttons to control the execution of the assigned cue list.

**Go**

This will execute the next cue in the active cue list. If there is no current cue active, the “Go” button will execute the starting cue number specified. As soon as this button is pressed, the cue will start, the cue progress time will start counting down the execution, and the progress indicator will show the cue progress.

If the cue is triggered by some external event, such as a timecode then “Go” will override this and execute the cue immediately.

**Stop / Back**

If a cue is presently executing, the first click will stop the execution of the cue immediately. Any fades or waits will suspend and the current lighting state will be maintained. This will also stop the next cue from being executed regardless of its trigger. Clicking “Go” will resume the execution. A second click will terminate the current cue and execute the previous cue.

If no cue is executing, the first click will execute the previous cue.

**Reset**

“Reset” resets the entire cue list and sets the current cue to the starting cue (usually Cue 0). Pressing “Go” after a reset will cause the start cue number to be executed.
**Inhibit Control**
The box above the playback controls contains a slider that acts as an inhibit submaster. When a cue list is assigned to a playback, this control defaults to 100%.

**Global Buttons**

**Select Master**
Only one cue list at a time may be loaded into the master playback. However, cues from any playback may be run. Clicking this button will select the cue list currently loaded into the master playback.

This button also has a pulldown list of options as described below:

- **Set number of playbacks visible per page**
The default is 5, but this may be adjusted by entering a new value in the dialog box and clicking "OK".

- **Execute cue lists exclusively**
Click this option to only run one cue list at a time. When you click Go on a playback, any currently active cue lists will be stopped the current cue used as the outgoing cue for the new playback.

- **Disable Reset Buttons**
To avoid accidentally executing the reset function in the middle of a show check the "Disable Reset" option at the bottom of the window.

**Go Next**
This button will do a "Go" on the last used playback. If no playback has been run, then the first cue of the first playback will run. When the cue list reaches the last cue in the cue list pressing the "Go Next" button will automatically advance to the next playback and start the cue list assigned to it. At any time the order can be changed by running a cue in a different playback.

**Note:** The "Link" field of the last cue in each cue list must be set to 0 in order for this function to work.

This functionality allows for the setup of a playlist based on several cue lists to be run as one continuous cue list. A "special shortcut" can be assigned to this button for quick access.

**Go All**
Pressing "Go All" is the equivalent of pressing all of the Go buttons for all cue playbacks at the same time.

**Reset All**
Click "Reset All" to reset all of the playbacks.

**Note:** The Go All and Reset All do not affect effects playbacks.
6.8 FX List Editor

An effect is an automated sequence of lighting states that typically runs without user interaction. The following types of effects are supported:

- **Simple Chase** - Simple chases, contains a number of lighting states and are similar to a basic cue list.

- **Timeline** – This effect contains a list of fixtures each assigned a number of timed segments. All effects have a default length of time (in seconds) that they will run for.

- **Profile** – This effect allows you to assign a profile path to specific attributes of the fixture. As the effect runs over a set time, the attribute follows the defined profile path.

- **Matrix** – Specifically designed for use with LED or grid lighting matrices, this effect provides an easy way to deal with a large number of lights.

- **Paint Box** – Also designed for matrices, this effect provides a more complex color path which can be manipulated for direction, length and the amount of spread.

- **Media** – To playback media files, flash animations, or control a DV desk.

- **DMX Recorder** – The DMX recorder will use the DMX input system of LightFactory to record a continuous stream of data that can be played back at any time.

To access the effects editor, click the "FX List" button on the command interface window or press the <F5> key on your keyboard.
**Effect Filters**

LightFactory provides the ability to set label with every effect to make managing a large number of effects easier. Right click on any of the effects and choose "**Effect Properties**" to edit the list of labels that describe this effect. For example a moving light effect that does a circle might be given the labels – Movement, Intelligent Lights, Rear Truss.

Use the combo box at the top of the effects list to select the filter (label) you want to apply. The effects list will now only show effects that match these criteria.

You can also use the tabs on the left of the window to only show effects of a particular type. By default all of the effects are shown but if you only want media effects for example, you can click on the "Media" tab and only that type will be listed to the right.

The last tab on the left of the window is different than the others in that it will switch to showing the effects stored in the Library. Library effects do not get deleted with a new show and can be used to create other effects.

**Creating new effects**

To create new effects click the "**Add Effect**" button, which brings up the following list:

```
Simple Chase
Timeline
Attribute / Profile
Matrix / LED
Paint Box
Media Playback
DMX Input Recorder
Run Effects Wizard
```

Select the type of effect you want to create and fill in the appropriate entries in the create dialog which will load the new effect into the editor for further development.

---

**Note:** The “Effects Wizard” is being phased out and will be removed in a later release of LightFactory. The descriptions below assume you have chosen the effect to create directly from the list above.

---

The following sections describe each effect and the additional editing needed to implement each type.
Simple lighting chase
A simple chase is a series of steps each containing a specific lighting state. Each step can contain any number of channels each in a different state. A chase can either run automatically or wait for a trigger before stepping onto the next state.

Enter a name to identify the new effect and choose the behavior that the effect will exhibit when run. The choices are "Override (LTP)", "Build", "Highest Takes Precedence", "Inhibit", "Exclusive", & "Subtract". The behavior may be changed after the effect is created.

Click on "OK" to create the new chase and open the effects editor. The newly created chase will immediately become visible in the right-hand side of the effects editor.

Clicking on each step will show the detailed channel state in the right hand panel.
To add a new step click on the “Add Step” button found below the step list. New steps will always be added to the end of the list. To remove a step, select the entry you want to delete and click “Delete”. A dialog will ask you to confirm the deletion, click “Yes” to complete this operation or “No” to cancel.

The “Step Time” specifies the time waited before the next step will be executed. If this is set to zero (0), then the step will wait indefinitely so that the chase can be stepped manually using the play control. If the switch above the step time is set to “Global Timing”, then all steps will use the specified timing. If the switch is set to “Timing per step”, then each step can have it’s time.

The “Fade Time” specifies the time it takes to transition from step to step. Simple chases will always cross fade between steps by the time specified in the fade time.

The “Fade Out Time” can be used to specify the time it takes for the previous step to fade out. By default this will be the same value as the fade time.

RIGHT CLICK STEP OPTIONS

Use the right mouse button on the “Chase Steps” panel will open a menu related to the steps of the chase.

Copy step – Select this option to copy the currently selected step to the end of the chase.

Reverse step order – Select this option to reverse the order that the steps run.

Insert step below the current step – Select this option to add a new step below the one currently selected.

ADDING CHANNELS TO A STEP

Along the bottom of the chase editor panel is an edit box and the “Add Channels” button. Enter the channel list into the edit box provided using the standard channel selection syntax. Press enter or click on the “Add Channels” button to add the channel(s) to the chase step, e.g. “1/5@30” will add channels 1,2,3,4 and 5 to the step with their value set to 30%.

REMOVING CHANNELS FROM A STEP

To remove channels from the group, select the channel(s) in the grid above and click on the “Remove Channels” button. To select channels, use the same techniques described in the channel display window.

EDITING CHANNEL VALUES

To edit the dimmer or attribute values of the channels in the chase step use the same technique as the channel display. Select the channels to modify by clicking on the desired channels (hold down <SHIFT> or <CTRL>to select multiple fixtures) and then use the scroll wheel on your mouse to modify the dimmer values.

If the fixture has more attributes, the fixture control window will be displayed as it does in the channel display.

The step channel display panel will only show attributes that are included. Until an attribute is modified it will default to the off state.

To clear an attribute from the selected fixtures, use the drop down menu on the end of the “Remove Channels” button.
Right clicking anywhere in the channel grid will bring up the context menu for this window. This is the same menu as the dropdown off the “Remove Channels” button.

Copy selected channels to another step – Use the sub menu to select a chase step to copy the current selection to. The state of the channels will also be copied.

Turn off attributes – To remove an attribute type from the step, select the channels and then select from this menu what you want to remove. In the case of color mixing you can use the submenu to select individual colors or remove all colors.

Random – Use the submenu to set an attribute type to random values for the selected fixtures.

Turn off in all steps – To turn off attributes in all fixtures and all steps use the sub menu to select the type.
An alternative way to view a chase step is the matrix view. You can switch between the matrix view and channel view by using the buttons in the top right of the window.

In the matrix view the step is shown as it looks from the point of view of a defined matrix.

Use the drop down combo to select the matrix you want to view as the chase step. You can work with as many matrices as you want. Because the matrix view is just another way to edit the underlying channels you can switch to a different matrix at any time and no information will be lost.

This view works like a painting canvas with each grid cell being a position in the matrix that you can set to a color. Use the “Pen” option to select a color and then click anywhere in the matrix grid to paint the color. As soon as a color is painted, the channel will be added to the chase step. If the channel already exists then it will be updated to reflect the painted color.

The eye dropper tool to the right of the pen option can be used to select an existing color from the matrix to set as your current pen color.

**Load from image** – Click this button to map any image to the matrix.

**Copy from previous step** – Use this to copy the state of the previous step to this step.

Additional controls allow you to tweak the brightness, red, green or blue content of the matrix.

The arrow buttons allow you to reposition the assigned channels.
MODIFYING THE CHASE BEHAVIOR

Simple chase effects can be run with different behavior types. By default this is set to **Override (LTP)**, however you can change this to **Build**, **Highest Takes Precedence (HTP)**, **Inhibit**, **Exclusive** or **Subtract**. The behavior set by this option will result in playback of the chase following the same rules as the behavior set by channel groups. See “Behavior” in section 6.4 for further details.

Build will add the output from the chase to whatever the output currently is set in the channels. HTP will only apply the channel output from the chase if that output is higher than what the channel is already outputting.

To set the behavior right click on the name of the chase in the left panel and select “**Effect Properties**” from the popup menu.

Use the drop down combo to set the desired behavior when running the effect.
Timeline effect
Provides the ability to build your effect by viewing its behavior over a timeline. The effect has a fixed length and each fixture can be given a specific behavior over that time.

Enter a name to identify the effect and click “OK”. The details will appear in the right-hand pane of the window.

An effect segment has a start offset time, start state, length and end state. When an effect runs it will progress through the list of segments executing each one in turn. If for example the first segment has an offset of 10 seconds, the segment will execute 10 seconds after the effect itself has started.

When a segment is executed, its start lighting state will be set immediately. The fixture will then perform a fade for the length of the segment to its end lighting state. If a segment is for an intelligent fixture, then all of the attributes (excluding dimmer) will be pre-fetched and set up for the start state at the end of the previous segment. If for example a moving light will start in a different position for the second segment then it will be
moved to this new position at the end of the previous segment. When the effect starts, intelligent fixtures will be set to the start state of the first segment.

Timeline effects are viewed in LightFactory as a Fixture vs. Time graph. Along the top of the effect view, you will see a time scale from 0 to the length of the effect. On the left of the effect view is a list of the fixtures included in the timeline.

**Note:** Each segment of an effect cannot overlap any other segment for a given fixture.

Along the top of the view is the number of lines in the effect. This can be used to add or remove fixtures. If this number is increased, new lines will be added when the “Apply” button is pressed. Each line can have as many fixtures in it as you want. Use the standard channel selection syntax to enter channels into the fields provided. If more than one fixture is added to a line, then all the fixtures in that line will do the same thing when the effect is run.

Each line can also reference channels in a channel group. Select the channel group using the drop down box to the right of this field. The channels contained in the group will automatically be used for the effect.

Also along the top is the “FX Length” edit that determines the default duration of the effect. Changing the effect length will change the time bar and increase or decrease how long an effect takes to run. To change the length of the effect enter the desired time and click on the apply button.

By default, changes to the length of an effect will not change any of the existing segments. If you make the effect shorter, any segments that go beyond the new length will be truncated. Use the “Rescale all elements” check box to ensure that all segments are rescaled to any length changes. If this is checked and you make the effect shorter, all of the segments will also be resized by the same proportion.
To the right of each fixture there is a small X for deleting the line from the effect. Clicking on the small X will remove this line (fixture) from the effect. A confirmation dialog will appear asking you to confirm that you want to delete the fixture. Click “OK” to confirm or “Cancel” to return to the effects editor.

**START OFFSET FIELD**

Use this field to specify a delay (in seconds) before starting this part of the effect. This allows you to stagger the execution of the effect across all of the lines.

**ZOOM**

Use the zoom control to adjust how much of the effect is visible in the frame. A zoom setting of 1 will show the entire effect length in the editor window. As you increases the zoom less and less of the effect will become visible but each section of the effect will become larger for more detailed editing. A scroll bar along the bottom will allow you to move within the zoomed effect.

**LOAD AUDIO TRACK**

A convenient use of the timeline effect is to accurately apply lighting changes to match music. Use the “Load Audio Track” button to render a waveform of the selected audio above the timeline. When the effect is played the audio track will play with it and an accurate position in the audio can be seen.

If the length of the audio track is different than the length of the effect, a dialog will ask if you want to adjust the effect length. If you click No to this option, the audio track will be truncated to the length of the effect.

To clear the waveform click on the “Clear” button on the right hand side of the view.

The waveform is stored with the effect to make rendering it quicker however the actual audio track will remain as a file on the hard drive. If you remove the original audio file, the waveform can still be rendered but the audio will not play with the effect.

The audio track display can be resized by moving the mouse between the bottom of the audio display and the top of the first timeline. The mouse cursor will change to a size control when you are in the correct location. Click and while holding the mouse button down mouse the line up and down to increase or decrease its size.

**CREATING AND EDITING SEGMENTS**

The graphical view of the effect allows you to easily see when the fixture is doing something. Each segment shows you at a glance that the fixture is changing state. The software will automatically set up intelligent fixtures between segments to their next state; hence, you need not be concerned with fixture attributes between segments. For example, often you may want the color of a fixture to be set before the light becomes visible. In the LightFactory effects engine, this will be done automatically for you if the next segment has this attribute set.

To create a new segment simply click inside the space provided to the right of the fixture, hold the mouse down and drag the segment to the desired length.

**Note:** By default, the newly created segment will have its start and end states set with the dimmer at full (100%) and all other properties set to zero.
The size of a segment can be adjusted by clicking and holding the mouse button down at either end of the bar and dragging it to the new length. When the mouse is moved over the end of the bar, its cursor will change to indicate the resize operation.

To move a segment to a different start position (offset), hold the mouse button down over the center of the bar and drag the bar to its new position.

To adjust the start and end state of the segment, click once on the bar to bring up the state editor panel.

The segment state editor panel will show all of the generic attributes that can be set for the segment. Each one has a start state and an end state. To edit any of these values, click on the cell and enter the desired value.

At any time you can double click on the heading of the row to load values from the fixture’s current state.

For the pan, tilt and color entries you can double click to open a helper box that will allow you to select the values.

If the end state of a property is zero, changes made to the start state will automatically be copied to the end state to assist with creating new segments.

Alternatively, you can set a profile for each of the attributes. When a profile is selected, the start and end values will become disabled and the profile used to determine the output during the segment. The profile is a path that the values will apply during execution. To set a profile click on the appropriate column and select the profile from the list presented.

At the right of the segment state editor the pan and tilt path is displayed for the selected segment. A moving light path applies to fixtures that have both pan and tilt control, and allows you to create a continuous movement that will follow a defined curve.

LightFactory provides an advanced path editor that can be used to define the minimum number of points. A spline curve will automatically create the best-fit curve between each point. Two control points are automatically created to provide the ability to control the curve entering and leaving the first and last point.
The “Elasticity” figure is an advanced feature allowing control over the spline curve. A positive value makes the lines straighter and a negative value makes them more curved.

To change the size of the curve created, use the resize buttons provided to the right of the edit space.

These buttons will move all of the points toward or away from the center of the effect, thus rescaling the distance the light will move while moving through the path.

The “Get Current Pos” button can be used to retrieve the current position of the fixture to use as the next point in the graph.

The four arrows below the resize control allow you to reposition the path around the pan and tilt space.

Pan and tilt can cover a large stage area. Often you only want the path to occur in a small section of the full range of the light. Clicking on these buttons will move all of the points in the direction clicked. If a point is at the edge of the edit space, it will not be moved.

Once you are happy with the shape you have created you must commit it to the effect segment you selected to edit the path. Clicking on the “OK” button will commit the new path to the selected segment.

**Note:** If you set the elasticity of the path to 1, then a straight line will be created between points (not a curve) and the software will create a single segment for each line.

Click on the “Cancel” button to return to the effect editor without committing the new path.

You can create a similar path for determining the color during the segment by clicking on the color path area on the right of the segment state editor.
Clicking on the right mouse button while over a segment of the effect will bring up several advanced options to assist with creating effects.

<table>
<thead>
<tr>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete segment</td>
</tr>
<tr>
<td>Delete All Segments</td>
</tr>
<tr>
<td>Reset all heights to default</td>
</tr>
<tr>
<td>Cut segment</td>
</tr>
<tr>
<td>Copy segment</td>
</tr>
<tr>
<td>Copy all segments</td>
</tr>
<tr>
<td>Paste to this fixture</td>
</tr>
<tr>
<td>Create a follow-on segment</td>
</tr>
<tr>
<td>Toggle key frame marker</td>
</tr>
<tr>
<td>Add point</td>
</tr>
<tr>
<td>Move all segments</td>
</tr>
</tbody>
</table>

**Delete Segment**

Click on the **Delete Segment** option to remove the currently highlighted segment from the effect. A confirmation dialog will ask you to confirm this operation before the segment is deleted.

**Delete All Segments**

Click on the **Delete All Segments** option to remove the segments for this fixture. A confirmation dialog will ask you to confirm this operation before the segments are deleted.

**Reset all heights to default**

The heights of the lines making up the effect can be adjusted with the mouse. The option will return the heights to their default value.
Cut, Copy, Copy All, Paste Segments

The cut, copy, and paste functions operate exactly as they do in most applications you use within Windows. Cutting a segment will remove it from the effect and put on the clipboard for pasting somewhere else, while copying places a copy of the highlighted segment on the clipboard without removing it from the effect.

“Copy all segments” ignores the currently highlighted segment and places all of the segments associated with the fixture onto the clipboard.

To place a copied segment or segments onto a fixture, select the “Paste” option while the mouse is over the fixture you would like to paste to.

| Note: When pasting, if a segment conflicts with segments that already exist for this fixture you are pasting to, nothing will happen. |

After a paste operation, the segments will remain in the clipboard to allow you to paste segments to as many fixtures as desired.

This feature is useful after creating a moving light path to copy the newly created path to all of the other fixtures in the effect. To do this, create a path for the first fixture and then select the copy all function. To create the path for all of the remaining fixtures simply paste to each one in turn.

Create a follow-on segment

This option will copy the current segment and place it to the right. The segment can then be moved by clicking and dragging.

Toggle key frame marker

If you’ve set a frame count for the effect, use this option to show a marker for the selected frame which can be used as a reference point for setting and moving segments.

Add Point

If a profile has been set for a channel (for the dimmer for example), use this option to add a new point to the profile’s curve.

Move all segments

This option brings up the following dialog box:

Entering a time value and clicking “OK” will shift all the segments in the effect by the amount specified. Both positive and negative values may be specified.
Profile effect
This effect type is based on a time vs. level path that is assigned to a list of fixtures and specific attributes or properties. Create this type of effect to assign a time vs. profile path to specific attributes of fixtures. When the effect runs, the selected attribute will apply the values over a set time. Profile effects are a very powerful way to create complex effects with minimal effort. Once you are used to creating this type of effect you will find it the most common effect system you will use.

Enter a name to identify the effect and click “OK”. The details will appear in the right-hand pane of the window.

In the above example a profile effect has been created to operate in fixtures 1 through 12. There are two elements in this effect, the first is a “Sine” wave working on the pan property and the second is an “Inverse Cosine” wave on tilt.

For each attribute you want to apply a profile path to, you need to create a separate line in the items table. In the above example, 2 entries are required to create a circle with the fixtures. The first entry controls the pan property...
and the second the tilt. If the desired effect was a ballyhoo we might only require one entry applying a profile to the tilt property.

To add an entry in the items table simply click on the “Add Line” or “Copy Line” button. This will create a new line with either blank values or the same values as the previous line. To delete an entry click on the “Remove Line” button.

**CHANNELS / FIXTURES**

This is a simple list of fixtures that the profile and attribute will operate on. You can use the same channel syntax as the command interface to enter the channel list. By default, channels will remain in the order they were typed. Right clicking on the channel cell will display a popup menu of operations that may be performed on the channel list such as **Sort** (in ascending order), **Reverse**, **Randomize**, and **Center Out**. The order that the channels are listed in is important for the stagger and cluster operations.

In addition, the popup menu provides options to **Add**, **Replace** or **Remove** channels from the list. When one of these options is selected, a list of any selection shortcuts that have been set in the show file is displayed as an aid to performing the chosen operation.

**ATTRIBUTE**

This value specifies the attribute of each of the fixtures that values will be applied to. Use the drop down menu to select from a generic list the attribute you want to use. You can also enter a number corresponding to the attribute for a specific fixture type. If you are using an attribute number, then all of the fixtures should be of the same type. If different types exist, then you will get strange results. The generic attribute can be used on any mix of fixtures. If the fixture does not support the selected generic attribute, then any applied values will be ignored.

**PROFILE**

The profile is the key to this type of effect as it defines exactly what the selected attribute of the fixtures will do. As the effect plays, the output value (DMX value) is derived from a point in the profile path. A “sine” wave, for example, will output the DMX values 127 at time 0, 255 (full) at ¼ of the way through the effect and 0 at ¾ of the way through the effect. The value at each point in the path is affected by some of the other parameters such as Offset, Scale & Start Position. The selected profile is shown graphically in each line of the effect.

To change the profile, click on the profile column of the line you want to change. A drop down box will appear listing all of the profiles that exist in the system.
The profile chooser will display four profiles across to maximize the number that can be seen. The profile currently assigned to the line will be highlighted with a red border. Use the scroll handle on the right hand side to find other profiles not visible on the page.

To select a profile, click the appropriate image and the profile picker will close automatically. The selected profile will be shown in the line you are working on. To close the profile picker without changing your selection, click on the Close button in the bottom right of the window.

To modify a profile click on the “Open profile editor” button at the bottom of this window. This will open a new window to that will allow you to modify or create profiles. See “Edit Profiles” in section 6.2 - Patch.

LENGTH

The length specifies how long the path will play for. The length of the effect is the length of the longest item. If the length of an item is less than the longest path, then the speed that the path will play is made proportionally faster.

OFFSET

Offset determines where the DMX output values will start from when the effect is run. The way in which an offset may be applied can be selected from the drop down menu. The choices are:

Absolute Value: enter a DMX value from 0 to 255. When the effect is run, the channels will be set to this value initially and the profile value will be added to it (not to exceed 100% or DMX 255).

Relative (build), the default: When the effect is run, the profile value will be added to the initial channel value (not to exceed 100% or DMX 255).

HTP (Highest Takes Precedence): When the effect is run, the channel value will be the higher of its initial value or the profile value.

Subtractive: When the effect is run, the profile value will be subtracted from the channel value (not less than 0).
If you add the effect into a cue, then LightFactory will set up the fixture based on the data in the cue and then apply the effect. With this you can have 2 adjacent cues both using the same effect but running completely differently.

**Note:** If you are running this effect on Pan & Tilt, then a couple of special conditions apply. First, the current position of the light becomes the center of the path. If (for example) you are doing a circle then the offset is automatically set up for you to make the current position the center. Secondly, when this type of effect is running, you can also use the pan and tilt controls in the channel view to move the position of the effect.

**SCALE**

The scale is a percentage that will be applied to the profile value. A scale of 50% causes the resulting values from the path to be halved. The combination of offset and scale can be used to restrict the output to a smaller range.

A drop down menu gives a choice of **Absolute Percentage** to be entered in the cell or **Relative to Live** which uses the initial value of each channel as the scale to be applied.

**START POSITION**

The start position is used to specify the point in the path that will be used when the effect begins.

**STAGGER & CLUSTER**

The Stagger and Cluster options provide a powerful way to make an effect more interesting. The stagger value either specifies how many fixtures the effect will be staggered across or the percentage across the path each fixture will be relative to its neighbors. A cluster value groups together the specified number of fixtures which will be treated as a single entity.

With a **Cluster** value of 1, a **Stagger #** of 4 means that each group of 4 fixtures in the Channels/Fixtures will be equally spread across the path so that each fixture starts in a different position. In the example profile effect shown above, fixtures 1, 5 and 9 would start together at the 0 position of the profile; fixtures 2, 6 and 10 would start at the 25% position, etc.

If **Cluster** is set to 2 (keeping **Stagger #** at 4), fixtures 1 & 2 and 9 &10 would start together at the 0 position of the profile; fixtures 3 & 4 and 11 & 12 would start at the 25% position, etc.

A stagger percentage (Stagger %) of 10% means that each fixture or cluster of fixtures will be 10% further along the path than the fixture before it. If the total length of the path is 10 seconds, then when the effect is at 0 seconds the 2nd fixture or cluster will be at 1 second, the 3rd fixture or cluster will be at 2 seconds etc.

This results in the fixtures all working slightly different. Making a number of moving lights all perform a simple circle can look good, but then to add variety you can use the stagger and cluster features to make each fixture start at a different point in the circle.

**SOFT START**

The “**Soft Start**” option for each profile effect determines if the effect starts abruptly or slowly. When an effect is set to start slowly (soft), then it will ramp up the scale from 0 to whatever value is set over one complete cycle of the effect. If this option is turned off, the effect will immediately start at the scale factor set.
Matrix/LED Effect
This effect type is specifically designed for large arrays of lights and LED fixtures. Every LED fixture provides a different way to control all of the individual lights contained in it. To create a matrix effect, you must have already defined the fixture matrix. To define the layout of the lights, use the “Edit Matrices” option in the dimmer patching window.

Matrix / LED
Enter a name for the new effect to be created

ID
19  New Matrix Effect

Behavior
Override (LTP)

OK  Cancel

Enter a name to identify the new effect and choose the behavior that the effect will exhibit when run. The choices are “Override (LTP),” “Build,” “Highest Takes Precedence,” “Inhibit,” “Exclusive,” & “Subtract.” The behavior may be changed after the effect is created.

Click on “OK” to create the new effect and open the effects editor. The newly created effect will immediately become visible in the right-hand side of the effects editor.

Once you have created the effect you must define the background that the effect will operate on. The background can be a jpeg, bitmap, or video (AVI) file. To set the background either enter the filename into the “Image or Video File” edit box or click on the button to the right to bring up the open file dialog box.
A default background image is always available by clicking on the “Default” button in the top right of the window. The default image allows you to create simple color fades by providing a pinwheel of the color spectrum. When a new effect of this type is created, the default image is always set.

Once the background has been set, you can define a path that the matrix will use to play the effect. In the example above the matrix is defined as a red box and the path is the black line tracking around the image.

To add a point, click on the desired location and the path will now trace to the newly created point. To move an existing point click on the point (holding the mouse button down) and drag the mouse to the desired location.

To remove the last point in the path, click on the ( ) button in the top left corner of the window.

At any point you can right click to edit the details of the point.

To remove any other point in the path right click on the desired point and select “Delete Point” from the resulting popup menu.

To change the rotation of the matrix at a point, select “Edit Rotation” from the right click menu and enter the desired value (in degrees) into the edit box that appears.

To change the scale of the matrix at a specific point, select “Edit Size” from the right click menu and enter the desired value into the edit box that appears. When the effect plays the scale of the matrix will transition between values across the length of the path.

When the effect is played from the editor, the red box will track the path over the specified time. As the effect runs, LightFactory will map the contents of the red box onto the defined matrix. The color of each fixture will be mapped to the color on the image or video clip. The preview ( ) button can be used to see the resulting output on screen.

Click on the “Show only assigned fixtures” to apply a mask over the preview that represents the fixtures in the real world.

EFFECT LENGTH

The length defines how long the effect will play for and can be any value up to 1 hour. If a video file is selected, the software will prompt you to set the length of the effect to the same length as the video. If the length of the effect is shorter than the video, the video clip will be truncated.
To change the size of the area that the matrix will use to generate output, set the zoom field. When playing back the effect, the image will be rescaled to the zoom setting to apply the correct color.

**Paint Box Effect**

New for V2.19, this effect is similar to the Matrix/LED Effect but providing more options for color path which can be manipulated for direction, length, opacity and the amount of spread that is applied across a matrix. To create a paint box effect, you must have already defined the fixture matrix. To define the layout of the lights, use the “Edit Matrices” option in the dimmer patching window.

Enter a name to identify the new effect and choose the behavior that the effect will exhibit when run. The choices are “Override (LTP)”, “Build”, “Highest Takes Precedence”, “Inhibit”, “Exclusive”, & “Subtract”. The behavior may be changed after the effect is created.

Click on “OK” to create the new effect and open the effects editor. The newly created effect will immediately become visible in the right-hand side of the effects editor.
Choose a matrix definition on which to run the effect from the drop-down list. Next, set a length in seconds for the effect to run. The spread determines how much of the color path will be distributed from the first to last fixture as the effect is run. The option “Show only assigned fixtures”, if set, will show only those cells of the matrix that have fixture assignments. If a cell is not assigned, it will remain black.

Below is an example of a paint box effect set up for a 10X10 matrix that has been paused to show how the effect progresses.

In the lower part of the edit window is an area where the color path can be set up. The path has default start and end points shown. Click on the start and end points to specify a color and opacity for each. Other color points may be added as desired by clicking along the path where you’d like to add a point and then specifying its color and opacity.

Opacity refers to how much of the underlying color that fixtures are set to shows through the colors programmed for the effect as it runs. A 0 value means the underlying color would show through fully and a 255 value means the underlying color would be masked completely.

The relative sizes of the upper and lower halves of the window can be adjusted by clicking and dragging the splitter bar between the sections.

To see the effect run, choose a direction by clicking on one of the 10 buttons on the right and then the run button on the bottom right. In the example above, the direction chosen was to start in the upper left fixture and proceed to the lower right fixture.
**Media Playback Effect**
The media playback effect provides an easy way to trigger audio and video clips from within LightFactory. You can use this feature to playback sound effects or video clips within a cue list.

Enter a name to identify the effect and click “OK”. The details will appear in the right-hand pane of the window.

**Image or Video File:** This is the actual media file located somewhere on your system. Use the button at the end of the edit box to open a file dialog for locating your media.

**Start Time:** Set the time in HH:MM:SS that you want the media clip to play from. If (for example) you want the clip to play 1 minute and 23 seconds into the file then enter 00:01:23 into the edit box provided. A further refinement of the start time can be set by entering a value (0-999) into the ms box.

**Play Length:** Set the length in decimal seconds that the clip will play for before either stopping for playing again from the start position. A play length of 3.5 will play for 3 and a half seconds each time it runs.
**Volume**: This value will override the volume of the effect when it is played back.

**Don't generate internal timecode**: The internal timecode will always read the last played effect time. If you want to play other media while using the internal timecode of a master track, turn this off for all of the audio tracks other than the one you want timecode read from.

The system relies on the correct codecs for the media to be played back. If the codec is not available on the system, then an error may occur when attempting the playback.

There are a number of global media playback controls that can be set in the “System Properties”. See section 5.7 – Media Settings for more information.

If you attempt to play a video file and have only a single monitor connected, then the software will only show the video in a window on your primary display. In a multi-monitor situation the system will default to use the 2nd display as the full screen output of the video clip.

The effects editor will show a preview of the video clip in the black box. Only when the effect is run in an effect playback or cue list will it play full screen.

**DMX Recorder**
The DMX recorder will perform a real-time read of the incoming DMX channels and record this into the software. The recorded DMX stream can then be played back to any DMX universe on an LTP basis. Only DMX addresses that have changed will be applied, meaning that you can mix a recorded DMX stream with other LightFactory functionality.

**DMX Input Recorder**
Enter a name for the new effect to be created

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>New DMX Recorder</td>
</tr>
</tbody>
</table>

Enter a name to identify the effect and click **OK**. The details will appear in the right-hand pane of the window.
To begin recording click on the “Record” button in the top left corner of the window. The button will change to red and the length display will begin increasing in time. Click on the button again to stop the recording.

Clicking on the record button again will cause a dialog to appear asking if you want to clear the existing recording and start again or append to the existing recording.

Use the output universe setting to determine the DMX universe you want to play the stream back on.

**Deleting an Effect**

To remove an effect from the system, select it from the list and click on the “Delete Effect” button at the bottom of the window. A confirmation dialog will ask if you are sure you want to remove the effect.
**Right click options**

Right click on any of the effects for options to set effect properties, make a copy of the effect, create an effect playback or add the effect to the library (profile effects only).

These options can also be accessed from the "Options" button at the bottom of the window.

---

**Find and replace media paths**

Use this option to conveniently update the location of media on your HDD in one step. If a media effect is already selected when choosing this option, then the path used in that effect will automatically be used as the "Path to replace" field.

**Adjust brightness, color levels, red, green, blue**

Use these options to make adjustments to all of the steps in a chase. Selecting one of these option will pop up a dialog asking for the percentage (%) amount to adjust the levels by. You can enter negative values to reduce the amount.
CREATE AN INDEPENDENT FX PLAYBACK

Once you have created your effect you can quickly add the effect to a playback control using this option or the “Create Playback” button at the bottom of the effect list. A new playback will appear in the “Effect Playbacks” window that can then be used to run the effect outside of the effects editor.

An alternative way to create an effect playback and assign a shortcut all at the same time is to simply drag and drop it from the effects editor to the shortcut window.

ADD THE SELECTED FX TO MULTIPLE CUES

This option will pop up a dialog allowing you to select a cue list and mark all the cues in the list where you want the effect to run.

SORT BY EFFECT ID

As an effect is created, it is assigned an ID number. This option is a toggle and when set orders the list of effects by the assigned ID number. When not set, the list is arranged alphabetically.
Effect Library

The effect library is a convenient way to save and recall your favorite profile effects. Once you have created an effect it can be copied to the library and will not be removed when you create a new show. LightFactory comes with a collection of effects already in the library which can be used as starting points for creating new effects.

A library effect looks exactly the same as a profile effect except it is missing the channels that the effect will use to run. The selected library is highlighted in gold and the heading along the top of the right hand of the window will display the library name.

To create a new profile effect based on one in the library, select the template from the library and click on the “Add effect” button, which will display the following dialog:

Fill in the dialog entries as needed and click on “OK”. The newly created effect will immediately become visible in the right-hand side of the effects editor.

To add an existing profile effect into the library simply select it from the list, right click and select “Add to library”. The name you have given the effect will also become the name of the library item.
You can also create a blank library effect by selecting "Create new library effect" from the "Add Effect" drop down menu. A dialog will appear asking for the name of the new library effect. Enter an appropriate name and click "OK" to complete the operation. Click on "Cancel" to return to the effects window without creating the new item.

To remove an entry from the library use the right click menu again and select "Delete" from the available options. A dialog will appear asking you to confirm the deletion.

**Effect Playback Controls**
Along the bottom of the effect editor are the playback controls for testing and debugging your effects. When the effect is played, a progress line will follow the execution through the effect.

- **Play**

  Use the play control to start the effect running. In the case of simple chases the play control is also used to step through the chase. While playing, the button changes to:

- **Pause**

  Pausing an effect will stop its execution immediately but keep the position pointer at the current location. Clicking this button again will change it back to **Play** and the effect will continue from the paused point.

- **Rewind**

  Pressing the rewind button will stop the effect and resets its position back to the start. If the effect is restarted, it will start from the beginning. This will also release the channels used in the effect.

**Run / Loop Switch** – Can be set to run the effect once per click of the Run button or continuously loop until paused or the Rewind button is clicked.
6.9 FX Playbacks

“Effect Playbacks” provide a quick and easy way to access effects in an ad-hoc manner. Once you have created your effects (See section 6.8 – FX List Editor), they can be used either within cue lists or manually from effects runners.

Open the “Effects Playback” window by clicking on the “Fx Playbacks” button at the bottom of the command interface or pressing the <F9> key on your keyboard.

This window will remain empty until you begin adding playbacks by clicking on the “Add Playback” button. Playbacks can be removed by clicking on the small X in the top right of the frame.

At any time you can re-order the effects playbacks by right-clicking to bring up the move menu. Click on the “Move Up”, “Move Down” or “Move To” to rearrange the effect runner appearance order.

Options
The “Options” button at the bottom of this window can be used to change the size of the playbacks or toggle the edit mode state. When the edit mode is turned off, you will not be able to delete a playback or change its settings. This switch is designed to avoid accidentally changing the configuration during a show.

Effects Playback Sizes
The “Options” menu will allow you to set 3 different sizes for the playbacks.

Reset overrides on reset all
If a running profile effect has been altered by using the override controls, setting this option will restore the original parameters stored in the effect when the “Reset All” button is clicked.
Setting up a new Effect playback

Left click inside the playback to bring up the “Effect Playback Properties” window. The properties that can be set vary depending on the type of effect. Below are examples of the different properties windows.

The description field can be used to identify the playback and will appear along the top of the control. By default, this will be set to the same as the effect name but can be changed as desired.

To set the effect to the playback, select the desired effect from the drop down list and the effect playback will become active.

Click on the “Edit” button to open the effects editor and automatically show the effect assigned to this playback.

The background color of the playback may be changed from the default white to other colors from the drop down list.

Radio Group

When a playback is created it is automatically placed into the “Independent” group. Effects contained in the independent group will run independently and can all be run at the same time. Setting an effect into a radio group other than 0 will make it exclusive. Only one effect contained in a radio group can be active at any time. If you start another effect in a radio group while one is already running, then the existing effect will stop and the new one started.
Submaster – Assigning a submaster to the playback will override the dimmer of the fixtures contained in the effect. As the effect runs, the position of the submaster will determine output to the fixtures.

Playback – Assigning a playback will disable the submaster edit box as only one can be assigned to the playback. A playback relates to external playback wings. Assigning a playback does more than just utilize the fader on the wing but also allows you to use the play, back and pause buttons to run the effect.

Start/Stop Shortcut – Set a shortcut number to assign to the playback controls for this playback. Pressing the shortcut will start the effect running. Pressing the shortcut while the effect is running will pause the effect and pressing it twice within 2 seconds will rewind the effect to the start.

Override Effect Length – Set this field to change the length of time the effect will run. If this value is set to 0, the default length (set during creation of the effect) will be used. If the effect length is overridden then all of the segments in the effect will be rescaled to this new length.

Loop Continuously – Check this option to make the effect loop back to the start when it finishes. If this option is not checked then it will stop as soon as the effect ends.
Chase Options

Submaster – Assigning a submaster to the playback will override the dimmer of the fixtures contained in the effect. As the effect runs, the position of the submaster will determine output to the fixtures. A submaster assigned to a chase will also cause the effect to automatically start when the value is above 0 and pause when it returns to 0.

Playback – Assigning a playback will disable the submaster edit box as only one can be assigned to the playback at a time. A playback relates to external playback wings. Assigning a playback does more than just utilize the fader on the wing but also allows you to use the play, back and pause buttons to run the effect.

Step Shortcut – If the “Step Time” of the chase was set to 0 when the effect was created and no overriding step time is set for this playback, then you can set a shortcut number to use to step the chase. Pressing the assigned shortcut will cause the chase to transition from the current step to the next. If a step time other than 0 has been specified, this shortcut will act as a “Start/Stop” control.

Fade Time Submaster – To manually adjust the fade time or transition time as the chase is running, you can assign a submaster that will control this. As each step executes, the fade time will be dependent on the position of the submaster. The maximum fade time that can be set by the submaster is 10min.

Step Time Submaster - To manually adjust the step time (time between automatic executions of steps) as the chase is running, you can assign a submaster that will control this. As each step executes, the time before the next step executes will be determined by the position of the submaster. The maximum step time that can be set by the submaster is 10min.

Chase Direction – Use this drop down option to specify how chase will run.

- **Forward** – The chase will run from the first step to the last. If the chase is set to loop, the chase will return to the first step after the last step.
- **Backward** – The chase will run from the last step to the first step. If the chase is set to loop, the chase will return to the last step after reaching the first step.
- **Bounce** – The chase will run from the first step to the last step and then back to the first step. If the chase is set to loop, then this operation will repeat.
- **Random** – Every step in the chase will execute in a random order.
**Step Time** – To specify a step time other than the default defined when the chase was created, enter a value into this field. Setting the step time to zero (0) will cause the default step time to be used.

Click on the buttons to the right of the “Step Time” field to set the chase to be triggered by either the audio or tap tempo features.

**Fade Time** - To specify a fade time other than the default defined when the chase was created, enter a value into this field. Setting the fade time to zero (0) will cause the default fade time to be used.

### Profile Effect Options

**Submaster** – Assigning a submaster to the playback will override the dimmer of the fixtures contained in the effect. As the effect runs the position of the submaster will determine output to the fixtures.

**Playback** – Assigning a playback will disable the submaster edit box as only one can be assigned to the FX playback at a time. A playback relates to external playback wings. Assigning a playback does more than just utilize the fader on the wing but also allows you to use the play, back and pause buttons to run the effect.

**Start/Stop Shortcut** – Set a shortcut number to assign to the playback controls for this playback. Pressing the shortcut will start the effect running. Pressing the shortcut while the effect is running will pause the effect and pressing it twice within 2 seconds will rewind the effect to the start.

**Override Effect Length** – Set this field to change the length of time the effect will run. If this value is set to 0, the default length (set during creation of the effect) will be used.

**Loop Continuously** – Check this option to make the effect loop back to the start when it finishes. If this option is not checked, then it will stop as soon as the effect ends.

**Scale Submaster** – Assign a submaster to this field to manually adjust the scale parameter of the effect while it is running. This can provide a dynamic way to vary the effect.

**Offset Submaster** – Assign a submaster to this field to manually adjust the offset parameter of the effect.
Stagger Direction – Use this drop down option to specify how stagger will operate on the list of fixtures.

- **Forward** – The stagger will be spread across the fixtures starting at the first fixture.
- **Backward** – This is the opposite of the forward stagger as the fixtures will be staggered from the last one through to the first.
- **Bounce** – Each time the effect runs the direction of the stagger will alternate between forward and backward behavior.
- **Random** – The fixtures in the effect will have a random order and the stagger applied over the new order.

Matrix Effect Options

Submaster – Assigning a submaster to the playback will override the intensity the all of the fixtures contained in the matrix.

Playback – Assigning a playback will disable the submaster edit box as only one can be assigned to the FX playback at a time. A playback relates to external playback wings. Assigning a playback does more than just utilize the intensity control of the fixtures in the matrix but also allows you to use the play, back and pause buttons to run the effect.

Start/Stop Shortcut – Set a shortcut number to assign to the playback controls for this playback. Pressing the shortcut will start the effect running. Pressing the shortcut while the effect is running will pause the effect and pressing it twice within 2 seconds will rewind the effect to the start.

Override Effect Length – Set this field to change the length of time the effect will run. If this value is set to 0, the default length (set during creation of the effect) will be used.

Loop Continuously – Check this option to make the effect loop back to the start when it finishes. If this option is not checked, then it will stop as soon as the effect ends.

Step to points only - Set this option to jump between points rather than tracking a smooth path. When the effect is started, the length of the effect will be broken up into the number of control points. As the effect runs it will jump from point to point at equal time intervals.

Stop at each point - Set this option to run the effect more like a chase where each point becomes a step. The effect will play normally, however when each point is reached the effect will pause and wait for a play command.
Paint Box Effect Options

Submaster – Assigning a submaster to the playback will override the intensity the all of the fixtures contained in the matrix.

Playback – Assigning a playback will disable the submaster edit box as only one can be assigned to the FX playback at a time. A playback relates to external playback wings. Assigning a playback does more than just utilize the intensity control of the fixtures in the matrix but also allows you to use the play, back and pause buttons to run the effect.

Start/Stop Shortcut – Set a shortcut number to assign to the playback controls for this playback. Pressing the shortcut will start the effect running. Pressing the shortcut while the effect is running will pause the effect and pressing it twice within 2 seconds will rewind the effect to the start.

Override Effect Length – Set this field to change the length of time the effect will run. If this value is set to 0, the default length (set during creation of the effect) will be used.

Loop Continuously – Check this option to make the effect loop back to the start when it finishes. If this option is not checked, then it will stop as soon as the effect ends.

Direction - Use this drop down option to specify the direction the effect will proceed. “FX default” refers to the direction that was set when the effect was created in the editor. The other choices allow you to override the default direction and correspond to the 10 direction arrows shown in the editor window.

Spread Submaster – Assigns a submaster to override the spread percentage set when the effect was created.

Length Submaster – Assigns a submaster to override the run time set when the effect was created.
**Media Effect Options**

**Submaster** – Assigning a submaster to the playback will override the volume of audio and the brightness of video during playback of the effect.

**Playback** – Assigning a playback will disable the submaster edit box as only one can be assigned to the FX playback at a time. Assigning a playback will control the running of the media file plus provide submaster functionally via the slider below the playback controls.

**Start/Stop Shortcut** – Set a shortcut number to assign to the playback controls for this playback. Pressing the shortcut will start the effect running. Pressing the shortcut while the effect is running will pause the effect and pressing it twice within 2 seconds will rewind the effect to the start.

**Loop Continuously** – Check this option to make the effect loop back to the start when it finishes. If this option is not checked, then it will stop as soon as the effect ends.
**Playback Controls**
Along the bottom of each effect playback frame are the playback controls and a progress indicator.

![Play/Pause](image)

Use the Play control to start the effect running. As soon as the effect starts the play control will change to the Pause control, will be highlighted in green and the progress indicator will beginning counting.

When a profile effect is running, you can click on its title bar and a set of override controls will be displayed:

![Profile Effect Controls](image)

These controls can be manipulated to change the parameters of the running effect. The values set will be retained unless the option “**Reset overrides on reset all**” is checked and the “**Reset All**” button is clicked.

![Rewind](image)

Pressing the rewind button will stop the effect running and reset its position back to the start. If the effect is started again, it will start from the beginning.

At the bottom of the page is a button to pause all active effects. Pressing this is the equivalent of clicking on the pause button of all running effects.

At the bottom of the page is a button to reset all active effects. Pressing this is the equivalent of clicking on the reset button of all running effects.
6.10 Macro Editor

The macro editor is an enhancement to the command interface and allows you to create a list of commands that are executed in one operation.

**Note:** This is particularly useful if you have a sequence of commands that you use frequently. Creating a macro enables you to activate the sequence in one operation rather than entering each command manually.

You can use the macro editor to create new macros or to edit existing ones.

Open the “Macro Editor” by clicking on the button at the bottom of the command interface or by pressing <F10> on your keyboard.

**Note:** You can create any number of macros, limited only by system resources.
To create a macro:

- Click the “Add” button at the bottom left of the window.
- The “New Marco” dialog box will appear. Enter a meaningful name and click “OK” to create the macro. If you want to assign a shortcut to the macro you can do so in the same dialog.

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Macro Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

- Type the commands for your macro into the window at the right-hand side of the macro editor.
- The “Run” button can be used to execute the macro (or a shortcut if you assigned one). As the macro executes, each line will appear in the command interface window.

Deleting a macro can be achieved by clicking on the appropriate row and clicking the “Remove” button. A confirmation dialog will prompt you to confirm the deletion before the macro is removed.

To edit the macro name and/or shortcut, double click on the row in the macro list. The same dialog as was used to add a macro will be displayed.

Right-clicking on a macro name will bring up a menu that allows you to print the selected macro or all macros and set a toggle which orders the list by number rather than name.

Once a macro has been created, it may be protected from alteration by selecting it and clicking on the “Unlocked” button which changes to “Locked”.
Variables
Variables can be defined and used in macros. Once defined, the value of a variable may be set or altered as part of the macro or via the command line. Variable names should not conflict with the normal command words used by LightFactory. See Chapter 7 – Command Reference for a list of reserved words.

Creating/editing Variables
To create new variables or edit existing ones, click on the “Variables” tab. To create a new variable, click on the “Add Variable” button. A new line with the name “New Variable” will be added to the bottom of the list. Click or double-click on each field to alter the value. In addition to the name, the following can be set:

- **Value** – Enter the value for a fixed variable or the initial value for an incremental variable.
- **Min & Max Values** – Defines the range of an incremental variable.
- **Increment** – Defines the value that will be added to (positive) or subtracted from (negative) the variable when it is referenced.

Using Variables
Once a variable has been defined, it can be referenced and manipulated within a macro. The value of a variable may be set or altered as follows:

- `{variable name} = (value)` – Set the variable to an absolute value
- `{variable name} = RANDOM((value))` – Set the variable randomly between 0 and value
- `{variable name} = CHANNEL((number))` – set the variable to the value of the specified channel number
- `{variable name} = SUB((number))` – set the variable to the value of the specified submaster
- `{variable name} += [increment]` – Add the increment value to the current value
- `{variable name} -= [decrement]` – Subtract the decrement value from the current value
The macro “Channel Check” illustrates some uses for variables. The first line initializes the variable “Checkchan” to the value set in “Startchan”. Line 5 is a channel command where the value in “Checkchan” is the channel number and the value in “Level” is used to set the channel level.

If a variable has an increment value set, each time the variable is referenced it will be added to or subtracted from by the value. For example, if “Checkchan” is equal to 1 when Line 5 is executed, it will be incremented by 1 after so if it is referenced again, it will have the value of 2, etc. This is useful when used inside a loop (see below) to step incrementally through a set of values, such as channel number in this example.

**Conditional Events**

This feature allows you to define real time events that can trigger a macro to run.

To create an event, click on **“Add Condition”** and fill in the fields.

- **Name** – Any text to identify the event.
  - **Type** – The kind of event to monitor. The choices are: Channel, DMX Output & Submaster.
  - **List** – The channel(s) or submaster(s) to monitor.
  - **Condition** – Compare the current value of the channel(s) or submaster(s) with the value to monitor and trigger the macro when the condition is met. The choices are: All Equals, Any Equals, All Less Than, Any Less Than, All Greater Than & Any Greater Than.
  - **Value** – The level to test the current value of the channel(s) or submaster(s) against to determine if the trigger condition has been satisfied.
  - **Macro #** - The number of the macro to run from the list of macros in the left pane of the editor window.

Example:

Type = Channel  
List = 1 thru 10  
Condition = Any Greater Than
Value = 30
Macro = 3
Macro 3 would be triggered when any channel 1 through 10 goes above a value of 30%.

Additional Commands
Macros consist of the same commands that are available in the command window. In addition to these commands, you can also enter comments, labels and the commands listed below.

C++ Style Comments
To add a line of text that will not be executed, place two slashes (/) before the text. As the system executes each line, it will ignore lines that begin with these symbols.

Inject
The inject command may be used to display a command that needs more user input to be completed. The underline character may be used to insert a space where needed.

Example:

Inject 1/6 @_

This command would place “1/6 @ “ on the command line. The user could then supply a value to complete the command. The macro would then continue with the next line.

Sleep
The sleep command will cause the software to pause before continuing to execute commands after this line. In the above example, Line 4 contains a 1 second sleep command.

Loop & Loop End
You can loop a series of commands using the “Loop” and “Loop End” keywords.

Loop {number of times} – This command will mark the beginning of the loop and also define how many times LightFactory will perform the loop block. In the example, Line 2 starts a loop with the number of iterations set by the value in the variable “Maxcount”. Lines 3-5 will be executed maxcount times after which the macro will continue at Line 7.

Loop End – This command will mark the end of the loop. All the commands between these two commands will executed however many times was specified in the “Loop” command.

Branch, Label & End
The “Branch” command can be used to create conditional jumps in the macro. If the condition is true, the macro will jump to a predefined label. If the condition is false, the macro commands after the “Branch” will execute until the “End” command.

Branch {condition} {label}

Condition takes the form: {variable} {operator} {value}. In addition to variables you have defined, the following special variables can be used:

channel((number)) – Returns the current output level (%) of the specified channel number.

group((number)) – Returns the current value (%) of the specified group number.

submaster((number)) – Returns the current level (%) of the specified submaster number.
playback((number)) – Returns the current cue number running in the specified playback.

The operators are: Equal (=), Greater than (>), Less than (<), Greater or equal (>=), & Less or equal (<=).

Labels are any text that starts with the hash (#) character.

Examples:

```
branch channel(3) > 30 label1
3@10
end
#label1
3@50.
```

The above macro will set channel 3 to 50% if its current value is greater than 30; otherwise it will be set to 10%.

```
branch my_variable <= 5 label1
Jump to label1 if the current value of my_variable is less than or equal to 5.
```

```
branch playback(0) > 10.5 label1
Jump to label1 if the current active cue number in playback 0 is greater than 10.5.
```

**Passing Parameters**

A macro may be executed from the command line and pass parameters to it. In the macro, a parameter is denoted as %n, where n is the parameter number starting with 1.

Example: Macro 1

```
Startchan = %1
Maxcount = %2
Startlevel = %3
Checkchan = Startchan
Level = Startlevel
loop Maxcount
Checkchan @ Level
sleep 1
@ 0
loop end
rel all
```

In this example, the macro is expecting 3 parameters to be passed to it, so the command **macro 1 1 10 50** would execute macro 1 setting Startchan to 1, Maxcount to 10 and Startlevel to 50. The action of this macro would be to step through channels 1 through 10 setting each in turn to level 50 for 1 second.
6.11 Shortcuts

Shortcuts are designed to provide quick access to several functions within the software. Some of the assignments that can be made to shortcuts include:

- Channel selection
- Channel group selection
- Apply generic and specific palettes
- Cue Go / Back / Pause / Reset
- Execute Fixture Properties
- Effects Run / Pause / Reset
- Execute macros
- And many more...

As with submasters, shortcuts can be accessed through an on-screen display or by connecting additional hardware. On-screen shortcuts also have the added feature of being designed for use with a touch screen display.

LightFactory provides 100,000 user-assignable shortcuts that are accessed through 100 pages. Open the shortcuts page by clicking on the "Shortcuts" button at the bottom of the command interface (if visible) or by pressing <F12> on the keyboard. The initial page displayed may be set using the "Shortcut Page" control.

On-Screen Shortcuts

The shortcut window is a grid of 100 buttons per page, each tagged with a number, description, and color. If a shortcut is not assigned, the button will appear greyed out and cannot be selected. The page buttons can be modified with a description and test/background colors by right-clicking on the desired button.
There are two view modes that can change the display of the on-screen shortcuts. You can switch between the modes by clicking on the button to the left of the “Full Screen” button. The label of this button will toggle between “Normal” and “4 Up” depending on the mode you are in. In “Normal” mode the shortcuts will appear as a 10 x 10 grid with the shortcuts numbered with 1 in the top left corner and 100 in the bottom right corner. In “4 Up” mode the shortcuts will be arranged in to 4 groups. Each of the groups can have a user definable heading. Above is an example of “4 Up” mode and below is an example of “Normal” mode.

To change the label for each of the groups in “4 Up” mode click anywhere in the heading.

Enter the new name of the group into the box provided and click “OK” to save the change. Each page can have different group labels.

**Options**

To change the global display options for the shortcut window, click on the drop down menu on the right of the mode button.
Use 3D buttons – (Default on) Use this option to change how each button is drawn. When this option is on, the buttons will have a 3D style gradient.

Set font size – Use this option to change the overall size of the text in each of the shortcuts.

Set mode and labels per page – When this option is turned on, the 4Up and normal mode can be set for each page. The labels will also be remembered for each page separately.

Auto Select page based on fixture selected – With this option turned on, the shortcut page will change if a palette page is set up for the fixture. This works on the name of the shortcut page. If a single fixture type is selected, then LightFactory will search through the page labels to try and locate one that matches the fixture name. If a page name match is found, then the page will automatically switch. This is a convenient way for the window to always show the shortcuts related to the fixture you have selected.

Set shortcut grid size (Columns x Rows) – Select this option to set the number of rows and columns you want to appear in the shortcut grid. This can be a useful option to set the on-screen shortcuts to match any physical hardware you are using.
Right clicking on any of the active shortcuts will produce a pop-up menu that will allow you to edit the description and change the button and text color, add an image or jump directly to the appropriate edit window of the shortcut.

You can also use the popup menu to copy and paste the formatting (color, text color etc.) of the shortcut to other shortcuts.

**Note:** Changes made to the description or color will remain until the shortcut is reassigned.

---

**Edit Description** – Select this option to change the label displayed on the shortcut button.

**Cut/Copy/Paste Format** – These options allow you to copy and paste the background and text colors to other shortcuts. The “paste to many” option is a convenient way to set the colors of multiple shortcuts at the same time.

**Background and Text Color** – For every shortcut you can change the background color and the text color. To reset either of these to the default use the “Reset background color” and “Reset text color” options.

**Images** – Each shortcut can have an image assigned that will be displayed to the left of the label. The “Set image” option will allow you to select an image from your system by bringing up a familiar image selection dialog. Use the “Set image from fixture” option to select any of the images stored with the LightFactory fixture library.

**Edit Image** – The edit image option will open a paint window that will allow you to modify or paint any image you want.

**Edit Shortcut** – Select this option to open the editor window associated with this shortcut.
**Move Shortcut** – Upon selecting the move shortcut option, your mouse pointer will change to a small hand. Click on any unassigned shortcut to move the original to this cell.

**Lock/unlock shortcut** – A locked shortcut will remain on screen regardless of the page change. This is useful for keeping some operations on screen all the time.

**Add Quick Command (macro)** – If you right click on a shortcut that is not assigned, you will get a single menu item “Add Quick Command (macro)”. This is a special function that will allow you to assign a single command function to the shortcut key. You can think of this as a one line macro that is assigned directly to the shortcut key. Clicking this option displays the following dialog:

You can enter a separate command for the button down and button up operation if desired. The commands can be any valid command line text (You may want to test your command in the command line window before entering it here). The behavior of the button can be selected as either "Momentary" or "Latched". Enter a description and click on the "OK" button to assign the new shortcut.

Clicking on the shortcut will cause the command(s) to be executed immediately in the command line window. If the mode is set to "Latched", the first click will execute the Down Command and the second click will execute the Up Command.

**Inject** - The “Inject” command will cause any text following the keyword to be presented on the command line with the cursor positioned at the end of the line. Thus you can create quick commands that prompt the operator for completion. When a space is required at the end of the command, you can use the underscore (_) character to denote the space character. An example would be a quick command defined as "Inject Record Cue_". When the shortcut is activated, “Record Cue “ would appear on the command line waiting for the operator to enter the cue number to record and hit <ENTER> to complete the command.

**Special Inject Commands**

- **Inject {Fn}** – When executed, triggers a function key, where n = 1 – 12.
- **Inject {^Fn}** – Same as above for a shifted function key.
- **Inject {CLEAR}** – Clears the contents of the command line.

The “Full Screen” button allows you to toggle the window into a borderless full screen mode. This can be useful when using the shortcuts page with a touch screen monitor. The window can be returned to its original size by clicking on the same button.
**Hardware Shortcuts**

Programmable keyboards can be connected to the LightFactory system to provide physical shortcut buttons. Programmable keyboards are most commonly used in point-of-sale environments but are perfect for this application. Each key can be assigned a sequence of characters to send to the computer and are generally designed for heavy continuous use.

LightFactory has a built-in command sequence that will trigger shortcuts from programmable keyboards. Each shortcut can be triggered by the key sequence "<CTRL>Q {digit 1} {digit 2}". For example to trigger shortcut 21 from an external keyboard you would need to program the key sequence <CTRL>Q 21.

If you are using the ENTTEC shortcut wing, no programming is required as the system will immediately associate the keys with the shortcuts in the system.

For more information on shortcut hardware, please visit our [web site](#).
6.12 Submasters

Submasters can be assigned to perform a number of functions. Traditionally a submaster is a physical slide control that allows the user to input a value between 0 and 100 (%) or 0 and 255 (DMX).

The following functions can be assigned to LightFactory submasters:

- Channel groups (Specific Palettes)
- Cue “GO” execution
- Cue intensity override
- Effect Playback intensity override
- Chase step rate control
- Chase fade time control

LightFactory provides up to 100,000 submasters that are accessed through pages. See section 5.3 – System Settings for information to specify how many pages the system creates and how many submasters (up to 100) per page.

Obviously, computers do not typically come with a number of physical faders, so LightFactory provides access to submasters through either an on-screen interface or through add-on hardware. The on-screen submaster window can be displayed by clicking the “Submasters” button (if visible) or pressing <F11> on the keyboard. The initial page displayed may be set using the “Submaster Page” control.

On-Screen Submasters

The on-screen submasters can be viewed as either slider controls or a grid similar to the channel display. The slider view will provide access to up to 30 submasters per page. Each submaster is represented by a single slide control and spin edit box. The grid view will display the total number of submasters as set in the system properties (Number of submaster pages X submasters per page). Each submaster is represented as a square in the grid that can be selected and modified using the scroll wheel on your mouse.

Note: LightFactory can support up to 100,000 submasters by connecting external hardware to the system. Not all submasters can be viewed on screen when in fader mode. If you configure more than 30 submasters per page, then only the first 30 will be visible in this mode.

To switch between the fader view and the grid view click on the button to the right of this window. Clicking on this will toggle between each of the views.
At the top of this window is a series of buttons to change the submaster page. Changing the page in this window will not change the page number on the main window as it is possible to have the on-screen submasters set to a different page than any external hardware you might be using. The page buttons can be modified with a description and test/background colors by right-clicking on the desired button.

**Fader Mode**

Setting a submaster can be done by using your mouse to click-and-drag the slide control, or by typing a value in the edit box below the slider. If you move the slide control, the value in the edit box will change to reflect the new position and changes to the edit box will be reflected in the slide position.

The “Flash” button at the bottom of each fader has two modes depending on the setting of the switch in the top right corner of the window. If set to “Momentary”, the submaster will go to 100% as long as the left mouse button is down and will return to its previous level when released. If set to “Latch”, the flash button becomes a toggle alternating the submaster between 100% and its previous level for each click.

| Note: If hardware submasters are being used, you will also see the slide position and edit box value change to reflect the hardware. |

Right clicking on a submaster will bring up additional options to help identity each fader.

- **Change Description** – Use this option to label the submaster. The label will appear along the top of the fader.
- **Set Description Color** – The color of the description can be changed by selecting it from this option.
- **Reset Description Color** – Select this option to return the color of the description back to its original color.
- **Lock/Unlock Submaster to all pages** - A locked submaster will remain on screen regardless of the page change. This is useful for keeping some operations on screen all of the time.

When a submaster is locked to all pages, a small yellow padlock will appear in the top right corner of the slider control.

- **Uncheck All** – Release all submasters from spin wheel control. See below for details.

- **Spin Wheel** - On the right hand side of this window is a large wheel that can be used to move all of the submasters on this page at once. Click on the wheel and while holding the mouse button down move the mouse up or down to raise or lower the levels. You will see all of the submasters on that page raise and lower with your mouse movements.

You can select what submasters the wheel will operate on by clicking to the left of the slider for each of the submasters. The master wheel will operate on all submasters that have the small green tick mark in the bottom left corner.
**Grid mode**
Setting submasters in the grid mode is similar to setting channels in the channel display. Each submaster is represented by a cell in a two-dimensional grid.

Submasters can be selected or deselected by simply clicking on the desired grid cell. By holding the left mouse button down you can drag an area of the grid to select multiple submasters. Once selected use the mouse wheel or the spin wheel on the right to change the value.

Right click on any of the cells in the grid for additional options.

- **Clear selection** – Select this option to unselect all submasters.
- **Select active submasters (all pages)** – All of the submasters currently above zero will be selected.
- **Clear selection when changing pages** – Check this menu item so that all of the submasters are automatically unselected when the page is changed.

**Inclusive selection mode** - This is a toggle option that will have a small check mark next to it when turned on. If the “inclusive selection” option is active then each selection made will be added to the previous selection. All submasters currently selected will remain selected unless they are in the new selection area. Any selection will toggle the selection state of a submaster.

- **Change Description** – Use this option to label the submaster. The label will appear along the top of the fader.
- **Set Description Color** – The color of the description can be changed by selecting it from this option.
- **Reset Description Color** – Select this option to return the color of the description back to its original color.
- **Set fixed column count** – Used to set the number of cells per row. If set to 0, the column count is dynamic and will adjust automatically to fit the width of the window.

**Grand Master Faders**
To the right of the spin wheel in both fader mode and grid mode are controls for the grand masters. Each grand master has a fader to control the level and a Dead Black Out (DBO) button.
**Hardware Submasters**

LightFactory provides the ability to add physical hardware to the system by using any standard DMX lighting desk, MIDI Control desk or Playback wing. By connecting the DMX-IN hardware, you can connect your existing lighting desk to the software.

LightFactory will only use the first 100 channels of the lighting desk as submasters, but these 100 channels can be paged to provide up to 100,000 submasters.

You can also use the ENTTEC playback wing as an external submaster board without needing to assign any playbacks.

See the **LightFactory Installation Guide** for more information about connecting the playback wing to your system.

LightFactory can also read fader levels from a standard MIDI controller using the “Control Change” messages. If the MIDI device supports motorized faders, then LightFactory will also send MIDI messages when changing page or setting the on-screen submasters. This will allow the physical submaster to reflect the current value.
6.13 DMX View

The DMX display is provided as a means to debug the system output by showing the final output values being sent to the DMX hardware.

To open the “DMX View” window click on the “DMX View” button on the command window or if that button is not visible, from the pop up menu associated with the “More” button (you can call up the display also by entering <SHIFT>+<F9> on the keyboard. Each DMX address is represented as a cell in the above grid. The DMX value is displayed to the right of the address number. Whenever a DMX address has a value greater than 0, it will be highlighted in light blue.

On the left are tabs for each DMX universe configured in the system. If you have DMX In hardware connected, the top tab (DMX In) will show the values being received.
6.14 More Menu

On the lower right side of the command window is a button labelled “More”. When clicked, the following menu is displayed:

The following sections describe some of the options available from this menu. The “Shortcuts Window”, “Submaster Window” and “DMX View” have been described in previous sections.

**Playback Window**
If you have a hardware playback wing connected to LightFactory, this option will display a status window showing the state of the playback controls.

**Live Video Preview**
If you have a video camera hooked up to the PC running LightFactory, this option will show the live view in a small window.

**Touchscreen Keyboard**
If you have a touchscreen display and would like to enter keyboard characters via the screen, this option will bring up a window with a graphical keyboard.
**Time Code Monitor**

Opens a small window displaying the timecode clock in realtime.

![Timecode Monitor](image)

**Note:** The timecode can be displayed at the bottom of the side bar if attached to the Channel Display. See section 6.3 – Channel Display for more information.

**Power Monitor**

The power meters provide an approximation of the power usage by your lighting rig. Using the power values in the patch detail for each fixture, the software can calculate the actual load on each of the power phases.

To use the power meters you must supply the maximum power load in the “Power” column of the patch detail and the phase (1, 2 or 3) in the “Dimmer Phase” column. If the phase is left blank, then the channel will not contribute to the values displayed in the meters.

![Power Monitor](image)

**Voltage** – Set the average voltage used by the power system in your building. For North America this is normally 120V. For most other countries this should be set to 220V.

**Limit (Amp)** – An upper limit on the power available per phase can be set using the “Limit” field. This setting is the limit per phase (not the total limit of all phases). When this is set (above 0) then the software will automatically adjust the grand master to keep the system within this limit.
Reports

Besides printing the patch and cue lists from their respective windows, additional reports are available from this option. Each report selected is first displayed as a print preview screen which can then be sent to a printer or just read on screen. Below are screen shots showing examples of each type of report available.

Fixture Report

![Fixture Report](image-url)
Macro Report

Profile Report
### Channels/Fixtures in use

<table>
<thead>
<tr>
<th>Fixture</th>
<th>Cues</th>
<th>Submasters</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dance Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td>DSM Chase</td>
</tr>
<tr>
<td></td>
<td>Performance</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tech Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dance Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td>DSM Chase</td>
</tr>
<tr>
<td></td>
<td>Performance</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preshow</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tech Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dance Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td>DSM Chase</td>
</tr>
<tr>
<td></td>
<td>Performance</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preshow</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tech Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dance Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td>DSM Chase</td>
</tr>
<tr>
<td></td>
<td>Performance</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
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<tr>
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<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Dance Rehearsal</td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td>DSM Chase</td>
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<td></td>
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<td></td>
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<td>DSM Chase</td>
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<td></td>
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<td></td>
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<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
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<td></td>
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<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1, 1, 2, 3, 5, 7, 8, 14 (MAX: 100%)</td>
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### Channels/Fixtures not in use

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<thead>
<tr>
<th>Fixture</th>
<th>Cues</th>
</tr>
</thead>
<tbody>
<tr>
<td>46</td>
<td>ACL Curtain</td>
</tr>
</tbody>
</table>
# Group Report

<table>
<thead>
<tr>
<th>Name</th>
<th>Fixtures</th>
<th>Submaster</th>
<th>Select SC</th>
<th>Toggle SC</th>
<th>Apply SC</th>
<th>Behaviour</th>
<th>Snap</th>
<th>Release</th>
<th>Rem p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area A</td>
<td>1,2,3,4</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>8</td>
<td>Overse 3</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area B</td>
<td>3,4</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area C</td>
<td>5,6,23,24</td>
<td>0</td>
<td>11</td>
<td>0</td>
<td>11</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area E</td>
<td>9,10</td>
<td>0</td>
<td>14</td>
<td>0</td>
<td>14</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area G</td>
<td>1.2,5.9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area H</td>
<td>15,16,23,24</td>
<td>0</td>
<td>104</td>
<td>0</td>
<td>104</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area I</td>
<td>17,18</td>
<td>0</td>
<td>103</td>
<td>0</td>
<td>103</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area L/K</td>
<td></td>
<td>0</td>
<td>101</td>
<td>0</td>
<td>101</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Area K</td>
<td>25,22</td>
<td>0</td>
<td>24</td>
<td>0</td>
<td>24</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Borton1</td>
<td>41</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Borton2</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>78</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cableink SL</td>
<td>26,27,28,29,30,31,32</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cableink SR</td>
<td>26,27,28</td>
<td>0</td>
<td>25</td>
<td>0</td>
<td>8</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable 1</td>
<td>26,27,29</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>28</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cable 2</td>
<td>21</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>26</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cable 3</td>
<td>23,34,35,36</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cable 4</td>
<td>27,36</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Cable 5</td>
<td>37,38,39,40,41,42,43,44</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>CFS Wash</td>
<td>42,43,44,45</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>15</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>DS Special</td>
<td>36,39</td>
<td>0</td>
<td>12</td>
<td>0</td>
<td>12</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>DSC</td>
<td>5,5,7,8</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
<td></td>
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<tr>
<td>DSL</td>
<td>5,10,11,12</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>5</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
<td></td>
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<tr>
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<td>1,3,3,4</td>
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<td>0</td>
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<td>Manual</td>
<td>Flash</td>
<td></td>
<td></td>
</tr>
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<td>Downstop</td>
<td>1,2,3,4,5,6,7,8,9,10,11,12</td>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 38</td>
<td>33,34,35,36</td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>17</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 39</td>
<td>33,34,35,36</td>
<td>0</td>
<td>19</td>
<td>0</td>
<td>19</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 33</td>
<td>5,6,7,8</td>
<td>0</td>
<td>21</td>
<td>0</td>
<td>21</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 32</td>
<td>17,18,19,20</td>
<td>0</td>
<td>22</td>
<td>0</td>
<td>22</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 37</td>
<td>22,24</td>
<td>0</td>
<td>23</td>
<td>0</td>
<td>23</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Group 44</td>
<td>1,2,3,4,5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
<tr>
<td>Lemmey 15</td>
<td>6,6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>Over 2</td>
<td>Manual</td>
<td>Flash</td>
<td></td>
</tr>
</tbody>
</table>

12/21/2018
**Edit Functions**

**Edit Fixture Library**
The fixture library is the list of all available fixtures that can be patched in the software. Each fixture has an associated definition file that contains information about how LightFactory can manipulate its features.

The fixture editor is a separate program provided with LightFactory. You can use the graphical interface to add, remove or modify fixtures.

See the "LightFactory Fixture Editor User Guide" for a detailed description of how to work with this application.

**Edit Matrices & Edit Profiles**
These edit functions are part of LightFactory and are described in section 6.2 – Patch.

**Edit Color Filters**
LightFactory includes a library of popular color filters (gels) from several suppliers. These can be used by the color picker to set fixtures capable of color mixing to the closest approximation of the selected filter. New filters can be added to the library or current ones modified using this editor.

Use the “Brand” pull down to show only those filters of the selected supplier.

New filters can be added by use of the “Add” button, which brings up the following dialog:

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Fill in the fields to describe the new filter and set the color patch at the bottom by clicking on it which brings up the standard color picker. Click on “OK” to add the new filter into the library.

Existing filters can be edited by selecting them and clicking on the “Edit” button which brings up the same dialog with some fields filled in.

Filters may be removed from the library by selecting them and using the “Remove” button.

**Note:** Some suppliers do not allow their filters to be modified or removed. A warning will be displayed if you try to edit any of those. Adding new filters to a supplier’s catalog is permitted, but once added cannot be modified or removed.

**Application Data Folder**
The application data folder is created in the user’s AppData folder when LightFactory is installed. This folder contains the fixture library and other reference data plus any log and error files generated by the software. The “Open windows application data folder” option displays the directory of this folder’s files.
**Window Layout Manager**

The window layout manager allows you to save floating window configurations for later recall. This is particularly useful if you have multiple monitors. The configurations are stored with the show file, thus you can create layouts with the windows needed for a particular show. For instance, some shows might use submasters and shortcuts to augment cues during performances and thus it would be helpful to have those windows displayed on the 2nd monitor for easy access.

When this option is selected from the "More" menu, the following dialog is displayed:

To create a layout:

- Call up the desired windows, then move and resize each one to the desired location on the 2nd monitor.
- Display the "Window Layout Manager" dialog and enter a name for the layout in the edit box provided.
- Assign an ID number to the layout. The ID number controls the position of the layout in the quick access bar on the main window. The number of layouts visible varies depending on the resolution of the monitor (typically 12-16).
- If you wish to assign a shortcut for easy recall of the layout, enter the number in the "Apply Shortcut" edit box.
- If you’d like the layout to be the default when LightFactory starts, set the switch to "Yes".
- Click the button labelled "Store New Layout" to save it to the current show file. The name of the new layout will be added to the list of existing layouts (if any) and a thumbnail of the layout will be shown in the lower left corner of the dialog.
To modify an existing layout:

- Arrange the desired windows.
- Display the “Window Layout Manager” dialog and select the layout to be updated from the list.
- Click either “Update Selected Layout” or “Update & Close” to save the changes.

If you haven’t assigned a shortcut to a layout, it can be applied from this dialog by selecting it and clicking on the “Apply Selected Layout” button. For V2.21 and up, a new layout quick access bar can be displayed on the main window by clicking on the small green arrow labelled “Layouts”.
7 Command Reference

The command window allows you to control your lighting system using a basic text interface. Traditional lighting desks have provided a command interface as a means to access large numbers of channels where individual buttons or faders were impractical. It may seem antiquated to include a command interface in LightFactory because it has an extensive Graphical User Interface (GUI) as described in the previous chapters. However, once familiar with the command structure, the command interface can be a very quick and powerful way of setting up scenes during complex programming sequences.

**Note:** It is also useful to learn the command structure because you can enter the channel selection syntax anywhere you wish to enter a large number of channels, e.g. the Cue List Editor. You can also enter commands directly from the channel display without having to shift focus back to the command window. As soon as a key is pressed in the channel display it will appear in the command edit box.

**Note:** The following applies equally when the Command Window is docked to the Channel Display.
Command Line Edit Box

This is where text commands are entered. An option in the System Settings tab of the System Properties window will enable context-sensitive help to be displayed as commands are entered. Also commands may be recalled for repeat operations. Commands may be executed by using the <ENTER> key on the keyboard.

Command Line Target

This box indicates which function will receive commands when entered (Live, Blind, Patch or Group). This box also displays the current cue in Live or Blind mode. This is also a clickable button which toggles the Command Line Edit Box between normal text entry mode and Keyboard Shortcuts. When in shortcuts mode, the legend “Console Keys” will appear on the right side of the Command Line Edit Box as shown below:

![Command Line Target](image)

A list of Keyboard Shortcuts appears at the end of this chapter.

Command History

LightFactory displays the last 100 commands entered in the text area just above the command entry box. Commands in the history text box can be retrieved into the command entry box using the up and down arrow keys on your keyboard. Pressing the up arrow will cycle through the last 100 commands starting with the last command entered. The down arrow will scroll back through commands you have passed with the up arrow.

Command Structure

Command Syntax Conventions

The commands described below use the following syntax:

- Characters entered via the keyboard appear in **bold**. Non-printing characters will be included within angle brackets (e.g. <ENTER>).
- Reference placeholders will be included within curly brackets (e.g. {attribute}).
- Optional parameters will be included within square brackets (e.g. [dmx]).
- Alternate parameters will be separated by a vertical bar and included within parentheses [e.g. (on | off | solo)].

Reserved Words

The following is a list of reserved words used in commands. When used in commands, these words are case insensitive. Named objects such as groups or palettes should not be defined using any of the following:

<table>
<thead>
<tr>
<th>@</th>
<th>@@</th>
<th>all</th>
<th>block</th>
<th>chilli</th>
<th>clear (clr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>connect</td>
<td>cue</td>
<td>cuelist</td>
<td>dim(mer)</td>
<td>disconnect</td>
<td>dmx</td>
</tr>
</tbody>
</table>
Channel Commands

When the value of any parameter of a channel or fixture is set using the following commands it is said to be under channel control which (usually) overrides any other control that may be applied (cue, submaster, etc.).

Channel commands take the following format:

[[channel list]] [[attribute]] [[@ [[(dmx | rem dim)]{value}] [[(time | fade){value}] | @@ | on | off | solo | full | up | down | hilight | lolight | home]]

Channel List

A single channel or a range of channels may be specified with the following syntax:

[(+ | -)] {chan} [[, | + | - | / | thru | thru on} {chan} …]

Single channels are separated by either a comma (,) or plus (+). A range of channels can be entered using the word “thru” or the forward slash (/) symbol between two values. Channels can be removed from a selection using the minus (-) key. “thru on” is a special keyword that applies changes only to those channels in a range that are already active (i.e. have an intensity level above 0).

If you enter a channel list only, the software will select the channels in the channel view. If the channel view is not visible it will be opened and brought to the front of your screen. If you are selecting channels by not entering the “@ {value}” on the end of the command, then you can add a + or a – to the front of the text to add or subtract from the currently selected channels.

With the addition of defining subsections within a fixture profile (Sub Fixtures), the subsections may be addressed with the following syntax:

[(+ | -)] {chan.subchan} [[, | + | - | / | thru] {chan.subchan} …]

Examples:
1,2,3,7,19/33 <ENTER> - Select channels 1, 2, 3, 7 & 19 through 33.
1+2+3+7+19/33-21 <ENTER> - Select channels 1, 2, 3, 7 & 19 through 33 with the exception of 21.
45.4/45.6 <ENTER> - Select sub channels 4 through 6 of Fixture 45.
-3/10 <ENTER> - Deselect channels 3 through 10.
1 thru on 20 <ENTER> - Select the active channels between 1 and 20.
6 thru <ENTER> - Select all sequential channels/fixtures of the same type starting with channel 6.

Attribute
By default, the software will operate on the intensity as it is assumed that all fixtures have this function. However, for intelligent fixtures, other attributes may be selected by using the keywords listed below:

pan, tilt, color, gobo, gobo r, control, effect, zoom, diff, iris, edge, focus, strobe, coloridx, goboidx.

Some of these attributes can accept a number following the keyword to access features where more than one of an attribute exists. E.g. some intelligent fixtures have more than one color wheel. If a command is entered with the word color, then color wheel 1 is selected by default. To select color wheel 2, the attribute would be entered as “color2”.

When fixture attributes are used in the command line, the value entered is a real world value that is logical to the attribute selected. The gobo command, for example, will take a number corresponding to the gobo index you want to select. Another example is the zoom attribute that takes beam angle (degrees) as its value. To address the dmx values, enter the word “dmx” after the “@”.

Examples:

37 pan @ 50 <ENTER> - Set fixture 37’s pan attribute to 50°.

24/30 gobo2 @ dmx 235 <ENTER> - Set gobo wheel 2’s control to a DMX value of 235 for fixtures 24 through 30.

Value
(@ [[dmx | rem dim]] {value} [[(time | fade) {value}]] | @@ | on | off | solo | full | up | down)

The single “@” is used to set the value to follow. The value can be a number from 0 to 100 or a reference to a value stored in a cue, group or palette. The value will be applied to the intensity attribute of the selected channel(s) unless the command is modified by specifying one of the attributes described in the previous section. The “*” and ““ characters can be used in place of “@” as well. If the value is preceded with “dmx”, it will be interpreted as a direct dmx value in the range of 0-255. If preceded by “rem dim”, only the currently selected channel(s) will be set to the value and all others will be set to 0.

Normally, when the command is executed, the value is applied using the “Master Fade Time”. This can be modified by adding the keyword “time” or “fade” followed by a value in seconds to apply the value over the specified time.

“on” will set the intensity of the listed channel(s) to the “on” value specified in System Properties. “off” sets the intensity to 0 and “full” or “@@” to 100%. “up” and “down” will increase or decrease the value of the listed channel(s) by an amount set in System Properties. “solo” will set the selected channels to the “on” value while setting all others to 0.
When the options “@@”, “on”, “off” & “solo” are entered by themselves with no other leading text, they will autocomplete, that is they don’t wait for the <ENTER> key to be pressed.

Examples:

1/6 <ENTER> - Select channels 1 through 6

@ 50 <ENTER> - Set the previously selected channels’ intensity to 50%

@ lavender <ENTER> - Set the previously selected channels to the attribute(s) stored in the generic palette “lavender”.

off – Set the previously selected channels to 0%. Note this command executes as soon as typed, i.e. does not wait for nor need <ENTER> to be typed.

3 solo time 10 <ENTER> - Set channel 3 to the “on” level over 10 seconds and set all other channels to 0.

Using Groups (Specific Palettes) & (Generic) Palettes in Channel Commands

When using the command line interface to set channels, you can reference groups (specific palettes) by name on both sides of the “@” symbol. You can also reference palettes by name on the right-hand side of the “@” symbol. A group name entered on the left side will select the channels in the group. Depending on the setting of the option “Only show palettes containing selected fixtures”, a group name entered on the right side will apply the group’s values to any channels that are selected and also included in the group or to any selected channels (virtual palettes).

As soon as you start typing the name of the group or palette on either side of the “@” symbol, a small window will appear suggesting matches to what has already been entered. This is designed to help with selecting groups and palettes without having to type all of the text. To select an item listed in the helper window, use the up and down arrow keys to move between the values and then press the <ENTER> key to select.

Examples:

LX Bridge 2 @ 25 <ENTER> - Sets the channels in group “LX Bridge 2” to 25%.

LX Wash @ Sky Blue <ENTER> - Set the channels in group “LX Wash” to the values of the attributes recorded in (generic) palette “Sky Blue”.

Referencing Groups & Palettes by Number

In addition to referencing groups and palettes by name, they can be referenced by number. Each group and palette type is assigned a number when it is created. The numbers are shown in the “Groups” and “Palettes” windows that are displayed when those buttons are clicked on the Channel Display.

To reference a group by number, use the keyword “group” (can be shortened to “grp”) followed by the desired number. Likewise, use the keyword “palette” followed by the desired number for generic palettes. For specific palettes, the syntax is “{palette type} {number}”.

Examples:

grp 11 @ 50 <ENTER> - Applies the values stored in Group 11 at 50% to the channels in the group.

6/9 @ palette 2 <ENTER> - Applies the attributes stored in (generic) Palette 2 to channels 6 through 9.

37 @ position 5 <ENTER> - Applies the values stored in Position Palette 5 for Fixture 37.
**Selecting & Referencing Channel Values in Cues**

The values stored in cues can be applied directly to channels without running the cue. The syntax of the command is:

```
[{channel list}] @ cue {number}
```

Examples:

```
1, 3, 5 <ENTER> - Select channels 1, 3 & 5.
@ cue 4 <ENTER> - Apply the values stored in Cue 4 to the selected channels.
2, 4, 6 @ cue 10 <ENTER> - Apply the values stored in Cue 10 to channels 2, 4 & 6.
```

**Additional Channel Commands**

**Undo**
The “undo” command is used to cancel the previous channel command. Successive “undo”s will back through the command history, but only effects channel commands.

**Clear**
Use the clear command (can be shortened to cl\r) to unselect some or all channels in the channel display. The command has the following syntax:

```
clear (channel list) | all <ENTER>
```

In addition the keyword “clear” entered by itself will clear the command history window.

**Release**
The release command can be shortened to rel to save typing. This command has several functions depending on the text entered after the keyword.

```
rel
```

rel by itself is equivalent to clicking the main “Release” button on the Channel Display. The first instance of the command will release channel control from the currently selected channel(s) and also unselect it/them. The next instance of the command would then release any remaining channels under channel control. Any channel so released will revert to the state it was in before being modified by channel control (for instance, cue control).

The action of this command is modified by an option found by expanding the “Release” menu on the Channel Display. *Reset cue playback on release* – With this option set, the “rel” command becomes a master reset and is equivalent to entering the “rel all” command described below.

```
rel {channel list}
```

Entering a channel list will release channel control on the specified channels regardless whether they’re selected or not. Selected channels will remain selected.

```
rel [sub | group | generic palette | fx | all]
```
In addition to channel control, the release command can be used to release other controls by specifying the modifiers shown above. These commands apply to all channels regardless whether any are selected. The "all" modifier will reset any active cue playbacks as well, effectively equivalent to a blackout.

| Note: The "rel all" command replaces the "bo bo" command in earlier versions. |

**Home, Hilight, Lo Light**

These commands can be used to set the selected fixtures’ attributes to the specified values as defined by their fixture profiles or defined in the special groups ~Home, ~Hi Light & ~Lo Light.

**If**

The "if" command is an advanced tool to allow the selection of channels or fixtures that match a series of conditions. The syntax is:

```
[({channel list}) if [!] {condition} [{operator} {condition}…] then {command}
```

The condition could be a direct value, a group name, palette name or a text string in the patch detail columns “Position”, “Purpose” or “Color”. The command only works on groups and palettes that have been applied. The command may be preceded by a channel list to operate on a subset of the applied group. Any text entered is case insensitive.

The operators are: & (and), | (or), ! (not).

Examples:

```
if downstage <ENTER> - Select the channels in the applied group “downstage”.

if upstage &! area b <ENTER> - Select the channels in the applied group “upstage” that do not have the label “area b” in the “Purpose” column of the Patch Detail.

if catwalk & red <ENTER> - Select the channels that have the label “catwalk” in the “Position” column of the Patch Detail that also have the palette “red” applied.

if @ 50 then 70 <ENTER> - Select those channels/fixtures whose intensity is at 50% and raise the intensity to 70%.
```

**View**

The “view” command is used to filter the channel display so that you can focus on a specific list of channels that you want to control. This command can filter the channel display by a channel list, group name, intensity value or an “if” statement. The format for the command is:

```
view (({channel list} | {group name} | @ {value} | if {condition} | all)
```

Examples:

```
view 1 + 5 + 17/20 <ENTER> - Create a display showing channel 1, 5, 17, 18, 19 & 20 only.

view upstage <ENTER> - Create a display showing the channels in group “upstage” only.

view if @35 <ENTER> - Create a display showing all channels whose current intensity is 35%.
```

To clear a view and return to displaying all channels, use the “view all” command.

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Scrollto
The “scrollto” command can be used to bring the row containing a specific channel into view in the channel display window. This command is useful in conjunction with the quick macro feature in the shortcut window. By creating a quick macro to scroll the channel display to a specific place, you can easily jump to any channel when working with a large number of fixtures.

The syntax for this command is:

```
scrollto {channel number}
```

Next/Last
These commands are equivalent to clicking on the “Select Next” and “Select Last” buttons on the channel display. The actions performed by these commands are described in Section 6.3 - Channel Display.

Park/Unpark
A “parked” channel is one whose values have been frozen with all other control locked out (channel control, cue control, etc.). Use the “park” command to set (a) channel(s) to that state. A parked channel will be displayed with all text in red. The format is:

```
[(channel list)] [@ (value)] (park | unpark)
```

Use the “unpark” command to return the currently selected channel(s) to the normal controlled state.

Example:

```
45/46 @ 50 park<ENTER> - Park channels 45 & 46 with the intensity set to 50%.
```

Submaster
The submaster command can be abbreviated to sub to save typing. This command has two functions depending on the text entered after the keyword.

```
sub {number list} @ (value)
```

The above command can be used to set a submaster or list of submasters to a specific value. The number list follows the same syntax as described in the channel list above.

```
sub (+ | - | page {number})
```

Use the above command to set the current submaster page. Entering a “+” or a “-” will increase or decrease the current page. Entering a number after the keyword “page” will jump to the specified page.

Dim
You can directly access DMX addresses and set levels in LightFactory using the “dim” command. When a DMX address is set to a specific value, it is said to be captured and will remain at that value regardless of the level of the channel patched to that address. Format:

```
dim {address list} @ [dmx] (value)
```
A single address or a range of addresses can be entered in the same manner as a channel list. DMX addresses range from 1 to 512. To access addresses beyond the first universe, use the form `{universe},{address}`. (Example: 3,250 would be address 250 in universe 3.)

The “dim” command works in much the same way as setting channels. The value is in % (0-100) unless preceded with the keyword “dmx”, in which case the range is 0-255.

To release a captured DMX address, enter an “r” at the end of the DMX address list. If no addresses are specified, then the command will release all captured DMX addresses.

**Select Dimmer**
Use this command to select the channel(s) to which the specified dimmer(s) is/are patched. Format:

```
select dimmer (address list)
```
Cue Execution & File Operations

Go, Stop, Back, Reset
These commands are the same as the buttons in the Master Playback and Cue List windows.

In addition, other keyboard keys can be assigned to perform “Go” and “Back” functions (See "Keyboard playback options").

Goto
The “goto” command can be used to run cues out of sequence. The syntax is:

    goto [{cue list #}]{cue number}

If cue number is entered by itself, the specified cue in the master playback will be executed. If the cue list # is also entered, the new cue list will be loaded into the master playback and the specified cue in the new list will be executed.

Examples:

    goto 7 <ENTER> - Execute cue 7 in the master playback.

    goto 2/5 <ENTER> - Load cue list 2 into the master playback and execute cue 5.

Load
The “load” command can be used to select the next cue to be executed when a “Go” command is given when you wish to run a cue out of sequence. The syntax is:

    load [{cue list #}]{cue number}

Saving & Loading Show Files
The current show file can be saved to disk and given a new name or an existing show file can be loaded by use of the following commands:

    save "[(path)]{filename}" 

    load "[(path)]{filename}"

If a path is not specified, the default show file folder is assumed. The file type .NEO will be added to the filename automatically. The entire string is enclosed in quotes.

Examples:

    save <ENTER> - If any changes have been made to the current show since it was loaded, the name shown in the Channel Display will have an “*” at the end and an archive copy of the original show file is created with “_REVn” appended to the show name, where “n” is a digit starting at 1 and incremented for each save operation. This allows the user to load previous versions of the show file if desired.

    save “myshow” <ENTER> - Will save the current show to a file named myshow.neo in the default show file folder.

    load “c:\my documents\lightfactory shows\myshow” <ENTER> - Will load the show myshow.neo located in the directory specified.
Recording Commands

Record
The record command can be abbreviated to rec to save typing. The command can be used to record cues, groups, submasters, specific palettes, generic palettes and simple chase effects. The syntax for each type of record operation is shown below.

**Note:** If the entire word is entered, a small window with buttons will appear above the command line showing labels for the NEO console softkeys. The labels may change in context as more of the command line is entered. For standalone LightFactory, these buttons should not be used. Using the abbreviated command will not display this window.

Record a Cue

```
rec [cue] [(cue number)] ["label"]
```

The keyword “cue” is optional. If no cue number is entered, the cue will be added to the end of the current active cue list. If a number is entered, it will be checked to see if it references an existing cue. An optional label enclosed in quotes can be entered which will appear in the “Description” column of the cue list editor and cue playbacks.

Example:

```plaintext
rec 4.5 “New Cue” <ENTER> - Record the current state of all channels into cue number 4.5 and give it the label New Cue. If cue 4.5 already exists, the following dialog will appear:
```

![Record over existing cue? dialog]

**Note:** For recording groups, palettes & submasters, the keywords “Exclude Zeros” may be added to the command so that any attribute that is at DMX 0 will not be recorded.

Record a Group

This command is the equivalent of clicking the “Record Group” button on the channel display. A snapshot of the selected channels will be recorded. The syntax is:

```
rec group [([number]) ["group name"]]
```

If no number is entered, the group will be added to the end of the group list. If a number and/or group name is entered, it will be checked to see if it references an existing group and if so, the following dialog will appear:
Choosing "Update" (the default if you press <ENTER>) will add any new selected channels to the existing group and adjust any existing channels in the current selection. Clicking on “Replace” will overwrite the existing group.

**Record a Submaster**

This command will create a group with a snapshot of the selected channels and assign the specified submaster number to it. The syntax is:

```
rec sub {number}
```

If the number matches a submaster already assigned, the following dialog will appear:

![Record Submaster dialog]

**Set Submaster Fade time**

Once a submaster has been recorded, its fade time may be set from the command line with the following syntax:

```
sub {number} time {value}
```

**Record a Specific Palette**

Use this command to record attributes of the selected channels to the specified specific palette type. The attributes recorded into (specific) palettes are organized into categories called palette types. The attributes included in each type are determined by a grid accessible from the Groups Editor window. See the section titled “Edit Palette Type” in Section 6.4 – Groups (Specific Palettes) Editor.

The syntax of this command is:

```
rec (intensity | position | color | beam | edge | utility)
```

The palette will be recorded with the label "{Attribute Type} {n}" (Example: Color 3).

**Record a Generic Palette**

Use this command to record attributes to a generic palette. If no number is specified, the palette will be added to the end of the list. The label is required.
**Rec palette** ([number]) {"label"}

Note: This command is not very sophisticated. If you have more than one fixture selected, only the attributes set in the lowest number fixture will be recorded. Therefore, it is recommended that you have only one fixture selected when using this command.

**Record a Simple Chase Step**

This command can be used to add a step or modify a step with the active or selected channels to an existing chase effect. Each effect is assigned a number when it is recorded. To determine the number of the desired effect, call up the Fx List Editor window (see section 6.8 for more details). The syntax is:

```
rec fx {number} [(step)] [sel]
```

If a step is not specified, a new step will be added to the effect. If `sel` is not entered, all active channels will be added to the effect step, otherwise only the selected channels will be added.

**Update**

The update command can be abbreviated to `upd` to save typing.

```
upd [cue {number} [thru [cue] {number}]][
```

Use the update command to update an existing cue or range of cues. Entering the “Update” command on its own will immediately update the current live cue with the current channel state.

**Modifying Cue Timing**

The time values stored in cues can be modified with the following commands:

```
cue {number list} (time | delay) ([(+ | -)](value) | [(+ | -)](up value)/(+( | -))(down value))
cue {number list} follow [(+ | -)](follow time)
cue number list) (pos time (value) | color time (value) | beam time (value) | edge time (value))
```

A single cue or a range of cues can be modified. The format of the “number list” is the same as for a channel list described above. Time values can be absolute or relative. For “time” and “delay”, there can be an up time/delay and a down time/delay separated by the “/” character. If a single time is entered, it will apply to both the up and down values. If a “follow” time is set, the trigger for the affected cue(s) will be changed to “Autofollow” also. The third form of this command can be used to alter the attribute family timing for the cue or list of cues.

Examples:

```
cue 3 time 4.5 <ENTER> - Sets the up and down times of Cue 3 to 4.5 seconds.
cue 5 time 2/4 <ENTER> - Sets the up time of Cue 5 to 2 seconds and the down time to 4 seconds.
cue 2 time +1.5 <ENTER> - Adds 1.5 seconds to the time for Cue 2. If the up and down times are different, applies only to the up time.
cue 4 follow 6 <ENTER> - Sets a follow time of 6 seconds for the next cue after Cue 4.
```
cue 6 color time 4 <ENTER> - Sets the color attribute time for Cue 6 to 4 seconds.

Modifying Channel Timing
Each channel stored in a cue may have its own time and delay that overrides the cue timing. The following commands can be used to set these values:

{channel list} time {number} [delay {number}]
group {(name) | (number)} time {number} [delay number]

Block, Smart Block & Unblock
The cue-level block flags can be set or unset with the following command:

cue {number} (block | smart block | unblock)

This command can be applied only to a single cue at a time.

Adding/Removing Fx
Defined effects may be added or deleted from a cue or cues with the following command:

cue {number}[(+/\{number\})…] fx [(+/ \{effect number\})[(+/ \{effect number\})…]

If no fx number(s) are specified, all effects will be removed from the cue(s).
**Communication with external systems**

LightFactory can connect to and communicate with external systems via a network connection, a serial line or a MIDI interface. The following sections provide details of the commands used.

**Telnet**

Telnet provides a way to send and receive commands over a network connection. The following commands can be used to establish a connection with and send commands to an external system.

```plaintext
connect ([ip address] | {system name})
```

Use the system name if it can be resolved by the network or the ip address of the external system if the name cannot be resolved. The port number is fixed at 3100.

**Note:**
You can establish a telnet connection to a program running on the same system as LightFactory by using the system name `localhost` (or ip address 127.0.0.1).

Once connected to a remote system, commands can be sent using the “send” or “sendto” command.

```plaintext
send {command string} - Send the command to the first connected system.

sendto (all | {remote system}) {command string} - Send the command to a specific remote system or all remote systems.
```

Use the disconnect command to end communication with a remote system.

```plaintext
disconnect – End communication to all connected systems.

disconnect ([ip address] | {system name}) – End communication with a specific external system.
```

Use the commands `telnet off` and `telnet on` to suspend and restore telnet traffic without disconnecting the link.

**UDP Messages**

Unlike telnet, UDP messages are connectionless with no acknowledgement received back when a message is sent.

```plaintext
Send udp {port number} {message} – Send a text message as ASCII up to 255 characters.

Send udp hex {port number} {##} {##} {##}... – Send raw 8-bit bytes. Each byte is entered as a 2-character hex value (00-FF).
```

**Serial Port**

Similar to Telnet, commands may be sent to or received from another system or device connected to the LF computer via a serial line. The following commands can be used to open a serial port, send commands and close the port.

```plaintext
serialopen {port} [[parameter], [[parameter]...]]
```

The (optional) parameters that may be specified are:

```plaintext
baud ([rate]), data bits ([7 | 8]), stop bits ([1 | 2]), parity ([none | even | odd]),
flow ([none | xon/xoff | rts])
```
The default parameters are: baud=9600, data bits=8, stop bits=1, parity=none, flow=none. In addition the parameter ignore can be added which will prevent incoming serial data from being sent to the command line processor.

```
serialwrite {port} {text}
```

Write the text data to the serial port. A \r may be added to send a return. If the specified port has not been opened previously, this command will open it with default parameters and set to ignore incoming commands

```
serialclose (port) – End communications on the specified port.
```

**MIDI**

In addition to receiving MIDI commands, LightFactory can send commands to external systems. The basic form of a MIDI message is:

```
midi {device #}[/channel #] {message type} [data 1] [data 2]
```

A MIDI connection can support up to 16 devices, each having 16 channels. The device # specifies which device will receive the message. LightFactory polls for connect MIDI devices and lists them in the command history screen during startup. A device number must be specified as part of the command syntax.

An optional channel number may be specified also after the device number separated by a period. If not specified, the channel number defaults to 1.

The message type is one of the following keywords: ALLNOTESOFF, NOTEOFF, NOTEON, KEYAFTERTOUCH, CONTROLCHANGE, PROGRAMCHANGE, CHANAFTERTOUCH, PITCHBEND, SYSTEMMESSAGE, BEGINSYSEX, MTCQUARTERFRAME, SONGPOSPT, SONGSELECT, ENDSYSEX ,TIMINGCLOCK, START, CONTINUE, STOP, ACTIVESENSING, SYSTEMRESET.

The data fields will contain values relevant to the message type. Knowledge of the receiving system is needed in order to construct proper messages for it.

**Chillinet & Ican**

There are architectural controls that can be integrated into a venue’s lighting system. LightFactory can send and receive messages from these systems via a serial line or network connection. These commands can be used to send command strings from LightFactory. The syntax of these commands are:

```
chilli {message string}
ican {message string}
```

Knowledge of the receiving system is needed in order to construct proper messages for it.

**VisionNet**

VisionNet is a fully integrated lighting management system from Philips Strand Lighting. More information is available at the Philips Strand **website** or by contacting LightFactory support (support@lightfactory.net). The basic form of a VisionNet command is:

```
vn {message type} [data 1] [data 2] [data 3]
```

Each message can have up to 3 bytes of data depending on the message type. Knowledge of the receiving system is needed in order to construct proper messages for it.
Miscellaneous Commands

Shortcut
The shortcut command can be abbreviated to \texttt{sc} to save typing. Use the shortcut command to execute the desired shortcut. The syntax is:

\texttt{sc \{number\} \{[on | off]\}}

The optional keywords "on" and "off" can be used to control the state of latching shortcuts. If not specified, a latching shortcut will be set to the "on" state.

Macro
The macro command can be used to execute any of the macros added to the show. The syntax for this command is:

\texttt{macro [stop] \{(number) | (name)\}}

Add the keyword "stop" to end a running macro.

Macros may have variables associated with them. The value of a variable may be set before a macro is run. To do this from the command line, set the variable by entering the command:

\{variable name\} = \{value\}

The following example will illustrate setting variables and executing a macro:

Consider the following macro named “Channel Check”:

\begin{verbatim}
Checkchan = Startchan
loop Maxcount
  Checkchan @ Level
  sleep 1
  @ 0
  loop end
rel
\end{verbatim}

This macro when run will step through a group of channels starting with the value of “Startchan”, setting each one in turn to the value specified by “Level” until “Maxcount” is reached. An example of running this macro would be:

\begin{verbatim}
Startchan = 13
Maxcount = 24
Level = 35
macro Channel Check
\end{verbatim}

With the variables defined above, “Channel Check” will start with Channel 13, setting its level to 35% for 1 second and proceed through Channel 24. When the loop is complete, it will execute a “Release” command to reset all channels.
**Master Fade Time**
The following commands can be used to set the master fade time for all channels. Once you have set the desired time, all changes made to fixture intensity levels will apply over this time.

```
Note: The master fade time applies to manual level changes only. This value will be overridden by cue and effects controls when running a show.
```

The syntax for this command is (use either keyword):

```
(fade | time) {time in seconds}
```

**Delete**
The delete command provides a quick way to delete a cue from the currently active cue list or a group. The syntax is:

```
delete (cue | group) {number}
```

When the command is entered, a confirmation dialog will be displayed to allow executing or cancelling the command.

**Timecode**
LightFactory now supports an internal timecode generator that can run independent of any media playback. To enable internal timecodes, enable the option in the timecode tab of the “External Triggers” window. Once enabled, the timecode generator can be controlled with the following commands:

```
tc reset – This command will reset the internal timecode back to 00:00:00:00.
tc pause – The internal timecode will stop in its current position.
tc con – Timecode will continue from where it was paused.
tc {time value} – Use this to set the timecode to a specific value. The time value is specified as:
{hours}:{minutes}:{seconds}:{frame}
```

**Tempo**
The tempo commands can be used to control the tap tempo functions of the software:

```
tempo reset – Reset the tap tempo in the system.
tempo pause – Temporarily pause the tap tempo events.
tempo con – Resume the paused tap tempo events.
tempo {value} – Set the tap tempo rate in bpm.
tempo div {value} – Divide the tempo by the specified amount.
```

**Stopwatch Commands**
If the stopwatch is displayed in the sidebar, it may be controlled with the following command:

```
sw (start | stop | reset)
```
# Keyboard Shortcuts

When the “Console Keys” legend is displayed on the right side of the command line, the following characters entered via the keyboard cause the corresponding command to be entered (commands shown in lower case do not show on the command line):

<table>
<thead>
<tr>
<th>Key</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>BEAM</td>
</tr>
<tr>
<td>C</td>
<td>COPY FROM</td>
</tr>
<tr>
<td>D</td>
<td>DELAY</td>
</tr>
<tr>
<td>E</td>
<td>EDGE</td>
</tr>
<tr>
<td>F</td>
<td>FOLLOW</td>
</tr>
<tr>
<td>G</td>
<td>GROUP</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; G</td>
<td>GOTO</td>
</tr>
<tr>
<td>I</td>
<td>INTENSITY</td>
</tr>
<tr>
<td>L</td>
<td>last</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; L</td>
<td>LOAD</td>
</tr>
<tr>
<td>M</td>
<td>MACRO</td>
</tr>
<tr>
<td>N</td>
<td>next</td>
</tr>
<tr>
<td>O</td>
<td>tracking options</td>
</tr>
<tr>
<td>P</td>
<td>POSITION</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; P</td>
<td>PRESET</td>
</tr>
<tr>
<td>Q</td>
<td>CUE</td>
</tr>
<tr>
<td>R</td>
<td>RECORD</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; R</td>
<td>CUE RESET</td>
</tr>
<tr>
<td>S</td>
<td>SUB</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; S</td>
<td>SHORTCUT</td>
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<tr>
<td>T</td>
<td>TIME</td>
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<tr>
<td>&lt;SHIFT&gt; T</td>
<td>TEXT</td>
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<tr>
<td>U</td>
<td>UPDATE</td>
</tr>
<tr>
<td>&lt;SHIFT&gt; U</td>
<td>UNDO</td>
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<tr>
<td>/</td>
<td>THRU</td>
</tr>
<tr>
<td>[</td>
<td>GOTO PREV</td>
</tr>
<tr>
<td>]</td>
<td>GOTO NEXT</td>
</tr>
<tr>
<td>&lt;ESC&gt;</td>
<td>REL</td>
</tr>
<tr>
<td>&lt;SHIFT&gt;&lt;ESC&gt;</td>
<td>clear selected</td>
</tr>
</tbody>
</table>