



CLARITY

Lighting and Media Control

LX-Series & Desktop

USER MANUAL

Issue 5.51



Desktop (MAC/PC)



LX300



LX600



LX900

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LSC Lighting Systems (Aust) Pty. Ltd.

ABN 21 090 801 675

65-67 Discovery Road
Dandenong South, Vic.
Australia

Tel: +61 3 9702 8000 Fax: +61 3 9702 8466

email: info@lsclighting.com

web: www.lsclighting.com

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Clarity LX products are manufactured in Australia.

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Conventions Used in this Manual

Throughout this manual, certain conventions have been used to make the meaning clearer.

- 1) A word in **Bold** text represents a button, a Tab, an area or label on the GUI (Graphical User Interface).
- 2) The terms "Click" "Select" and "Touch" are interchangeable.
- 3) Emphasis is indicated by underlining.
- 4) *Notes or Hints are displayed in italic font*

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1 Latest Features

1.1 OVERVIEW

Both LSC Lighting Systems (Aust) Pty. Ltd. and OpenClear Pty. Ltd. have a corporate policy of continuous improvement covering areas such as product design and documentation. To achieve this goal, we undertake to release software updates for all products on a regular basis. The latest features to be added to this version of Clarity are listed below.

1.2 VERSION 2.51

1.2.1 Thrusters – Global Speed Controls

Thrusters allow for global speed control of Cuelists, Chases and Dynamics (Rate and Size). The new rocket icon on the toolbar is used to access the settings.

On LX consoles Thrusters are also instantly available on the encoders, whilst holding down the [function] button. Turning the encoder/s alters the value and clicking the encoder resets the value to 'x1' – default.

Thrusters can also be freely assigned to any fader/s on LX consoles and VX wings. The Thrusters button on the toolbar flashes Red when any value/s are not set to default. (x1.0). Press button to access thruster GUI controls to set value and reset one/all.

The settings dialog allows the user to change thruster control on GUI between wheel or absolute fader. This also affects the LX/VX faders to operate in relative (scoot) or absolute mode. Absolute faders (VX/LX/GUI) are linear from x0 to x1 at the halfway point, then exponential from x1 to x10. The maximum thrust for absolute faders can be set between x2 and x100, default to x10.

1.2.2 Rotate fixture icons in Rig View

Non rectangular compound fixtures can now be rotated in rig view in increments of 90 degrees.

1.2.3 Console Lock

The lock provides a number of options including;

- Full Lock
- Playback Lock
- Lock Save
- Lock Edit

1.2.4 Replace Fixtures

Right clicking on a fixture in the patch window allows the selection of fixture replace. This uses Clarity's powerful cloning engine to replace existing fixtures with new fixtures. Real World parameters are used to ensure minimal programming updates are required (e.g. Pan/Tilt are in degrees, Strobe is in Hz)

The new fixtures re-use the same fixture numbers, and all Groups, Rig Views, Presets and Cuelists are updated with the new fixture data whilst the old fixtures are completely removed from the show file. If the DMX footprint is the same or less than the original fixture, the original DMX start address will be retained. If not then the fixtures will appear in the Unpatched Fixtures window. Improved Cloning for Compound fixtures.

When cloning Compound fixtures to another fixture with different cell counts, the user is now presented with a window that allows them to visually map which cells are mapped to what cells in the incoming fixture.

This allows for complete flexibility and predictability when mapping Compound to Compound, Compound to Non-Compound and Non-Compound to Compound fixtures.

1.2.5 Improved Pyro Control

The Safe/Fire parameter is treated as an Intensity, so that it is always controlled live by the playback fader, Grand Master and DBO. This means that pressing the DBO button will instantly set the Safe/Fire mode channel to Zero.

Please note: LSC do not recommend nor endorse using DMX for the control of Pyrotechnics.

1.2.6 TimeLines in cuelists.

It is now possible to trigger a timeline via a script in a cue.

The syntax is *tl/timeline play/stop/rewind {timeline name}*
(N.B. Timeline names are case Sensitive, and can contain spaces)

Examples:

timeline play NameOfTimeLine

tl play Timeline Number 1

timeline stop NameOfTimeLine

tl stop We Will Rock You

timeline rewind Blue Monday

1.2.1 Minor Changes

Updated to the latest Carallon fixture library - Rev 14.1.424

Extend Control Booth Assign action button method to also work for playback displays - renamed to just 'Assign' and 'Clear' accordingly.

Simplified all top-level window names.

If a timeline with option 'Snap-release-all at start' is triggered by a cuelist script, that cuelist is exempted from the release all.

Highly significant playback optimizations applied resulting in benefits between 40% and 340% depending on platform.

1.3 VERSION 2.4

1.3.1 New Fixture Library

Clarity always did a great job of working with compound fixtures (multiple fixtures within the one fixture) but over the years the way that they have evolved means that we had to change some things. The Carallon fixture library (used by Clarity) and the Clarity software did not allow for non-rectangular compound fixtures (e.g. round) nor for some of the new features found in the next generation of very complex compound fixtures such as the High End Shape Shifter.

Another issue with compound fixtures is that manufacturers usually assign all the channels that are common to all of the sub fixtures (within a fixture) at either the start or end of their channel list. However some manufacturers are now putting the common channels at both ends of the channel list. This creates a very cumbersome operating interface for these fixtures. Yet another issue was that some manufacturers did not specify the correct default values for the RGB channels resulting in the need to manually set RGB to 100% before any intensity could be obtained from the fixture.

This version of Clarity has a totally new fixture library that overcomes these problems. It allows for the latest types of compound fixtures and more importantly it makes all compound fixtures appear in a standardised format.

- Common features of compound fixtures are now all grouped together at the start of the fixture channels.
- Individual cells always get a virtual dimmer if a real one does not exist.
- The home values of sub cell RGB will now always be 100%.

Another major change is that Clarity 2.4 and up now saves the patched fixture types inside the show file. This avoids errors when the fixture library is updated and fixtures change footprint which can invalidate older shows.

The new library is a new foundation for the future of Clarity.

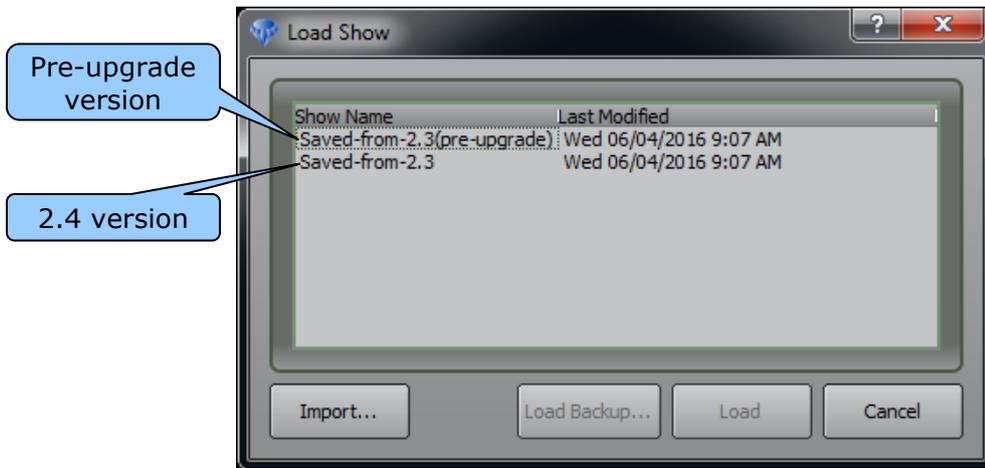
1.3.1 Show Compatibility

Shows created in earlier versions of Clarity can still be loaded in Clarity version 2.4. These shows do not include their patched fixtures (as they do in version 2.4 and on) so Clarity looks to see if there is a pre-2.4 fixture library available. This original library is now referred to as the "Legacy Library".

- The location/name of the "Legacy Library" is: Clarity/library.
- The location/name of the new (v2.4 and on) fixture library is: Clarity/fixlib.

Clarity checks that the legacy library is the latest version available. If it does not find the latest legacy library you will be prompted to download and install the legacy library from the LSC website.

When a pre-2.4 show is opened and then saved it will be automatically converted to version 2.4 format (with its fixtures embedded in the show file). In addition Clarity automatically creates a "pre-upgrade" copy (without the embedded fixtures) that can be used in any older Clarity systems still running versions earlier than 2.4.



Shows created and exported using version 2.4 cannot be imported into earlier versions of Clarity.

1.3.2 Network Devices

The "Network Devices" feature allows Clarity to interface with UDP network devices such as Network GPI (General Purpose Interface) units so that they can trigger playback actions in Clarity and also be controlled by Clarity over a network connection. See section 34.3

1.3.3 Bookmarks

In previous versions, when a Page Bookmark was recalled, it released all other playbacks. Now there are multiple options to choose the way that playbacks are released or not released. See section 8.7.14

1.3.4 Freeset Load Option

When changing a show you can now choose an option to NOT load the default freesets. See section 30.2.2

1.3.5 Patch Highlight

Patch highlight provides a quick method of identifying fixtures when patching by turning on their intensity channel at 50%. See section 11.3.4

1.3.6 Mass Multi Patch

Mass multi-patch is a special feature that is only available to Clarity systems that have the unlimited license (Clarity product code CT/U). It allows a very large quantity of one type of fixture to be patched to a single unit number. It is most useful when Clarity is being used to control extensive installations of LsED strips. Contact LSC for more information.

1.3.7 Minor Changes

- Version 2.4 includes the latest HASP Mac and windows runtime software.
- In the Patch window's "Library" tab, the built-in "Custom" manufacturer has been renamed to "User Custom" to differentiate it from Carallon's "Custom" manufacturer.
- In the Clone window, fixtures are sorted by patch order rather than numeric order.
- The Circle Proglet now has a "NoBase" option.
- MIDI port selection has been added in the "MIDI trigger" dialog as well as "Timecode configuration" dialog.
- The latest version of the user manual is included.

2 Introduction/Models

2.1 OVERVIEW

Clarity lighting and media control is available as a Desktop software package for PC or MAC (with optional USB connected peripherals) or in three console models, LX300, LX600 and LX900.

There are separate sections in this manual for the Desktop version (with its optional peripherals) and for each of the Console models.

The software is common to all platforms, however there are small differences that are particular to each platform due to the different hardware controls of each platform. The common operating system is described in detail with separate sections for of the various operations that can be performed. The screen shots used in these sections of the manual are all from the LX600. There might be slight variations in the screen layout in other modes of operation.

The Desktop version can be configured to run in desktop mode or to emulate any of the console platforms. Emulating a console is most useful for pre-programming a show for a console when the console is not available.

2.2 DESKTOP VERSION



Clarity Desktop
shown with optional VX20 wing and
external monitors.

The desktop version is described in its own section of this manual. A range of USB accessories are available for desktop operation.

2.3 CONSOLE MODELS

There are three models in the LX range of consoles....



LX300



LX600



LX900

Each console is described in its own section of this manual.

2.4 COMMON FEATURES

The desktop and LX consoles all run the renowned **Clarity** software with many years of proven reliability on thousands of shows. Some of the main features of Clarity are:

- Full Drag and Drop Patching, with intelligent fixture Cloning.
- Rig View with 2D simulation and easy fixture selection.

- Seamless fixture substitution, brand to brand, model to model, type to type, etc, from the world's most comprehensive Fixture Library.
- Multiple programmers, each with independent unlimited Undo/Redo.
- Media Server Integration with clip thumbnails (supports Arkaos VJ DMX, ArKaos Media Master, Catalyst, Green Hippo's Hippotizer, Pandora's Box, ROBE Digispots).
- LED pixel mapping with picture and video playback – maximum size limited only by available DMX slots.
- Full Dynamics Editor and Effects Engine with smooth cross-fading of effects.
- Freesets – just like Presets, but independent of fixture type and quantity.
- Time Presets and Live Time Busking interface.
- Unlimited Groups, Presets, Freesets, Cues and Chases.
- Audio playback and time-code synchronization.
- Full tracking cue-lists with Macro scripts and Undo/Redo of cue record/delete.
- Unique Performance window live interface, a very powerful ad-lib playback matrix grid.

2.5 HELP

The desktop installation includes a copy of this manual that can be found in the LSC folder.

The LX consoles contain a copy of this manual that can be viewed on screen and on-board video tutorials of common operations. They are contained in the LX Tools utility.

- To start LX Tools from the console press **Function+Fine+Fine** at the same time.
- To start LX Tools from the keyboard press **Ctrl+Alt+L** at the same time.

On LX consoles the manual can also be accessed from the menu via "Show/Help".

If you are experiencing problems with Clarity either contact your local LSC agent or post a message on the LSC forum at <http://www.lslighting.com/forums/>

3 Desktop (PC or MAC) Clarity

3.1 OVERVIEW



Desktop

The desktop version of Clarity consists of a software application and optional control surfaces and interfaces. In its simplest form, Clarity can be run with just a computer where control is via a Graphical User Interface (GUI) or Command Line input and output is via ArtNet (DMX over Ethernet). Hardware can be added in the form of USB to DMX adaptors and USB Playback and Programming wings that also include DMX outputs.

The desktop version of Clarity is available for both PC and MAC operating systems. Purchased versions of Clarity desktop include a USB dongle (HASP) that you plug into a USB port of the same computer that is running Clarity or into the secure compartment in the rear of a VX10 or VX20 wing. When you start Clarity, it reads the license from the dongle and automatically enables the channel capability that you have purchased. Multiple dongles can be plugged in at the same time to increase your available DMX channels.

Your Clarity USB Hasp Dongle is a valuable item. Without it, Clarity will operate in "Demo Mode" as described below. Therefore you should care for it as you would any other valuable piece of equipment. LSC recommends that you insure your USB Hasp Dongle against loss, theft or damage as LSC cannot supply a replacement in these circumstances.

3.1.1 Software

The Clarity software contained on the Clarity CD is also available as a download from the LSC website, www.lsclighting.com. Both the CD and downloaded versions are identical although both LSC Lighting Systems (Aust) Pty. Ltd. and OpenClear Pty. Ltd. have a corporate policy of continuous improvement. To achieve this goal, we undertake to release software updates for all products on a regular basis. In light of this policy, the website might contain a later version of Clarity than the version on your CD or in your console. Please check the web site for the latest version of Clarity software.

3.2 INSTALLING CLARITY ON A PC

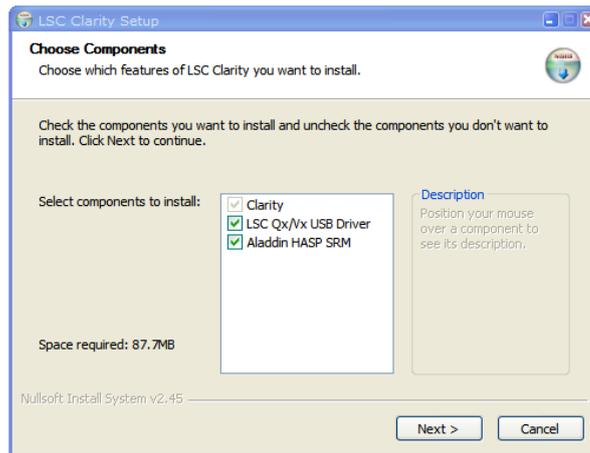
When using a PC type of computer, LSC recommends running Clarity on Windows 7 (32 or 64bit) operating system. Clarity might not operate correctly with later versions of windows. We also recommend using a computer with a minimum of an i5 processor.

Note: The Clarity software and device drivers must be installed before connecting any QX DMX nodes or VX wings to your computer.

Install the software by double-clicking on the Clarity installation file supplied on the CD or downloaded from the LSC website (www.lsclighting.com).

Note: The name of the Clarity installation file will be different depending on which version of software you are loading but will be of the form Clarity-PC-x.y.z.exe where x.y.z is the version number of the software.

Windows will ask you if you want to allow Clarity to make changes to your computer. Click **Yes** and the "LSC Clarity Setup" dialog box appears.



Components are selected for installation by checking their box. Position your mouse over a component to see its description.

A new installation of Clarity requires all 3 components to be installed.

- Clarity
- LSC QX/VX USB Driver
- Aladdin HASP SRM

The Aladdin HASP SRM software is for the USB Dongle that contains your Clarity license.

An upgrade to a new version of Clarity only requires 2 components to be installed.

- Clarity
- LSC QX/VX USB Driver

An upgrade of the operating system of your PC (for example Win 8 to Win 10) requires the "Aladdin HASP SRM" to be re-installed.

Continue the installation by clicking **Next**, then follow the on screen instructions.

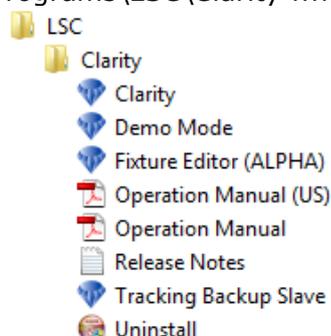
The QX/VX drivers are certified 64 bit drivers, however you may be asked to confirm their installation. Installation of the "Aladdin HASP SRM" software can take several minutes. You can check the operation as described in "HASP Diagnostics" below.

When the installation is complete, click **Close**.

If you accept the defaults, Clarity will be installed in C:\Program Files\LSC\Clarity.

You can now plug in a QX DMX node, VX wing or USB license dongle (Hasp). The first time that you do this, windows automatically installs their device drivers. This takes a few moments and windows will inform you that "Your device is ready to use".

To run Clarity, click on Start\All Programs\LSC\Clarity where you will see all of the installed files.



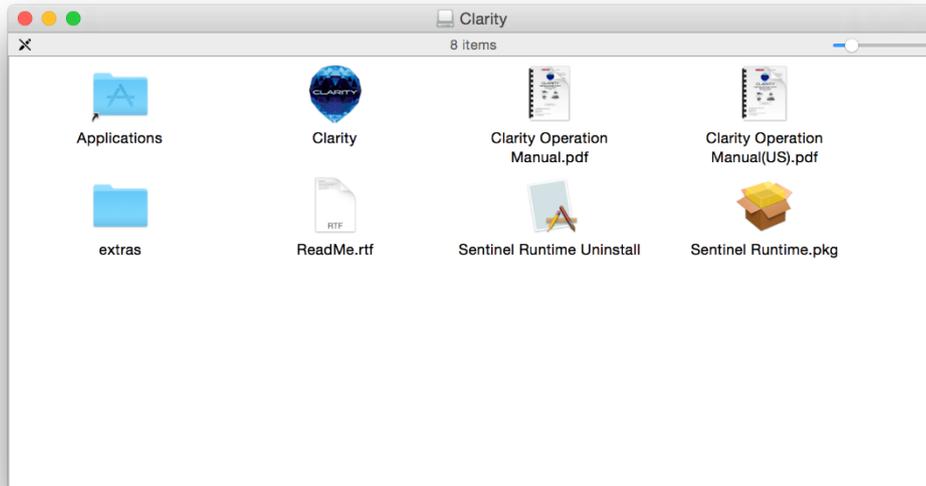
Click on **Clarity** to run the program.

The above steps are for installation on Windows 7.

3.3 INSTALLING CLARITY ON A MAC

When using a Mac type of computer, LSC recommends running Clarity on the OSX 10.10.4 Yosemite operating system. Clarity might not operate correctly with later versions of operating system. We also recommend using a computer with a minimum of an i5 processor.

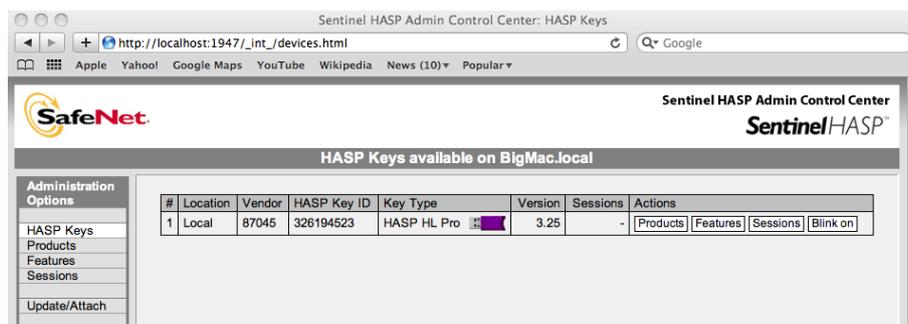
- Open the DMG file by double clicking. This mounts a drive called "Clarity" onto the desktop.
- Open the drive and you will see the following:



- Double click on "Sentinel Runtime.pkg" and follow the prompts to install the HASP driver that is required for the software to run in licensed mode.
- Once the Sentinel driver is installed you can install Clarity by dragging the "Clarity" icon to the left and dropping it onto the Applications folder. Do NOT double click the Clarity icon as this will run Clarity instead of installing it.
- You may receive a warning that the file exists, if so select the "Overwrite" or "Replace" option.
- If you need to uninstall the HASP SRM Run-time environment you can do this by running "Sentinel Runtime Uninstall".
- If you need to uninstall Clarity then all you need to do is delete (Move to Trash) the "Clarity.app" from your Applications folder.

HASP DIAGNOSTICS

You can verify that the HASP SRM Runtime is correctly installed by navigating to <http://localhost:1947> to view the "HASP SRM Admin Control Centre". Make sure you USB license dongle is plugged into a USB port then click on **HASP Keys** to verify that your key is recognized. You might have to refresh the page if you are too quick.



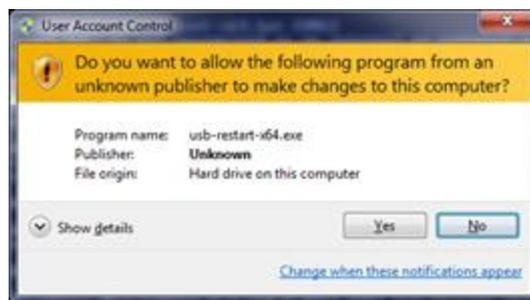
3.4 VX/QX DEVICE DRIVER (WINDOWS & MAC)

On early versions of Clarity, some computers had intermittent USB connection problems with VX wings and QX DMX nodes. These issues can cause rapid disconnect/reconnect of USB devices, which can cause an overflow of the operating system's USB stack. Version 2.2 of Clarity introduced a new driver that provides a far more stable and recoverable method of connection to VX wings and QX DMX nodes. The new driver has many changes to ensure that this is less likely to occur and also includes a special application to reset the host operating system's USB stack in the event of it crashing.

The new driver requires VX wings to be updated to the latest Firmware (v1.15). This update can be downloaded from www.lsclighting.com.au/vxupdate

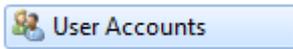
3.4.1 Windows 64 bit Device Driver.

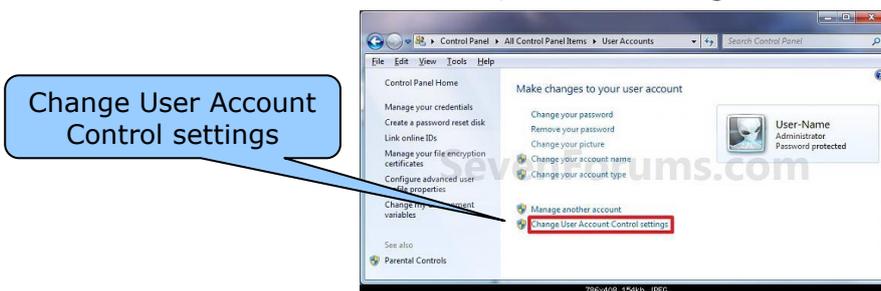
The application that 'reboots' the USB stack (described above) requires Administrator privileges to run. On Windows 64 bit computers this will mean that the "UAC" (User Account Control) warning is triggered, as shown below:



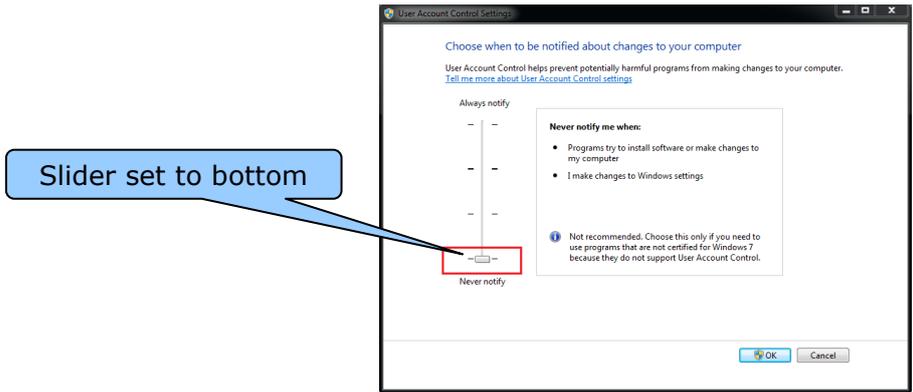
This is not desirable because it means that the USB stack will not automatically reset. You would need to manually press [Yes]. Therefore we strongly recommend that you set the UAC to the "Never Notify" level (as described below) to prevent this dialog from appearing and allow Clarity to operate seamlessly on your computer.

Changing the UAC Setting – Option 1

- Go to the Start Menu search box and type: **User Accounts**
- A list of search results will appear:
- Click on 
- On the "User Accounts" window, click on "Change User Account Control settings":

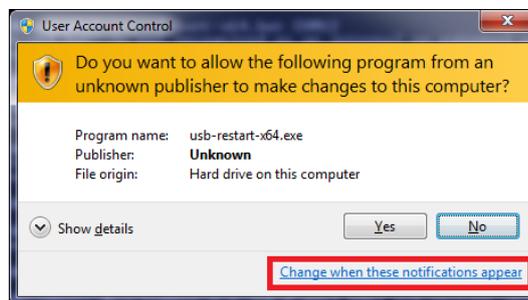


- On the User Access Control Settings window that appears, move the slider all the way to the bottom then press **OK**.

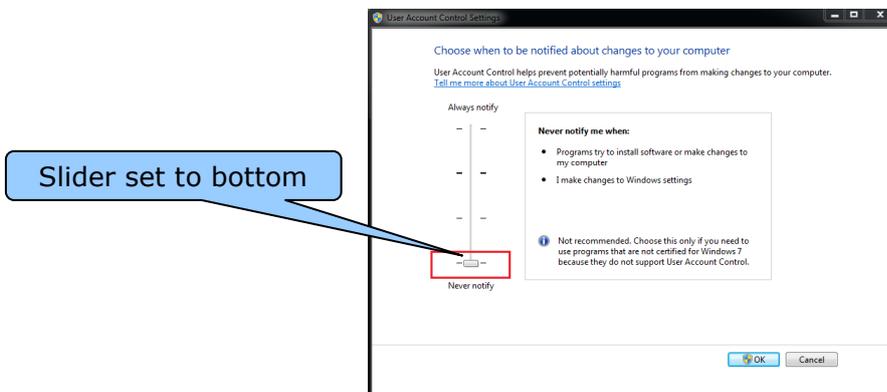


Changing the UAC Setting – Option 2

- If you have not set the UAC as described in option 1 above and the pop-up dialog box appears:



- Click on "Change when these notifications appear."
- On the User Access Control Settings window that appears, move the slider all the way to the bottom then press **OK**.



3.5 DEMO MODE

If Clarity is run without a USB dongle it will run in Demo mode. Demo mode has full functionality but the intensity of all fixtures will black out and all non-fadable channels will freeze for a short period on a regular basis. It is therefore not suitable for running a show, however it is ideal for training and demonstrations or to create off line shows that can be run on a purchased version of Clarity or on a LX console.

3.6 DESKTOP DMX OUTPUT

DMX512 output is obtained by connecting any of the following devices to the USB port of your computer. Multiple devices can be connected.

- LSC Clarity QX1 interface provides 1 universe of DMX output.
- LSC Clarity QX2 interface provides up to 2 universes of DMX output.

- LSC Clarity VX10 wing provides up to 2 universes of DMX output.
- LSC Clarity VX20 wing provides up to 4 universes of DMX output.



QX1

Provides 1 universe of DMX output



QX2

Provides 2 universes of DMX output

The QX1 and QX2 interfaces are powered directly from the computer's USB connector. Connect your DMX controlled equipment to the relevant DMX universe connectors. The DMX outputs are fully isolated from the USB input.

Note that the DMX output has to be patched in Clarity before it will work. See section 11.12 for details.

3.7 DESKTOP ARTNET AND SACN OUTPUT

ArtNet and sACN are protocols that transmit multiple DMX universes over Ethernet LAN (Local Area Network) or WAN (Wide Area Network). Clarity transmits these protocols from the network connector of your computer. No adaptor is necessary. To use ArtNet or sACN it must be connected to the internal universes within Clarity in the Patch window. See sections 11.13 and 11.14 for details.

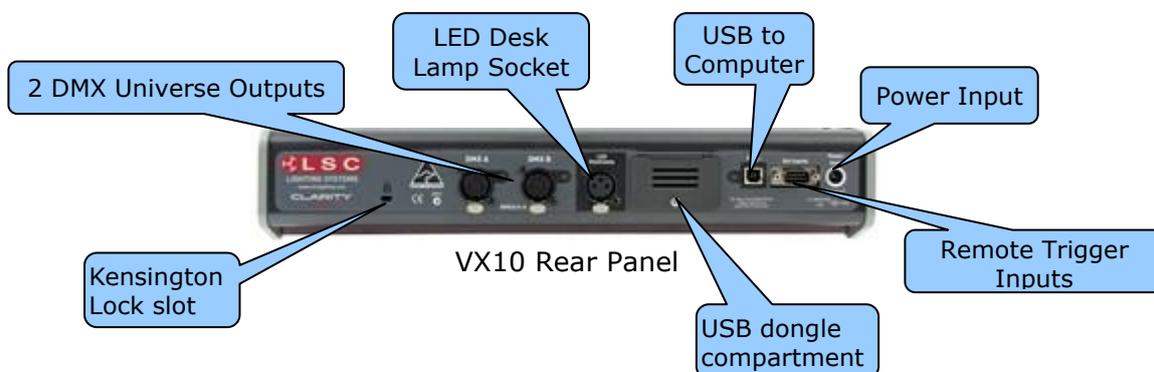
3.8 VX10 PLAYBACK WING

Control of Playback on a computer can be augmented by adding an LSC Clarity VX10 playback wing. This provides 10 fader Playbacks with LCD displays and multiple page selection, a Grand Master and DBO (Dead Black Out), two DMX512 universe outputs, remote trigger inputs and a secure compartment for installing your license dongle and a front panel USB port.



VX 10 Wing

Connect the VX10 wing to a USB port of your computer using the cable provided. The VX10 is powered directly from the computer's USB connector. A separate power supply is required when your computer's USB connector cannot supply sufficient power for the VX10.



The rear panel is described in detail below.

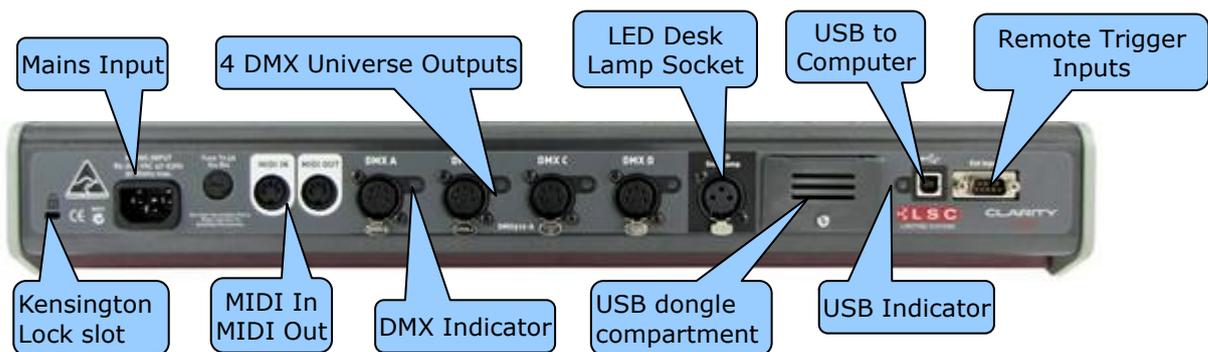
3.9 VX20 PROGRAMMING & PLAYBACK WING

Programming controls on a computer can be augmented by adding an LSC Clarity VX20 wing. This has all of the features of the VX10 (above) but adds 10 button Playbacks with LCD displays and multiple page selection, Programmer controls (including trackball), MIDI in and out and includes four DMX512 universe outputs.



VX 20 Wing

Connect the VX20 wing to a USB port of your computer using the cable provided. The VX20 is designed to operate off USB power, however for some computers and when using a LED gooseneck light, there may be insufficient USB power to operate the VX20. To cater for this, the VX20 is fitted with an internal universal mains power supply. We recommend connecting the VX20 using the supplied IEC cable to a source of 85 to 264 Volts AC mains power wherever possible. The backlight for the LCD screen only works when external power is connected.



VX20 Rear Panel

3.9.1 USB Indicator

The LED beside the USB connector shows the status:

- Flashing RED = No USB connected. (The DBO button also flashes)
- Steady RED = USB connected but Clarity not running on computer.
- Green = USB data is OK.

3.9.2 DMX Indicators

The LED beside each DMX connector shows the status:

- Green = DMX data is OK.

3.9.3 Desklamp

The Desk lamp socket provides 12volts power for a LED. Pins 1 and 2 are ground and pin 3 is +12 Volts. The brightness control is accessed by holding down **Function** and **Select** together.

3.9.4 Kensington Lock Slot

The Kensington Lock slot allows you to secure your VX10 or VX20 wing using a commercially available tethering device.

3.9.5 USB Slot

The top panel of the VX10 and VX20 wings has a standard USB connector allowing you to connect other USB devices such as memory devices to store your shows.

Multiple VX10 and VX20 wings can be connected to your computer.

Note: The QX and VX products are designed to be powered from the USB port on our computer. However due to the design of some computers or your particular configuration, there may not be enough power to operate the VX products. If you experience problems in the installation process, first try a different USB port on your computer or try powering the VX10 with an external power supply or if you have a VX20, plug it into the mains supply. If you still experience problems, check the LSC website or contact your local dealer.

Note that the DMX output has to be patched in Clarity before it will work. See section 11.12 for details.

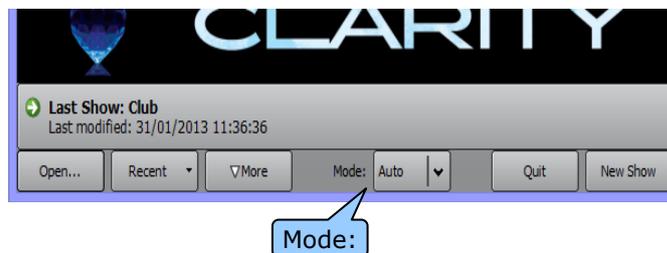
3.10 STARTING CLARITY

If you are running a purchased copy of Clarity, please ensure that your USB license dongle is plugged into a USB port on the PC or in the secure rear port your VX10 or VX20 wing before you start Clarity.

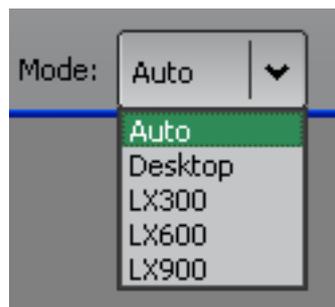
To start Clarity, double click on the Clarity icon on your desktop or browse to the LSC menu from your Start button.

3.11 LOADING A SHOW

When you start Clarity, it prompts you to load a show.



The **Mode:** function allows you to run Clarity as a normal desktop version or to emulate a console version of Clarity (LX300, LX600 or LX900) on your computer. If "Mode" is left as Auto, then the mode is determined from the show file that is loaded. For example, if you load a show saved on a LX600 then Clarity will start up in LX600 emulation mode. Clicking the dropdown box allows you to make a selection.

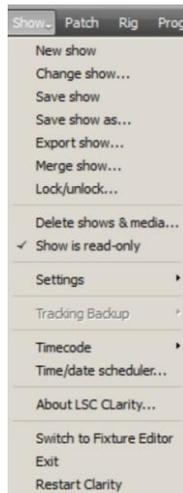


Selecting a console mode is particularly useful when you are creating or editing a show on the desktop version that will be loaded onto a console version of Clarity. Once you have made your selection.....

- Clicking **Last Show** loads the last show to be saved.
- Clicking **Open** shows a standard file navigator allowing you to select any show.
- Clicking **Recent** opens a drop down box containing your most recent shows.
- Clicking **New Show** starts a new show.

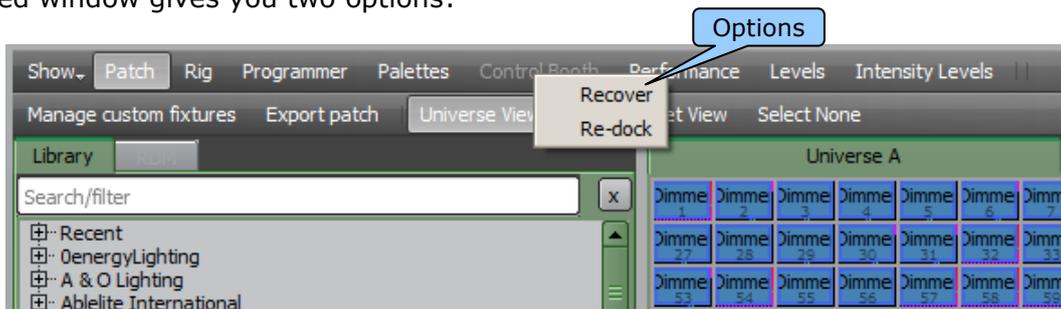
3.11.1 Show Tab

When Clarity is running you can always start a new show, change to an existing show, save or rename a show from the **Show** tab on the top toolbar. Selecting "Change show..." allows you to also change the "Mode" as described above and below.



3.12 MODES OF OPERATION

Clarity's top toolbar is available in all modes of operation and has tabs allowing you to switch between the main windows of: **Patch**, **Rig**, **Programmer**, **Palettes**, **Control Booth**, **Performance**, **Levels** and **Intensity Levels**. These windows are un-dockable to suit multi-monitor set-ups or multiple windows. Double clicking on a tab will un-dock the window allowing it to be either re-sized and repositioned (large monitor recommended), minimized or dragged to another monitor when using multiple monitor set-ups. Closing an un-docked window will automatically re-dock it to the main display. Right clicking on the greyed out menu name of an un-docked window gives you two options:



- Recover. Moves the undocked window to the front if it was hidden.
- Re-dock. Re-docks the window.

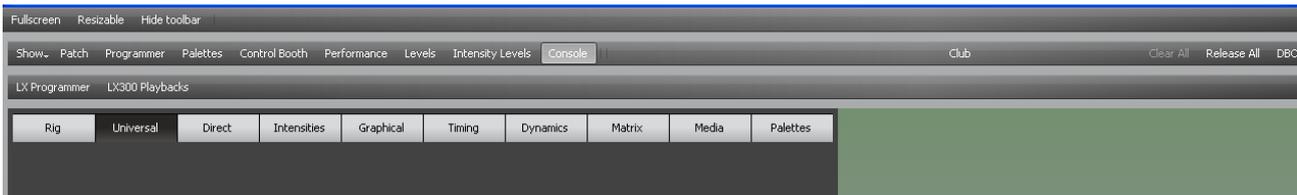
In the "Levels" and "Intensity Levels" tabs you can create multiple new un-docked windows.



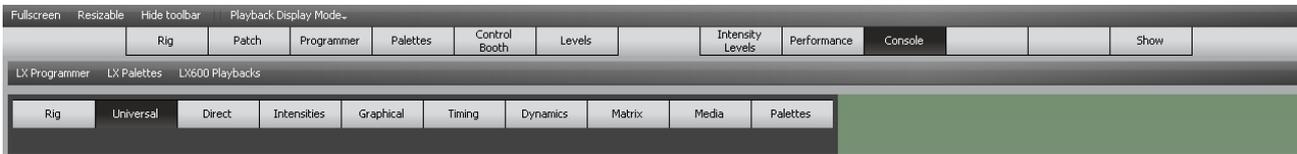
Desktop Mode

In Desktop mode, when a window is un-docked, its tab on the main window is greyed out. If you right click on the greyed out tab you can choose to either **Recover** or **Re-dock** the window. "Recover" will bring the un-docked window to the front of the screen if it is being covered by another window.

When Clarity is started in a LX console emulation mode (described above), the main window is contained within a special 'wrapper' window which can be scrolled to navigate the main window. This allows the main window to remain at the original size it would be on the console to preserve graphical layouts and positions.



LX300 emulation Mode



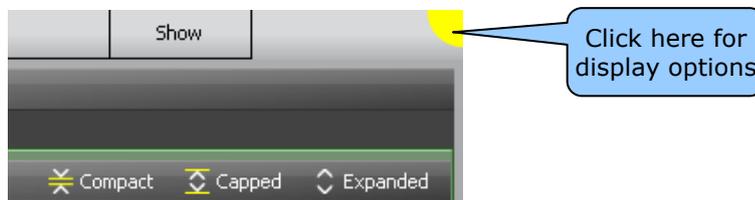
LX600 emulation Mode



LX900 emulation Mode

The wrapper window's toolbar provides several options:

- **Fullscreen.** The wrapper is set to full screen mode and the wrapper's toolbar is hidden.
- **Resizable.** The main window's size will follow the size of the wrapper window and the scrollbars are hidden, unless the wrapper window is smaller than the main window's minimum size.
- **Hide toolbar.** This option replaces the window wrapper's toolbar with a small yellow disc on the top right of the wrapper window. Clicking on this presents the toolbar options as a drop-down menu.



- **Split/Join** (LX900 mode only). The LX900 has two internal monitors. This splits the wrapper into two separate wrapper windows. If this is running on a system with two or more monitors then the other wrapper window will be presented on the other monitor and will appear full screen if the original wrapper was full screen.
- **Left/Right** (LX900 mode only). This switches the view between the LX900's left or right internal monitors (unless the wrapper has been split). The left monitor of the LX900 displays the "Levels", "Intensity Levels" and "Performance" windows.
- **Playback display mode** (LX600 or LX900 modes). The LX600 and LX900 have playback displays positioned at the bottom of the main screen(s) and this controls how they are presented in the wrapper:
 - **Auto.** If the main window size is normal (1280x1024) then the playback display is positioned at the bottom as usual. If the Resizable option is enabled then the playback display is only displayed if the main window size is 1280x1024. For example, if running on a 1280x1024 host system in full screen mode.
 - **Always Hidden** Playback displays are never shown.
 - **Always Visible** Playback displays are always shown at the bottom of the main window even if the main window size is not 1280x1024. Note that if the main window width is less than 1280 then the playback display will be truncated.

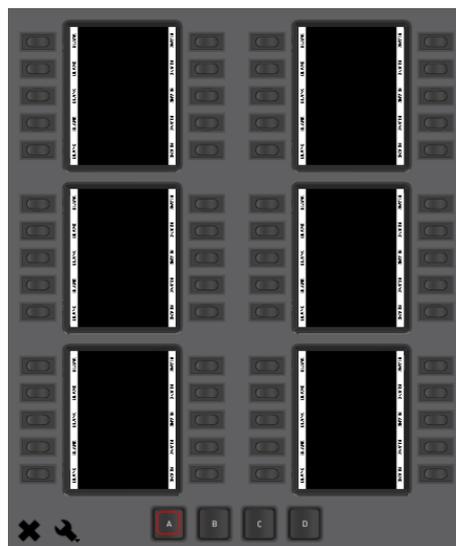
3.12.1 Console Window

When running in an emulation mode, a top-level **Console** tab is provided to show the console's internal encoder wheel touch screen and includes tabs for displaying the virtual control surfaces of the relevant LX console.

For example, the LX600 Console tab allows you to select the **LX Programmer**, **LX Action Buttons** and **LX600 Playbacks** controls:



LX Programmer



LX Action Buttons

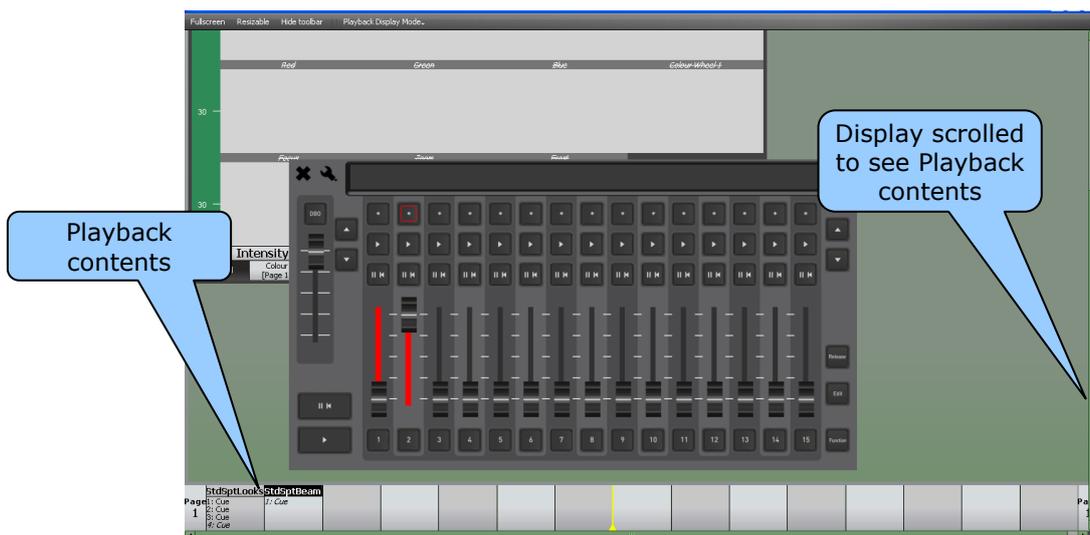


LX600 Playbacks

The buttons and faders all work as if they were on the actual console.

If you need to press two or more buttons at the same time, pressing and holding a button for half a second will latch that button down. For example, if you wanted to hold the Function modifier or one of the wheel modifier buttons you latch it by holding it for ½ a second. Press it again to un-latch it.

The playbacks on the LX600 and LX900 do not have dedicated contents displays as in the LX300 but show their contents on the touch screen located above them on the console. These displays are emulated at the bottom of the screen on your computer. Depending upon the screen resolution of your computer you might have to scroll to the bottom to see the playback displays.



LX600 Playbacks with main screen scrolled down to see the playback displays.

The playback controls work in exactly the same manner as in the actual consoles. See the playback sections of the consoles for details.

When hovering over an emulated LCD screen, a zoomed version of the LCD is presented to aid readability. This is also configurable via the tool menu. The emulation views also snap to screen boundaries and to each other to aid layout.

3.13 BASIC DESKTOP OPERATION

The tabbed windows of the main menu bar follow the same order as the basic steps used in control lighting fixtures.

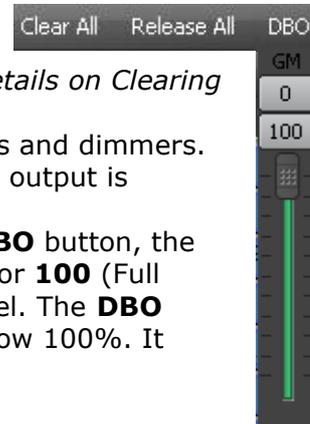
1. **Patch** allows you to select your fixtures from a fully integrated fixture library of over 2000 fixture personalities supplied by Carallon, an independent supplier of fixture libraries. You patch a fixture to its DMX slot by drag and drop.
2. **Rig, Programmer** and **Palettes** allow you to select fixtures and control their attributes to create (record and edit) looks, effects, cue lists and palettes.

3. **Control Booth** and **Performance** provide extensive methods of playback.
4. **Levels** shows you what is happening on the output.

All of these operations are described in detail in their relevant sections of this manual.

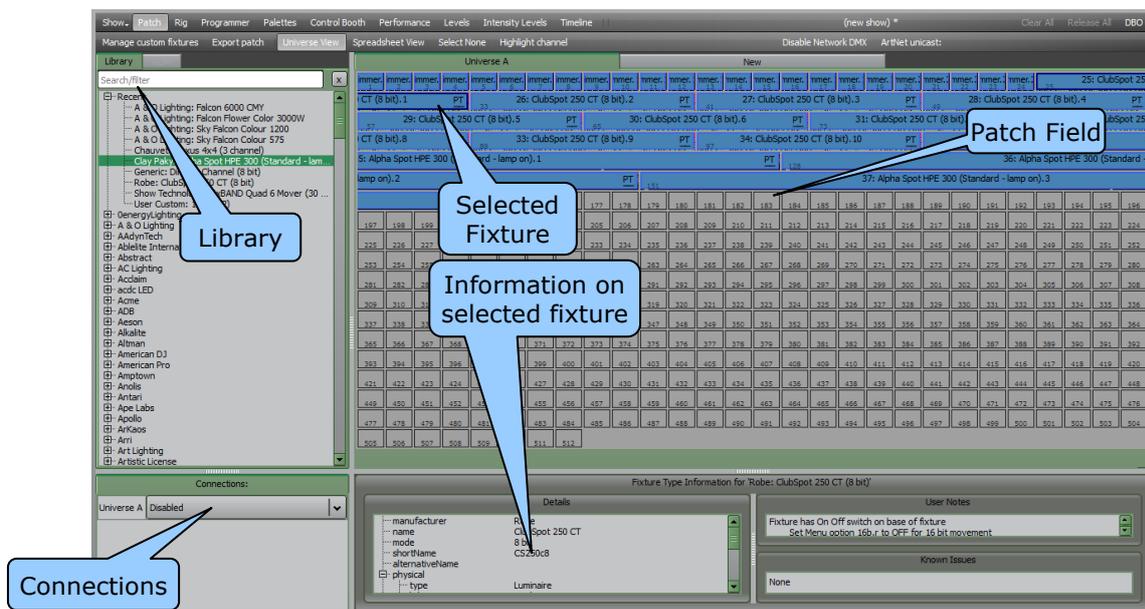
The right end of the top toolbar has buttons for **Clear All**, **Release All** and **DBO**.

- **Clear All** clears all fixtures from all Programmers.
- **Release All** releases all fixtures from all Playbacks.
See the Programmer and Control Booth sections for more details on Clearing and Releasing.
- **DBO** (Dead Black Out) instantaneously blacks out all fixtures and dimmers. This is a momentary action. When the button is released, all output is instantly restored.
- **GM** (Grand Master). When you hover the mouse over the **DBO** button, the Grand Master (GM) appears. You can click on **0** (Black Out) or **100** (Full level) or drag the virtual fader to set an overall intensity level. The **DBO** button flashes red if the Grand Master is set to any level below 100%. It stays red when the Grand Master is set to 0%.



3.14 PATCHING

Clicking on the **Patch** tab reveals the patch window.



To patch a fixture:

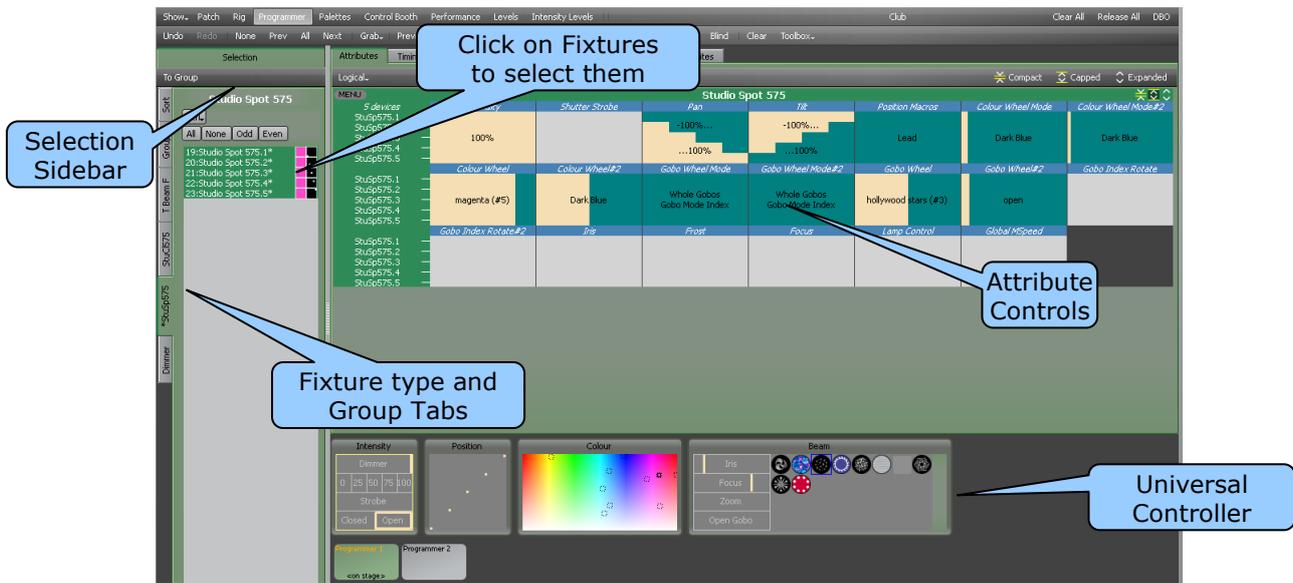
- In the **Library**, click on the fixture manufacturers name to show all of their models then select your model of fixture. Dimmers are located in the "Generic" listing.
- Drag the fixture name and drop it into the desired DMX slot in the Patch Field or double click the fixture name to patch it to the next available slot.
- Enter the quantity of fixtures in the pop up "Add Devices" dialog then click **Patch**.



- Continue to select fixtures and patch them as above.
- In the "Connections" Pane, click the down arrow beside the Universe that you have patched your fixtures to and then select the output DMX connector to use.

3.15 PROGRAMMING

Clicking on the **Programmer** tab reveals the programmer window.



All patched fixtures are available in the **Selection** sidebar, organized in tabs of patched fixture types and groups.

- Select the tab for the fixtures to control then click on the fixtures to select them.
- Click and drag to quickly select multiple fixtures.
- Clicking on a selected fixture de-selects it.
- When a fixture(s) is selected, its attribute controls appear.

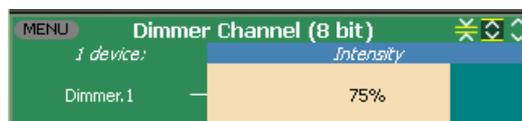
Fixtures can also be selected in the **Rig** view. See section 12 for details.

3.15.1 Attribute Controls

Clarity uses Attribute Controls in many of its windows to control the values of fixture attributes, dynamic effects and timing controls. Specific Attribute Controls automatically appear when required for the fixtures or objects that you select.

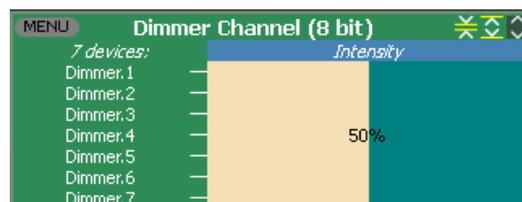
Attribute Controls are adjusted by clicking and dragging with a mouse anywhere within each attributes window.

A single Attribute Control for controlling one dimmer looks like this:



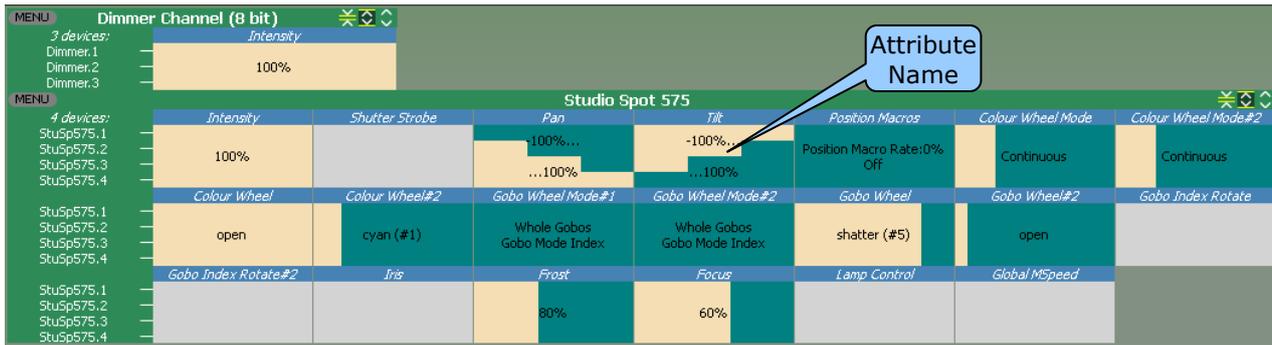
To adjust the intensity of the dimmer, click and drag anywhere in the bar below the attribute name "Intensity".

If seven dimmers are selected the Attribute Control looks like this:



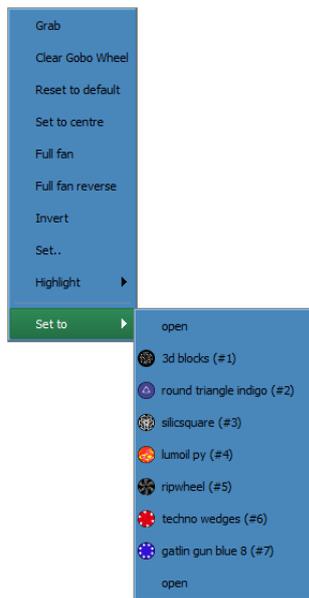
To adjust the intensity of all 7 dimmers, click and drag anywhere inside the bar. All these dimmers are set to 50%.

When you select different fixtures that have multiple attributes, Attribute Controls automatically appear for each type of fixture and each attribute of each fixture type.



3.15.2 Attribute Quick Menus

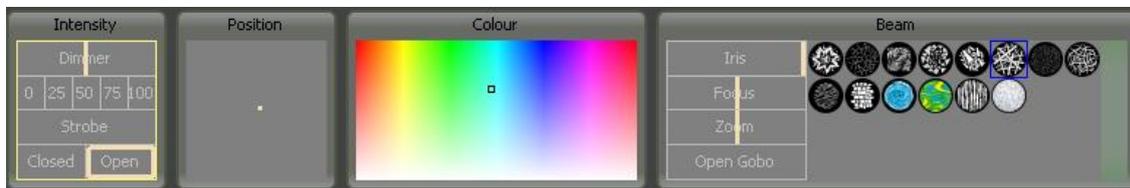
To access the "Attribute Quick Menus, either click on the name of an Attribute Control or right click in the Attribute Control area. Each individual Attribute Control has its own specific quick menu, offering rapid access to common settings relevant to that attribute. For example:



Typical Attribute Quick Menu

3.15.3 Universal Controller

The Universal controller at the bottom of the Programmer window can also be used to control the attributes of all selected fixtures. These controls work with any type of fixture that has been selected and are especially useful to simultaneously control selections of mixed fixture types.



Clicking and dragging in these controls uses low mouse gearing for accurate control, but can be made even finer by holding down [Shift] whilst dragging.

3.15.4 Creating a Lighting Look

- Select the fixture(s) to be controlled.
- Use the Attribute Controls or the Universal Controller to get the desired look.
- To record the look as the first cue in a cue-list click **Record**.
- In the Record dialog that opens accept the defaults and click **Record**.
- Select fixtures and adjust attributes to set the next look.
- To record this look as the next cue in the Cue-list click **Append Last**.

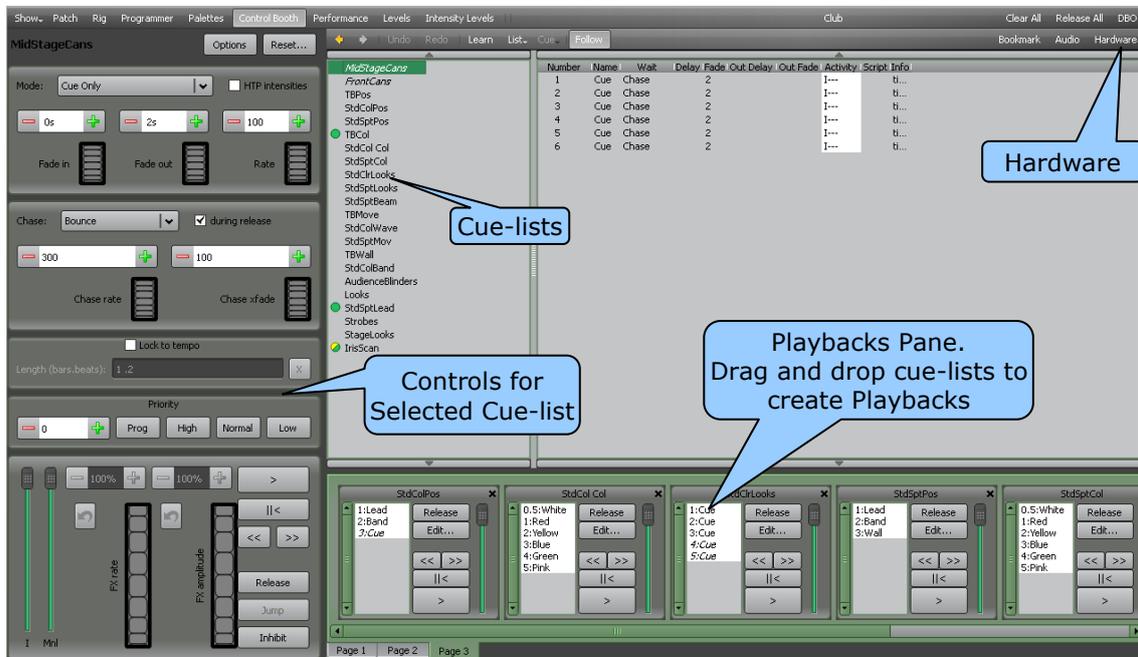
- Repeat until all cues in the cue-list have been recorded.
- Click **Clear** to clear all attributes from the Programmer.

3.16 PLAYBACK

Desktop Clarity provides several means of playing back the cues that you have recorded.

3.16.1 Control Booth

Clicking on the **Control Booth** tab reveals the Control booth window.



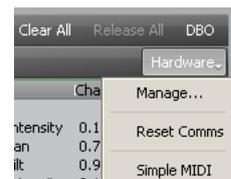
- Clicking on a Cue-list (that you have recorded) allows it to be controlled by the buttons in the "Control" pane.
- Dragging a Cue-list to the Playbacks pane at the bottom of the screen creates a new Playback with buttons and a fader to control the Cue-list. Multiple pages of Playbacks are available. The function buttons of your computer keyboard (F1 through F7) act as **"Go" buttons** for playbacks 1 to 7 respectively.

See section 25 for more details on the Control Booth.

3.16.2 Adding a Virtual VX Wing

You can add a "virtual" VX wing and use it for control of cue-lists. Cue-lists are assigned to the playbacks on VX wings in the Control Booth window by drag and drop onto a virtual copy of the wing on the Clarity screen. When a wing is plugged into the computer running Clarity or into a LX console, the real and virtual wings both operate simultaneously. Drag a cuelist onto a playback of the virtual wing and it also appears on the real wing. Move a fader on the real wing and the same fader on the virtual wing also moves. Click a button on the virtual wing and both it and the real wing button light.

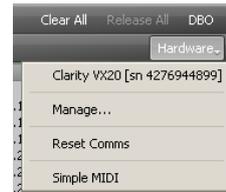
In the **Control Booth** window click **Hardware, Manage** and in the **Hardware** dialog box select **add virtual wing....**



From the **Add new device** box drop down list select your model of playback wing or DMX node and click **OK** then **Close**.

3.16.3 Selecting a Virtual VX Wing

To select a Virtual Wing, in the **Control Booth** window click **Hardware**, then click on the name of the Wing that you added above (**Clarity VX10** or **Clarity VX20**). The selected wing appears on the screen. The virtual wing is fully functional except that the Grand Master is not activated until a hardware USB wing is connected.



VX20 Virtual Wing Display

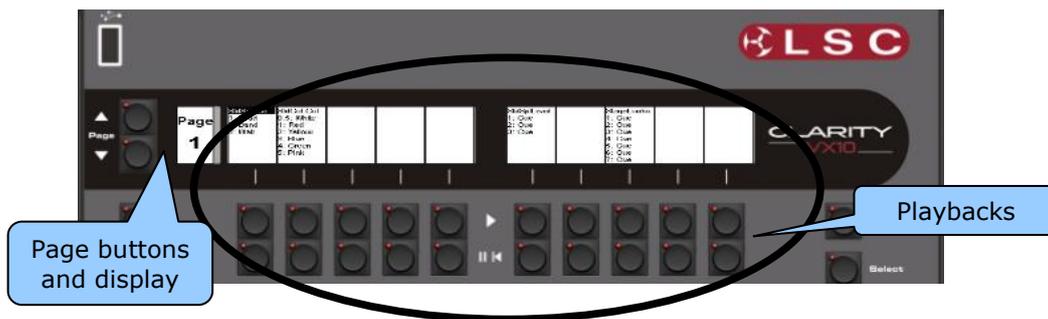
3.17 ADDING A CUE-LIST TO A VX WING

To add a cue-list to a playback on a wing, in the Control Booth window, drag the cue-list from the cue-list column onto the LCD window of the virtual wing playback. If the actual wing is connected, the cue-list also appears in the same playback as on the virtual wing.

- Cue-lists already on a wing playback can be moved to a different playback by dragging them on the virtual wing.
- To copy a cue-list to another playback, hold [Ctrl] (PC) or [Cmd] (Mac) whilst dragging on the virtual wing.

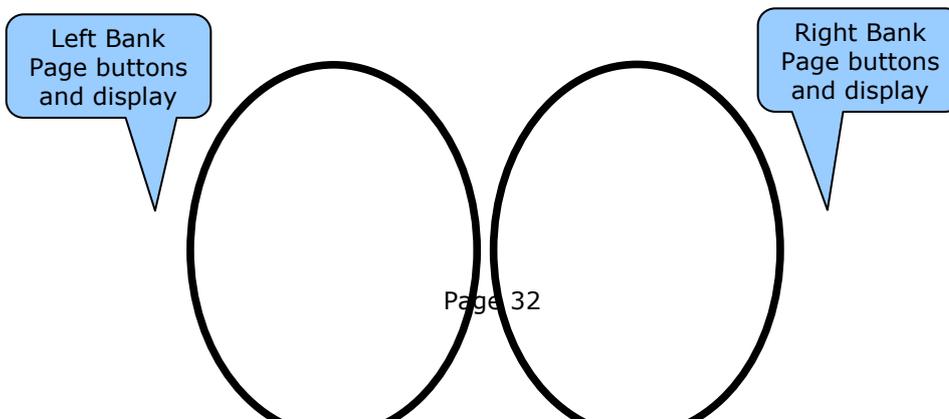
3.18 WING PLAYBACK PAGES

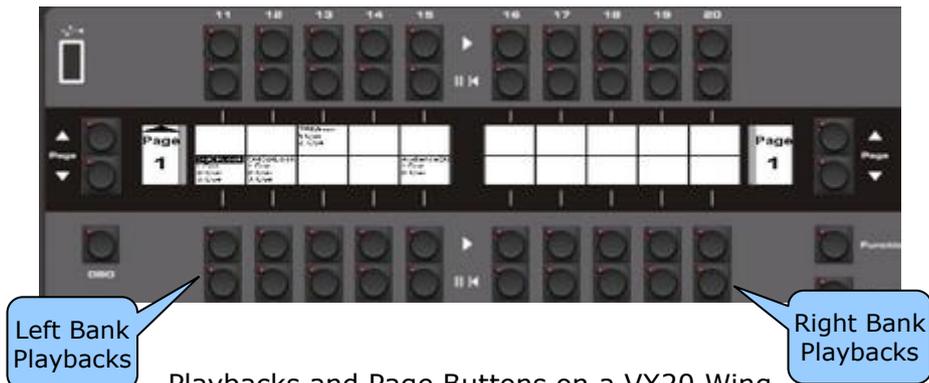
The playbacks on the Clarity VX10 and VX20 wings can have up to 99 pages of cue-lists. On the VX10 wing, the Page Buttons select the current page for all 10 playbacks.



Playbacks and Page Buttons on a VX10 Wing

On the VX20 wing, playbacks are divided into 2 separate banks. Playbacks 1 to 5 and 11 to 15 are in the left bank and playbacks 6 to 10 and 16 to 20 are in the right bank and each bank has separate Page Buttons.





Playbacks and Page Buttons on a VX20 Wing

When you start a new show, only page one exists. When a cue-list is dropped onto any playback on a page of a virtual wing, the next higher page is automatically created. You can manually create any page number (up to 99) by directly selecting that number as described below. This also automatically creates all of the in between pages up to the selected page number.

The page number display beside the page buttons shows a ▲ or ▼ symbol when a higher or lower page exists.

- Pressing **Page ▲** or **Page ▼** selects the next higher or lower page number.
- To directly select any page number, hold either **Page ▲** or **Page ▼** and use the numbered [flash] buttons below the faders to enter the page number. For example, to go to page 21, hold either **Page ▲** or **Page ▼** and tap **2, 1**. Use the **10** button as a 0.
- Holding Function and pressing **Page ▲** or **Page ▼** increments or decrements the page number by 10.

3.18.1 Locking a Playback

A playback on a VX wing can be locked so it is unaffected by page changes. On the virtual wing, right click on the playback and select **Lock this playback**. The letter L is displayed.

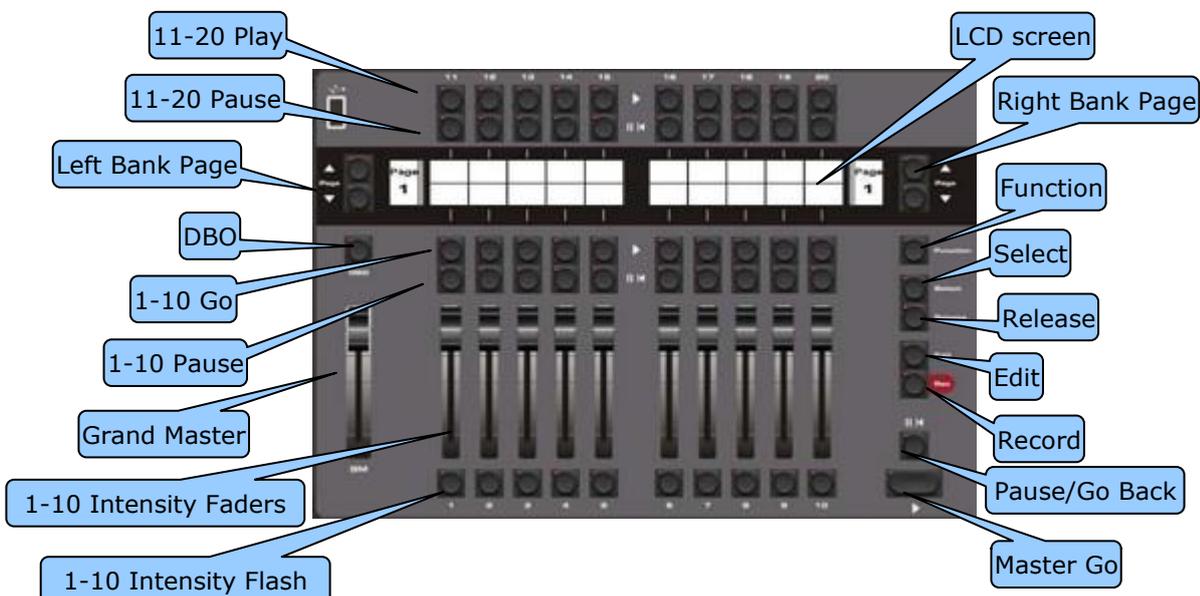
3.18.2 Page Bookmarks

Page bookmarks allow instant recall of pages. See section 8.7.14 for details.

3.18.3 Managing VX Pages

Pages can be re-ordered and named. See section 8.7.13 for details.

3.19 WING PLAYBACKS



VX20 Playback masters

The area of the LCD screen adjacent to each playback shows the name of any cue-list that is on the playback and also the names of the current cue and the next two cues in the cue-list.

- **GM** (Grand master): controls the overall intensity of all fixtures on the output. If more than one VX wing is connected, the Grand Masters work on a Lowest Takes Precedence basis.
- **DBO** (Dead Black Out): Whilst held down, it blacks out all intensity of all fixtures on the output.
- **Intensity fader**: that controls the overall intensity of all fixtures on the output of its playback (Playbacks 1 to 10 only).
- **Flash button**: Instantly flashes the intensity of all fixtures on the playback to full level (Playbacks 1 to 10 only). Also see "Solo" and "Solo Safe" in section 25.2.1
- **▶ (Go)**: Plays the next cue in the cue-list or restarts a paused fade. Pressing ▶ will start the fade to the next cue even if the current fade has not finished. Press **Function+ ▶** to snap to the next cue.
 - The indicator in the button lights during the transition to the next cue.
- If the playback contains a chase, pressing ▶ will start the chase. If you continue tapping ▶ (to the beat of the music) it will automatically adjust the chase rate to match the beat of your tapping. If you want to change the rate simply tap the ▶ button at the new rate. Always leave at least two seconds after tapping a beat before starting a different beat.
- **|| ◀ (Pause)**. Pauses any fades in progress. If no fades are in progress, it fades back to the previous step.
 - The indicator in the button lights when the fade to the next cue has completed.
 - The indicator in the button flashes if the cue has been partially overridden.
 - If the playback contains a chase, pressing || ◀ will stop the chase. If you continue tapping || ◀ it will manually step the chase with each tap.
- **Select**: Selecting a playback allows it to be controlled by the Master ▶ and Master || ◀ buttons and also selects the playbacks cue-list in the Control Booth window allowing you to see and or change the playback settings of the cue-list.
 - To select a playback tap **Select** then tap any button of the desired playback.
 - The cue-list name of the "currently selected cue" is displayed in reverse video (black text on white background).
- **▶ (Master Go)**: Plays the next cue or restarts a paused fade of the selected playback. *See Select above.*
- **|| ◀ (Master Pause /Go Back)**: Pauses the fade of the selected playback. If no fade is in progress, it fades back to the previous step. *See Select above.*
- **Release**: To release a playback, tap **Release**. All buttons of all playbacks flash. Tap **any button** of the playback to be released. To clear (remove) a cue-list from a playback, right click on the name of the cue-list on the virtual playback then click **Clear**.
- **Edit**: To edit a cue on a playback, tap **Edit**. All buttons of all playbacks flash. Tap **any button** of the playback to be edited.
- **Record**: opens the Record Cue dialog box. To **append** a cue to the last recorded cue-list, press **Record** twice. To record the cue on a playback on a VX wing, press **Record** then press the **flash** button of that playback.

- **Page:** the Page buttons are described earlier in this section.

3.20 WING GROUP MASTERS

You can configure any of the VX wing fader playbacks (or Control Booth playbacks) as fixture "Group Masters". When a playback is converted into a Group Master, it no longer controls its previous cue-list (if any) but instead acts as a submaster over the intensity of the selected group as determined by your choice of either "Additive, Scale+, Inhibiting or Limiting" mastering as described below.

To create a Group Master on a wing, in the Control Booth window, **Right click** on the LCD window of the *virtual* wing playback and select **Set as Group Master...**

See above for details on how to display the virtual wing.



On the "Create Group Master Dialog" select the required fixture **Group** to master then choose the **Master Type** to use:

- **Additive.** The fader level is added to the current intensity level of all fixtures in the group. For example, if the fader is at 50% each fixture would get 50% *added* onto its current level. So fixtures at 25, 50 and 75% would end up at 75, 100 and 100 percent.
- **Scale +.** This scales each intensity level between its current level and full. For example, if the fader is at 50%, a fixture at 25 would be set half way (50%) between 25 and full which is 62.5%. A fixture at 50 would be set half way (50%) between 50 and full which is 75% and a fixture at 75 would be half way between 75 and full which is 87.5%.
- **Inhibitive.** This is the default, and operates in the same way as a fader assigned to a cue-list. For example, if the fader is at 50%, fixtures at 25, 50 and 75% would be at 12.5, 25 and 37.5%.
- **Limiting.** The intensity level of each fixture is capped to the fader level. For example, if the fader is at 50%, fixtures at 25, 50 and 75% would be at 25, 50 and 50%.

If the actual wing is connected, the LCD shows the status of the fader as a Group Master.

A group master on a wing will be deactivated when it is not on the currently selected page. You can change this by un-ticking **Deactivate group masters while paged out** in the "User Preferences". When you return to a page that has a group master assigned to it, the group master

remains deactivated until you press it's ►(Go) button. This gives you the opportunity to manually set the fader level before activating it.

When a playback on a VX wing has been programmed as a Group master, it's ►(Go) and II ◀ buttons now act as **Group select** and **Group deselect** buttons. Therefore, pressing the ► button of that Group Master on the VX wing will select all of the fixtures in that group in the Programmer.

3.21 EXTENDED WING CONTROLS

Unused playbacks on a VX10 or VX20 wing can be used as extra control buttons and faders for another playback on that wing that contains a cue-list. The playbacks on a wing are arranged in groups of 5:

- A VX 10 wing has 2 groups of playbacks, 1 to 5 and 6 to 10.
- A VX 20 wing has 4 groups of playbacks, 1 to 5, 6 to 10, 11 to 15 and 16 to 20.

If a cue-list is loaded on a playback and there are un-used (clear) playbacks to the right of the loaded playback in the same group of 5, then the unused playbacks can now be linked to the loaded playback to provide greater live control. The previously unused playback's buttons and faders can now be used for live control of Chase Rate, Playback Rate, FX Rate and FX Amplitude.

To create extended controls on a wing, in the Control Booth window, **Right click** on the loaded playback's LCD window of the *virtual* wing playback and choose either single, 2, 3, 4 or 5 columns. The number of columns that are available depends upon the number of clear playbacks to the right and in the same group of five playbacks.



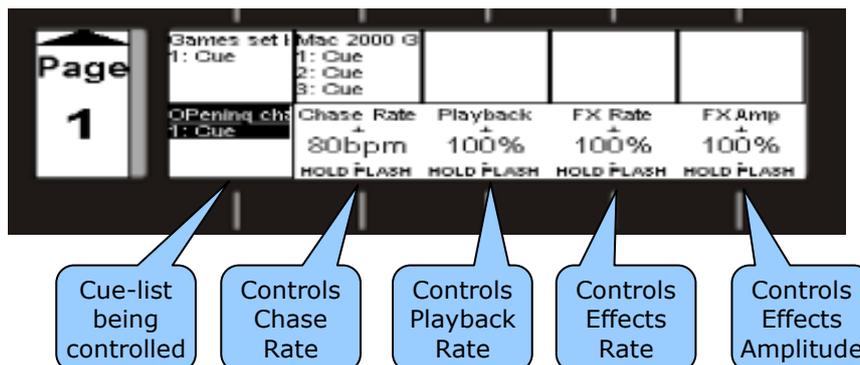
The 4 playbacks to the right are clear so up to 5 columns can be selected.



The 2 playbacks to the right are clear so up to 3 columns can be selected.

Each column represents a playback on the wing:

- The first (single) column is the playback loaded with the cue-list.
- If you choose 2 columns then the playback to its right controls that cue-lists Chase Rate.
- If you choose 3 columns then the next playback to the right controls that cue-lists Playback Rate.
- If you choose 4 columns then the next playback to the right controls that cue-lists FX (Effects)Rate.
- If you choose 5 columns then the next playback to the right controls that cue-lists FX (Effects) Amplitude.

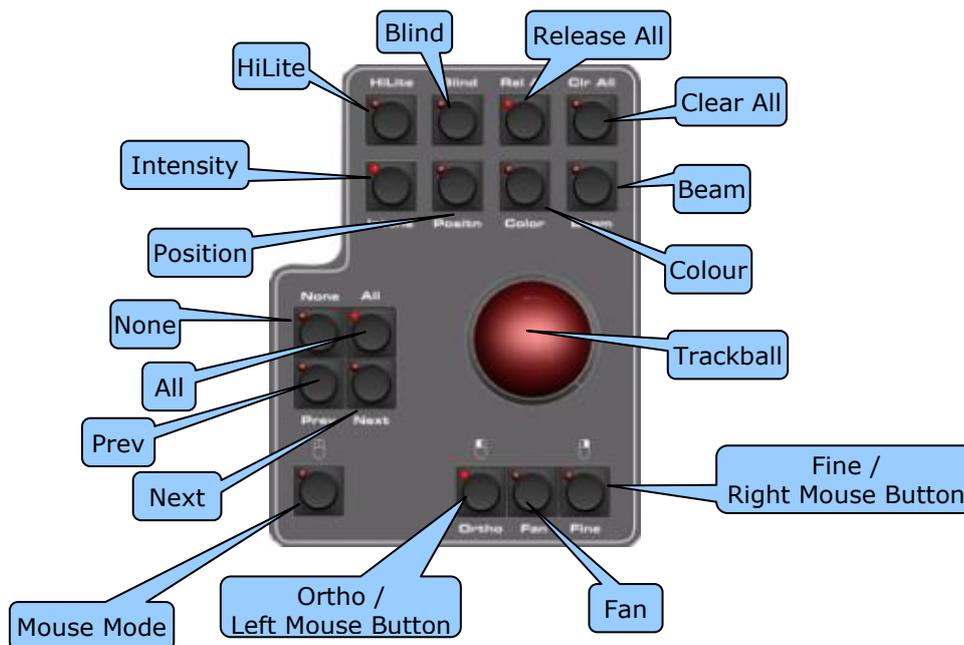


The buttons and fader on each of these playbacks (columns), now perform the following functions:

- Pressing **Play** or **Pause** steps the values up or down respectively. If you hold the button it will auto-repeat after a delay.
- Holding the **Flash** button when pressing **Play** or **Pause** makes them step in larger increments.
- Pressing both **Play** and **Pause** together resets to the default value.
- Holding the **Flash** button allows you to use the **fader** to make fine adjustments to the value. If you reach a fader end-stop but you need to more range, you can release the flash button and move the fader to the opposite end, then hold flash and move fader to continue adjusting the value. This is known as "scooting" the fader. The user preference "Invert flash button operation on rate faders" changes this operation so that you just move the fader without holding flash to adjust the value, then (if you reach the fader end stop) hold flash to reposition the fader. So the fader is always connected giving you instant control but you can hold the Flash button down to 'scoot' the fader. See section 37.1 for User Preferences.

3.22 PROGRAMMING WITH THE VX20 WING

The VX20's programmer section assists programming by providing hard controls for the main programming functions.



3.22.1 Trackball

The trackball is multi-purpose and can be used for Programming and as a computer mouse.

- Pressing either **Intens** (Intensity), **Position**, **Colour** or **Beam** turns the track ball blue and causes the trackball to vary the Intensity, Position, Colour or Beam values of the selected fixtures in the current programming session.
- Pressing the $\hat{\mu}$ (mouse) button turns the trackball green and causes it to act as a mouse for the computer running Clarity. When $\hat{\mu}$ (mouse) is selected the **Ortho** and **Fine** buttons act as the **Left** and **Right** mouse buttons respectively.

The Intensity, Position, Colour, Beam and Mouse buttons are all interlocked so that selecting any one button deselects the previous button.

3.22.2 Programmer Buttons

The programmer buttons have the following functions:

- **Next, All, Prev, None, HiLit (Highlight), Blind, Clear All, Release All:** Perform identical functions to the same buttons on the Programmer window's toolbar in the GUI (Graphical User Interface). See section 20 for details.
 - The **Clr All** button lights when any attributes have been grabbed in either programmer.
 - The **Rel All** button lights when any playbacks are active on the output.
*Hint: Inadvertently pressing Rel All will blackout all Playback. To prevent this you can set a "User Preference" to require both **Function** and **Rel All** to be pressed together to release all playbacks.*
- **Ortho:** (Orthogonal) Holding **Ortho** whilst moving the **trackball** restricts the trackball output to only horizontal or vertical movements, whichever occurs first. When in mouse mode (above) it acts as a **Left** mouse button.
- **Fan:** When multiple fixtures are selected, holding **Fan** whilst moving the trackball will fan the values of those attributes. (The same as holding [Ctrl] (PC) or [Cmd] (Mac) when dragging with the mouse in the GUI).
- **Fine:** Holding **Fine** whilst moving the **trackball** gives finer control. (The same as holding Shift when dragging with the mouse in the GUI). When in mouse mode (above) it acts as a **Right** mouse button.
- **Record:** opens the Record Cue dialog box and all playback buttons on VX wings flash. To record the programmer contents to a VX20 playback, press any (flashing) playback button. If the playback is empty a new cue-list will be created. If the playback already contains a cue-list, the new cue will be appended to the end of that cue-list. To **append** a cue to the last recorded cue-list, press **Record** a second time.

3.22.3 VX20 Soft Menus

The top row of playback buttons can be toggled to become additional programming buttons acting as shortcuts for some common operations. To switch the buttons between normal playback operation and soft functions, right-click on the VX20's *virtual wing* display and select **Toggle soft menus**.

There is only a single row of functions, and both buttons above each label will trigger the same function as shown on the LCD display.



Soft Menu Functions

Left Bank Soft Menus

Undo Prog	Undo Ctrl	Auto Update	Clear Prog	Save All
Undoes the last operation in the current Programmer.	Undoes the last operation in the Control Booth.	See section 26.2	Removes all attributes from the current Programmer.	Saves all currently open edit sessions.

Right Bank Soft Menus

Grab Active	Rem Dim	Prog 1	Prog 2	Esc
Grabs all attributes that are active on the output into the	Unselected fixtures currently grabbed in the programmer have	Selects Programmer 1	Selects Programmer 2	Closes any open



current
Programmer.

their intensity in the
Programmer set to
zero.

as the current
session.

as the current
session.

dialog
boxes

3.23 EXTERNAL CONTROL INPUTS

The “external Inputs” 9-pin D-SUB connector on the back of the VX10 and VX20 wing can be used to connect up to 6 external push buttons that act the same way as the “Go” buttons on the playbacks. The connector is wired to accept 6 inputs in the form of contact closures.



The external inputs control GO buttons 5 to 10

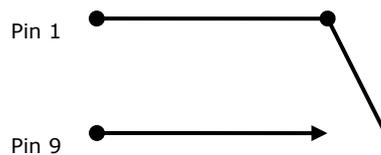


The external inputs control GO buttons 15 to 20

The pin assignments on the 9 pin D-SUB connector are:

Pin	VX 10 Button	VX20 Button
1	Go 5	Go 15
2	Go 6	Go 16
3	Go 7	Go 17
4	Go 8	Go 18
5	Go 9	Go 19
6	Go 10	Go 20
9	Common	Common

To remotely operate a Go button, provide a contact closure (short circuit) from its control pin to the common pin.



Circuit to operate
Go button 5 on a VX10
or Go button 15 on a VX20

3.24 VX20 MIDI

A MIDI signal connected to a VX20 wing can be used to remotely control the playback of the “selected” playback that wing. A playback is selected on a wing by pressing **Select** then any of the flashing buttons of that playback. The cue-list name of the currently selected playback is displayed in black text on a white background.

- MIDI “Note ON” messages can be assigned to trigger the Go, Pause/Back, Release and Jump functions of the selected playback on a VX20 wing.
- MIDI “Control Change” messages can be used to pre-select a cue in the cue-list of the selected playback that will be triggered by the next “Note on” message to be received that is assigned to the “Jump” function.

See section 31 for details on the VX20’s MIDI functions.

3.25 DESKLAMP INTENSITY

The brightness of the LED desk light on the VX wing control can be controlled by holding down [Function] and [Select] together.

3.26 FREE MODE

Early versions of Clarity will run in free mode. Clarity will only run in free mode if it was downloaded as version 1.3 or earlier and registered for free mode prior to April 8, 2011. To continue running the free version it must be upgraded to version 1.3.2 and cannot be upgraded further. The following restrictions are applied to the free mode of Clarity:

- Limited to a single universe output of 32 fixtures and 128 channels.
- The VX10 and VX20 wings have the front panel controls (LCDs, faders and buttons) and the remote trigger inputs disabled. However the DMX outputs on the rear and the USB port on the top still work.
- MIDI functionality is disabled.
- Media Servers functionality is disabled.
- Matrix functionality is disabled.
- RDM functionality is disabled.
- Tracking Backup is disabled.
- The template request service is not provided to users of the free version, however Clarity does have a built-in fixture editor which can be used instead.
- Technical support for the free version is via the user forums only.

4 LX Consoles

4.1 OVERVIEW

There are three models in the Clarity LX range of consoles....



LX300



LX600



LX900

Sections 5, 6 and 7 of this manual describe the rear panel connections and the front panel control surfaces of each model respectively.

There are several areas on the consoles that are common to all models. These common controls are described in section 8.

The software is common to all platforms however there are small differences that are particular to each platform due to the different hardware controls of each platform. The common operating system is described in detail with separate sections for of the various operations that can be performed. The screen shots used in these sections of the manual are all from the LX600. There might be slight variations in the screen layout in other modes of operation.

The Desktop version of Clarity can be configured to run in desktop mode or to emulate any of the console platforms. Emulating a console is most useful for pre-programming a show when the console is not available.

4.2 VX WINGS

You can increase the number of playbacks on a LX console by connecting either a VX10 or VX 20 wing to one of the USB connectors. See section 3.16.2 for details.

5 LX300 Console

5.1 OVERVIEW

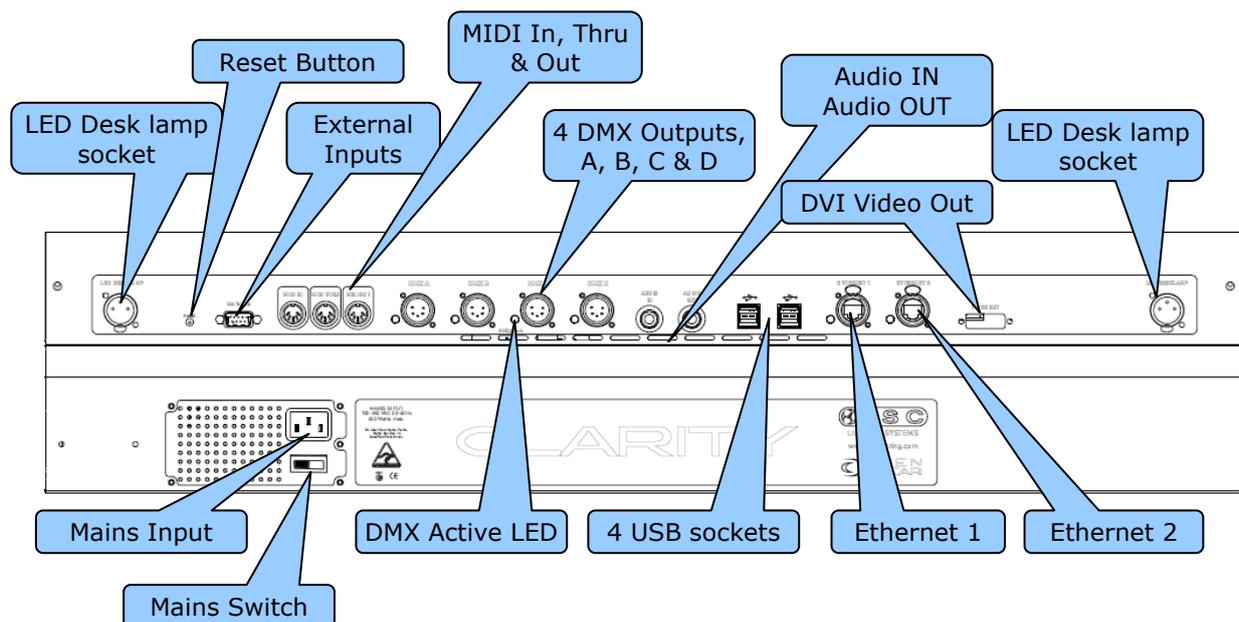


LX300 with External Monitor

The LX300 has the following features:

- One 10.4 inch “encoder wheel touch screen”.
- 15 Fader Playbacks. Each playback has a fader with RGB mode indicator plus Select, Go and Pause/Back buttons. 99 pages of memory.
- 15 Button only playbacks. Each playback has Select, Go and Pause/Back buttons.
- 99 pages of playback memory split into left and right pages.
- Individual full color screens for each playback.
- Four DMX512/A output connectors (XLR5).
- DMX capacity up to 4096 DMX slots. Clarity USB license dongles (software license keys) can be used to expand the DMX slot capacity of LX consoles.
- Accepts external USB alphanumeric keyboard.
- One DVI monitor output.
- MIDI In, Out, Thru.
- Audio In & Out via 3.5mm sockets.
- Dual Gb Ethernet ports.
- IEC Power Input.
- 160GB Shock protected disc storage system.

5.2 LX300 REAR PANEL



5.2.1 Power Input and Mains Switch

An IEC mains input socket and mains switch connects to the LX300 universal power supply that operates on input voltages between 100 volts and 240 volts, 50-60 Hertz AC. The maximum power consumption is 450 watts.

5.2.2 DMX Outputs

Four DMX universes (A, B, C and D) are available. To use these outputs they must be connected in the Patch window to the internal universes within Clarity. The LED below each DMX connector lights when it is connected. See section 11 for details.

5.2.3 Ethernet

Two identical Ethernet connectors are provided. The connectors have coloured indicators.

- Blue/Purple indicates a 1000MB connection.
- Green/yellow indicates a 100MB connection.

The indicators flash when data is being sent/received.

The Ethernet ports can be used to either:

- Connect a wireless access point for Touch OSC remote control. See section 34.
- Connect a "Network Device". See section 34.3.
- Connect to a media server. See section 18.3.
- Provide remote technical support via the internet. See section 40.
- Provide DMX output via ArtNet or sACN protocols. See section 11.13.

See section 38.2.5 for more information on network settings.

5.2.4 DVI Video Out

An external monitor with a *minimum* resolution of 1280x1024 is required to operate the LX300. The monitor must be connected before switching on the console. Connect the monitor or touch screen to the Video Out connector using a DVI cable. A HDMI monitor can be connected via a *DVI to HDMI converter plug. (Not supplied).*

Note: The LX300 will not start correctly if an external monitor is not plugged in.

See section 38 (LX Tools) for details on how to setup the external monitor. Only compatible external touch screens can be used. Contact LSC or your local LSC dealer for compatible touch screen models.

5.2.5 USB

Four USB connectors are provided for connecting a keyboard, mouse, external touch screen or memory device (or charging your phone). A single USB connector is also provided on the front panel below the power switch.

5.2.6 MIDI

MIDI In, MIDI Thru and MIDI Out connectors are provided.

See section 31 for details on the LX300's MIDI functions.

5.2.7 Audio In/Out

Two 6.5mm Stereo jacks are provided for audio.

See section 25.9 for details on Audio playback.

5.2.8 LED Desk Lamps

Two 3 pin XLR connectors are provided for LED desk lamps. Pins 1 and 2 are ground and pin 3 is +12 Volts.

The brightness of the LED desk light can be controlled from the "LX Tools" utility.

See section 38 for details on LX Tools.

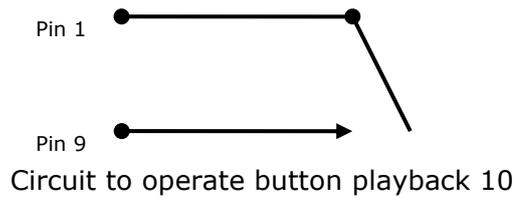
5.2.9 External Inputs

The "external Inputs" 9-pin D-SUB connector on the rear can be used to connect up to 6 external push buttons that act the same way as the "Go" buttons on the playbacks. The connector is wired to accept 6 inputs in the form of contact closures.

The pin assignments on the 9 pin D-SUB connector are:

Pin	Button Playback
1	Go 10
2	Go 11
3	Go 12
4	Go 13
5	Go 14
6	Go 15
9	Common

To remotely operate a Go button, provide a contact closure (short circuit) from its control pin to the common pin.



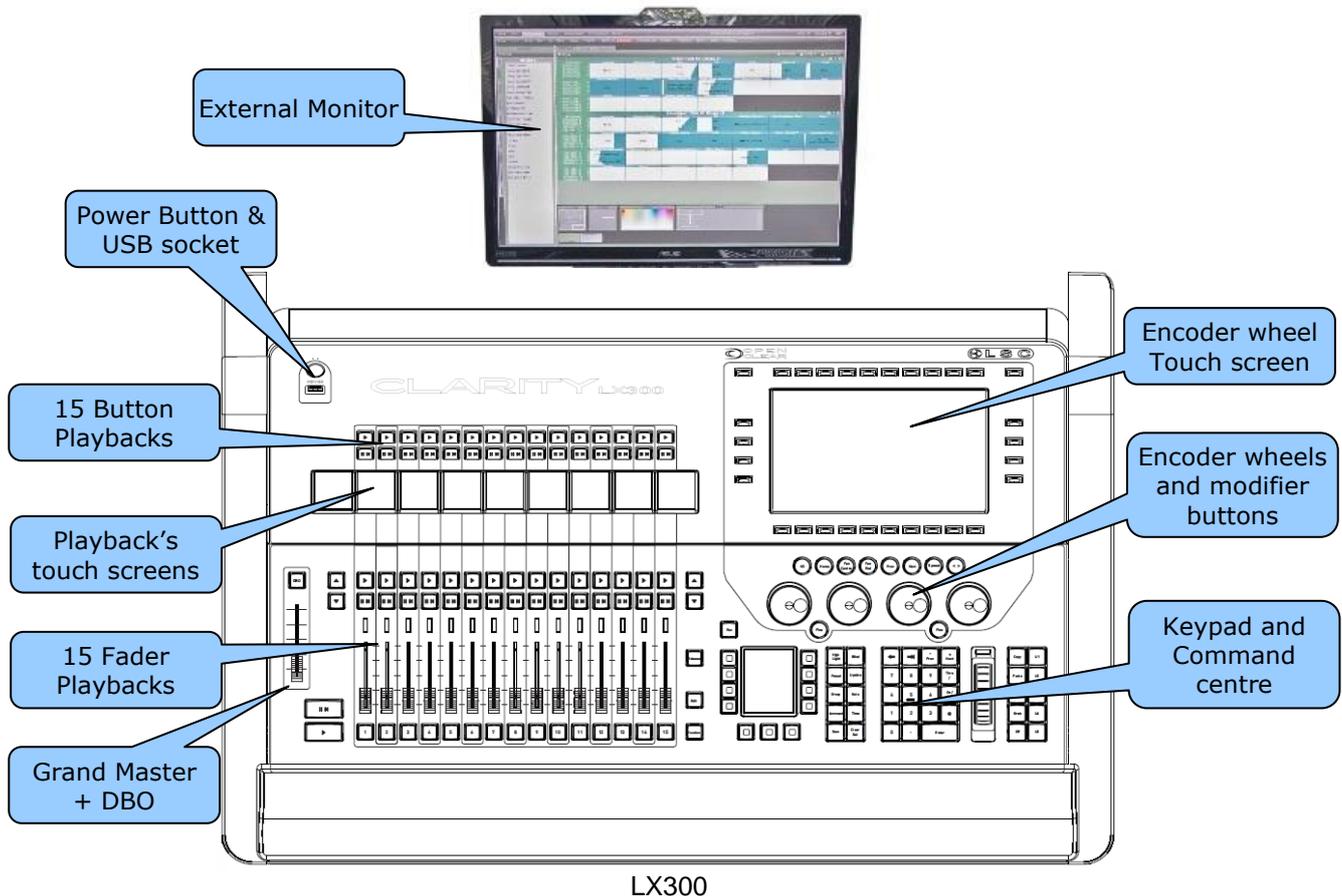
5.2.10 Reset

The **Reset** button should only be used if instructed by LSC technical support. The LX300 GUI (Graphical User Interface) can be reset from the LX tools utility. See section 38.

5.4 LX300 FRONT PANEL

The main areas of the LX 300 are:

1. Grand Master and DBO (Dead Black Out) button.
2. 10.4 inch multi function encoder wheel touch screen.
3. Encoder wheels and modifier buttons.
4. Keypad and command centre.
5. 15 fader playbacks.
6. 15 button playbacks.
7. External monitor.



See section 8 for descriptions of the Encoder Wheel Touch Screen, Encoder wheels and modifier buttons, Keypad and Command centre and the Grand Master.

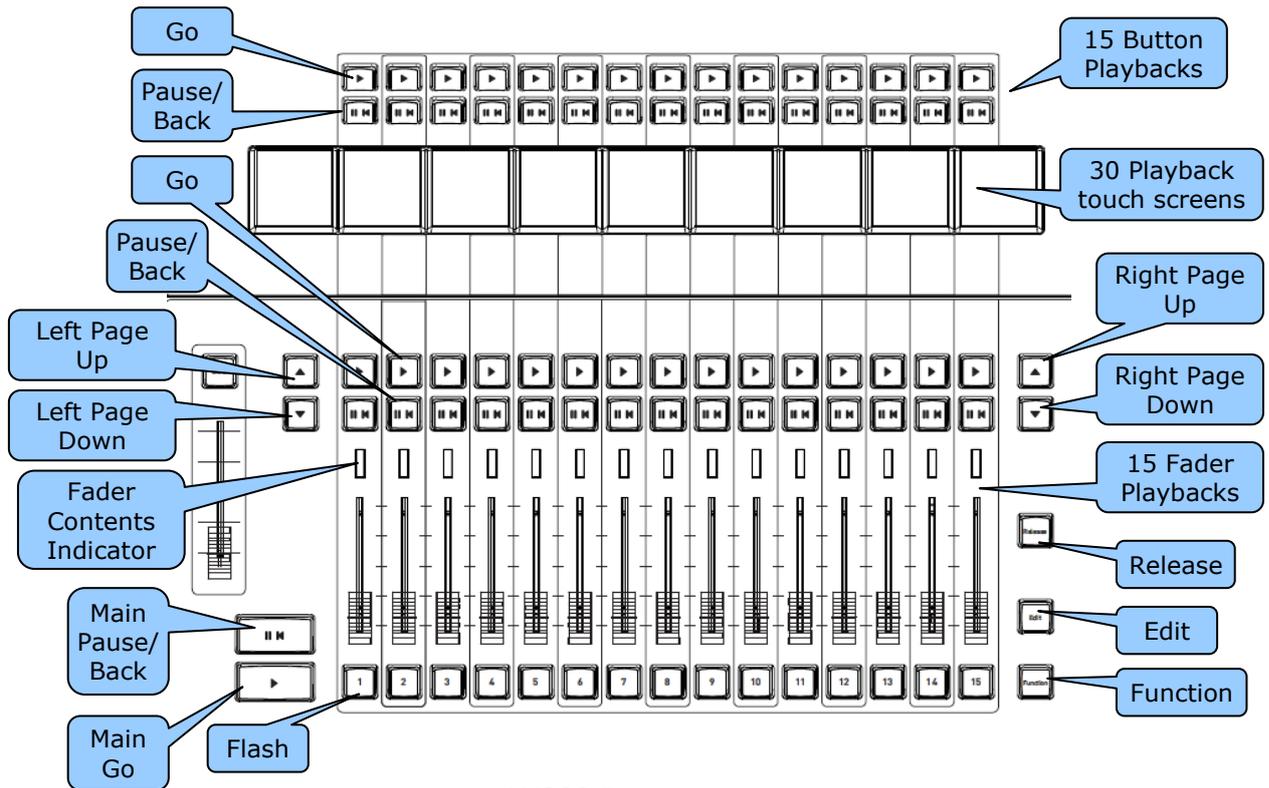
5.4.1 LX300 Playbacks

The LX300 has 15 fader playbacks and 15 button playbacks that are used for playing back cuelists. Between the fader playbacks and button playbacks are individual Playback touch screens that show the contents of each of the 30 playbacks and also allow you to assign cuelists and configure the playbacks by double tapping on a touch screen.



LX300 Playback Touch Screens

See section 8.7 for details on how to assign cuelists and configure playbacks.



LX300 Playbacks

Each Fader playback has a **Flash** button below the fader and **▶ (Go), || ◀ (Pause/Back)** buttons, a coloured contents/function indicator and a LCD touch screen above it. The Flash button instantly flashes the intensity of all fixtures on the playback to full level. The Flash button can also be used to “Solo” the playback. See section 25.2 for details on “Solo” and “Solo Safe”.

Each Button playback has a **▶ (Go)** and a **|| ◀ (Pause/Back)** button and LCD touch screen below it.

See section 8.7 for descriptions of the Playback operations.

6 LX600 Console

6.1 OVERVIEW

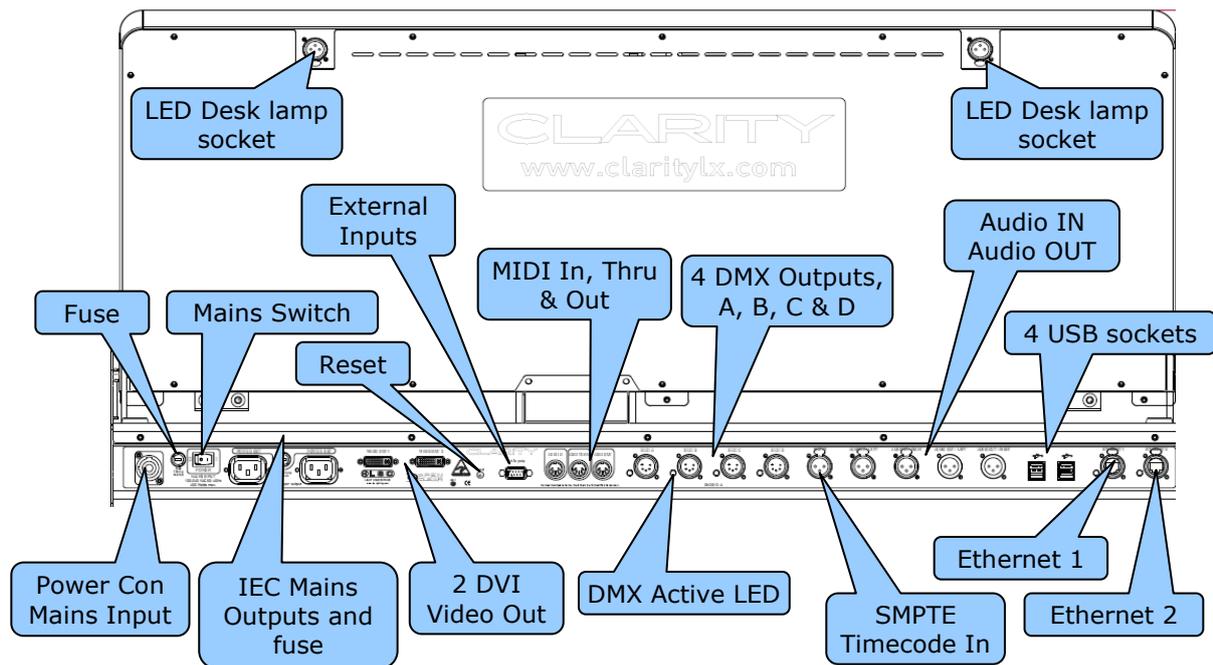


LX600

The LX600 has the following features:

- Pivoting monitor panel.
- One 10.4 inch "encoder wheel touch screen".
- One 17" touch screen.
- 15 motorized Fader Playbacks. Each playback has a fader with integral RGB "mode" indicator plus Select, Go, Pause/Back and Flash buttons.
- 99 pages of playback memory split into left and right pages.
- 60 Action Buttons for Group/Palette/Preset/Cue, each with LCD touch screen for labelling and advanced control. Four pages of memory.
- Any pair of faders can be assigned into Split mode for crossfade playback. (Future feature).
- Four DMX512/A output connectors (XLR5).
- DMX capacity up to 8192 DMX slots. Clarity USB license dongles (software license keys) can be used to expand the DMX slot capacity of LX consoles.
- Slide Out alphanumeric Keyboard.
- Two DVI monitor outputs.
- MIDI In, Out, Thru.
- SMPTE LTC (Linear Time Code) input.
- Motorized Grand Master.
- Stereo Audio In & Out on balanced XLR3.
- Dual Gb Ethernet ports.
- PowerCon power input. Two IEC power outputs.
- 160GB Shock protected disc storage system.

6.2 LX600 REAR PANEL



6.2.1 Power Input and Mains Switch

A Power Con mains input socket and mains switch connects to the LX300 universal power supply that operates on input voltages between 100 volts and 240 volts, 50-60 Hertz AC. The maximum power consumption is 450 watts.

6.2.2 Mains Outputs

Two IEC mains outputs are provided for external monitors.

6.2.3 DMX Outputs

Four DMX universes (A, B, C and D) are available. To use these outputs they must be connected in the Patch window to the internal universes within Clarity. The LED below each DMX connector lights when it is connected. See section 11.12 for details.

6.2.4 Ethernet

Two identical Ethernet connectors are provided. The connectors have coloured indicators.

- Blue/Purple indicates a 1000MB connection.
- Green/yellow indicates a 100MB connection.

The indicators flash when data is being sent/received.

The Ethernet ports can be used to either:

- Connect a wireless access point for Touch OSC remote control. See section 34.
- Connect a "Network Device". See section 34.3
- Connect to a media server. See section 18.3
- Provide remote technical support via the internet. See section 40.
- Provide DMX output via ArtNet or sACN protocols. See section 11.13.

See section 38.2.5 for more information on network settings.

6.2.5 DVI Video Out

Two external monitors can be connected to the DVI connectors. A HDMI monitor can be connected via a *DVI to HDMI converter plug*. (Not supplied). (Touch screens are not currently supported). Displays on the inbuilt touch screen can be undocked and dragged onto the external monitors.

- If you are only using one external monitor it MUST be connected to "Video Out 1".
- If you are using two external monitors it is recommended that both monitors have identical resolutions and preferably the same make and model. If different resolution

monitors are used then the higher resolution monitor should be connected to the "Video Out 1" connector. If these recommendations are not observed, then it is possible that some of an external monitors display will spill over onto the encoder wheel touch screen display.

See section 38 (LX Tools) for details on how to setup the external monitors.

6.2.6 USB

Four USB connectors are provided for connecting a keyboard, mouse or memory device (or charging your phone). Single USB connectors are also provided on the front panel below the power switch and inside the keyboard drawer.

6.2.7 MIDI

MIDI In, MIDI Thru and MIDI Out connectors are provided. See section 31 for details on the LX300's MIDI functions.

6.2.8 SPMTE Timecode

A female 3 pin XLR socket is provided for SMPTE Timecode input.

6.2.9 Audio In/Out

Two XLR connectors are provided for audio input and two for audio output. An "Audio Out" 3.5mm headphone socket is located inside the keyboard drawer. See section 25.9 for details on Audio playback.

6.2.10 LED Desk Lamps

Two 3 pin XLR connectors are provided for LED desk lamps. Each connector provides 12volts power for a LED. Pins 1 and 2 are ground and pin 3 is +12 Volts. The brightness of the LED desk light can be controlled from the "LX Tools" utility. See section 38 for details on LX Tools.

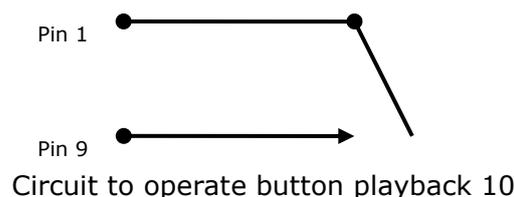
6.2.11 External Inputs

The "external Inputs" 9-pin D-SUB connector on the rear can be used to connect up to 6 external push buttons that act the same way as the "Go" buttons on the playbacks. The connector is wired to accept 6 inputs in the form of contact closures.

The pin assignments on the 9 pin D-SUB connector are:

Pin	Button Playback
1	Go 10
2	Go 11
3	Go 12
4	Go 13
5	Go 14
6	Go 15
9	Common

To remotely operate a Go button, provide a contact closure (short circuit) from its control pin to the common pin.



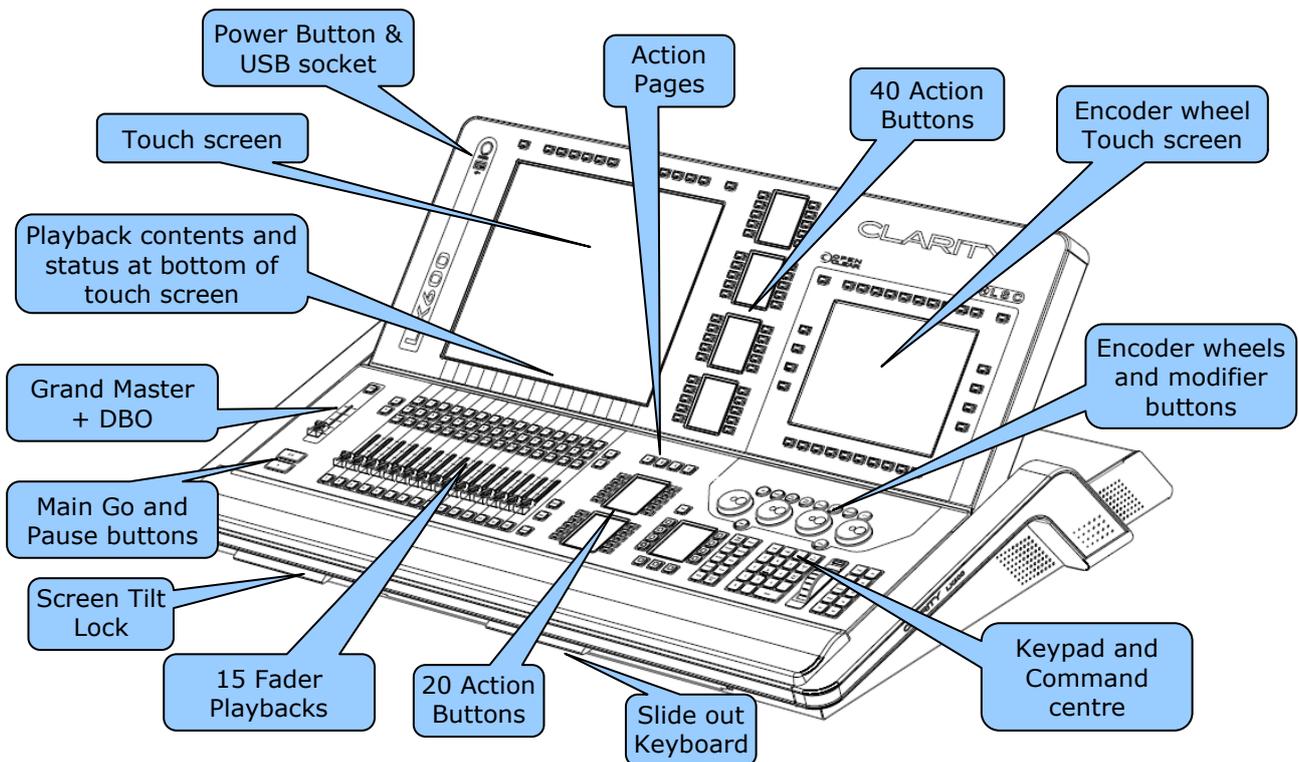
6.2.12 Reset

The **Reset** button should only be used if instructed by LSC technical support. The LX600 GUI (Graphical User Interface) can be reset from the LX tools utility. See section 38

6.4 LX600 FRONT PANEL

The main areas of the LX 600 are:

- Grand Master and DBO (Dead Black Out) button.
- 10.4 inch multi function encoder wheel touch screen.
- Encoder wheels and modifier buttons.
- Keypad and command centre.
- 15 fader playbacks.
- 60 Button Playbacks for Group/Palette/Preset/Cue, each with LCD touch screen. Four pages of memory.



LX600

See section 8 for descriptions of the Encoder Wheel Touch Screen, Encoder wheels and modifier buttons, Keypad and Command centre and the Grand Master.

There are 15 motorised fader playbacks each with a **Flash** button below the fader and **▶ (Go)**, **⏪ (Pause/Back)** and **Select** button above the fader. A coloured contents/function indicator surrounds the fader and the playback status/contents is shown on the touch screen above it. There are 99 pages of Playbacks available split into left and right banks with an adjustable bank divider.

See section 8.7 for descriptions of the Playbacks.

There are 60 **Action** Buttons, each with a touch screen beside it. There are four pages of Action buttons for a total of 240 actions.

See section 8.8 for descriptions of the Action buttons.

7 LX900 Console

7.1 OVERVIEW

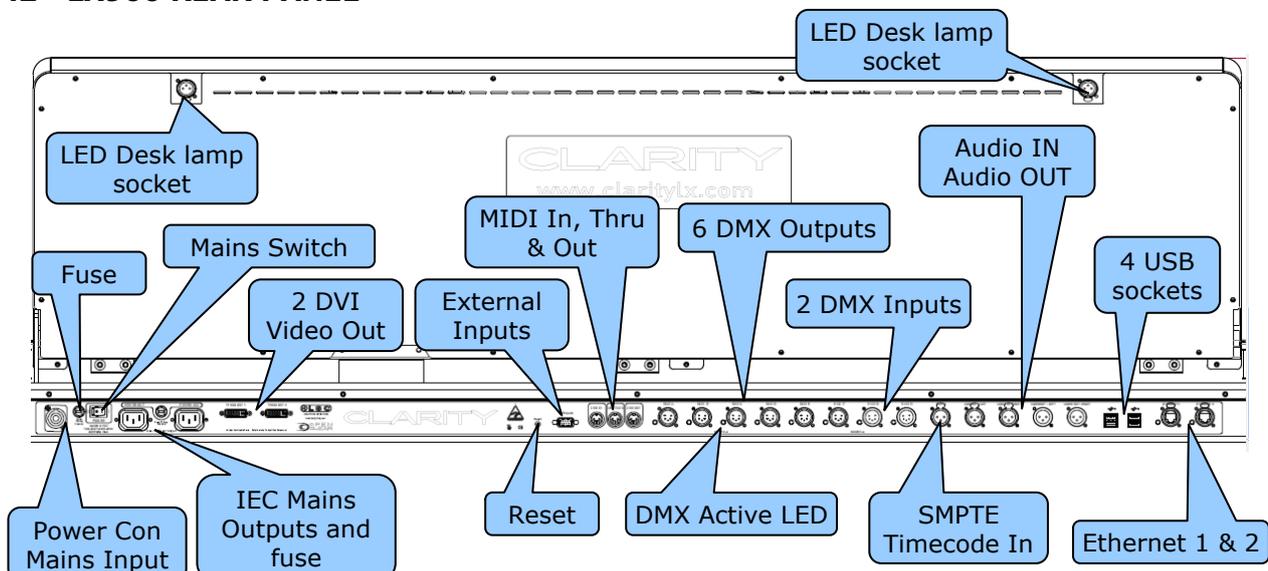


LX900

The LX900 has the following features:

- Pivoting monitor panel.
- One 10.4 inch "encoder wheel touch screen".
- Two 17" touch screens.
- 30 motorized Fader Playbacks in two banks of 15 playbacks. Each playback has a fader with integral RGB mode indicator plus Select, Go and Pause/Back buttons.
- 99 pages of playback memory for each bank split into left and right pages.
- 60 Action Buttons for Group/Palette/Preset/Cue, each with LCD touch screen for labelling and advanced control. Four pages of memory.
- Dedicated split crossfade motorised fader pair with 2.4" full colour LCD display. Select, Go and Pause/Back buttons.
- Six DMX512/A **output** connectors (XLR5).
- Two DMX512/A **input** connectors (XLR5).
- DMX capacity up to 64,000 DMX slots. Clarity USB license dongles (software license keys) can be used to expand the DMX slot capacity of LX consoles.
- Slide Out alphanumeric Keyboard.
- Two DVI monitor outputs.
- MIDI In, Out, Thru.
- SMPTE LTC (Linear Time Code) input.
- Motorized Grand Master.
- Stereo Audio In & Out on balanced XLR3 connectors.
- Dual Gb Ethernet ports.
- PowerCon power input. Two IEC power outputs.
- Dual 160GB RAID 1 disc storage system.

7.2 LX900 REAR PANEL



7.2.1 Power Input and Mains Switch

A Power Con mains input socket and mains switch connects to the LX300 universal power supply that operates on input voltages between 100 volts and 240 volts, 50-60 Hertz AC. The maximum power consumption is 450 watts.

7.2.2 Mains Outputs

Two IEC mains outputs are provided for external monitors.

7.2.3 DMX Outputs

Six DMX universes (A, B, C and D) are available. To use these outputs they must be connected in the Patch window to the internal universes within Clarity. The LED below each DMX connector lights when it is connected. See section 11.12 for details.

7.2.4 DMX Input

Two DMX512/A **input** connectors. Not currently active.

7.2.5 Ethernet

Two identical Ethernet connectors are provided. The connectors have coloured indicators.

- Blue/Purple indicates a 1000MB connection.
- Green/yellow indicates a 100MB connection.

The indicators flash when data is being sent/received.

The Ethernet ports can be used to either:

- Connect a wireless access point for Touch OSC remote control. See section 34.
- Connect a "Network Device". See section 34.3
- Connect to a media server. See section 18.3
- Provide remote technical support via the internet. See section 40.
- Provide DMX output via ArtNet or sACN protocols. See section 11.13.

See section 38.2.5 for more information on network settings.

7.2.6 DVI Video Out

Two external monitors can be connected to the DVI connectors. A HDMI monitor can be connected via a *DVI to HDMI converter plug*. (*Not supplied*). (Touch screens are not currently supported). Displays on the inbuilt touch screens can be undocked and dragged onto the external monitors.

- If you are only using one external monitor it **MUST** be connected to "Video Out 1".
- If you are using **two** external monitors it is recommended that both monitors have **identical resolutions** and preferably the same make and model. If different resolution monitors are used then the higher resolution monitor should be connected to the "Video Out 1" connector. If these recommendations are not observed, then it is possible that some of an external monitors display will spill over onto the encoder wheel touch screen display.

See section 38 (LX Tools) for details on how to setup the external monitors.

7.2.7 USB

Four USB connectors are provided for connecting a keyboard, mouse or memory device (or charging your phone). Single USB connectors are also provided on the front panel below the power switch and inside the keyboard drawer.

7.2.8 MIDI

MIDI In, MIDI Thru and MIDI Out connectors are provided. See section 31 for details on the LX300's MIDI functions.

7.2.9 SMPTE Timecode

A female 3 pin XLR socket is provided for SMPTE Timecode input.

7.2.10 Audio In/Out

Two XLR connectors are provided for audio input and two for audio output. An "Audio Out" 3.5mm headphone socket is located inside the keyboard drawer. See section 25.9 for details on Audio playback.

7.2.11 LED Desk Lamps

Two 3 pin XLR connectors are provided for LED desk lamps. Each connector provides 12volts power for a LED. Pins 1 and 2 are ground and pin 3 is +12 Volts. The brightness of the LED desk light can be controlled from the "LX Tools" utility. See section 38 for details on LX Tools.

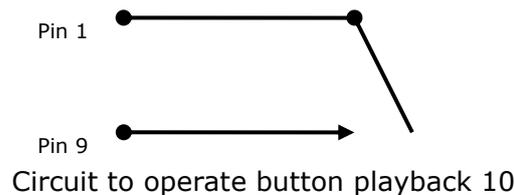
7.2.12 External Inputs

The "external Inputs" 9-pin D-SUB connector on the rear can be used to connect up to 6 external push buttons that act the same way as the "Go" buttons on the playbacks. The connector is wired to accept 6 inputs in the form of contact closures.

The pin assignments on the 9 pin D-SUB connector are:

Pin	Button Playback
1	Go 10
2	Go 11
3	Go 12
4	Go 13
5	Go 14
6	Go 15
9	Common

To remotely operate a Go button, provide a contact closure (short circuit) from its control pin to the common pin.



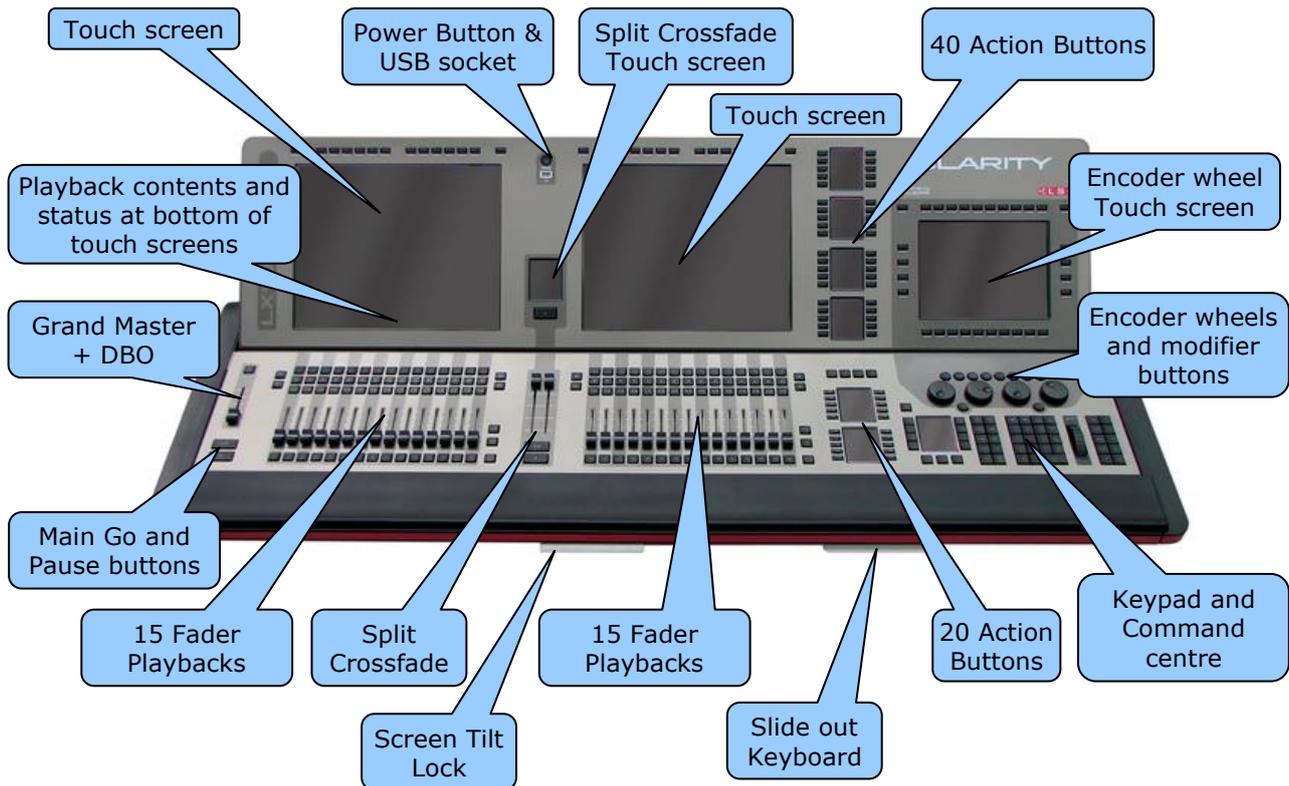
7.2.13 Reset

The **Reset** button should only be used if instructed by LSC technical support. The LX600 GUI (Graphical User Interface) can be reset from the LX tools utility. See section 38

7.4 LX900 FRONT PANEL

The main areas of the LX 600 are:

- Grand Master and DBO (Dead Black Out) button.
- 10.4 inch multi function encoder wheel touch screen.
- Encoder wheels and modifier buttons.
- Keypad and command centre.
- 15 fader playbacks.
- 60 Action buttons for Group/Palette/Preset/Cue, each with LCD touch screen. 4 pages of memory.



LX900

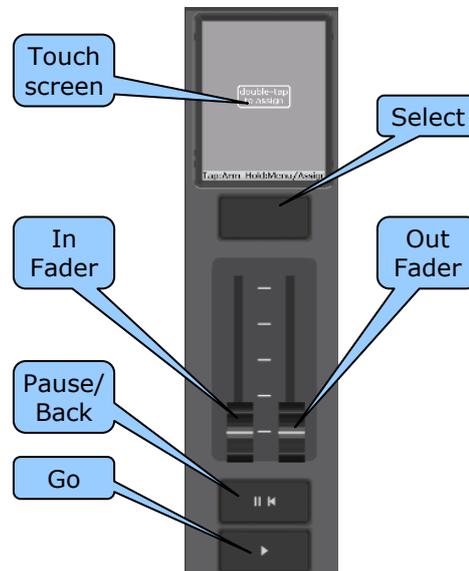
See section 8 for descriptions of the Encoder Wheel Touch Screen, Encoder wheels and modifier buttons, Keypad and Command centre and the Grand Master.

There are 30 motorised fader playbacks (arranged in two banks of 15 each). Each playback has a **Flash** button below the fader and **▶ (Go)**, **|| ◀ (Pause/Back)** and **Select** button above the fader. A coloured contents/function indicator surrounds the fader and the playback status/contents is shown on the touch screen above it. Each bank of 15 playbacks has 99 pages of Playbacks available split into left and right banks with an adjustable bank divider. See section 8.7 for descriptions of the Playbacks.

There are 60 **Action** Buttons, each with a touch screen beside it. There are four pages of Action buttons for a total of 240 actions. See section 8.8 for descriptions of the Action buttons.

7.5 LX900 SPLIT CROSS FADE

The LX900 has a “theatre style” split crossfade. It has individual motorised faders for the incoming (up) fade and outgoing (down fade), Go and Pause/back buttons plus a dedicated touch screen for status and configuration.



LX900 Split Playback

To quickly assign a cuelist to the split playback, double tap the touch screen then press the select button of playback containing the cuelist. Currently the split playback is an extension of the master playback, so is only assignable from an existing physical fader assignment.

To configure the split playback (or assign a cuelist) hold its **Select** button. The LCD shows....



- **Assign.** Press a select button on a playback to assign that playback to the split playback.
- **Join.** The **In fader** controls both the In fade and the Out fade. The **Out fader** does nothing.
- **Auto advance.** When enabled, the cuelist will automatically advance to the next cue when the in fade and out fade both reach 100%.
- **Auto loop.** When the cuelist reaches the last cue it will start again at the first cue.
- **Clear.** Clears the current cuelist from the split playback.

The buttons have the following functions:

- **▶ (Go):** Plays the next cue in the cue-list or restarts a paused fade. Pressing ▶ will start the fade to the next cue even if the current fade has not finished.
Press **Function** + ▶ to snap to the next cue.
 - The indicator in the button lights during the transition to the next cue.

If the playback contains a chase, pressing ▶ will start the chase. If you continue tapping ▶ (to the beat of the music) it will automatically adjust the chase speed to the beat.

- **|| ◀** (Pause). Pauses any fades in progress. If no fades are in progress, it fades back to the previous step.
 - The indicator in the button lights when the fade to the next cue has completed.
 - The indicator in the button flashes if the cue has been partially overridden.

If the playback contains a chase, pressing **|| ◀** will stop the chase. If you continue tapping **|| ◀** it will manually step the chase speed with each tap.

- **Function + || ◀** Snap to the previous cue.
- **Function + ▶**. Snap to the next cue.

7.6 IN AND OUT FADERS

The IN fader is used to control the incoming cue and the OUT fader is used to control the outgoing cue. Normally these manual faders become active when the cuelist is active and paused. However pressing **|| ◀(Pause/Back)** when the cuelist is inactive or already paused will cause it to play the previous cue. Taping the split playbacks **Select** button will “arm” the playback which will always pause the cuelist at the current position, even if it’s inactive. It will pause at cue:1 0s.

8 LX Console Controls

8.1 OVERVIEW

The following controls on the LX consoles are common to all models.

8.2 POWER SWITCHES

There is a mains power switch located on the rear. There is also a Power switch on the front panel. To switch on the console, switch on the rear panel power switch then press the front **POWER** button.

If power has not been disconnected or switched off at the rear since the last use, press the **Power** button on front panel to start Clarity.

To shutdown Clarity, from the menu select "Shows/Shutdown".

You can also shutdown or restart Clarity by tapping the front **Power** button.



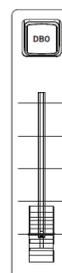
- **Quick Restart** restarts Clarity.
- **Full Restart** restarts the operating system and Clarity.
- **Shutdown**

To force Clarity to shutdown without saving any of its settings or files, press and hold the front **Power** button for 5 seconds.

8.3 GRAND MASTER

The Grand Master and DBO (Dead Black Out) button only affects the intensity of your fixtures. The **DBO** is a momentary action and the button lights when active or flashes if the Grand Master is set to any level below 100%.

The LX600 and LX900 both have motorized Grand Masters. When multiple consoles are networked, the Grand Masters are all synchronized, so adjusting the GM on any console moves the GM on all consoles to ensure that all operators have the correct visual feedback from the position of the faders



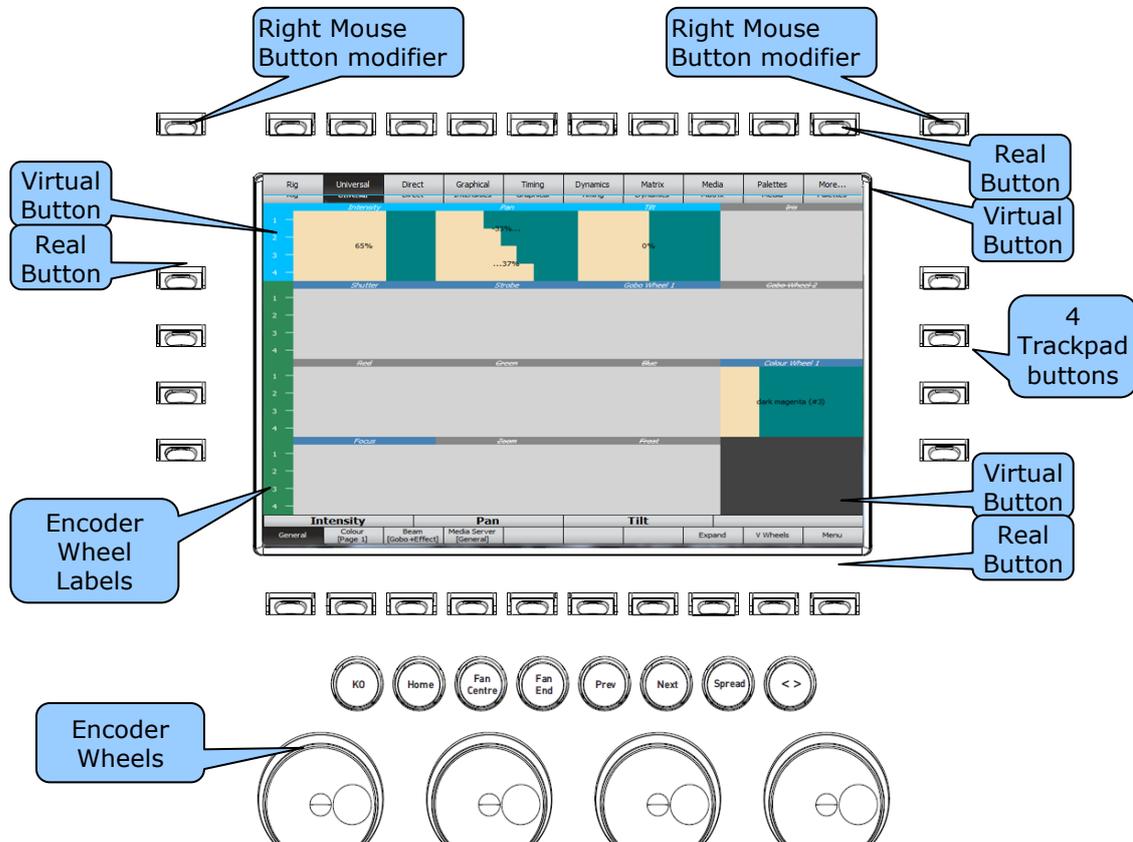
The grand master and DBO can be disabled in the "Preferences" menu. See section 37.1 for details.

8.4 ENCODER WHEEL TOUCH SCREEN

The 10.4 inch encoder wheel touch screen has multiple modes of operation.

There are 10 virtual buttons (with labels) across the top of the screen that select the different operational modes for the screen. These 10 buttons are duplicated by the 10 real buttons directly above them. You can use either the virtual button or the real button to select each mode. Press a button to select that mode. Pressing and HOLDING a button momentarily displays its mode. When the button is released the previous mode returns.

There are also 10 virtual buttons (with labels) across the bottom of the screen that provide different functions for the current mode. These 10 buttons are duplicated by the 10 real buttons directly below them. You can use either the virtual button or the real button to make a selection.



The 2 outside buttons at the top act as right mouse button modifiers for the touch screens. When either button is held down, a single tap on a touch screen acts as a right click. Right clicking opens a drop down context menu for the item or object that you right click on. These usually provide shortcuts to often used values or allow items to be renamed, deleted, etcetera.

There are 4 buttons on each side of the screen:

- The buttons on the left of the screen select the row of fixture attributes that are controlled by the encoder wheels. You can also touch the virtual button on the left of the screen to select that row.
- The buttons on the right are used for trackpad operations as described below.

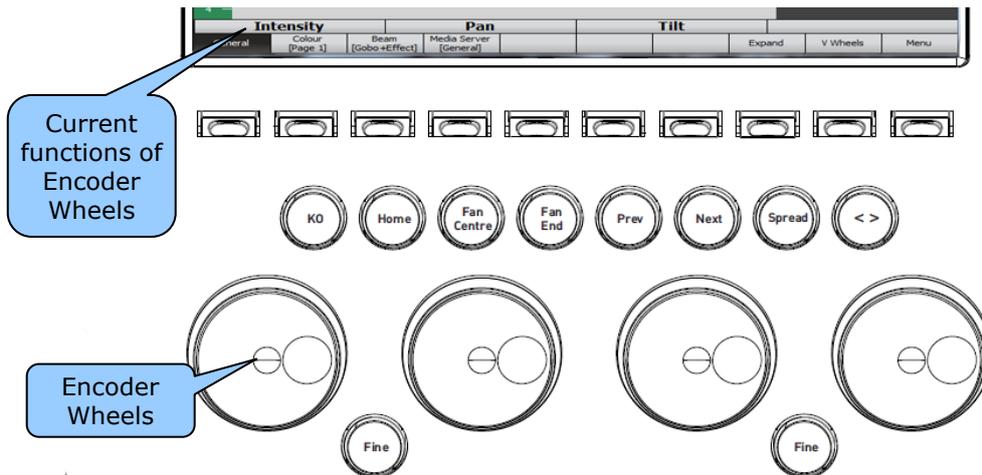
The operation of left and right side buttons can be swapped. Go to: Show/Settings/Preferences and select "Swap programmer window side buttons (LX)".

8.4.1 Trackpad Mode

Trackpad mode makes the encoder wheel touch screen act as a touch pad (as found on a laptop) to control the cursor on the other monitor(s). In trackpad mode, the 4 buttons on the right of the touch screen perform the following functions from top to bottom.

- **Next Screen.** Moves the cursor to the next touch screen. (Not applicable to the LX300).
- **Right Click.**
- **Left Click.**
- **Trackpad Mode.** Selects trackpad mode. Press and hold for momentary use or double press to latch into track pad mode. Press again to return to normal touch screen operation.

8.5 ENCODER WHEELS AND BUTTONS



Above the bottom row of virtual buttons on the touch screen are four labels that show the current functions of the four encoder wheels. These functions change as different modes or attribute rows are selected.

For finer control, hold either **Fine** button whilst turning a wheel. recor **Fine** to latch it on. Press again to un-latch. Two fine buttons are provided so that any of the 4 wheels can be put into fine mode using just one hand to operate the wheel and push the button.

If you push in the encoder wheel, rocking it left or right will set the parameter to 0% or 100% respectively.

The 9 round buttons above the encoder wheels are used together with the wheels to modify their actions as described below. They are ergonomically placed above the wheels so that you can tap them without letting go of a wheel. The wheel modifier functions are:

- **KO (Knock Out)**. Hold the button and turn a wheel to knockout (remove) the attribute(s) being controlled by that wheel from the programmer. Whilst you hold down **KO**, the command center touch screen changes to offer the following functions...



- **Home** Hold the button and turn a wheel to send the attribute(s) being controlled by that wheel to its home position. Whilst you hold down **Home**, the command center touch screen changes to offer the following functions...



- **Fan Centre** Hold the button and turn a wheel to fan the attributes being controlled. The centre is fanned symmetrically about the ends. Turn the wheel in the opposite direction to reverse the fan. Double press **Fan Centre** to latch it on. Press again to unlatch.
 - **Fan End** Hold the button and turn a wheel to fan the attributes being controlled. The ends are fanned symmetrically about the centre. Turn the wheel in the opposite direction to reverse the fan. Double press **Fan End** to latch it on. Press again to unlatch.
 - **Prev** Step through the attribute(s) being controlled, one attribute at a time.
 - **Next** Step through the attribute(s) being controlled, one at a time in the opposite direction.
- To reselect ALL fixtures press **Prev** and **Next** at the same time.
When programming compound fixtures that have multiple cells, if you **HOLD Fine** and tap either **Prev** or **Next**, it will step through the individual cells of the fixture.
See section 21.5 for more information on Prev and Next.
- **Spread** Hold the button and turn a wheel to snap the attribute(s) being controlled into a spread from maximum to minimum values. Turn it in the opposite direction to reverse the spread.
 - **<>** Hold the button and turn a wheel to mirror the values. The attributes have a range from -100% to +100%. This button inverts the values. Positive values become negative values and negative values become positive.

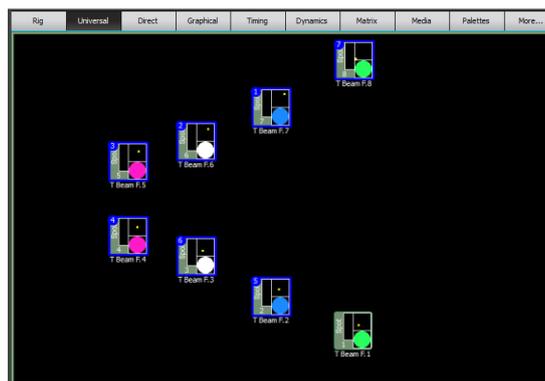
The 10 touch screen modes as selected by the top buttons are:

Rig Universal Direct Graphical Timing Dynamics Matrix Media Palettes More...

The “**More...**” button provides access to the **Intensities** and **Timeline** modes. These modes allow you to control the attributes of the selected fixture in the current programmer as selected in the **Programmer** window. There are 2 programmers available and programmer 1 is selected by default.

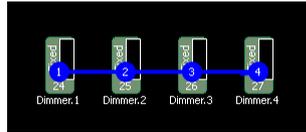
8.5.1 Rig

Rig mode is a fixture selection tool and 2 dimensional visualiser.



Rig

It shows a geographical view of the fixtures (and groups) which you can arrange so that they are positioned as they actually are in your rig. Multiple views can be created with specific fixtures and or groups in each view. A background image of your stage or venue can be added to each view. This allows you to rapidly find and select fixtures for programming by touching them. Selected fixtures have a blue border. Touch again to de-select a fixture. If you touch a fixture then drag over multiple fixtures, Clarity draws a line showing the drag path and selects each fixture that you drag over.



If you touch on the background area then drag a box, all fixtures within the box are selected.

When selecting fixtures, every fixture or group that you select is added to the current selection. This allows you to build up complex selections of fixtures. Re-selecting a currently selected fixture or group removes it from the current selection. Clarity calls this the "selection phase".

As soon as you change any values of any of the selected fixtures (using the other modes of the touch screen) Clarity changes to the "programming phase" allowing you to adjust the values.

When the next fixture or group selection is made, Clarity changes back to selection phase and clears all previous selections. You can now build up your next selection of fixtures or groups to be programmed.

The selections from the previous selection phase can be retained by holding the **Function** button (near the Playback faders) when making new selection.

The fixture icons show the intensity, colour and positions settings of the fixtures.

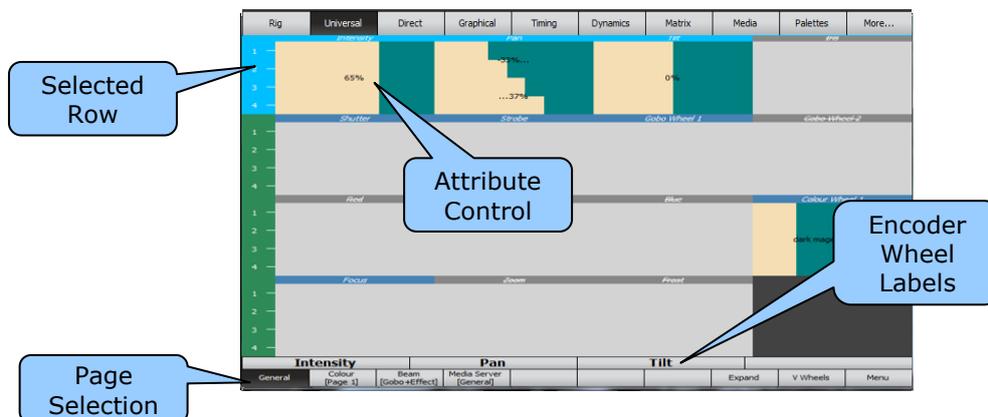
See section 12 for more details on Rig Mode.

8.5.2 Universal

When you have selected a fixture(s), universal mode provides universal attribute controls that are always in the same locations on the screen and operate in exactly the same way, regardless of which fixture types you have selected. This not only allows multiple types of fixtures to be controlled simultaneously but also simplifies the control of complex fixtures that might use multiple attributes to control an effect or fixtures that use one attributes to change the mode of another attributes. Universal mode automatically interprets these attributes and presents a single control for each effect.

If a listed attribute does not exist on any of the selected fixtures, then that attribute control is still visible but disabled (its name is crossed out and the background is grey).

In **Universal** mode, the screen is divided horizontally into 4 rows.



Each row shows the attributes of the selected fixture(s) that you can control by dragging the attribute control on the touch screen. Attribute controls can also be flicked to "scroll" the value in either direction. If you tap a "scrolling" attribute it will stop at the current value.

The four attributes in any row can also be controlled with the encoder wheels if that row is selected. Rows are selected by either tapping in the green section (virtual button) of the row on

the left of the screen or pressing one of the 4 buttons on the left of the screen corresponding to that row. The currently selected row is blue. Repeatedly tapping a page selection button (described below) at the bottom of the screen will also step through the rows of its page.

Above the bottom row of virtual buttons are four labels that show the current functions of the four encoder wheels. These functions change as different rows or pages are selected.

Universal controls are arranged in 4 main pages that are selected by the 4 buttons at the bottom left of the screen. The main pages are:

General Colour Beam Media Server

For example, selecting "General" provides controls for.....

Intensity	Pan	Tilt	Iris
Shutter	Strobe	Gobo Wheel 1	Gobo wheel 2
Red	Green	Blue	Colour Wheel 1
Focus	Zoom	Frost	

The Colour, Beam and Media Servers are arranged in a similar manner but they also have additional sub pages that can be selected by either holding a Colour, Beam or Media Server button and selecting from the sub pages that appear or using their page buttons at the bottom of the screen.

See section 13 for more details on Universal Mode.

8.5.3 Direct

Direct mode provides another means of controlling the attributes of the selected fixture(s). When you have selected a fixture(s), direct mode provides attribute controls for the selected fixture as specified for that fixture in the fixture library. Only one type of fixture can be controlled at a time.

The controls are divided into groups of:

Intensity/Position Colour Gobo/Effects Beam

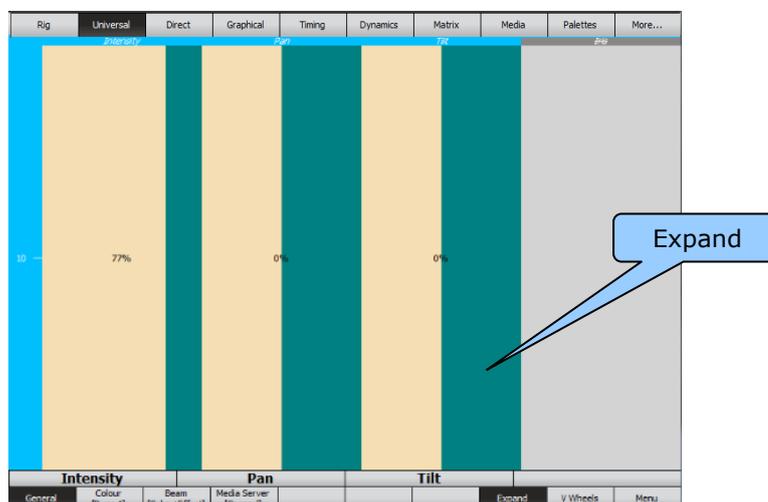
Groups and rows are selected and connected to the encoder wheels in the same way as in Universal mode above.

Direct mode also allows you to control any unusual attributes that a fixture might have that aren't covered by the controls in Universal mode.

See section 14 for more details on Direct Mode.

8.5.4 Expand

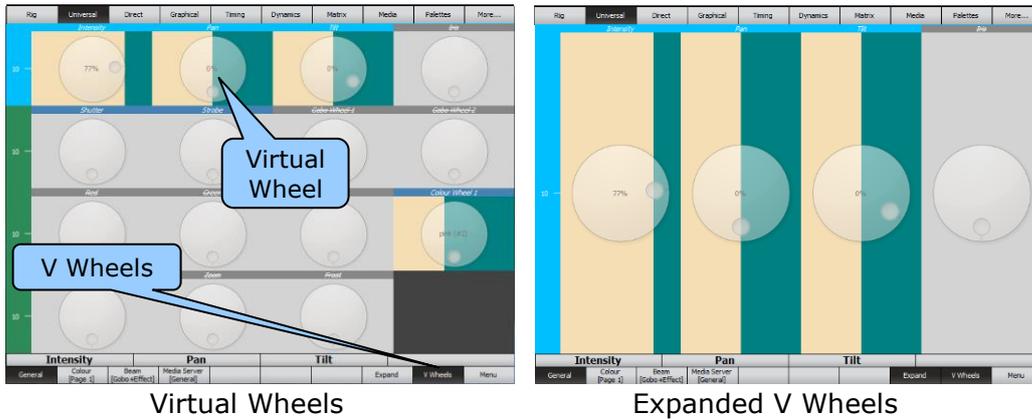
When either Universal or Direct mode is selected you can expand the display to show only the currently selected row by selecting the **Expand** button at the bottom of the screen. This makes it easier to see individual fixtures when many fixtures have been selected and gives easier control of attributes when dragging on the touch screen.



Expand

8.5.5 Virtual Wheels

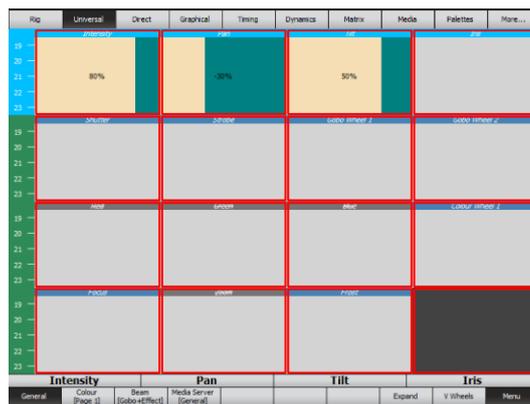
When either Universal, Direct or Graphical Gobo mode is selected, you can display Virtual Wheels (instead of control widgets) by selecting the **V Wheels** button at the bottom of the screen.



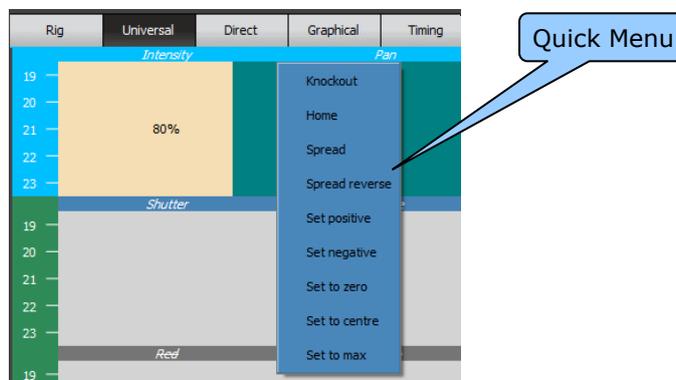
Touch anywhere within the wheel to get control then drag a circle shape. You can drag a circle to the extremities of the screen to get finer control.

8.5.6 Menu

The "Universal" and "Direct" screens both off a **Menu** button at the bottom of the screen. Pressing the **Menu** button displays flashing red boxes around each parameter.



Touching inside one of the boxes reveals a "Quick Menu" for that parameter.



8.5.7 Graphical

When you have selected a fixture(s), graphical mode provides a visual display for controlling attributes. Graphical controls are arranged in 3 main pages that are selected by the 3 buttons at the bottom left of the screen.

The main pages are:

Position Colour Gobo

The **Position** page allows you to move the selected fixtures by touching and dragging.



Position

The **Colour** page allows you choose a colour for the selected fixture(s) by touching a colour. It has two sub pages; Hue/Sat and Swatch. Swatch view can be viewed in Chromatic order or by gel swatch manufacturer. Touch the manufacturer's name to see the available choices.

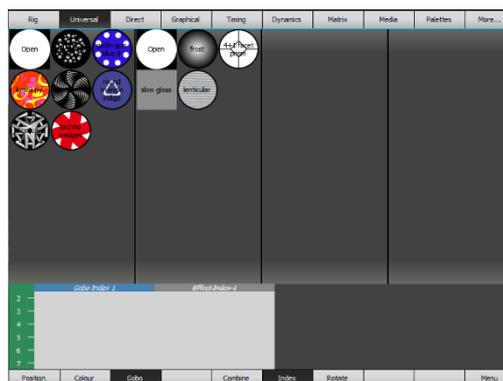


Hue/Sat



Swatch

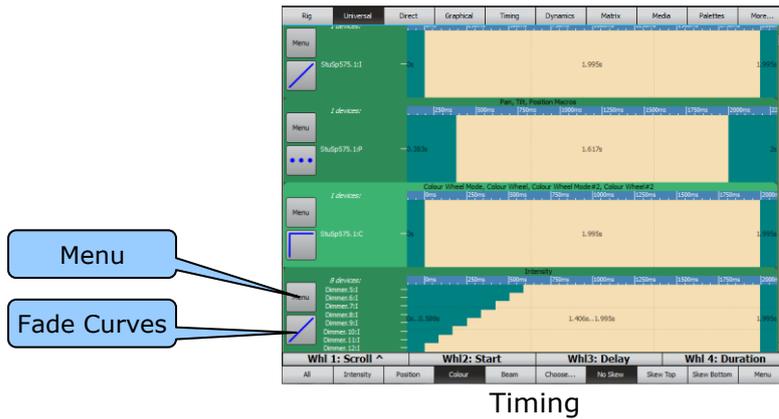
The **Gobo** page allows you choose a gobo for the selected fixture(s) by touching a gobo shape. It also has additional sub pages for controlling gobo indexing and gobo rotation by touch and drag using the widgets at the bottom or with the encoder wheels.



Gobo

8.5.8 Timing

If an attribute or multiple attributes have been altered, timing mode provides a means of altering its fade times.



Timing

Times can be individually set at the bottom of the screen for the attribute groups of **Intensity**, **Position**, **Colour** and **Beam** or **All** times can be selected. Attribute times can be further filtered by touching **Choose** and then selecting the attributes to be included. Use the encoder wheels or touch and drag to set the times.

- Touching the "Fade Curves" box reveals a range of fade curves to choose from.
- Touching the "Menu" box reveals a range of choices to set, reset, align and straighten times and to recall preset times or save preset times.

See section 15 for information on times.

8.5.9 Dynamics

Dynamics mode provides real time effects for the attributes of selected fixtures by adding modulation (variation) to any attribute or combination of attributes.

See section 1 for more details.

8.5.10 Matrix

Matrix mode allows you to place fixtures on a two dimensional grid and then display static or moving imagery on them. This is typically used with LED arrays. Therefore, the output of the fixtures can be tightly integrated into a complete lighting and visual show. Clarity allows you to control and program the imagery just like any another lighting fixture.

See section 17 for details.

8.5.11 Media

Media mode allows you to control media servers that provide video and graphics playback for visual projection on video screens or LED walls. Clarity allows you to control media servers and program them just as if they were another lighting fixture. Therefore, their output can be tightly integrated into a complete lighting and visual show.

See section 18 for more details.

8.5.12 Palettes

Palettes mode is the home of groups, presets and freesets that you create and also for Clarity's in-built library of groups, presets and freesets ready for you to use. Freesets are fixture independent and store values that can be generically applied to any selected fixtures, no matter what the type.

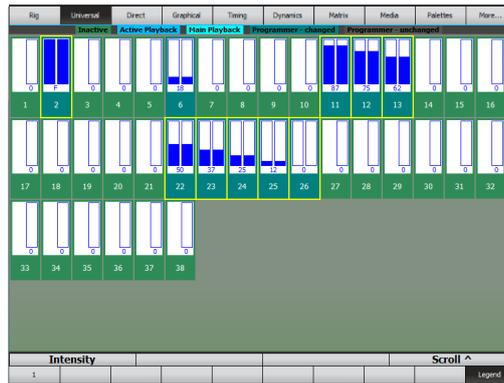
See section 19 for more details.

8.5.13 More...

More accesses the Intensities and Timeline windows.

8.5.1 Intensities

Intensity mode is a fixture selection, intensity control and visualiser tool.



Intensity

Fixtures are selected by touching them. Selected fixtures have a yellow border. Touch again to de-select a fixture.

If you touch a fixtures number then drag over multiple fixtures, Clarity draws a line showing the drag path and selects each fixture that you drag over.

If you touch on the background area then drag a box, all fixtures within the box are selected.

To set the intensity of the selected fixtures, touch on the intensity bargraph and drag or use the intensity wheel.

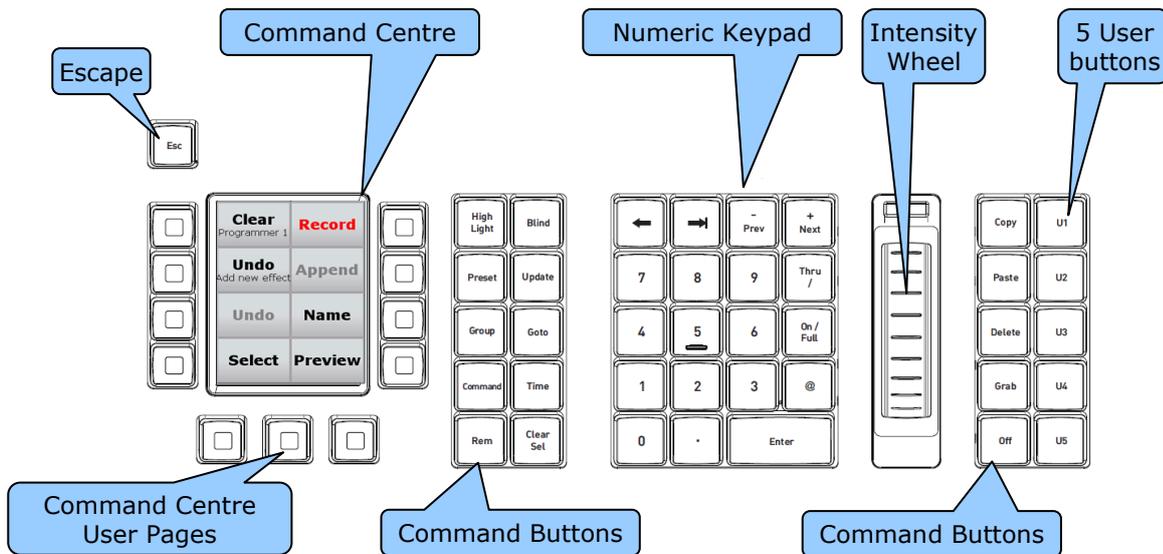
See section 20 for more details on Intensity mode.

8.5.2 Timeline

Timeline allows playback to be synchronised to timecode or to audio tracks played back by Clarity. It allows simple drag and drop editing of the timeline.

See section 33 for more details.

8.6 KEYPAD AND COMMAND CENTRE



8.6.1 User Buttons

The 5 user buttons (U1 to U5) on the right are used to save and recall your favourite screens and attribute selections on the “encoder wheel touch screen”.

- To save a screen setting, make your selections on the encoder wheel touch screen then press and hold one of the user buttons for 2 seconds. Confirm by pressing **OK** on the dialogue box that pops up on the encoder wheel touch screen.
- To recall a screen setting, tap its user button.

For example, you might be regularly selecting the “Universal” mode then selecting the “Beam” group then the “Gobo Wheels 1-4” page and controlling the third row of attributes. If you save this to one of the user buttons you can recall the entire selection with one push.

8.6.2 Intensity Wheel

The intensity wheel always controls the intensity of the selected fixtures.

8.6.3 Numeric Keypad

The keypad is used for fixture number selection and command line programming.

When the Patch window is selected on the touch screen, the keypad can be used for patching.

8.6.4 Command Centre

The Command Centre has a touch screen divided into 8 virtual buttons with dynamic labels. These 8 buttons are duplicated by the 8 real buttons on either side of the screen. You can use either the virtual button or the real button to make a selection.

The functions of these buttons will change dynamically as you perform various functions on Clarity.

For example, when you start to program a cue-list the **Record** button will create a new cue-list and record the first cue. It then changes to show the name of that cue-list and that it ready to save the second cue in the cue-list.

There are 4 pages of command buttons for the Command Centre touch screen, the default page and 3 momentary user pages. The 3 buttons below the command centre touch screen are used to momentarily select the user pages by holding down the desired page button. The buttons on the default page are:

- **Clear** or **Close** as appropriate for the current programmer. The label also displays the name of current programmer session (e.g. “Programmer 1” or “Name (of cue-list being edited)”). (Programmers are selected in the **Programmer** tab on the monitor).

- **Record** or **Save** (Save will also display the list/cue name).
- **Undo** last programmer action (displays action to be undone, e.g. "Undo clear position").
- **Append** a cue to the last recorded cuelist (displays the name of the cue-list that will be appended to).
- **Undo** last control booth action (e.g. "Undo delete cue").
- **Name** displays last item to be named, e.g. "Name [new group]". Pressing **Name** opens the "Name Item" dialogue box allowing you to enter a name. You can also re-name a cue-list loaded on a playback, or the contents of an Action button by holding **Name** and tapping a playback's **Select** button or an **Action** button.
- **Select**. If the Programmer is empty it selects all fixtures. If there are fixtures in the programmer it selects all of the fixtures in the programmer.
- **Preview** a fade transition (displays the cue name that will be previewed in edit mode). See section 21.8.4

The button functions on the default page cannot be changed.

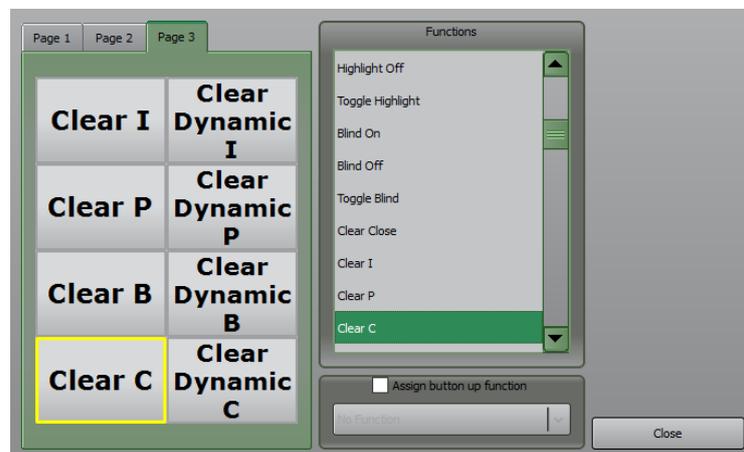
8.6.5 Command Centre User Pages

You can configure the buttons on the Command Centre's user pages with your favorite commands.

To configure the buttons on a user page, press and hold all 3 page buttons at the same time.

When using the desktop version of Clarity to emulate a LX console, click and hold each button for 1 second to latch that button down. When finished, click each button to un-latch it.

When all 3 page buttons are pressed, a dialogue box appears where you can select a function and assign it to a button.



Use the tabs to select a page the select one of the 8 buttons. In the "Functions" pane, select a function to assign it to the selected user button. The selected function will occur when the button is pressed down.

The "Assign button up" tick box allows you to assign a separate function when the button is released. Ticking the box allows you to select a function from the drop down list that appears. There are a few functions where this is mandatory. For example, if you assign the "DBO" (Dead Black Out) function to a button, the "DBO button up" command is automatically assigned to the button up function. This allows the button to work as a momentary black out button.

The button up functions can be individually assigned for your own custom functions. For example, you can create a custom momentary flash to full button by assigning the "Full" command to a button and the "Programmer Undo" to the button up function. When you press

and hold down the button the currently selected channels in the programmer go to 100% level and then when the button is released, they return to their previous value (via the Undo command).

8.6.6 Command Buttons

The 10 command buttons between the touch screen and the keypad are:

- **Highlight** (lights RED when active) This is a toggle (on/off) action. See section 21.8.9.
- **Blind** This is a toggle (on/off) action. See section 21.8.11
- **Preset** When pressed after the Record button it records a Preset. Also used to apply a preset. For example, pressing **Preset, 2**, applies preset number 2 to the selected fixture(s).
- **Update** Updates a cue or preset using the current programmer values. See section 21.8.8
- **Group** When pressed after the Record button it records a Group. Used in conjunction with a group number to select a group. For example, pressing **Group, 2**, selects group 2.
- **GoTo** When followed by a cue number it makes the current Playback go directly to that cue number. Can be used in conjunction with the **Time** button. For example, **Goto x Time y Enter**, will fade to cue x in y seconds.
- **Command** Opens the command line window for command line programming. See section 23 for details on command line programming. Can also be used to “build” a string of commands that can be executed via the **Enter** button. See section 19.14.2 for more details on Build mode.
- **Time** When followed by a number (seconds) it enters times in the command line.
- **Rem** Opens the command line window with the command “Remainder” entered for you. The “Remainder” command is used to so set the level of all unselected fixtures that are currently grabbed in the programmer to a level that you specify. This is usually used to dim out the unselected fixtures so that the selected fixture(s) can be easily identified and focused. For example, turn on fixtures 1 through 10 at 80%. Now select fixture 1 and press **Rem, Off**. Fixtures 2 through 10 turn off and fixture 1 is still selected. To reverse the Remainder Dim command, use the programmer **Undo** button. You can also specify a level for the **Rem** command. For example, turn on fixtures 1 through 10 at 80%. Now select fixture 2 and press **Rem, @, 25**. Fixtures 1 and 3 through 10 are set to 25%.
- **Clear Sel** Clears all fixture selections in the current programmer. It lights red when any fixtures are selected.

The 5 buttons to the right of the Intensity wheel are:

- **Copy** Copies the attribute values of the currently selected fixture or multiple fixtures to the clipboard.
- **Paste** Pastes the attribute values of the clipboard to the currently selected fixture or multiple fixtures.
- **Delete** Knocks out the selected fixtures from the programmer (either on its own or as part of a command line string).

- **Grab** The Grab button has multiple functions:
Pressing **Grab** grabs all attributes that are active on the output of Clarity PLUS all the other attributes of those fixtures that are at their "Default" level, into the current programmer. In other words, it grabs every attribute of any fixture that currently has any of its attributes active on the output of Clarity.

Typing a fixture number(s) and then pressing Grab grabs just that fixture(s) in the programmer and shows the parameter values for the selected fixture(s) on the encoder wheel touch screens "Universal" or "Direct" windows.

Holding **Grab** and moving an encoder wheel grabs that type of parameter into the programmer. For example, Holding **Grab** and moving the Pan encoder wheel grabs both Pan and Tilt at the current values on stage.

Holding **Grab** and tapping the **Select** button on one or more playbacks grabs the channels controlled by the playback into the programmer. These channels may be different from the contents of the cue-list if the playback is partially overridden. The information that is grabbed is post fader, so you get exactly what you are seeing on the stage.

- **Off** Sets the intensity of the selected fixtures to zero.

Hint: Copy and Paste is a powerful function. It allows you to duplicate attribute settings between different types of fixtures with just a few keystrokes.

For example, you have 12 fixtures that use Red, Green, Blue (additive) colour mixing and 12 fixtures that use Cyan, Magenta, Yellow (subtractive) colour mixing. Select the RGB fixtures and set them to a colour (or even fan a range of colours) then press Copy. Select the CMY fixtures then press Paste. All 24 fixtures are now set to matching colours. Clarity's fixture translation engine is very comprehensive and will attempt to convert all programming for all attribute types.

The **Esc** button flashes whenever there is a modal dialogue box open that requires your attention. Press **Esc** to close any dialogue box without making changes.

8.7 PLAYBACKS

The quantity and type of playbacks varies with the model of LX console.

- The LX300 has 15 fader playbacks and 15 button playbacks.
- The LX600 has 15 motorised fader playbacks and 60 Action Buttons for Groups, Palettes, Presets or Cuelists.
- The LX900 has 30 motorised fader playbacks and 60 Action Buttons for Groups, Palettes, Presets or Cuelists.

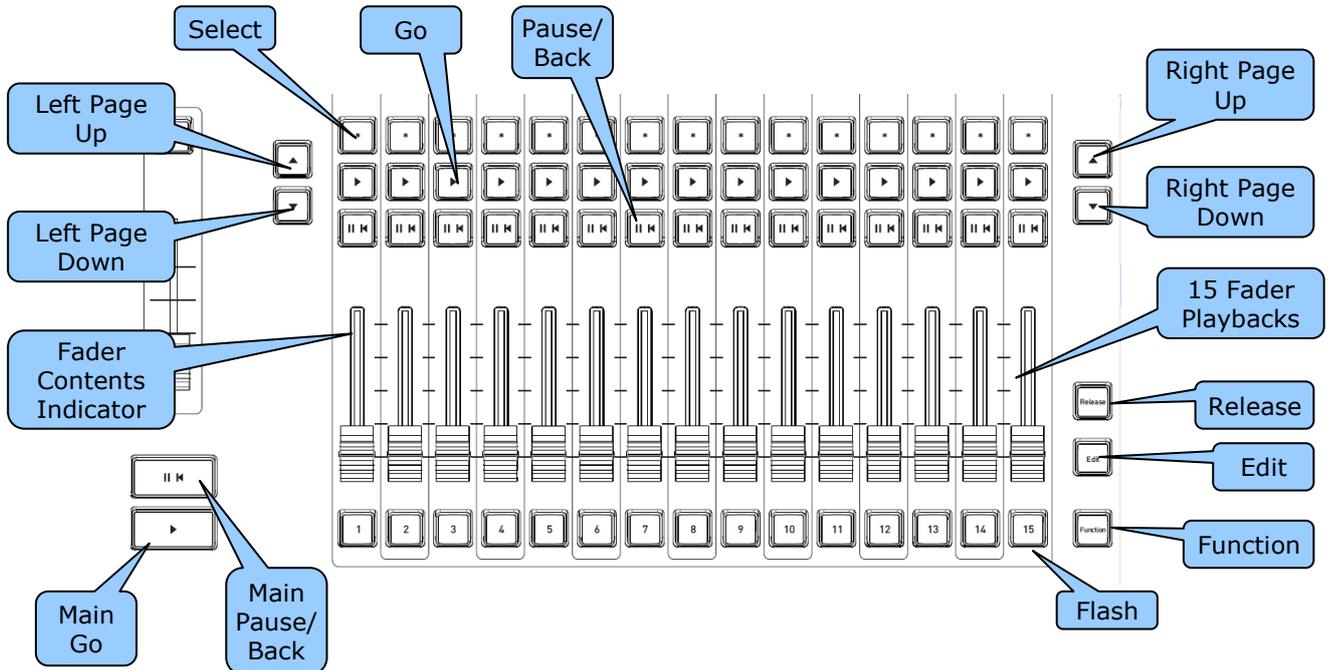
The LX600 & LX900 consoles both include high resolution motorized faders on all playbacks as well as the Grand Master.

With 99 pages of playbacks, the LX600 provides 1,485 simultaneous playbacks and the LX900 doubles this number to 2,970. Managing this many playbacks is easy with motorised faders, as they instantly slide to the correct position as soon as the new page is selected. This provides instant visual feedback and allows the level to be manually overridden just by touching the fader.

8.7.1 LX300 Button Playbacks

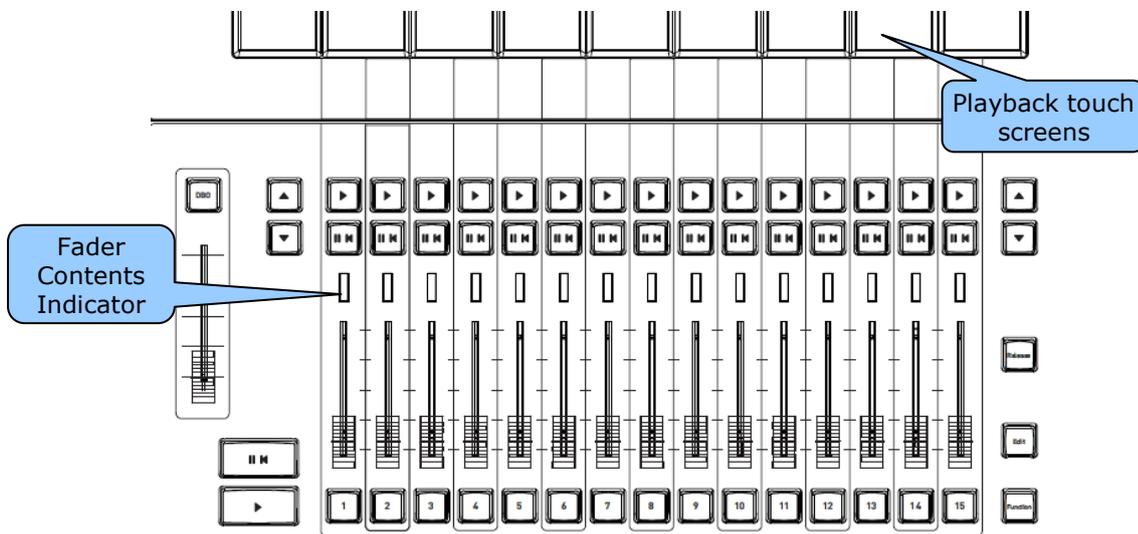
See section 5.4.1

8.7.2 Fader Playbacks



LX600 and LX900 Fader Playbacks

The LX600 and LX900 use the lower part of the large touch screen(s) above the playbacks for assigning and configuring the playbacks and to show their contents and status.



LX 300 Fader Playbacks

The LX300 playbacks are similar to the LX600 and 900 except that they are not motorized and do not have dedicated **Select** buttons. You "select" a playback by touching on its dedicated small touch screens above it.

8.7.3 Assign a Cuelist to a Playback

To assign a cue-list or chase to a playback, double tap anywhere on the playback's touch screen. See section 8.7.9 for more details.

8.7.4 Edit Button

To edit a cue on a playback, press **Edit**. All buttons of all playbacks flash. Press **any button** of the playback to be edited. See section 24.4 for details on editing a cue.

8.7.5 Release Button

8.7.5.1 Releasing a Playback

To release a playback, tap **Release**. All buttons of all playbacks flash. Tap **any button** of the playback to be released. The Release button lights RED when any cue is still active.

8.7.5.2 Releasing a Page of Playbacks

Each bank of playbacks has pages split into left and right sides. You can release multiple playbacks on either left or right sides of a bank using **Release** and the playback left or right Page buttons to release their respective playbacks.

For example, to release all playbacks on a left page bank press **Release + Page Up** (or **Page Down**) for the left bank.

8.7.5.3 Releasing ALL Playbacks

To release ALL playbacks, HOLD **Function**, tap **Release**.

Holding **Function** and double tapping **Release** will release all playbacks including those set to "ignore release all".

8.7.6 Function Button.

The Function button has multiple uses. It is used in conjunction with other buttons to change the function of those buttons as listed below:

- Hold **Function** and tap **▶** to snap to the next cue.
- Hold **Function** and tap **II ◀** Snap to the previous cue.
- To release ALL playbacks, HOLD **Function**, tap **Release**.
- Holding **Function** and double tapping Release will release all playbacks including those set to "ignore release all".

The Function button also emulates a computers [Ctrl] (PC) or [Cmd] (Mac) and [Shift] buttons to perform functions on the LX consoles that utilize the [Ctrl] or [Cmd] and [Shift] buttons on the "Desktop" version of Clarity.

- Holding Function whilst performing an operation is the same as holding the **Ctrl** (PC) or **Cmd** (Mac) button on a computer keyboard.
- Double tapping and Holding Function whilst performing an operation is the same as holding the **Shift** button on a computer keyboard.

Examples of these operations on LX consoles are:

- To deactivate an applied Preset or Freeset, hold **Function** and select the Preset or Freeset.
- When patching fixtures, you can copy a patched fixture to another DMX slot by holding Function and dragging the patch to another DMX slot number.
- In "Rig View", any selections from the previous selection phase can be retained by holding the **Function** when making a new selection.
- When adjusting cue attribute timing in the Programmer, select either **ALL**, **Intensity**, **Position**, **Colour** or **Beam**. To select multiple groups hold **Function** when you select.
- In the Programmers "Matrix Settings" window, multiple fixtures can be selected by using **Function** + touch. You can rotate the device by 180° by holding **Function** whilst dragging. Double tapping **Function** rotates it by 90°.
- In the "Control Booth", holding **Function** whilst dragging and dropping between two cues selects the "Copy" option instead of "Move".

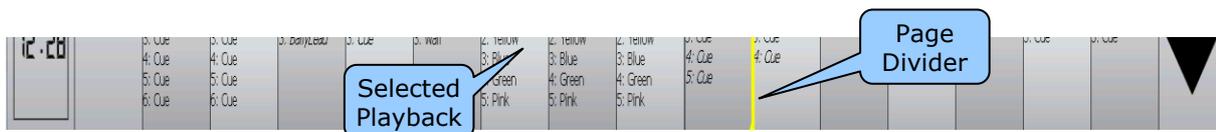
- In the "Performance Window", to record all active cells into a blank row of your choice, hold **Function** and the Row Masters of all blank rows turn into a red record button. Whilst holding **Function**, click on a red record button.

8.7.7 Playback Controls

- **▶ (Go)**: Plays the next cue in the cue-list or restarts a paused fade. Pressing **▶** will start the fade to the next cue even if the current fade has not finished. Press **Function+ ▶** to snap to the next cue.
 - The indicator in the button lights during the transition to the next cue.
 - If the playback contains a chase, pressing **▶** will start the chase. If you continue tapping **▶** (to the beat of the music) it will automatically adjust the chase rate to match the beat of your tapping. If you want to change the rate simply tap the **▶** button at the new rate. Always leave at least two seconds after tapping a beat before starting a different beat.
- **|| ◀ (Pause)**. Pauses any fades in progress. If no fades are in progress, it fades back to the previous step.
 - The indicator in the button lights when the fade to the next cue has completed.
 - The indicator in the button flashes if the cue has been partially overridden.
 - If the playback contains a chase, pressing **|| ◀** will stop the chase. If you continue tapping **|| ◀** it will manually step the chase with each tap.
- **Function + || ◀** Snap to the previous cue.
- **Function + ▶**. Snap to the next cue.
- **Select**. Connects that playback to the main **▶** play button and main **|| ◀ (Pause/Back)** button. Also used to select a playback when editing or using the "Update" function. See section 26.2 for details on Update.
- **Flash**. The Flash button instantly flashes the intensity of all fixtures on the playback to full level. The Flash button can also be used to "Solo" the playback. See section 25.2 for details on "Solo" and "Solo Safe".

The Main **Go** and Main **|| ◀ (Pause/Back)** buttons control the currently selected playback (see above). The currently selected playback has its name displayed in reverse video (white text on a black background) on the touch screen.

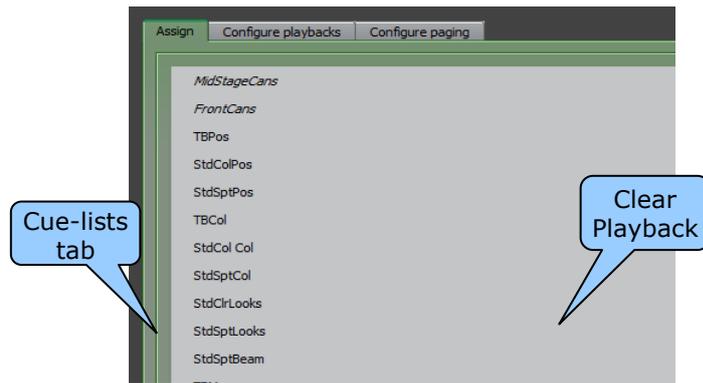
8.7.8 Playback Touch Screens



Each screen shows the name of the assigned cue-list. Cue-lists that have been configured as a chase have their name displayed in *italics*. The vertical yellow line shows the division between left (green bar) and right (blue bar) pages (see below).

8.7.9 Assign or Clear a Playback

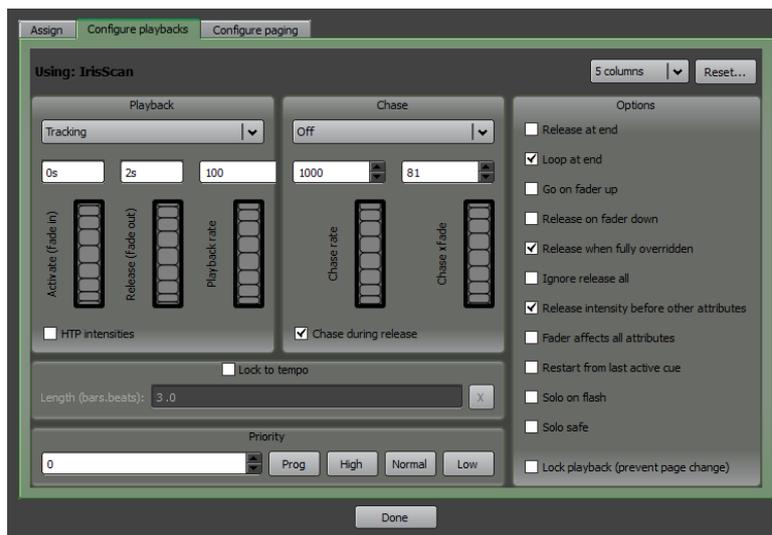
To assign a cue-list or chase to a playback, double tap anywhere on an empty playback's touch screen. The Playbacks window opens on the touch screen. In the "Assign" tab, the "Cue-lists" tab at the bottom of the window shows all of the available cue-lists and chases.



- To assign a Playback, tap the Cue-list name or Chase name (italics) to be assigned. All of the playback touch screens flash red. Tap the playback's touch screen to which the cue-list or chase is to be assigned.
- To clear a Playback, tap **Clear Playback**. All of the playback touch screens flash red. Tap a playback's touch screen to clear it.

8.7.10 Configuring a Playback

To configure a cue-list or chase already assigned to a playback, double tap on that playback's touch screen and the "Configure Playbacks" tab appears.



This screen allows you to change the cue-list into a chase or vice versa and to alter all of its playback settings. These settings are also available and fully described in the "Control Booth" window. See section 25.2 for details.

8.7.11 Playback Pages

Each bank of 15 playbacks has 99 pages of Playbacks available split into left and right banks with an adjustable bank divider. The LX900 has 30 playbacks and each bank of 15 playbacks has separate left and right pages.

The left/right division of the playback pages playbacks is shown as a yellow vertical line with a green bar above the left section and a blue bar above the right section.



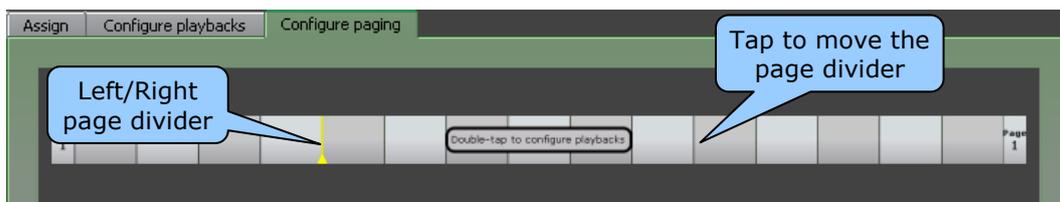
Pages are changed using either the virtual page buttons on the playback's touch screen or the real buttons below the playback's touch screen.

- The **right** ▲ (page up) and ▼ (page down) buttons step through the right pages.
- The **left** ▲ (page up) and ▼ (page down) buttons step through the left pages.
- To go directly to a page number on a side, press and HOLD either page button on that side then enter the page number using the numbered playback flash buttons.

For example, Holding ▼ and pressing 6 = page 6. Holding ▼ and pressing 2, 2 = page 22. There are 99 pages available.

When you create a new show, only page 1 is available. When you have assigned a cue list to a page 1 playback, Clarity automatically creates page 2. If you load a cue list onto page 2 then page 3 is created and so on. This keeps the quantity of unused pages manageable for inexperienced users. If you want to make multiple or even all pages available use the "direct" page selection process described above and Clarity will automatically create all of the pages up to and including the selected page. For example, Holding ▼ and pressing 99 will create all 99 pages.

The division between the left and right sides can be moved by double taping the touch screen of any playback and selecting the "Configure Paging" tab.



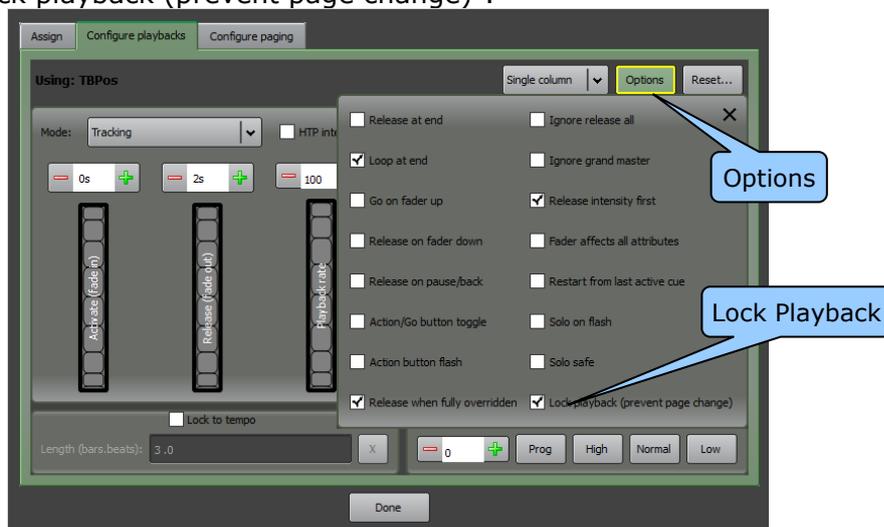
The yellow vertical line and green/blue bars show the left/right page division.

- The division between left and right can be moved by touching the screen at the desired position.

There are two 2 banks of 15 playbacks each on the LX900 and the left/right page division can be individually configured for each bank.

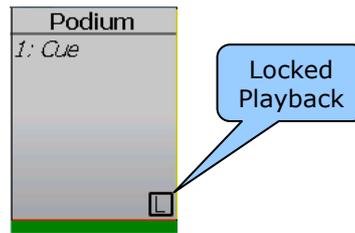
8.7.12 Locking a Playback

You can lock a playback so that it is unaffected by page changes. To lock a playback, double tap on that playback's touch screen and in the "Configure Playbacks" dialogue select **Options** then tick the box for "Lock playback (prevent page change)".



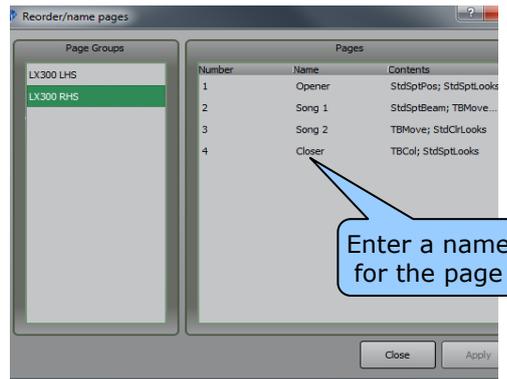
Locked Playback

The letter "L" is displayed on the playbacks screen.



8.7.13 Managing Pages

Pages can be re-ordered and named. At the bottom of the "Configure Paging" window (above), tap "Re-order/rename pages..."



- Tapping in the "Name" field allows you to enter a name for each page.
- To change the order of a page, tap and drag the page to a new position in the order. The page numbers are automatically updated when you "Apply" the changes.

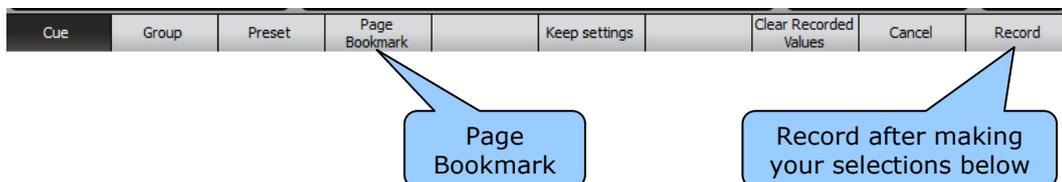
8.7.14 Page Bookmarks

Page bookmarks allow instant recall of pages on all connected control surfaces (LX console or VX wings).

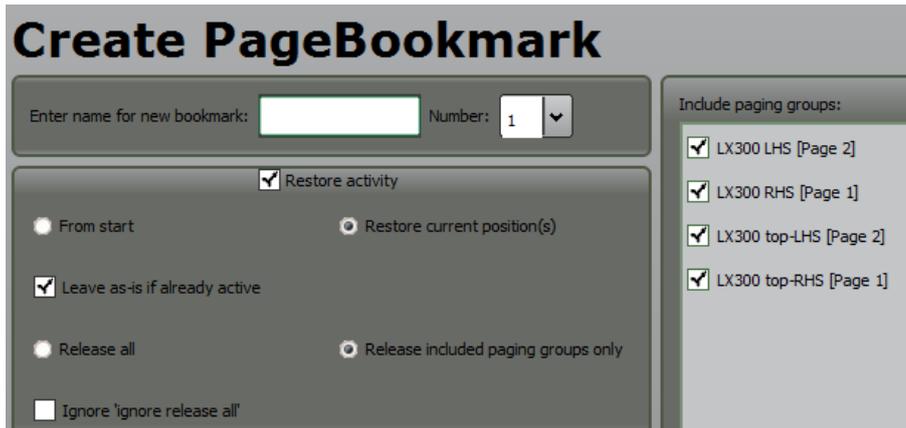
You create a page bookmark by switching to the desired page(s) on the control surface(s) and then either pressing **Bookmark** in Control Booth or pressing **Record** to bring up the record dialog where you can select Page Bookmark mode.

To record a Page Bookmark, select the required left and/or right pages then either:

- In the Control Booth press **Bookmark**.
- Press **Record**. Using the buttons at the bottom of the touch screen select **Page Bookmark**.



The "Create Page Bookmark" dialogue appears:



It allows you to:

- Name the bookmark.
- Give it a number.
- Tick or un-tick the page groups that you want included in the bookmark. A page group is the left or right side of a VX10 or VX20 wing, or a split page section on an LX console. See below for more details on page groups.
- “Restore activity” to restore (play) the playbacks when the bookmark is recalled. Cue-lists can be restored from their start or from their current position(s).
- “Leave as-is if already active”.
- “Release all” playbacks when the page is recalled.
- “Ignore “Ignore release all””. Choose to release all playbacks when the page is recalled, even if a playback is set to “ignore release all”.
- Release included paging groups only. Only the playbacks in the pages that are recalled will be released.

To record the Bookmark touch **Record** at the bottom of the touch screen.

Page Bookmarks are stored in the Palettes window under the “Page Bookmarks” tab.

- Touch a Page Bookmark to recall it.

On LX 600 and LX900 consoles, Page Bookmarks can be assigned to Action Buttons for easy recall. See section 8.8

To delete a Page Bookmark, right click on it and select **Delete**.

8.7.15 Page Groups

The Clarity software has to preserve show data between different models of console and the desktop version. Therefore there are 6 built-in paging groups that are generally referred to as pairs A, B or C. Here’s how they map to the different variants of Clarity:

	A LHS/RHS	B LHS/RHS	C LHS/RHS
Desktop	N/A	N/A	N/A
LX300	Fader (bottom) row	N/A	Button (top) row
LX600	LHS/RHS	N/A	N/A
LX900	Screen 1:LHS/RHS	Screen 2:LHS/RHS	N/A

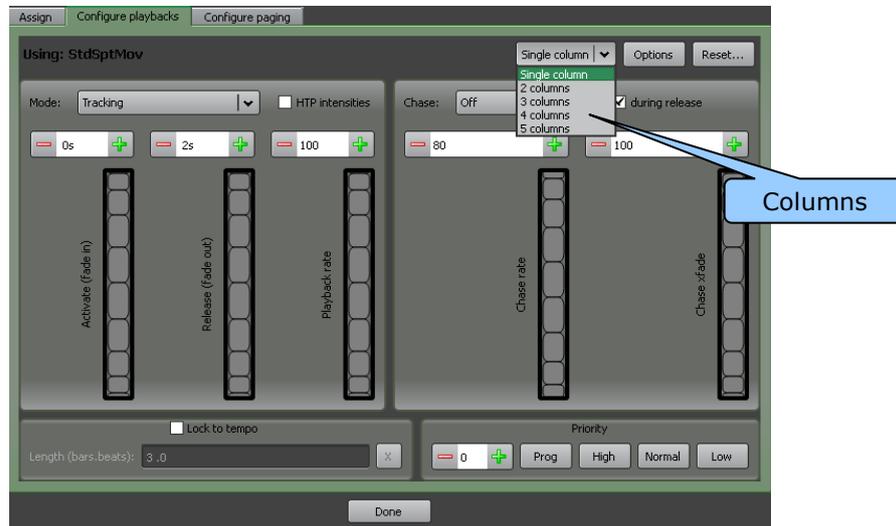
The need for the ‘C’ bank is because the LX300 split position is the same for the fader playbacks and the button playbacks whereas on the LX900 the two playback pairs can each have different split positions.

This means that playback assignments on the LX300’s main row will map to the LX600 and to the LX900’s first playback section, but the LX300’s button playback assignments will not map to the LX900’s second playback section (and vice versa).

8.7.16 Extended Playback Controls

If a cue-list is loaded on a playback and there are un-used (clear) playbacks to the right of the loaded playback, then the unused playbacks can be linked to the loaded playback to provide greater live control of Chase Rate, Playback Rate, FX Rate and FX Amplitude.

To create extended controls, double tap on the touch screen of the playback to be controlled and the "Configure Playbacks" screen appears.



At the top right of the screen choose either "single column", 2, 3, 4 or 5 columns. The number of columns that are available depends upon the number of clear playbacks to the right of the playback containing the cue-list.

Each column represents a playback.

- The first (single) column is the playback loaded with the cue-list.
- If you choose 2 columns then the playback to its right controls that cue-lists Chase Rate.
- If you choose 3 columns then the next playback to the right controls that cue-lists Playback Rate.
- If you choose 4 columns then the next playback to the right controls that cue-lists FX (Effects)Rate.
- If you choose 5 columns then the next playback to the right controls that cue-lists FX (Effects) Amplitude.

StdSptMov	Chase Rate	Playback Rate	FX Rate	FX Amp
1: Cue 2: Cue 3: Cue	+ 80bpm -	+ 100% -	+ --- -	+ --- -
	HOLD FLASH	HOLD FLASH	HOLD FLASH	HOLD FLASH

Cue-list being controlled

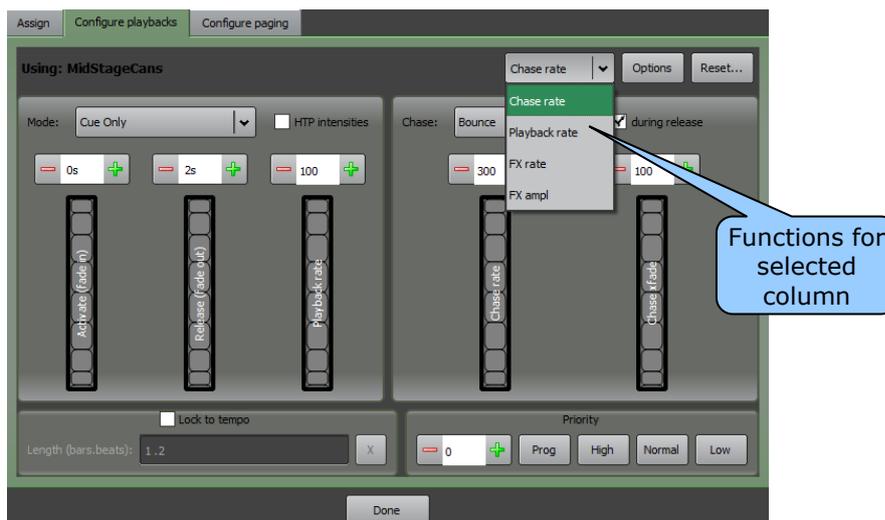
Controls Chase Rate

Controls Playback Rate

Controls Effect Rate

Controls Effect Amplitude

Any playback that has been assigned as an "extended playback control" can be changed to any of the available functions, "Chase Rate", Playback Rate, "Effects Rate" or "Effects Amplitude". If the "Configure playbacks" window is still open (as selected above) select the playback to be changed by touching its touch screen or use its **Select** button. If the "Configure playbacks" window is closed, double tap on the touch screen of the playback to be changed and the "Configure Playbacks" screen appears.



At the top right of the screen choose either “Chase Rate”, Playback Rate, “Effects Rate” or “Effects Amplitude”.

The buttons and fader on each of these playbacks (columns), now perform the following functions:

- Pressing **Go** or **Pause** steps the values up or down respectively. If you hold the button it will auto-repeat after a delay.
- Holding the **Flash** button when pressing **Go** or **Pause** makes them step in larger increments.
- Pressing both **Go** and **Pause** together resets to the default value.
- On fader playbacks, holding the **Flash** button allows you to use the **fader** to make fine adjustments to the value. If you reach a fader end-stop but you need to more range, you can release the flash button and move the fader to the opposite end, then hold flash and move fader to continue adjusting the value. This is known as “scooting” the fader. The user preference “Invert flash button operation on rate faders” changes this operation so that you just move the fader without holding flash to adjust the value, then (if you reach the fader end stop) hold flash to reposition the fader. So the fader is always connected giving you instant control but you can hold the Flash button down to 'scoot' the fader. See section 37.1 for User Preferences.

On LX consoles, the color of the fader contents indicators of any faders set as “extended playback controls” are “Cyan”. See below for fader contents indicators color codes.

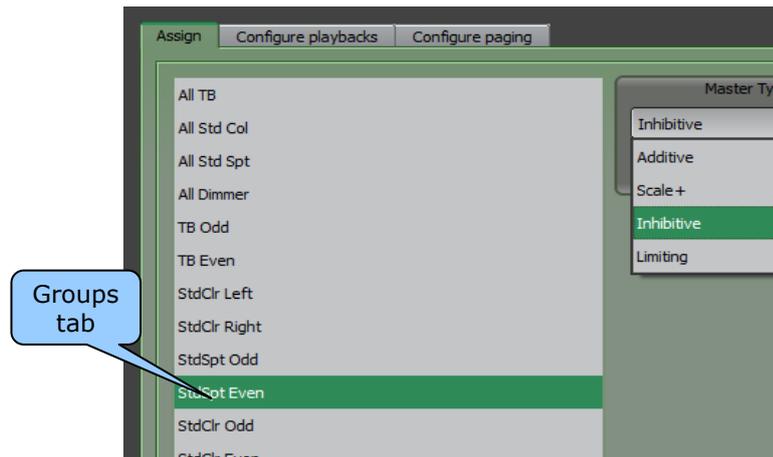
8.7.17 Clearing a Playback

To clear (remove) a cue-list from a playback, double tap the playback’s touch screen. From the “Assign” tab tap **Clear Playback**. All of the playback touch screens flash red. Tap the touch screen of the playback to be cleared.

8.7.18 Group Masters

Playback faders can also be configured as either “Inhibitive” “Additive”, Scale +” or “Limiting” group masters. When a playback is converted into a Group Master, it replaces its previous cue-list (if any) and instead acts as a submaster over the intensity of the selected group as determined by your choice of either “Additive, Scale+, Inhibiting or Limiting” mastering as described below.

To create a Group Master, double tap the playback’s touch screen. In the “Assign” tab, tap the “Groups” tab at the bottom of the window.



Select the required Group then select the “Master Type” drop down box and choose the **Master Type**:

- **Additive.** The fader level is added to the current intensity level of all fixtures in the group. For example, if the fader is at 50% each fixture would get 50% *added* onto its current level. So fixtures at 25, 50 and 75% would end up at 75, 100 and 100 percent.
- **Scale +.** This scales each intensity level between its current level and full. For example, if the fader is at 50%, a fixture at 25 would be set half way (50%) between 25 and full which is 62.5%. A fixture at 50 would be set half way (50%) between 50 and full which is 75% and a fixture at 75 would be half way between 75 and full which is 87.5%.
- **Inhibitive.** This is the default, and operates in the same way as a fader assigned to a cue-list. For example, if the fader is at 50%, fixtures at 25, 50 and 75% would be at 12.5, 25 and 37.5%.
- **Limiting.** The intensity level of each fixture is capped to the fader level. For example, if the fader is at 50%, fixtures at 25, 50 and 75% would be at 25, 50 and 50%.

Any “no motorised” fader that is configured as a Group master only becomes operative once activated. You have to press the **Go** button to activate them and make the fader work. This gives you the opportunity to manually set the fader level before activating it. This applies to the faders on VX10 and VX20 wings and LX300 Consoles.

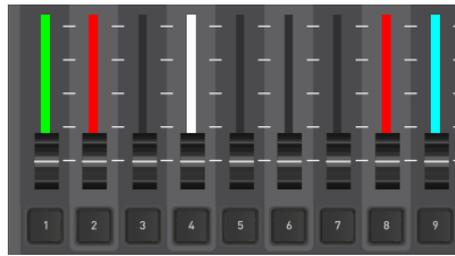
A group master will be deactivated when it is not on the currently selected page. You can change this globally by un-ticking **Deactivate group masters while paged out** in the “User Preferences” or individually by ticking the “Lock Playback (prevent page change)” box when configuring the group master.

When a playback has been programmed as a Group master, it’s **▶**(Go) and **|| ◀** buttons now act as **Group select** and **Group deselect** buttons respectively. For example, pressing the **▶** button of that Group Master will select all of the fixtures in that group in the Programmer.

On LX consoles, the color of the fader contents indicators of any faders set as “group masters” show the type of master as listed below.

8.7.19 Fader Contents Indicator

On the LX600 and LX900, there is a back bezel around each fader. On the LX300 there is a backlit indicator above the fader. The colour of the LED bezel/indicator shows the current contents or function of the fader.

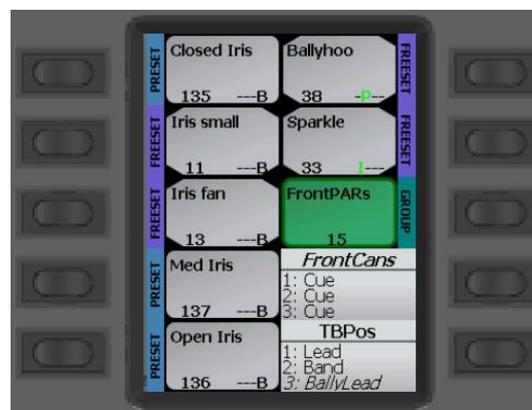
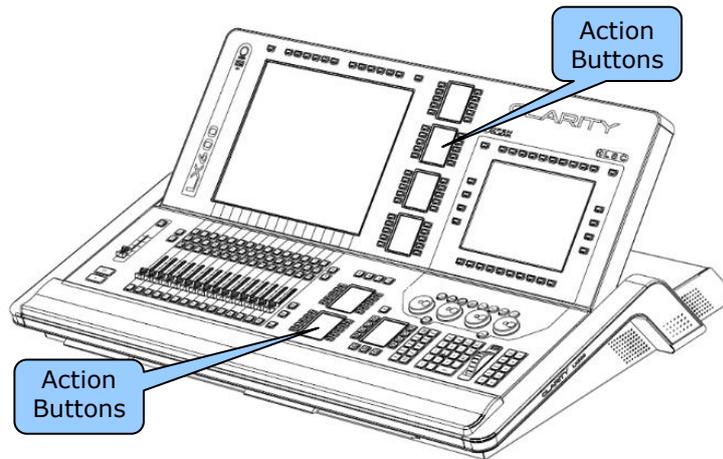


LX600/LX900 indicators

Colour	Contents/Function
Red	Cue-list
Green	Chase
Yellow	"Limiting" Group Master
Blue	"Additive" Group Master
Magenta	"Scale +" Group Master
White	"Inhibitive" Group Master
Cyan	Extended Playback Control. (Chase or Playback Rate, Effects Rate or Amplitude)

8.8 ACTION BUTTONS

The LX600 and LX900 both have 60 Action Buttons arranged in 6 banks of 10 buttons with 4 pages of memory. Each of these banks comprises a 3.2" LCD touch screen with 10 physical buttons located around its peripheral.



LX600/LX900 Action Buttons

Any Action button can be configured to control either a:

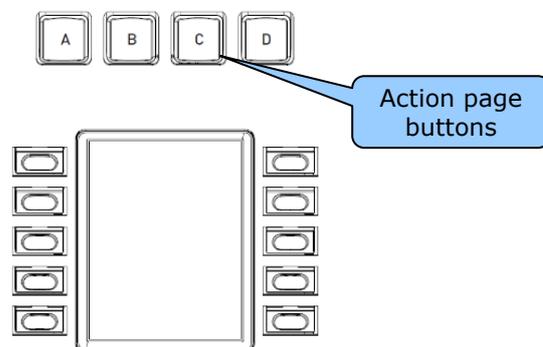
- Group
- Preset
- Freetset
- Cuelist
- Page Bookmark
- Timeline

You can put any type of action on any button in any bank, mixing and matching as you please. You can press either the button or the touch screen to “action” the function.

The buttons are divided into 6 banks to assist you in organizing your shows. For example, one bank might be used for selecting groups, another to select positions, another for colours, another for effects or freesets etc.

8.8.1 Action Button Pages

Action Buttons have 4 pages of memory that are selected by pressing the **A**, **B**, **C** or **D** buttons located between the banks.



Having a dedicated button for each page means that any of the 240 actions is no more than two button pushes away.

8.8.2 Assigning an Action Button

To assign a group, preset, freeset, Page Bookmark or Timeline to an Action button, select the page (A, B, C, or D) then select the Palettes window (large touch screen on LX600 or LX900).



Select **Assign Action Button**. The Palettes window changes to grey. Select a group, preset or freeset by touching it. Select the **Page Bookmarks** tab to select a Page Bookmarks or the **Timelines** tab to select a Timeline. When a selection is made, the borders around all Action button touch screens flash red. Touch an **Action** touch screen or press its button to make the assignment. Continue to select and assign to other buttons. You can use the **A**, **B**, **C** or **D** buttons to change pages. When finished either press **Assign Action Button** again or press **Cancel** or select another screen.

To activate a Preset or Freetset assigned to an Action button, press that Action button. To de-activate a Preset or Freetset assigned to an Action button, hold **Function** and press that Action button.

When a “LTC” (Linear Time Code) timeline is assigned to an Action button, the physical Action button “Enables” or “Disables” the timeline.

When an "Internal" or "Audio" timeline is assigned to an Action button, the physical Action button plays the timeline. If the timeline is playing it stops and rewinds the timeline. When multiple timelines exist, the touch screen Action button select the timeline that is displayed in the Timeline window.

To assign a Cuelist to an Action button, select the page (A, B C, or D) then select the Control Booth window.



Select **Assign Action Button** then select a cue list. The borders around all Action button touch screens flash red. Touch an **Action** touch screen or press its button to make the assignment. Continue to select and assign to other buttons. You can use the **A**, **B C** or **D** buttons to change pages. When finished either press **Assign Action Button** again or press **Cancel** or select another screen.

Hint: When a cue list containing a single cue is assigned to an Action button, setting the "Action/Go button toggle" option in the Control Booth allows you to play and release the cue list using the same button. The first press plays the cue. Pressing the button again while the cue is active will release it.

8.8.3 Release a Cue List on an Action Button

To release a cue list assigned to an Action button press **Release, Action Button** (containing the cue list).

8.8.4 Release all Cue Lists on a Page of Action Buttons

To release all playbacks assigned to a page of Action buttons press **Release, A** or **B** or **C** or **D** (Action Page buttons). This releases all playbacks on the selected page (A, B, C or D).

8.8.5 Clearing an Action Button

To clear an Action button, select the page (A, B C, or D) then select the Palettes window or the Control Booth window.

Select **Clear Action Button**. The borders around all Action button touch screens flash red. Touch an Action touch screen or press its button to clear it. You can use the **A**, **B C** or **D** buttons to change pages. When finished either press **Clear Action Button** again or press **Cancel** or select another screen.

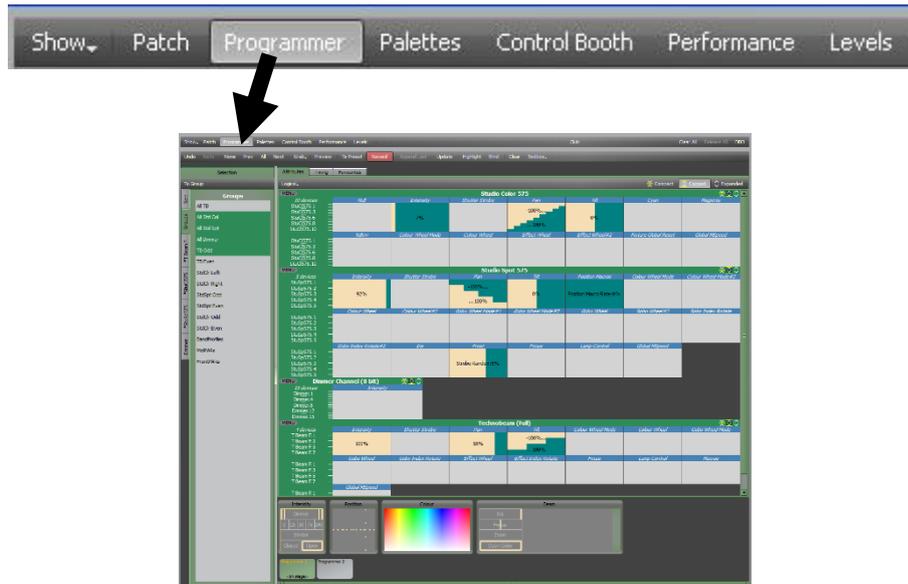
8.9 TOUCH SCREEN(S)

On the touch screens (or external monitors), the tabbed main windows of Patch, Programmer, Palettes, Control Booth, Performance and Levels are un-dockable to suit multi-monitor set-ups or multiple windows. Double clicking on a tab or button will un-dock the window allowing it to be either re-sized and repositioned or dragged to another screen.

Closing an un-docked window or double pressing its button above the touch screen will automatically re-dock it.

In the "Levels" and "Intensity Levels" tabs, you can create multiple new un-docked "levels" windows of the currently selected Level window by clicking **New**.

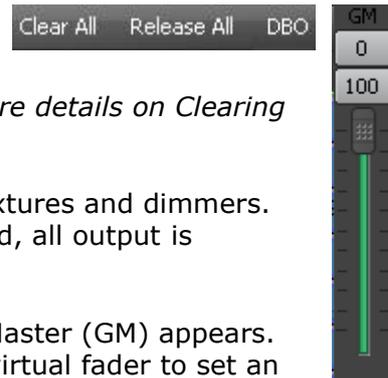
The top toolbar has tabs allowing you to switch between the main windows of: **Patch, Programmer, Palettes, Control Booth, Performance** and **Levels**. All of these windows are fully described in their own sections of this manual.



Programmer Tab

The right end of the top toolbar on the desktop version has buttons for **Clear All**, **Release All** and **DBO**.

- **Clear All** clears all fixtures from all Programmers.
- **Release All** releases all fixtures from all Playbacks.
See the Programmer and Control Booth sections for more details on Clearing and Releasing.
- **DBO** (Dead Black Out) instantaneously blacks out all fixtures and dimmers. This is a momentary action. When the button is released, all output is instantly restored.



When you hover the mouse over the **DBO** button, the Grand Master (GM) appears. You can click on **0** (Black Out) or **100** (Full level) or drag the virtual fader to set an overall intensity level. The **DBO** button flashes red if the Grand Master is set to any level below 100%. It stays red when the Grand Master is set to 0%.

9 Basic Operation

9.1 OVERVIEW

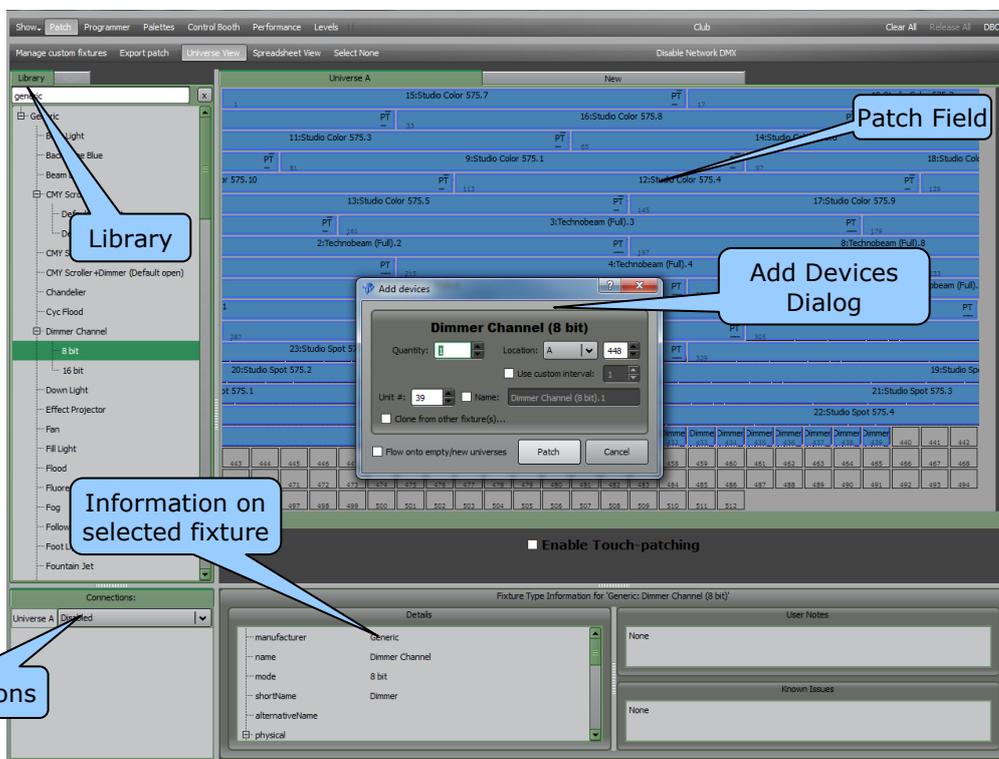
Clarity is a “programmer and playback” lighting controller and uses tracking playback by default. If you are unfamiliar with these terms it is recommended that you read the “Operating Concepts and Terminology” section at the end of this manual before proceeding.

The basic steps in controlling lighting fixtures are:

- Patching the fixtures to the DMX slots/Universes that will control them.
- Programming. The basic principles of programming are:
 - Select a fixture or multiple fixtures.
 - Adjust the fixtures attributes to get the desired look.
 - Record the fixture attributes values to a Preset or a Cue/Cue-list.
- Playback of the Cues, Chases, etc.

9.2 PATCHING

Clicking on the **Patch** tab of the monitor reveals the patch window.



To patch a fixture:

- In the **Library**, click on the fixture manufacturers name to show all of their models then select your model of fixture. Dimmers are located in the “Generic” listing.
- Drag the fixture name and drop it into the desired DMX slot in the Patch Field or double click the fixture name to patch it to the next available slot.
- Enter the quantity of fixtures in the pop up “Add Devices” dialog then click **Patch**.
- Continue to select fixtures and patch them as above.
- In the “Connections” Pane, click the down arrow beside the Universe that you have patched your fixtures to and then select the output DMX connector or Artnet universe to use.

See section 11 for more details.

9.3 PROGRAMMING

Clarity provides many methods of selecting your fixtures.

- Touching fixtures or groups in **Rig** mode. See section 12 for details.
- Clicking on fixtures or groups in the **Programmer** window **Selection** sidebar.
- Touching groups in **Palettes** or the LX600/LX900 **Action** buttons.
- Typing a fixture(s) number on the keypad and pressing **Enter**.
- Typing a group(s) number on the keypad and pressing **Enter**.

Clarity provides many methods of programming your selected fixtures.

On the LX console's encoder wheel touch screen:

- **Universal** or **Direct** modes using the encoder wheels.
- **Graphical** mode using the touch screen .

The **Programmer** tab on the touch screen or external monitor.

Adjust the attributes of the fixtures to get the desired look.

To record the look as the first cue in a cue-list press **Record** on the LX command centre or in the Programmer.

- To record this new cue-list directly to a playback, press any button on that playback.
- To record this new cue-list to memory press Record again.

Select fixtures and adjust attributes to set the next look.

- To record this look as the next cue in the Cue-list on the same playback press any button on that playback.
- To record it to the cue-list in memory press **Append Last** in the Programmer.

Repeat until all cues in the cue-list have been recorded.

Press **Clear** to clear all attributes from the Programmer.

The Programmer is fully described in section 20.

9.4 PLAYBACK

If you recorded your cues directly to a playback, you can see them on the playback touch screens where they were recorded.

If you recorded them directly into memory you can double tap an empty playback touch screen then touch a cue-list from the **Assign** and **Cue-lists** tabs. Touch a playback to assign the selected cue list to it.

The **Control Booth** window tab provides extensive controls for managing, manipulating and analyzing the contents of your cue lists. Right click on a cue list to see the available options. See section 25 for details.

Clarity provides several means of playing back the cues that you have recorded. See section 8.7 for details on the operation of the playbacks.

9.4.1 Performance Window

The **Performance** window tab provides a unique and intuitive method of playback especially designed for busking or improvising a show. It is fully described in section 27.

9.5 EDIT AND UPDATE

To change the contents of a cue you can either:

- Make your changes in the programmer and then use Clarity's **Update** function to update the cue.

Or

- **Edit** the cue.

See section 26 for details.

10 Customizing Clarity

10.1 OVERVIEW

You can control the look and feel of Clarity to suit your individual requirements. Windows and panes can be un-docked, moved and re-sized and attribute controls can be expanded or compressed as described below. "User Preferences" can be selected for many settings and controls as described in section 37. Default settings for new cue-lists can be selected as described in section 25.2.

10.2 LX TOOLS

The LX Tools utility provides tools for setting up the monitors, calibrating the touch screens and setting the intensity of the LED's, screens and desk lamps. It also contains the Help section documents and video tutorials. See section 38 for details.

10.3 TOUCH SCREEN OPERATION

Normally Clarity uses 'mouse scaling' to get continuous fine-level control for parameter controls. What this means is that behind the scenes when you drag on any parameter control Clarity hides the mouse cursor, scales the actual mouse move by some factor, then repositions the mouse cursor back to its original position. This enables parameter changes and ensures that the logical mouse cursor position never reaches the screen boundary (otherwise it would hit an invisible end-stop). The drawback is that this only works in cases where the system can actually reposition the mouse, which excludes touch screen input devices or virtual machines. Enabling the settings preference: "Show/Settings/Control widget touch mode", changes this so that the mouse move is still scaled but the cursor is not hidden and the logical position is not changed. This also makes it easier to make larger changes without having to 'scoot' the mouse because you can flick any parameter control and the value will continue moving with inertia (similar to scrolling on an iPhone).

10.4 DOCKABLE WINDOWS

The tabbed main windows of Patch, Programmer, Palettes, Control Booth, Performance, Levels and Intensity Levels are un-dockable to suit multi-monitor set-ups or multiple windows. Double clicking on a tab or double pressing the button above the touch screen will un-dock the window allowing it to be either re-sized and repositioned or dragged to another screen. Closing an un-docked window (double pressing the same button above the touch screen) will automatically re-dock it to the main display.

In the "Levels" and "Intensity Levels" tabs, you can create multiple new un-docked "levels" windows of the currently selected Level window by clicking **New**.

10.5 RESIZING PANES

Windows have their various areas organized into "panes". A pane can be identified by its double line borders. Most panes can be re-sized by clicking and dragging on the double line border.

10.6 RIG MODE ICONS

In Rig mode you can choose detailed or compact/combined Icons to optimize the display. See section 12.4

10.7 UNIVERSAL AND DIRECT

In universal and direct modes you can **Expand** the display for finer control when using the touch screen and also select virtual encoder wheels. See section 8.5.4

10.8 ATTRIBUTE CONTROL SIZE

On the Programmer window tab, when multiple fixtures with multiple attributes are selected, the Attribute Control area can become quite large. Scroll bars automatically appear when

required but you can also control the size and detail of the Attribute Controls to reduce screen clutter.

In the top right corner of the Attribute Control window, are buttons that allow you to control the size of the Attribute Controls for all of the selected fixtures.

- Clicking **Compact**, **Capped** or **Expanded** allows a trade off between screen area and detail as described below.



"All Attribute" Controls Display Selector

Each different type of fixture also has its own set of individual size controls. When multiple fixtures are selected you can use these controls to expand the Attribute Controls of the fixture that you are currently controlling.



Individual Fixture Attribute Controls Display Selector

The symbols on these size buttons match those used on the All Attribute Controls buttons above.

Selecting **Compact** displays an attribute control that is only one line high for each type of device, irrespective of how many of that type of device are selected.



Compact Display (1 line per device type)

Selecting **Capped** displays an attribute control that is only five lines high for each type of device, irrespective of how many of that type of device are selected.



Capped Display (max 5 lines per device)

Selecting **Expanded** displays an attribute control that shows all selected device of that type.



Expanded Display (All selected devices shown)

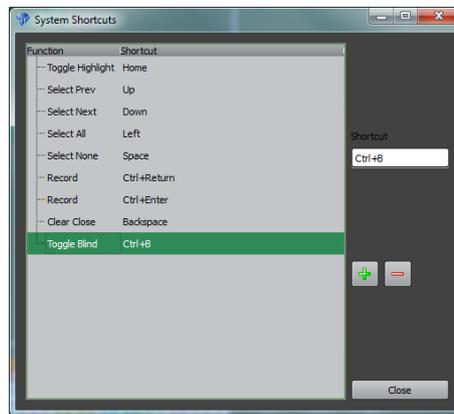
10.9 PREFERENCES

You can customize many of Clarity's features in the "User Preferences" settings. Click on "**Show, Settings, Preferences**" then make your selections. User Preferences are described in section 37.

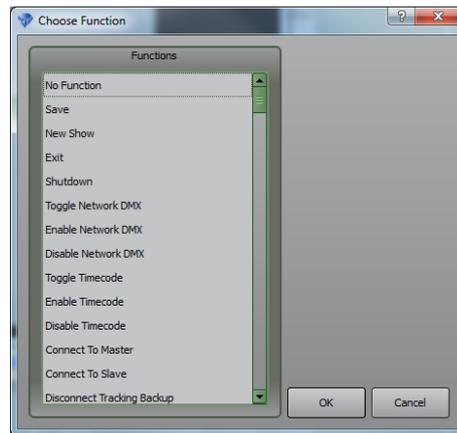
10.10 KEYBOARD SHORTCUTS

Keyboard shortcuts allow you to perform certain functions on Clarity by simply pressing a keyboard key or combination of keys. Clarity comes with some pre-programmed shortcuts but you can change the required keystrokes and also add your own shortcuts.

To open the keyboard shortcuts, select **Show, Settings, Keyboard shortcuts**.



- To change a current shortcut, select it by clicking on it then click in the "Shortcut" box. Press your new key or combination of keys.
- To add a new shortcut click +, and the "Choose Function" dialogue appears:



Select a function from the list and press **OK**. Now press your new key or combination of keys for the shortcut for this function.

- To delete a shortcut, select it by clicking on it then click -.

See also section 23, "Command Line Programming".

11 Patching Fixtures

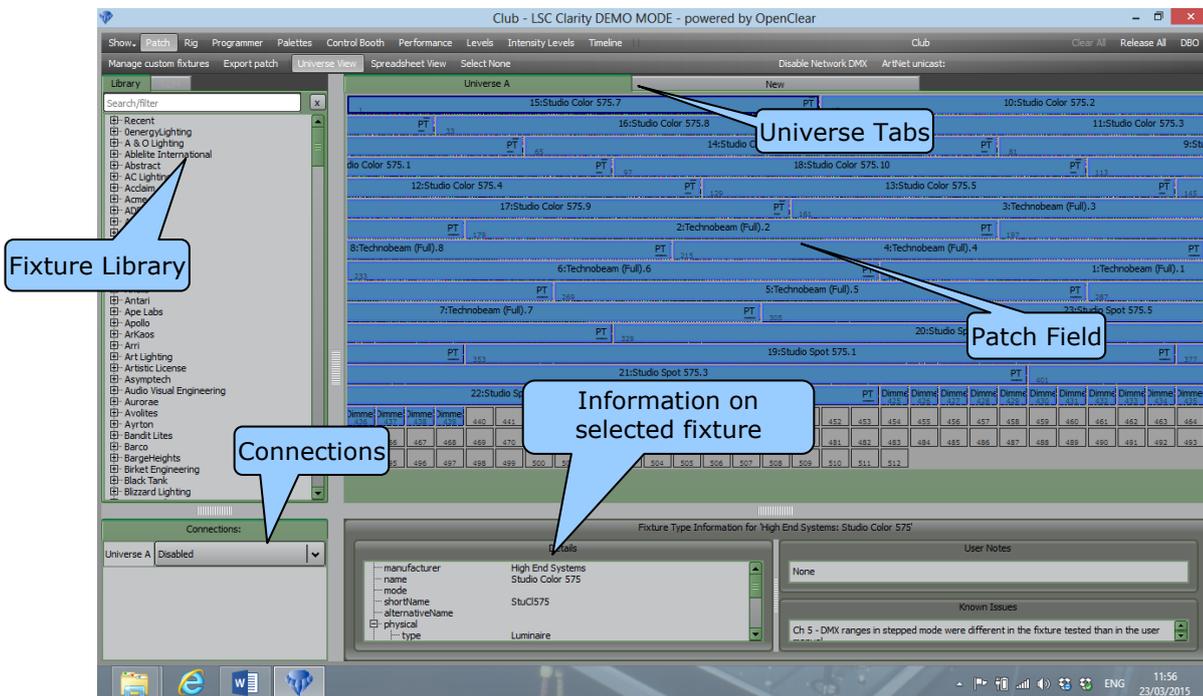
11.1 OVERVIEW

Clicking on the **Patch** window tab reveals the patch window.

The **Library** sidebar lists fixtures by manufacturer and model. If you click on a fixture, additional information for the selected fixture is shown at the bottom of the patch window.

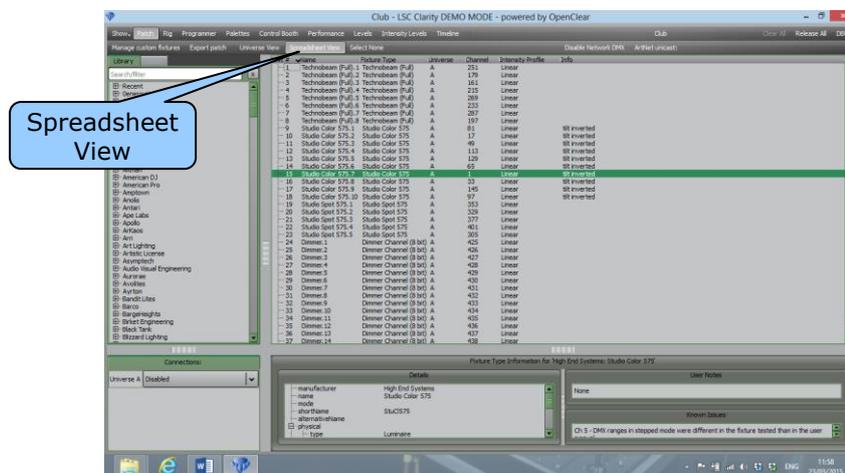
The right side shows the 512 patch slots for each internal universe as selected by the **Universe #** tabs. The **Connections** pane allows you to connect Clarity's internal universes to the DMX universes on the rear panel and also to ArtNet. If any universes are connected to the Ethernet outputs, they can be temporarily disabled by clicking **Disable Network DMX**.

You can enable touch patching by ticking the box at the bottom of the patch field.



11.2 SPREADSHEET VIEW

Clicking on the **Spreadsheet View** button displays the patch information in a spreadsheet view.



The columns can be re-arranged by dragging a column name. The order in a column can be sorted by clicking on the column's name. Click again to reverse the order.

11.3 PATCHING FIXTURES

Fixtures and dimmers can be patched by using your mouse to drag and drop or by using the keypad to enter your patching commands. Keypad patching is described below.

11.3.1 Drag and Drop Patching

To patch a fixture:

- Click on the fixture manufacturer's name in the **Library** side bar to reveal the available fixture models.

Hints: To quickly jump to a manufacturer, click on any manufacturer then type in the first letter of the required manufacturer's name or type their name in the search field. Recently patched fixtures can also be found at the top of the Library.

- Click on a fixture name then drag and drop it into the desired DMX slot on the "Universe View" or double click the fixture name to patch it to the next available slot.

11.3.2 Patching Dimmers

To Patch a dimmer, in the **Library** select **Generic** then **Dimmer** then double click or drag and drop as described above.

11.3.3 Clarity Universes

You can patch fixtures to a new universe by dragging them and hovering over the **New** tab for a second or so.

You can also click on the **New** tab to create a new universe. Clarity calls its internal universes A, B, C etc. Later, in the connections pane, you connect Clarity's universes to output universes.

When you drop a fixture into the patch or double click a fixture, the **Add devices** dialog box opens.

For example, if patching Mac250's....

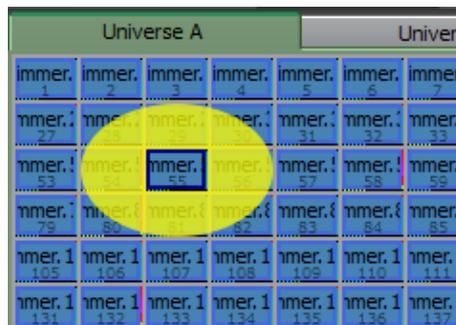


- **Quantity:** allows you to enter the quantity of fixtures to patch.
- **Location:** sets the Universe (A, B etc) and starting DMX slot number.
- **Use custom interval:** when ticked, quantities of fixtures greater than 1 will be spaced apart in the patch by the number slots that you enter in the box.
- **Unit #:** sets the unique identifying number for each fixture, shown in front of the fixture name. It is used to select a fixture when using "command line programming" and to identify fixtures in the Programmer's "Intensities" tab.
- **Name:** The name of the fixture from the library is used by default. To change the name, click in the box then enter your own name. Clarity automatically appends a number after each name to aid identification.
- **Flow onto empty/new universes:** When ticked, if the selected fixtures require more DMX slots than there are available on the current universe, then the fixtures will be patched to the next empty universe or a new (empty) universe will be created.

11.3.4 Highlight channel

The "Highlight channel" button in the Patch window provides a patch "test" function. It provides a quick method of identifying fixtures when patching by turning on a single channel at 50%.

Selecting **Highlight channel** (toggle on/off) displays a yellow balloon which causes the channel number in the centre of the balloon to have an output level of 50% (highlight).



- Clicking on the balloon allows it to be dragged.
- Clicking a channel outside the balloon will snap the highlight to that channel.
- The cursor keys can also move the balloon around the screen.

You cannot drag or select fixtures on the patch whilst "Highlight channel" is active.

The yellow balloon also appears on the "Levels" window when "DMX" view is selected. It is an indication only and cannot be moved.

Highlight channel is automatically turned off when you leave the "Patch" screen.

The Highlight channel function can be also be used to assist in patching fixtures:

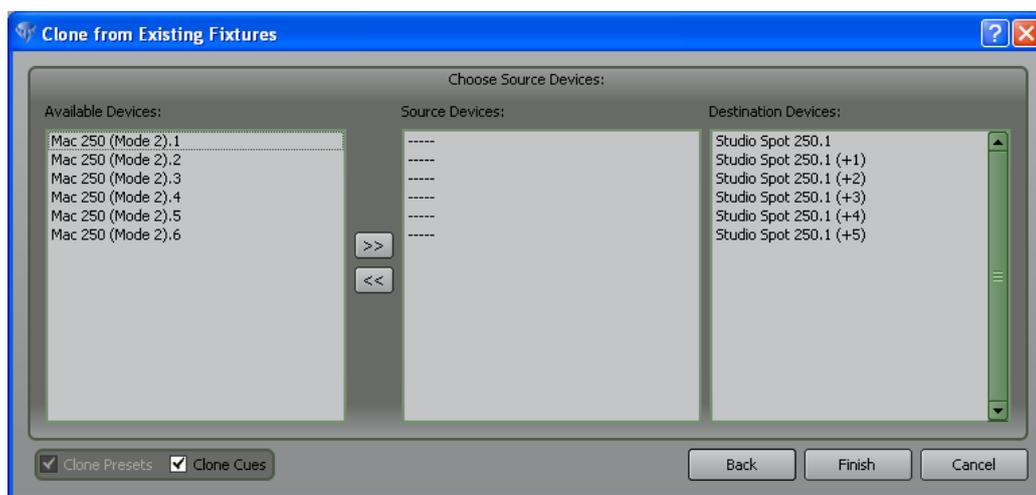
- Turn on **Highlight channel**.
- Click on the DMX slot that you want to be used for the intensity channel of the fixture to be patched. It now has the yellow balloon around it.

- In the "Library" pane, double click the fixture type to be patched. The "Add Devices" dialog appears for the fixture you have selected and the DMX slot number is automatically assigned so that the intensity channel for that fixture is at the highlighted DMX slot.

11.4 CLONE FROM OTHER FIXTURE(S)

Cloning is an advanced feature of Clarity. If you are reading this manual for the first time or just want to patch some fixtures you can skip this section. Cloning allows you to substitute different fixtures in a show or to add more fixtures of the same type without the need to reprogram the show. An example of cloning is described below.

In the **Add devices** dialog box above, if you click in the **Clone from other fixtures** check box, the **Patch** button becomes a **Next** button and clicking it allows you to clone the programming (presets and cues) of any patched fixture(s) to the new fixture(s) that you are patching. Clicking **Next** reveals the clone dialog box.



The new fixtures being patched are automatically selected as the Destination Devices. All existing patched fixtures are available in the Available Devices pane. Choose the source device(s) by selecting them in the Available Devices pane, then transfer your selection to the Source Devices pane by clicking **>>**. Incorrectly selected Source Devices can be moved back to the Available Devices pane by selecting them and clicking **<<**. Presets will be automatically cloned for the new fixtures however you can choose whether or not to clone cues by using the **Clone Cues** check box. To clone the programming of the source devices to the destination devices click **Finish**.

11.4.1 Cloning Example

Program a show with 10 "scanA" (fictitious) fixtures. Move show to new venue that does not have any "scanA" fixtures but has "yokeB" fixtures instead. Patch same quantity of "yokeB" fixtures (possibly on a different universe) and clone them from "scanA" fixtures. All presets (and cues if checked in clone box) are updated to include both types of fixtures. The show runs in new venue with no need to reprogram the whole show, possibly just trim and update the position presets.

11.5 KEYPAD PATCHING

Fixtures can be patched using the numeric keypad when Patch window has been selected. In the Patch window, select the required fixture from the Library. If you don't select a fixture type from the library, a generic dimmer will be automatically selected for you. On the numeric keypad or a keyboard, type in a fixture unit number and the "command line" automatically appears at the bottom of the screen showing the fixture type and the unit number you have

entered. Type @ then a DMX slot number and press **Enter** to make the patch. The patch(s) will be made to the current universe as selected by the tab at the top of the Patch window.

Additional patching commands are listed below.

11.5.1 Patching Commands:

The patching commands are:

- **# (unit number) @ # (slot number) Enter.**
Patches a single fixture unit at the given DMX slot number.
For example: 1 @ 1 Enter, will patch fixture 1 to DMX slot 1.
- **# (unit number) Enter.**
Patches a single fixture at the next available patch slot number.
For example: 1 Enter, will patch fixture 1 to the next available DMX slot.
- **@ # (slot number) Enter.**
Patches the next available fixture unit number at the given patch slot number.
For example: @ 1 Enter, will patch the next available fixture number to slot 1.
- A range of fixture unit numbers can be selected by using either the **Thru/** key and you can also combine and subtract ranges using the **+** and **-** keys.
For example: 1 Thru/ 50 + 100 Thru/ 120, enters fixture unit numbers 1 through 50 and 100 through 120.
1 Thru/50 - 25, enters fixture unit numbers 1 through 24 and 26 through 50.
- The order of number entry is respected so that
5 Thru/ 1 + 6 Thru/ 10 Enter, will get a fixture selection order of 5, 4, 3, 2, 1, 6, 7, 8, 9, 10.

Also see Multi-Patch below for additional commands.

11.6 MULTI-PATCH

You can patch the same fixture unit number to multiple DMX locations. This allows you to use a single fixture unit number to control multiple fixtures. Multiple patches can be made by using either keypad patching or by copying a patched fixture to another DMX slot as described below.

11.6.1 Keypad Multi-Patch

Use the keypad to specify the multiple DMX slot numbers.

For example: **# (unit number) @ # (slot number) + # (slot number) Enter.**

This command patches a fixture unit number to two DMX slot numbers.

When patching dimmers only you can supply a range of DMX slot numbers.

For example:

- **# (unit number) @ # (slot number) > # (slot number) Enter.**
Patches the unit number to a range of DMX slot numbers.
- **# (unit number) @ # (slot number) + # (slot number) + # (slot number) Enter.**
Patches the unit number to the DMX slot numbers.

11.6.2 Copy Multi-Patch

Copy a patched fixture to another DMX slot by holding Function and clicking and dragging the patch to another DMX slot number.

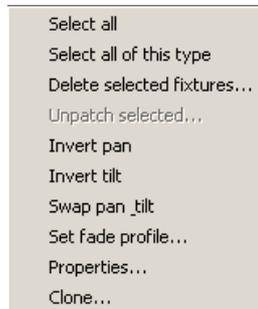
11.6.3 Removing Multi-Patches

You can remove multi-patch locations by clicking on their slot number(s) then right clicking and selecting "Unpatch selected".

11.7 SELECTING FIXTURES

Fixtures are selected in the patch window by clicking on them. Selected fixtures have a black border. Multiple fixtures can be selected. You can select all fixtures of the same type by right clicking on any one of the type and choosing "Select all of this type" from the drop down menu.

Right clicking on a fixture or selecting multiple fixtures then right clicking reveals a drop down box from which you can choose:



These functions are described below.

To deselect a fixture, click on it again. To de-select all fixtures click [**Select None**] on the menu bar or click on an un-patched DMX slot.

11.8 INVERTING/SWAPPING ATTRIBUTES

Inverting or swapping pan and or tilt is used to counter the effects of hanging some fixtures in different orientations, so that they all respond in the same direction when controlled by Clarity.

The alignment status of each fixture is shown in the patch window by the **PT** (Pan Tilt) icons at the end of each fixture.

- **PT** shows normal pan and Tilt
- If the bar is above the P or T then that attribute is inverted.
- If Pan and Tilt have been swapped then **TP** is shown instead of **PT**.

55	14:Trackspot 2 (Standard).1	PT	Normal
82	15:Trackspot 2 (Standard).2	PT	Inverted Pan
109	16:Trackspot 2 (Standard).3	PT	Inverted Tilt
136	17:Trackspot 2 (Standard).4	PT	Inverted Pan & Tilt
163	18:Trackspot 2 (Standard).5	TP	Swapped Pan & Tilt

- To change the alignment status of a fixture, right-click on the fixture then select either: **invert pan**, **invert tilt** or **swap pan & tilt**.

Note: This action affects all currently selected fixtures.

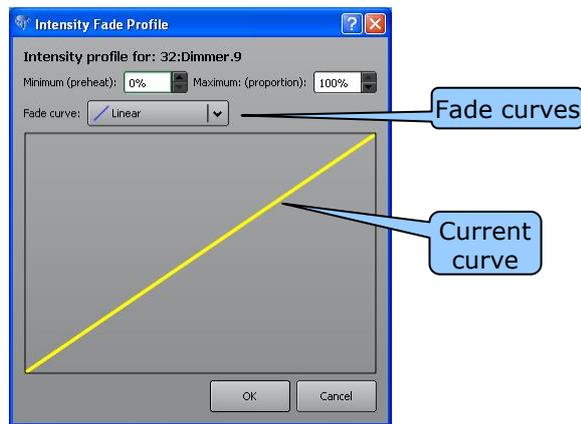
See also section 21.9.11 "Flip". Flip will alter the current pan and tilt values of the selected moving yoke fixture(s) to the other possible combination of values that achieves the same position on stage.

11.9 INTENSITY FADE PROFILES

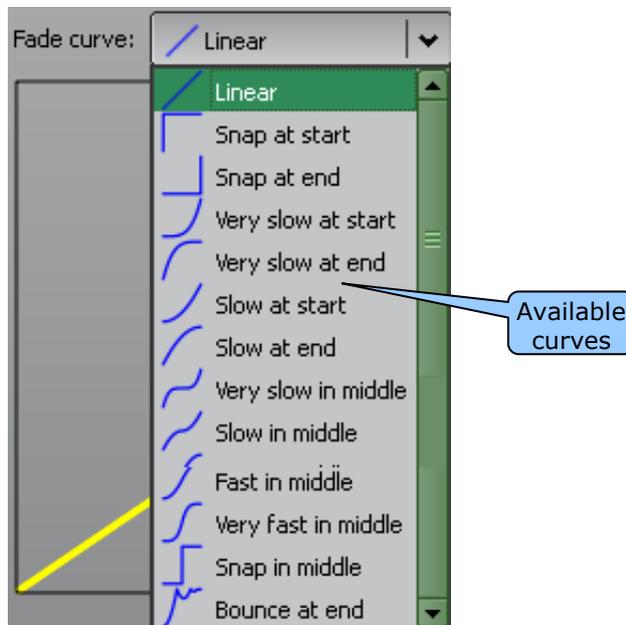
Intensity Fade Profiles are the relationship or "transfer characteristic" between input control signal and intensity output of a fixture or dimmer.

Clarity provides several intensity fade profiles from which to choose to suit the application of your fixture or dimmer.

To select an Intensity Fade Profile for a fixture(s), in the Patch window, right click on the selected fixture(s) then choose "Set fade profile" from the drop down box.



Click on the "Fade curve" drop down box and select the required curve.



11.10 MINIMUM AND MAXIMUM INTENSITY

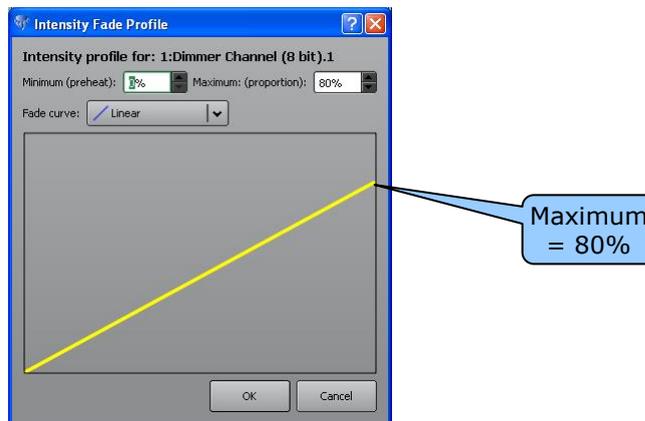
You can set minimum and maximum intensity values for a fixture or dimmer. These values are applied "proportionately" throughout the dimming range.

Setting a maximum value for a fixture will reduce the intensity value on the output relative to the intensity value that you have programmed.

For example. If you set a maximum of 80%, then when you program an intensity value of 100%, the fixture intensity will be 80%. If you dim the fixture to 50%, its intensity will be 40%.

A "Minimum" value is often used with incandescent lamps to "pre-heat" the filament. This can increase lamp life by reducing the surge of current that flows through a cold filament. It also speeds up a lamps response when it is instantly flashed to full power. A minimum value of between 5% to 10% usually provides enough heating effect without producing noticeable light to an audience.

To set a minimum or maximum values, select the "Intensity fade profile" as described above and enter your required values in the minimum and maximum boxes. The current curve shows the minimum and maximum values and the proportional level of the fade.



11.11 CUSTOM FIXTURES

Clarity's contains a fully integrated fixture library of over 2000 fixture personalities supplied by Carallon, an independent supplier of fixture libraries. However, if you have a fixture that is not in the library you can either use the Clarity fixture editor described later in this manual or request a fixture file from LSC. Template requests are only available to customers that have purchased Clarity. Before you submit a request for a template, please insure that you have downloaded and installed the latest Clarity fixture library. If the fixture you are looking for is still not in the library then check to see if it is on the interim list on the LSC website.

To request a template navigate to:

<http://www.lscighting.com/help-centre/clarity-templates>

Click on "[Request a template to be written for you](#)" and enter the details.

Please supply all details of the fixture including the brand, model, version number, operating modes and a manual or DMX channel list.

LSC will email you a Clarity fixture file for your new fixture. The requested template will be available to all users of Clarity via the LSC website and will be included in a future library update.

- To add a new fixture to the library, in the **Patch** window click **Manage custom fixtures**.
- In the "User Fixtures" dialog box, click the **+** symbol then navigate to the new fixture file on your computer (*.cfx) and click **Open**.

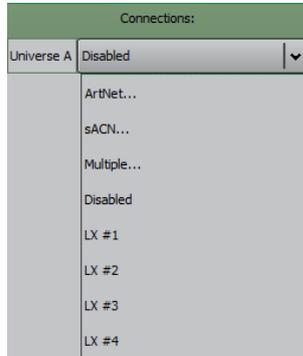
11.12 CONNECTING OUTPUT DEVICES

Clarity's internal DMX universes are labelled A, B, C, etc. When patches have been made, you use the **Connections** pane to connect these internal universes to external DMX universes on the rear panel (on LX consoles and wings) or USB DMX nodes (on computers) or to ArtNet or

sACN protocols on the Ethernet ports of LX consoles or the network connector of your computer when running desktop Clarity.

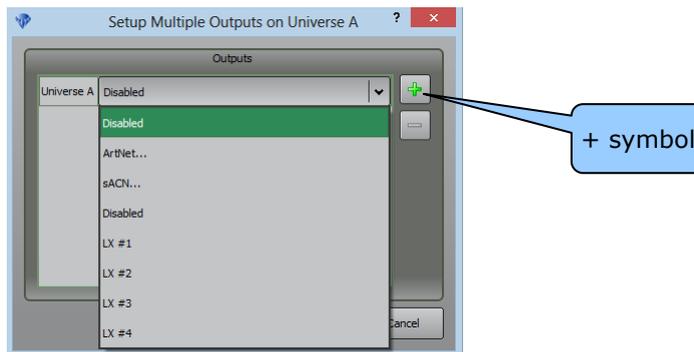
Note that universe connections are only presented for internal universes that have one or more devices patched – empty universes are not listed.

Clicking on the drop-down arrow for each internal universe will list the available connections.



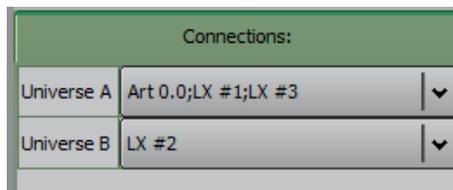
Select the required DMX connector or Ethernet protocol (ArtNet or sACN) to make the connection. See below for more information on ArtNet and sACN.

Any internal universe can be connected to any number of outputs by selecting **Multiple...** Select the **+** symbol to add a connection then select an output as above.



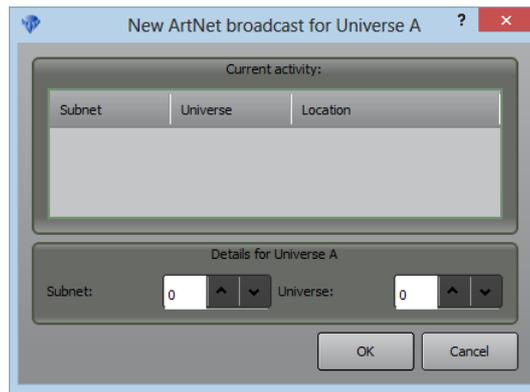
Select **+** again to add another output.

The following example shows an LX console where Universe A is connected to Artnet, DMX Output 1 and DMX Output 3. Universe B is connected to DMX Output 2.

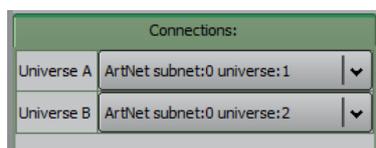


11.13 ARTNET OUTPUTS

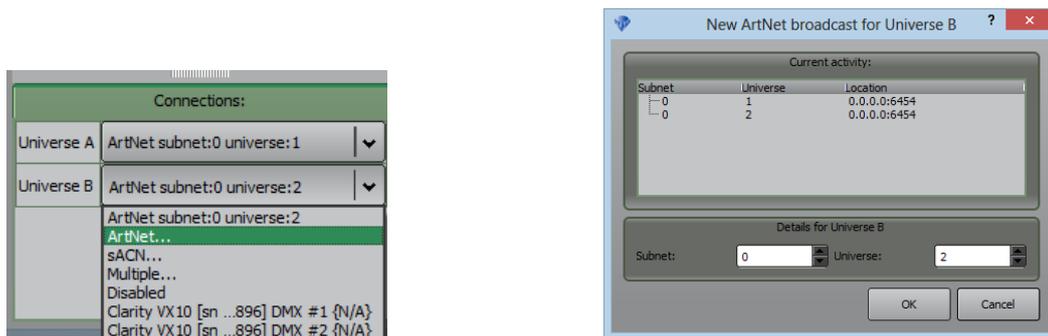
ArtNet is a streaming protocol to transport multiple DMX universes over a single cat 5 Ethernet cable/network. Selecting ArtNet (above) will take you to a configuration dialog specific for that connection type. ArtNet supports 256 DMX universes. These are arranged in 16 sub-nets each containing 16 universes. The data will be "broadcast" to the network. See also "ArtNet Unicast" below.



Select the required ArtNet Subnet and ArtNet Universe for this output then click **OK**. Your ArtNet universes are shown in the “Connections” pane.....



To see or edit the current ArtNet settings of a universe, click on the drop down box of Universe in question and select **ArtNet...** from the list. The “ArtNet broadcast” dialog box shows the settings for all ArtNet universes and allows you to change the details of the selected universe.

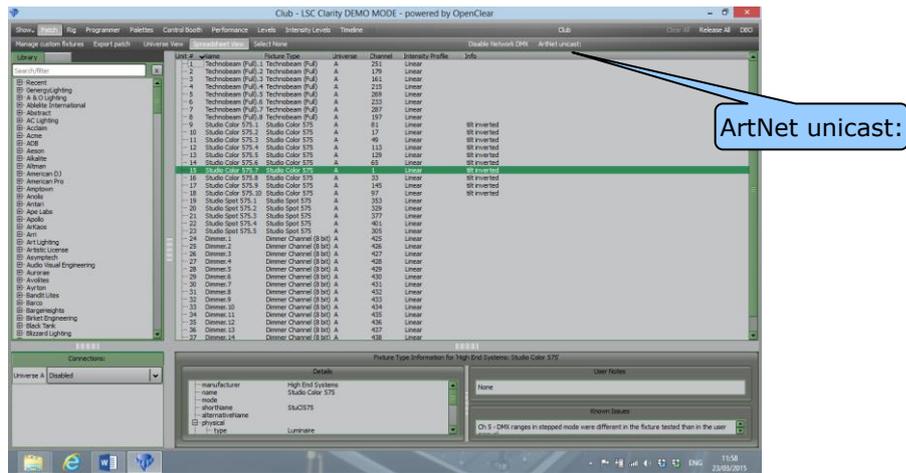


Note: The current setup is that ArtNet is only sent via one Ethernet port at a time. This is due to issues where ArtNet floods a network and makes using other devices (e.g. TouchOSC remote control) very slow and unresponsive. Ethernet 1 has highest priority, so if there is anything connected to Ethernet 1, ArtNet gets sent via this port. If nothing is connected to Ethernet 1 then Art-Net will be sent to whatever is connected to Ethernet 2. This provides an automatic failsafe. If you connect both ports to your network and Ethernet 1 fails, the system will automatically start transmitting on Ethernet 2.

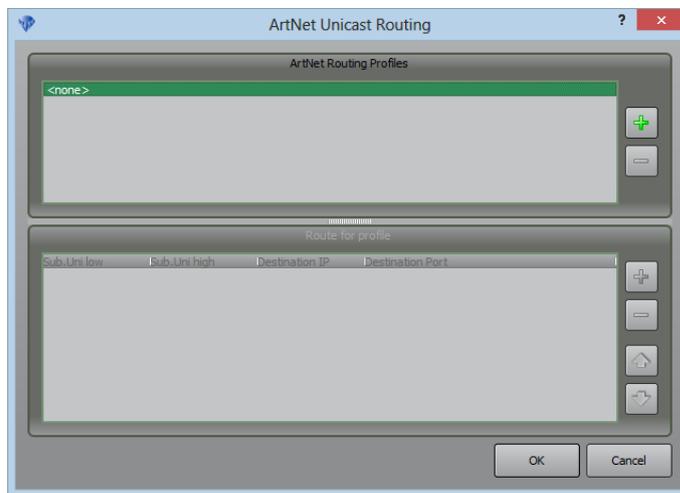
11.13.1 ArtNet Unicast

The original ArtNet protocol only used a broadcast protocol. This means every packet sent from the lighting console will be received by all receivers on the network. This can cause large amounts of data on the network and slow down performance. ArtNet now supports Unicast mode where you can specify the address to which the data is to be sent and hence improve the performance of the network.

Clarity allows you to either “Broadcast” (default setting) and “Unicast” specific ArtNet data. After making the ArtNet connection(s) above, the data is broadcast to the network. To Unicast to specific addresses click **ArtNet unicast:** at the top of the Patch field. If an ArtNet Unicast profile is in use, its name will be displayed beside the button.

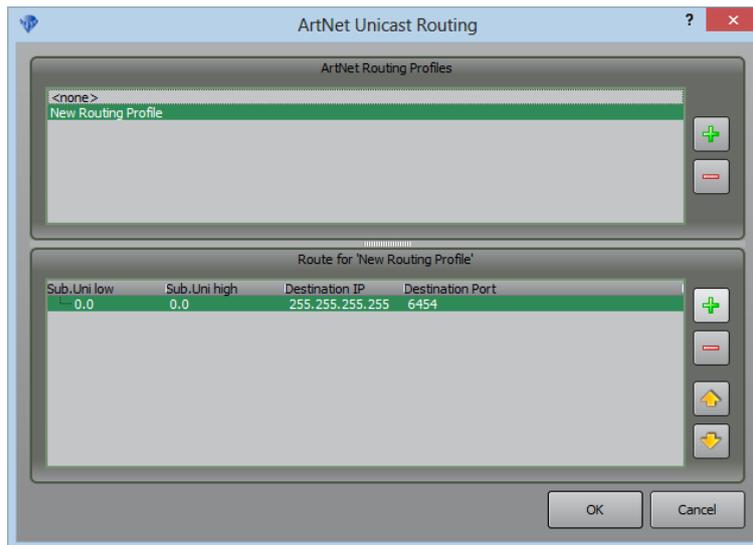


The “ArtNet Unicast Routing” dialog opens.....



The list at the top are your available “ArtNet Routing Profiles” where <none> is the fixed profile where all universes will be broadcast. Click **+** to create a new profile. You can create multiple profiles and switch between them selecting a profile and clicking **OK**. For example, this allows you to have one profile for pre-programming on a visualiser and another when connected to the actual rig. You can rename a profile by double clicking on its name.

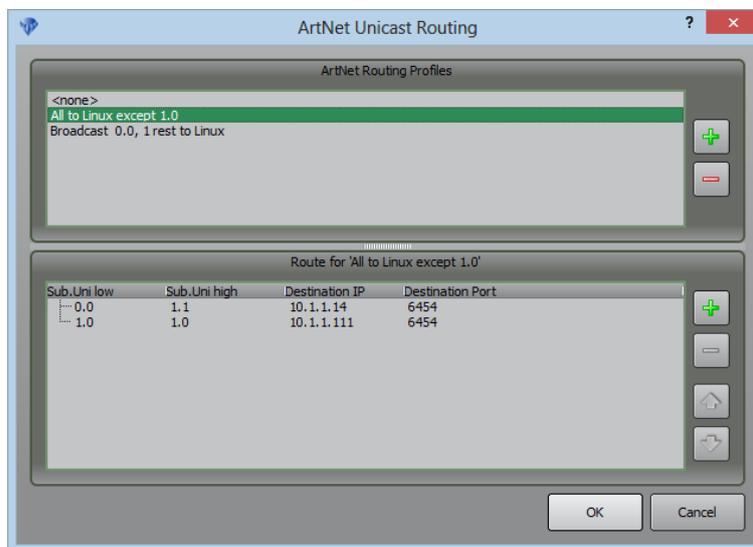
When you select a profile its settings are shown and can be edited in the bottom pane. When you create a new profile the bottom pane will be blank. To add a “route” to this profile click the **+** beside the bottom pane.



You can either specify individual ArtNet subnet/universe pairs or ranges. Double-click to edit fields. If you enter a blank for the "Destination IP" it will auto-correct to the broadcast address and a blank for the "Destination Port" will auto-correct to the default ArtNet port.

Multiple routes can be added by clicking + and entering the details. Each row is a separate routing and the list is evaluated in descending order so you can have a catch all route at the top and individual special cases below.

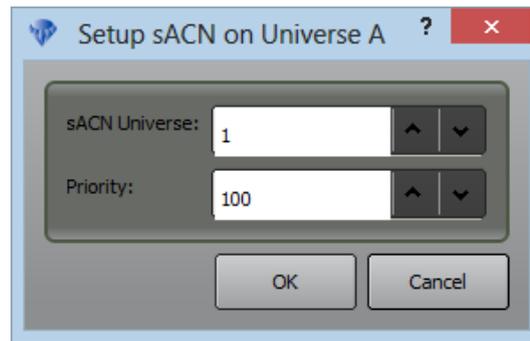
You can change the order in which the routing is evaluated by clicking on a route then using the up/down arrow buttons.



In the example above, all ArtNet universes between 0.0 and 1.1 will be sent to 10.1.1.14, except for ArtNet 1.0 which will be sent to 10.1.1.111. All other universes will get broadcast.

11.14 SACN OUTPUTS

Streaming ACN (sACN) is an informal name for the E1.31 streaming protocol to transport multiple DMX universes over a single cat 5 Ethernet cable/network. Selecting sACN (above) will take you to a configuration dialog specific for that connection type.



sACN supports a priority setting that is designed for backup solutions. Valid priority settings range from 0 to 200 with higher numbers representing higher priority. The default setting is 100. Data will always be received from the device with the highest priority.

For example, you might have two lighting consoles on the network. The main console gets a priority of 100 and the backup gets a priority of 50. If the main console fails, data will be automatically received from the backup console. Note that the receiving sACN interface must also support this feature.

11.15 DISABLE NETWORK DMX

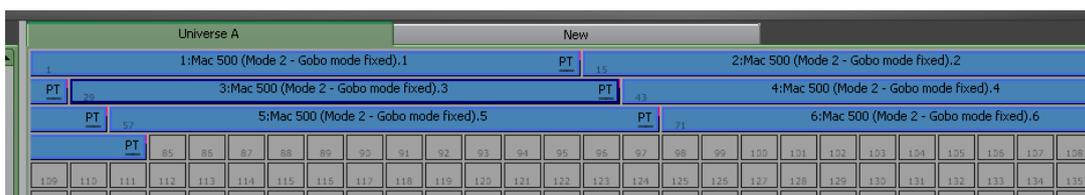
All network DMX (ArtNet and sACN) can be quickly disabled by clicking **Disable network DMX**.



11.16 EDITING THE PATCH

Select the fixture(s) to be edited.

- Patched fixtures can be selected by clicking on them. The fixture's border will become highlighted when it is selected.
- To deselect a fixture, click on it again.
- To select all fixtures, right-click on any fixture then click **Select all**.
- To deselect all fixtures, click on an un-patched DMX slot.



Selected fixtures have a black border.

11.16.1 Editing a Fixtures Address

Selected fixtures can be dragged and dropped onto any DMX slot or universe. If any of the destination DMX slots are already occupied by an existing patch then those slots will turn red and the patch will not be permitted. If you exceed the number of licensed channels for the dongle that you are using (or exceed 128 channels or 32 fixtures for the free version) a red warning banner will be displayed at the top of the screen to alert you to this.

11.16.2 Editing a Fixtures Name or Number

Select a single fixture and right-click on it and then select **Properties**. In the dialog box that opens you can alter its unit number and name. Fixture unit numbers can also be changed in the Programmer's toolbox. See section 21.9.5 for details.

11.16.3 Deleting Fixtures

Select the fixture(s) to be deleted by clicking on them, then right-click and select **Delete selected fixtures**.

11.16.4 Un-Patching Fixtures

Select the fixture(s) to be un-patched by clicking on them, then right-click and select **Unpatch selected**. When any fixtures have been un-patched, an "UNPATCHED FIXTURES" pane appears showing those fixtures allowing them to easily be re-patched when required. Un-patched fixtures do not count towards your license limit.

11.16.5 Exporting the Patch

The **Export Patch** button in the Patch Window allows you to save the patch information as a CSV file and then open it in a spreadsheet program.

12 Rig

12.1 OVERVIEW

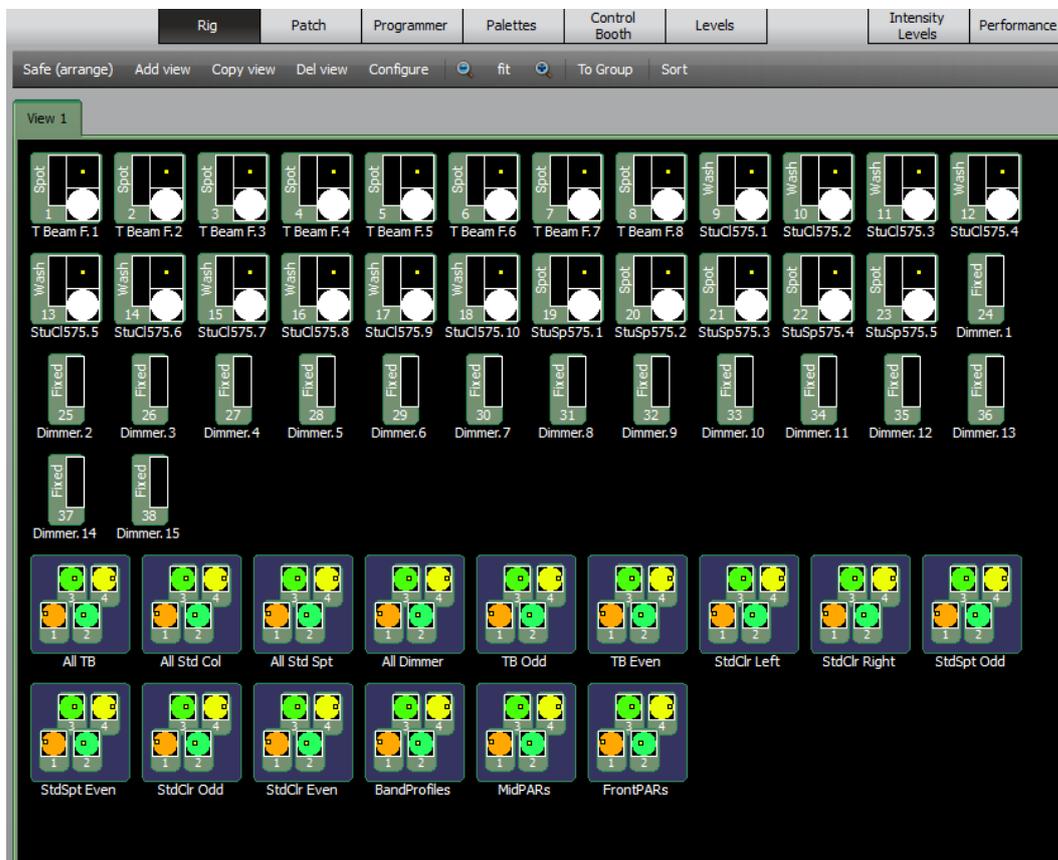
Rig view is a fixture selection tool and two dimensional visualiser.

It shows a geographical view of the patched fixtures (and groups) which you can arrange so that they are positioned as they actually are in your rig. This allows you to rapidly find and select fixtures for programming by clicking on them or touching them or by dragging the mouse cursor through multiple fixtures. This will remember the order in which you drag though the fixtures or you can click in whitespace to draw a selection rectangle.

A background image of your stage or venue can be added to aid selection and multiple views can be created using the toolbar at the top. Each view can be configured with various options:

- Icon style: detailed (separate areas for intensity, position and gobo/colour) or combined.
- Whether or not to auto-add new fixtures or new groups.
- Background image & background image zoom.

The intensity, colour and position of the fixtures are also displayed.



All of the patched fixtures and all of the groups are shown in patched order.

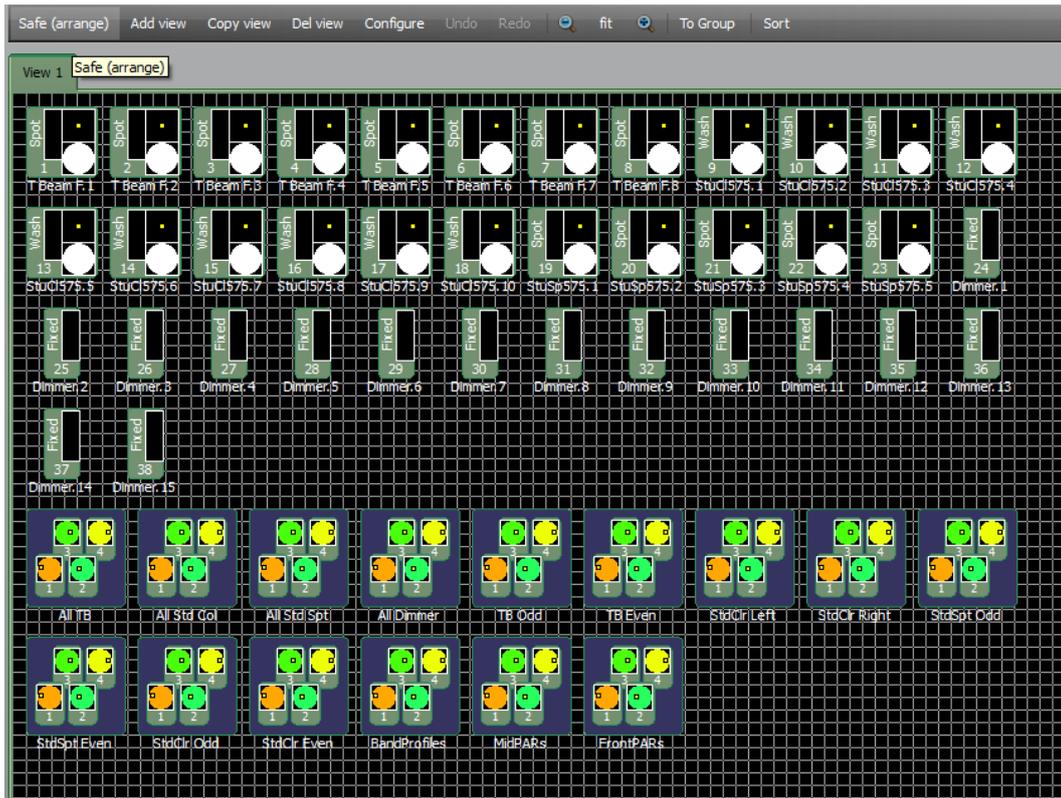
The display is zoomable using the toolbar, mouse wheel or by right clicking on the screen.

When arranging icons in Safe (arrange) mode you can also define a grid and optionally enable snap-to-grid.

12.2 ARRANGING FIXTURES

You can arrange the fixtures geographically as they are rigged on stage and therefore make them much quicker to find and select.

If you click **Safe (arrange)**, a grid appears on the background indicating "Safe" mode.



You can now move and organize the fixtures and groups by dragging and dropping them. Selected items have a yellow border

- Click a fixture or group then drag it to its new position.
- Multiple items can be moved by clicking each one the dragging.
- If you click on the background area then drag a box, all items within the box are selected.
- To de-select an item, click it again.
- To de-select all items click on the background area.

12.3 ALIGNING FIXTURES

Multiple fixtures and groups can also be accurately aligned by selecting them then right clicking and choosing from the menu that appears.

You can align them to the top, to the left, snap them to a grid of either 5, 10 20 or 50 pixels. The "Arrange selected" option opens the "Arrange Items" dialogue box which allows you to accurately space the selected fixtures in horizontal or vertical columns, specify the number of columns and the spacing of the fixtures.



If you make a mistake when arranging fixture or groups you can click **Undo** or **Redo** from the **Menu** button in the bottom right of the touch screen.

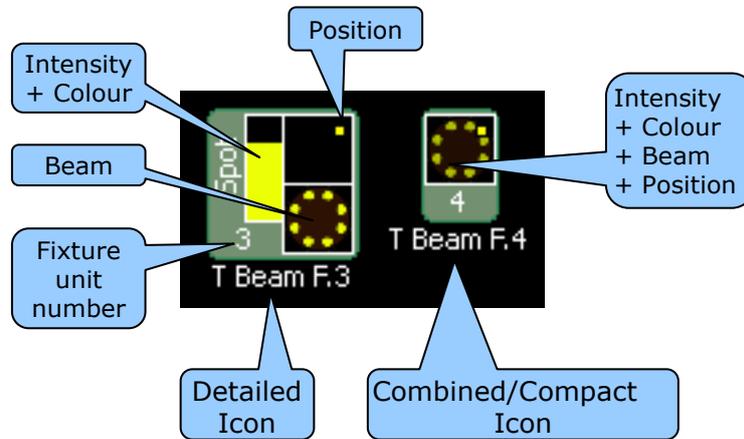
To re-activate normal fixture selection mode click **Safe (arrange)** again (toggle action).

Note that the fixtures can also be aligned when not in Safe (arrange) mode.

12.4 FIXTURE ICONS

Two different styles of icons are available for displaying fixtures:

- **Detailed.** Separate areas for Intensity/Colour, Position and Beam are shown.
- **Combined/Compact.** All attributes combined into a compact display.



Fixture icons can be individually set by selecting the fixture(s) and right clicking then selecting either **Detailed** or **Combined/Compact**.

You can also choose which type of icon will be used as the default icon for each view in the "Configure View" dialogue described below.

The "Fixture Unit Number" displayed in the icon is the fixture's number used in command line programming.

Screen size can be varied with the -, + and **100%** or **fit** (to screen) buttons on the menu bar. It can also be zoomed with the mouse wheel.

12.5 MULTIPLE VIEWS

You can create multiple views. In each view you can name the view, delete or add fixtures and groups, change the arrangement of the fixtures and groups, display the fixtures as either "detailed" icons or "combined/compact" icons and select a different background image.

For example:

- A "Stage View" might show a plan of the stage with the stage fixtures positioned on the lighting battens. A "FOH View" might show a plan of the auditorium with of the Front Of House fixtures in their positions around the auditorium.
- In a television studio, the selection of fixtures can be greatly simplified by creating an individual view for each set or performance area that only contains the fixtures to be used in that set.

12.5.1 Creating a new View

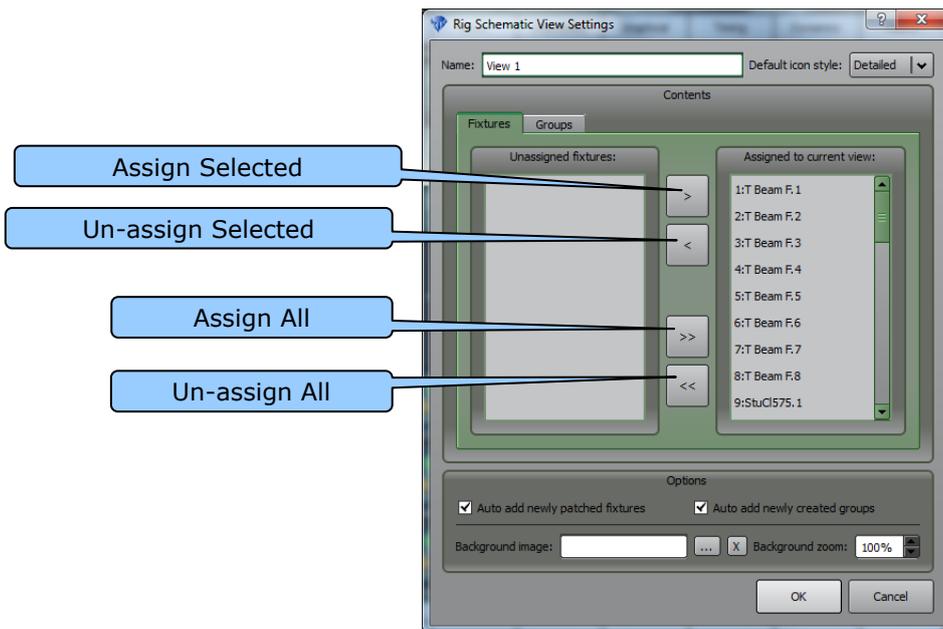
To add a new view click either:

- **Add View** (opens a new blank view without any fixtures) or:
- **Copy View** (creates a copy of the currently selected view that you can configure to your requirements).

To delete a view, select that view by clicking on its name tab then click "Del View" from the menu bar.

12.6 CONFIGURING A VIEW

When a view has been selected (by clicking on its name tab), that view can be configured by either clicking **Configure** on the menu bar or right clicking in the view pane and selecting "Configure View". This opens the "Rig Schematic View Settings" dialogue....



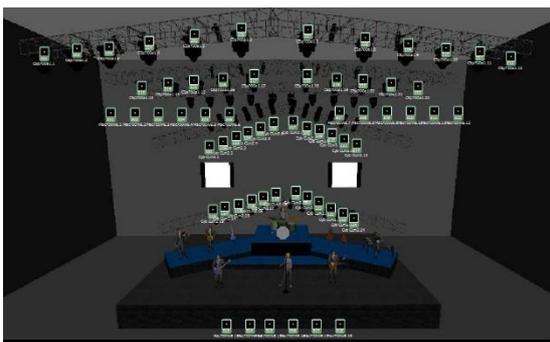
The "Contents" pane allows you to select either Fixtures or Groups tabs and then make your selection by clicking on the fixture or group names. You can then assign or un-assign them from the current view by clicking on the arrow buttons.

At the top you can enter a name for the view and also select the type of fixture icon to be used as the default icon for this view.

The options pane allows you to "Auto add newly patched fixtures" and "Auto add newly created groups".

12.6.1 Background Image

At the bottom of the "Rig Schematic View Settings" dialogue (above) you can select and load a background image over which your fixtures will be displayed. Click on the ... button and navigate to your image. The "Background zoom" controls allow you to scale your image to suite your screen size on the rig view. To remove a background image click on the X button.



Examples of Rig mode with background image.

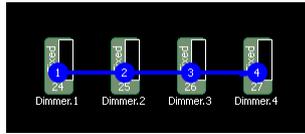
Note: When media is added to Clarity from elsewhere (audio files, images/movies, rig backgrounds), Clarity automatically adds it to the Clarity media folder.

Hint: On LX600 and LX900 consoles, if you create your background image with a size of 1280 840 pixels it will fill the available screen space without the need to scale the image in Clarity and thus maintain the maximum resolution of the background.

12.7 SELECTING FIXTURES IN RIG VIEW

Fixtures to be programmed can be selected by clicking on them. Selected fixtures have a blue border. Click again to de-select a fixture.

If you click on a fixture then drag over multiple fixtures, Clarity draws a line showing the drag path and selects each fixture that you drag over.



If you click on the background area then drag a box, all fixtures within the box are selected.

When multiple fixtures are selected, the selection order numbers are shown on the selected icons. You can select multiple fixtures from different views. The order in which you select the fixtures is used for certain effects (such as fans and dynamics) and can be also utilized by the Programmers "sort" function.

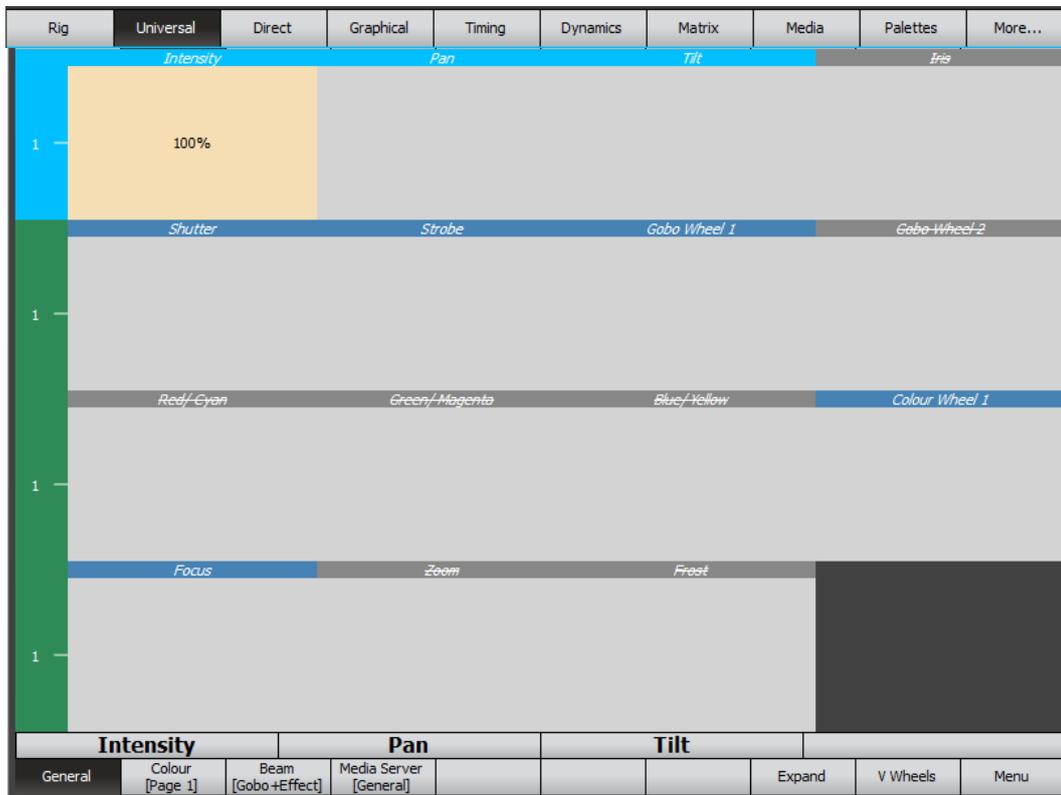
Your fixture selection including its order can be saved to a group by clicking **To Group** in the menu bar and giving the group a name..

Group icons have a dotted blue border when some fixtures in group are selected and a solid blue border when all of the fixtures in the group are selected.

To de-select all fixtures, click on the background area of the window.

13 Universal

13.1 OVERVIEW



When you have selected a fixture(s), Universal mode (on the consoles encoder touch screen) provides universal attribute controls that are always in the same locations on the screen and operate in exactly the same way, regardless of which fixture types you have selected. This not only allows multiple types of fixtures to be controlled simultaneously but also simplifies the control of complex fixtures that might use multiple attributes to control an effect or fixtures that use one attribute to change the mode of another attribute. Universal mode automatically interprets these attributes and presents a single control for each effect.

For example, the fixture being controlled might have a gobo mode attribute and a gobo index/rotate attribute or it may use a single gobo index/rotate attribute that has index from 0 to 127 and rotate from 128 to 255. When you use the Universal mode you don't need to care about these modes because Clarity automatically interprets these attributes and always provides a control for gobo rotate and a control for gobo index.

If a listed attribute does not exist on any of the selected fixtures, then that attribute control is still visible but disabled.

13.2 UNIVERSAL MODE PAGES

Universal controls are arranged in 4 main pages that are selected by the buttons at the bottom of the screen. The main pages are:

General Colour Beam Media Server

Each page has rows of controls that you connect to the encoder wheels by using the buttons to the left of that row.

The Colour, Beam and Media Servers have sub pages that can be selected by either holding their button and selecting from the sub pages that appear or by using the next two buttons to the right.

General (One page)

Intensity	Pan	Tilt	Iris
Shutter	Strobe	Gobo Wheel 1	Gobo wheel 2
Red/-Cyan	Green/-Magenta	Blue/-Yellow	Colour Wheel 1
Focus	Zoom	Frost	

Colour (Two pages)

Colour, Page 1

Intensity	Cyan	Magenta	Yellow
Red	Green	Blue	Amber
Colour Wheel 1	Colour Wheel 2	Colour Wheel 3	Colour Wheel 4
Colour Wheel Spin 1	Colour Wheel Spin 2	Colour Wheel Spin 3	Colour Wheel Spin 4

Colour, Page 2

Red	Green	Blue	White
Intensity	Hue	Saturation	Amber
Scroller 1	Scroller 2	Scroller 3	Scroller 4

Beam (Five pages)

Beam, Gobo + Effect

Gobo Wheel 1	Gobo Wheel Spin 1	Gobo Index 1	Gobo Rotate 1
Gobo Wheel 2	Gobo Wheel Spin 2	Gobo Index 2	Gobo Rotate 2
Effect Wheel 1	Effect Wheel Spin 1	Effect Index 1	Effect Rotate 1
Effect Wheel 2	Effect Wheel Spin 2	Effect Index 2	Effect Rotate 2

Beam, Gobo (whls 1-4)

Gobo Wheel 1	Gobo Wheel 2	Gobo Wheel 3	Gobo Wheel 4
Gobo Wheel Spin 1	Gobo Wheel Spin 2	Gobo Wheel Spin 3	Gobo Wheel Spin 4
Gobo Index 1	Gobo Index 2	Gobo Index 3	Gobo Index 4
Gobo Rotate 1	Gobo Rotate 2	Gobo Rotate 3	Gobo Rotate 4

Beam, Effect (whls 1-4)

Effect Wheel 1	Effect Wheel 2	Effect Wheel 3	Effect Wheel 4
Effect Wheel Spin 1	Effect Wheel Spin 2	Effect Wheel Spin 3	Effect Wheel Spin 4
Effect Index 1	Effect Index 2	Effect Index 3	Effect Index 4
Effect Rotate 1	Effect Rotate 2	Effect Rotate 3	Effect Rotate 4

Beam, (Beam)

Focus	Zoom	Frost	Iris
Animation Wheel 1	Animation 1 <>	Animation Wheel 2	Animation 2 <>

Beam, Framing

Frame Depth 1	Zoom	Frost	Iris
Frame Depth 2	Animation 1 <>	Animation Wheel 2	Animation 2 <>
Frame 1A	Frame 1B	Frame 3A	Frame 3A
Frame 2A	Frame 2B	Frame 4A	Frame 4A

Media Server (Two Pages)

Media Server, General

Output Level	X Position	Y Position	Z Position
Intensity	Red Adjust	Green Adjust	Blue Adjust
X Zoom	Y Zoom	Playback Speed	Rotate Z
Object Directory	Object File	Effect	Effect Parameter

Media Server, Keystone

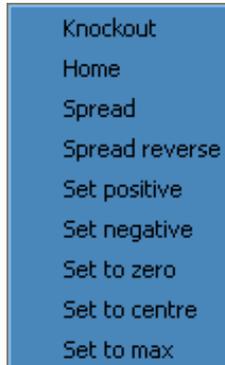
Keystone X#1
Keystone X#3

Keystone Y #1
Keystone Y #3

Keystone X#2
Keystone X#4

Keystone Y #2
Keystone Y #4

The following shortcuts are available if you right click on any control on the screen:

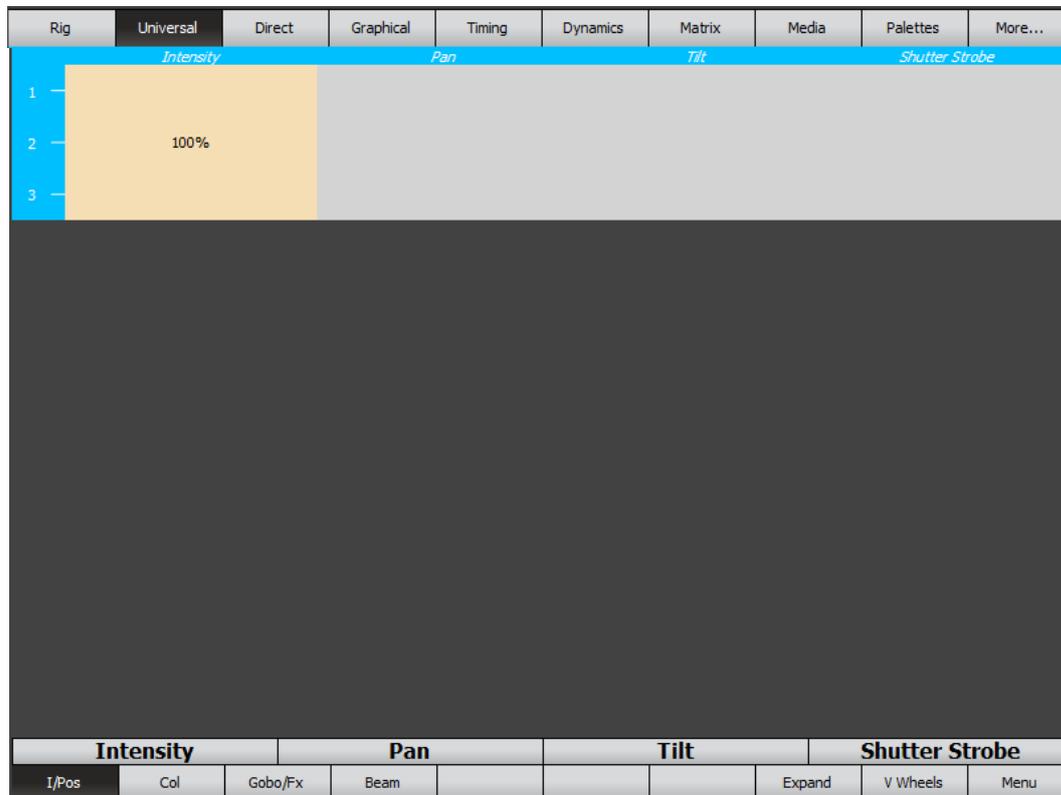


You can save a shortcut to a page and row allowing you to navigate to it with a single key press. See section 8.6.1 for details.

See also section 8.4 for more information on Universal mode.

14 Direct

14.1 OVERVIEW



When you have selected a fixture(s), Direct mode provides attribute controls for the selected fixture as specified for that fixture in the fixture library.

For example, the fixture being controlled might have a colour wheel with a colour mode attribute and a colour index/spin attribute. When you use the Direct mode, you control these attributes directly so if you want to spin the colour wheel you would need to set both attributes to the appropriate values. This is different to Universal mode where you only need to set a single control and Clarity sends the appropriate values to both attributes.

Direct mode also allows you to control any unusual attributes that a fixture might have that aren't covered by the controls in Universal mode.

The Direct controls are divided into groups of:

Intensity/Position Colour Gobo/Effects Beam

Groups and rows are selected and connected to the encoder wheels in the same way as in Universal mode (described in the previous section).

You can save a shortcut to a page and row allowing you to navigate to it with a single key press. See section 8.6.1 for details.

15 Timing

15.1 OVERVIEW

Clarity provides comprehensive controls for the timing of your Cue-lists and Cues. Timing information can be entered when recording a cue or when editing a cue.

There are three types of times:

1. "Cue-list times" that affect the overall cue-list, not the individual cues within the list. These are "Activate" (fade in) time, "Release" (fade out) time and "Playback Rate".
2. "Cue times" that affect each individual cue within the cue-list. Every cue in a cue-list has individual time settings for "Wait", "Delay", "Fade", "Out Delay" and "Out Fade".
3. "Fixture attributes times". By default, every individual attribute of every fixture will be given the "Delay" time and "Fade" time that are set for the cue. However you can set individual delay and fade times for every fixture attribute in a cue.

All of these time settings are described below.

Time Presets and FreeSets allow you to create building blocks of timing patterns for use in programming or to use them in live playback from the Palettes window.

Times can be momentarily overridden.

15.2 CUE-LIST TIMES

Every cue-list has the following time settings:

- Activate (fade in) time. See section 15.2.1
- Release (fade out) time. See section 15.2.2
- Playback Rate. See section 15.2.3

These time settings affect the cue-list, not the individual cues within the list.

15.2.1 Activate (fade in) time.

This is the time taken for a Cue-list to fade in when the first cue is played.

Default time = 0 seconds.

Normally this would be left at 0 and the affected fixtures in cue 1 would fade in using their recorded fade times for cue 1. However, you can enter an "activate time" to scale the fade in over time. This is most useful with chases or when cues are set to automatically follow each other. In these cases the "activate time" is set to be longer than the cumulative fade times of the first few cues.

For example: If you had a position chase that moved a beam between the 4 corners of the stage, you might not want the fixtures to jump to the first corner when you play the cue-list but instead to gradually spiral out from the centre as it steps through the list. If the cues step every second and you set the **activate** time to say 10 seconds, then the chase starts at the centre and gradually gets bigger over 10 seconds. It takes 10 steps before each cue reaches full recorded level.

15.2.2 Release (fade out) time.

This is the time taken for the Cue-list to fade out when released from a Playback.

Default time = 2 seconds.

15.2.3 Playback Rate.

Playback Rate proportionally changes all of the timing information (wait, delay and fade) of all of the cues in a cue-list. Wait, delay and fade are described below.

The Playback Rate range is 1% to 1000%. The default setting is 100% which means that the wait, delay and fade times are not changed.

For Example:

If Playback Rate is set to 50% it slows all of the fades.

If Playback Rate is set to 100% there is no change to fades.

If Playback Rate is set to 200% it speeds up all of the fades.

“Playback rate” is usually only used to adjust times “on the fly” during playback to speed up or slow down a fade that is in progress.

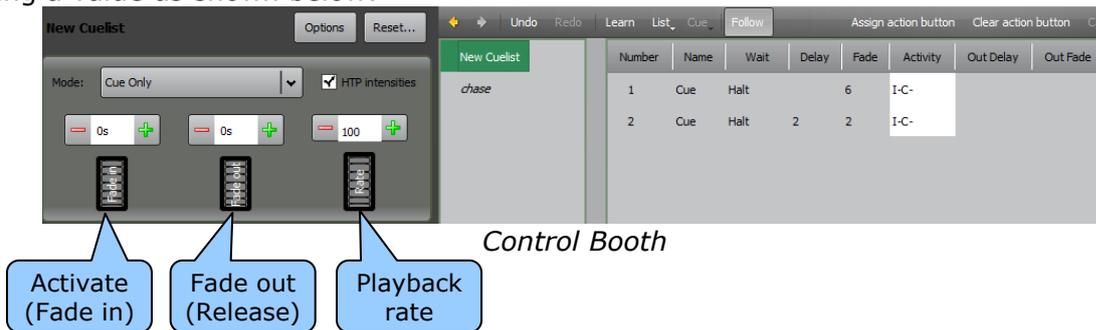
Note: If you are going to use your current settings as the defaults for all new cue-lists, it is advisable to ensure that the “Playback Rate” is set to 100% so that all new cue-list times will be accurate and not scaled to a different time by the playback rate.

15.2.4 Setting Cue-list times

Cue-list times (Activate, Fade out and Playback rate) can be set when recording a new cue-list by using the wheels or entering a value in the Record dialog box as shown below:



Cue-list times can be altered by selecting the cue-list in the “Control Booth” using the wheels or entering a value as shown below:



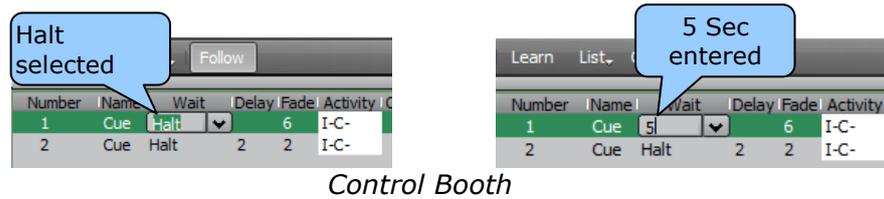
15.3 CUE TIMES

Every cue in a cue-list has individual time settings for “Wait”, “Delay”, “Fade”, “Out Delay” and “Out Fade”.

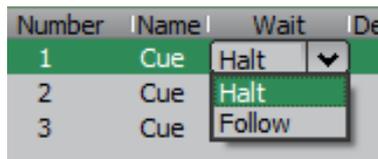
15.3.1 Wait

Every cue has its own “Wait” time. The wait time can be set in the Record dialog or in the Control Booth. There are 4 choices for wait time:

1. Halt. At that at the conclusion of the fade in of the previous cue, the cue-list will halt and wait until this cue is manually played (or played by MIDI, Timecode, GPI or “Network Devices” control). Halt is the default setting.
2. A “time” value. You can automate the playing of a cue by entering a wait time value (instead of “Halt”). The cue will be automatically played after the wait time has expired after the playing of the previous cue.
In the record dialog, enter a wait “time” by clicking on the word “Halt” and entering a time (### seconds) or move the “Wait time” wheel.
In the Control Booth, enter a wait “time” by clicking on the word “Halt” and entering a time (### seconds).

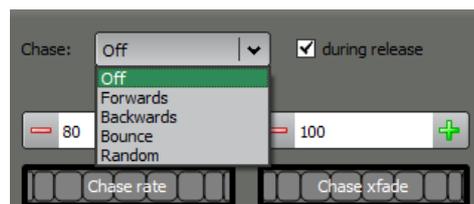


3. **Follow.** You can also automate the playing of a cue by selecting "Follow" (instead of "Halt"). The cue will be automatically played after the previous cue finishes its delay and fade times.
In the Record dialog, click on the drop down box beside "Halt" and select "Follow".
In the Control Booth, select the cue then click on "Halt" to reveal the drop down box and select "Follow".



4. **Chase.** You can run a cue-list as a chase that automatically steps from cue to cue.

In the Record dialog or in the Control Booth, in the "Chase" pane, click in the drop down box and select either: Forwards, Backwards, Bounce or Random.



When "Chase" is selected, the delay and fade times are ignored and the cue-list is controlled by the "Chase rate" and "Chase xfade" controls.

Hint: You can also set the rate of a chase by tapping the "go" button of the playback to which the chase is assigned. This is known as "Tap to Tempo". If you start tapping at a CONSISTENT rate then the Clarity matches your rate. However if you start at one rate and then speed up or slow down, Clarity tries to cover for your lack of rhythm and slowly ramps to the new rate. If you have tapped a tempo and then want to change the tempo, pause for 2 seconds then start tapping the new tempo.

15.3.1 Delay.

Every cue has its own "Delay" time. Delay is the time between the cue being played and an attribute value starting to change. Every attribute of every fixture in a cue can have an individual Delay time.
Default time = 0 seconds.

15.3.2 Fade.

Every cue has its own "Fade" time. Fade is the time from when an attribute value starts to change until it reach its value recorded in the cue. Every attribute of every fixture in a cue can have an individual Fade time.
Default time = 2 seconds.

*Note: You can enter your own default "Fade Time". Select **Show/Settings/Preferences** and enter a time in the "Default fade time:" box.*

15.3.3 Out Delay.

Every cue has its own "Out Delay" time. When the cue is played, any Intensity values that are about to decrease in level (from their level in the previous cue) will wait for the "Out Delay"

time to expire before they start to fade. Increasing intensity values and all other attributes ignore this setting.

Default setting is no value and is therefore ignored.

15.3.4 Out Fade.

Every cue has its own "Out Fade" time. When the cue is played, any Intensity values that are about to decrease in level (from their level in the previous cue) will use the "Out Fade" time.

Increasing intensity values and all other attributes ignore this setting.

The Default setting is no value and is therefore ignored.

15.4 RECORDING CUE TIMES

There are 3 methods for recording times:

1. **Default Times.** If you have not used the Programmer's "Timing" tab to adjust times and if you don't touch the "Delay" and "Fade" times in the record dialog, the cue will be recorded with the default Delay time and Fade time applied to every grabbed attribute of every fixture in the programmer.
 - Default Delay Time = 0 seconds.
 - Default Fade Time = 2 seconds.
2. **Simple Times.** If you have not used the Programmer's "Timing" tab to adjust times then when you press **Record** you can set a Delay time and a Fade time for all grabbed attributes of every fixture in the programmer by either entering a time value in the appropriate box or moving the "Delay time" or "Fade time" wheels.



3. **Complex Times.** You can use the Programmer's "Timing" tab to set individual Delay times and individual Fade times for every fixture attribute in the cue and then **Record** the cue. See section 15.5.2 for details.

Note: If you set complex times in the Programmer's "Timing" tab and then use the Record dialog (Simple Times) to change the delay and/or fade times prior to recording, the times that you set using the Programmer's "Timing" tab will be scaled by the changes that you make in the Record dialog.

For example:

You use the Programmer's "Timing" tab to set the following fade times:

All Position attributes Fade time = 8 seconds.

All Colour attributes Fade time = 10 seconds.

You then use the "Record dialog" and enter a fade time of 5. The highest time (10 seconds) has been halved so all fade times are halved. The result is:

Position: Fade=4.

Colour: Fade=5

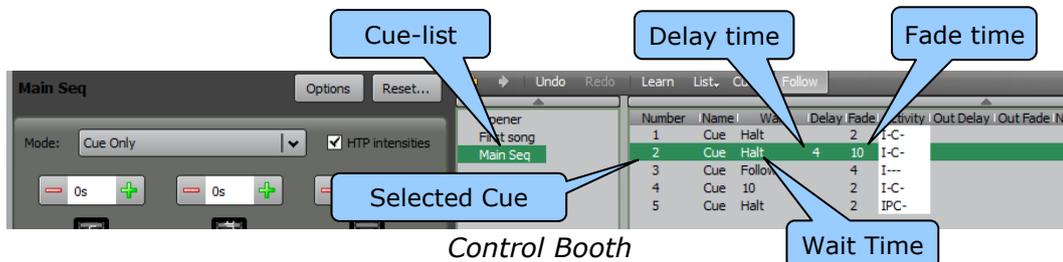
15.5 EDITING TIMES

The Cue-list "Wait" time and the global delay and fade times for all attributes in a cue can be changed in the Control Booth. See section 15.5.1.

Individual attribute delay and fade times can be set by editing the cue and using the Programmers "Timing" tab. See section 15.5.4

15.5.1 Changing Times in Control Booth

The "Wait" time and the global Delay and Fade times of a recorded cue can be changed by selecting the cue-list in the "Control Booth" then clicking on the time to change and entering the new time.



Individual fixture attributes in a cue can have different delay times and different fade times. The delay time and fade time displayed in the Control Booth is always the highest value of each time.

For example:

A cue has the following delay and fade times (in seconds):

Position: Delay=6 and Fade=8.

Colour: Delay=2 and Fade=10.

The Control Booth will show:

Delay=6 and Fade=10.

If the fade times recorded in the cue are the same for every attribute, then if you enter a new fade time, the new time is applied to every attribute of every fixture in the cue. The same applies to delay times.

If the fade times recorded in the cue are not the same for every attribute, then if you enter a new fade time, the new time will be applied to the highest value and all other fade times will be scaled by the same amount of change that you applied to the highest value. The same applies to delay times.

For example:

A cue has the following fade times:

Position: Fade=8.

Colour: Fade=10.

The Control Booth will show: Fade=10.

You select the 10 fade time and change it to 5. The time has been halved so all fade times are halved. The result is:

Position: Fade=4.

Colour: Fade=5.

Individual attribute times cannot be set in the Control Booth. If you want to set delay and fade times for individual attributes or groups of attributes then you must use the "Timing" tab in the programmer prior to recording the cue or edit the cue and use the "Timing" tab in the programmer edit session. See section 15.5.2

15.5.2 Individual Attribute Times

Every attribute of every fixture in every cue can have an individual delay time and individual fade time. These times can be set prior to recording a cue or later by editing a cue.

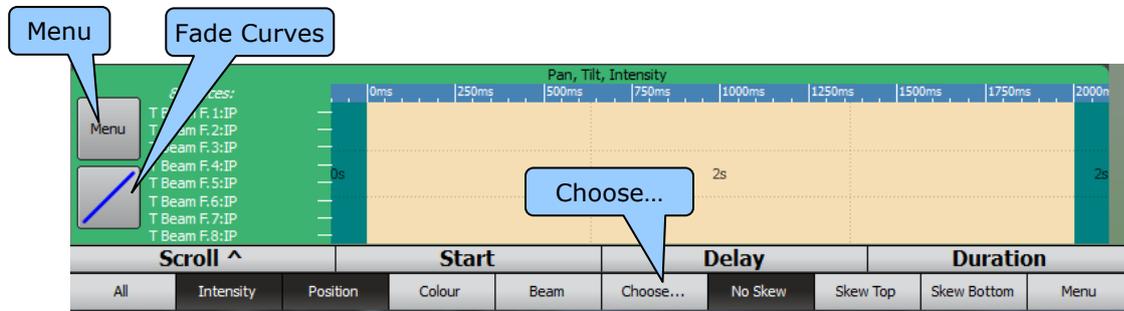
Clarity provides several methods for setting the delay and fade times for each attribute in a cue.

- **Timing mode** (on the encoder wheel touch screen of LX consoles).
- The **Timing tab** in the **Programmer** window.
- Command line programming (fade time only).

Timing mode and the Timing tab provide similar controls for setting times.

15.5.3 Timing Mode

Timing mode, selected on the encoder wheel touch screen of the LX consoles, displays the timing of the fixture attributes that are grabbed in the Programmer and provides a means of altering their times.



LX console Encoder Wheel Touchscreen

The buttons at the bottom of the screen allow you to filter your selection by the attribute groups of **ALL**, **Intensity**, **Position**, **Colour** or **Beam**. You can select these groups individually or they are multi-selectable by holding **Function** when you select. Attribute groups can be further filtered to individual attributes by selecting **Choose** which opens a window allowing you to select individual attributes within the selected group(s).

Use the encoder wheels to set the times according to your selection of either **No Skew**, **Skew Top** or **Skew Bottom**.

When **No Skew** is selected the wheels operate as follows:

1. **Start** changes the delay time without affecting the total duration (because it also changes the fade time).
2. **Delay** changes the delay time.
3. **Duration** changes fade time.

When **Skew Top** is selected the wheels operate as follows:

4. **Start** skews the delay times from top to bottom without affecting the total duration.
5. **Delay** skews the delay times from top to bottom.
6. **Duration** skews the fade times from top to bottom.

When **Skew Bottom** is selected the wheels operate as follows:

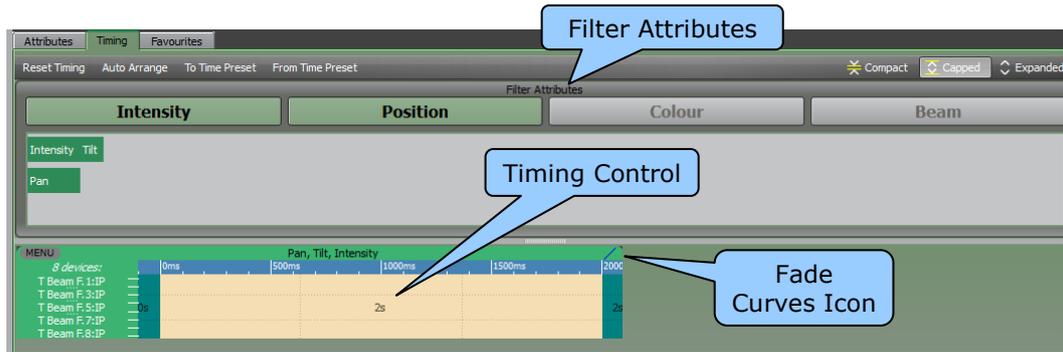
7. **Start** skews the delay times from bottom to top without affecting the total duration.
8. **Delay** skews the delay times from bottom to top.
9. **Duration** skews the fade times from bottom to top.

You can also touch and drag any of the times or click on any times and enter a time value or range (to skew the times) as described in "Setting Times" below.

Selecting the **Fade Curves** box reveals a range of fade curves to choose from as described below. Selecting the **Menu** box reveals a range of choices to set, reset, align and straighten times and to recall preset times or save preset times as described below.

15.5.4 Timing Tab

The Programmer's timing tab displays the timing of the attributes that are grabbed in the Programmer and provides a means of altering the times.



The "Filter Attribute" buttons allow you to filter your selection by the attribute groups of **Intensity**, **Position**, **Colour** and **Beam**. Attribute groups can be further filtered to individual attributes by clicking the attributes to be included. You can select them individually or they are multi-selectable with **Function** + click.

Below the filter attributes are the Timing Controls. The detail shown in the Timing Control can be varied by clicking on either:

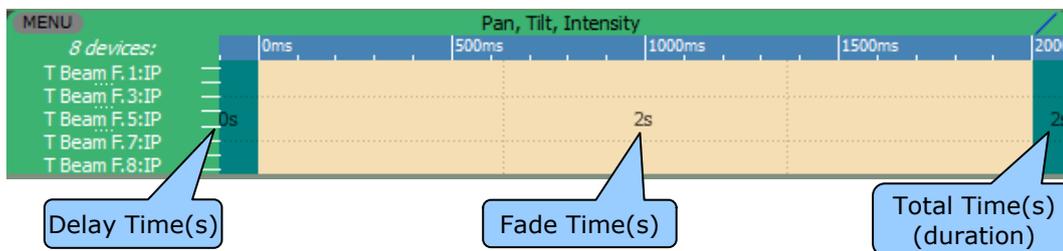
- **Compact:** one line is used for all devices of that type
- **Capped:** the height of the Timing Control is limited to a maximum of 5 lines – the individual value rectangles are compressed to fit into the available space.
- **Expanded:** the Timing Control is expanded to suit the number of selected devices.

Clicking on the **Fade Curves** icon reveals a range of fade curves to choose from as described below.

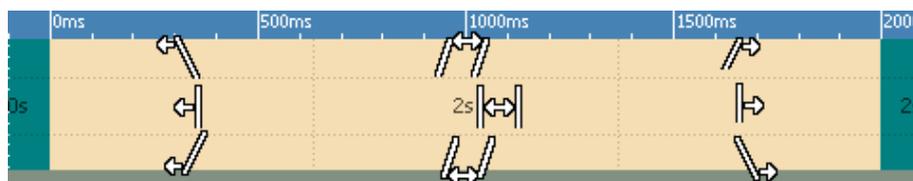
Clicking on **Menu** reveals a range of choices to set, reset, align and straighten times and to recall preset times or save preset times as described below.

15.5.5 Setting Times

The delay time, fade time and total time (delay + fade) are shown in the Timing Control. When times are altered the display automatically zooms to show the entire duration.



The Timing Control is divided into a grid of 9 time boxes as indicated by the dotted lines in the Timing Control. As you move over each time box, the cursor changes to indicate how the timing will be affected if you drag in each section. Touching (or clicking) and dragging in one the relevant box performs the following actions:



Skew delay time from top to bottom without changing duration.
Change delay time without changing duration.
Skew delay from bottom to top without changing duration.

Skew delay time top to bottom.
Change delay time.
Skew delay time bottom to top.

Skew fade from top to bottom.
Change fade time.
Skew fade from time bottom to top.

Double clicking and holding **Function** (LX consoles) or holding [Shift] on the keyboard whilst dragging gives finer control.

15.5.6 Setting Times by Direct Entry

- Double-clicking in the left, middle or right centre boxes of a Timing Control brings up an entry box where you can key in either the delay, fade or duration times respectively on the numeric keypad, then press **Enter**.
- To skew the times (of 2 or more fixtures) enter the minimum and maximum times separated by two decimal points.
For example, to skew the fade time of 4 fixtures between 1 second and 5 seconds enter a time value of "1..5".
- Right-clicking in the left column displays a menu where you can choose to:
 - Reset to Defaults.
 - Set start time(s).
 - Align starts (removes skewed starts without affecting the total duration).
 - Straighten starts (equalises unevenly skewed start times without affecting the total duration).
- Right-clicking in the centre column displays a menu where you can choose to:
 - Reset to Defaults.
 - Set duration(s).
 - Shift Align starts (removes skewed starts).
 - Shift Straighten starts (equalises unevenly skewed start times).
- Right-clicking in the right column displays a menu where you can choose to:
 - Reset to Defaults.
 - Set end time(s).
 - Align ends (removes skewed ends).
 - Straighten ends (equalises unevenly skewed end times).

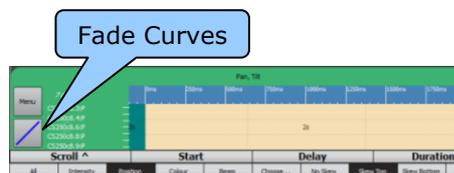
The "right-click" options listed above are also available on the **Menu** button on LX consoles "Timing" tab on the Encoder Wheel Touchscreen or the **Menu** button of the Programmers Timing tab.

15.5.7 Fade Curves

Fade curves determine the way that attributes vary during the fade times entered in the cue. The curve icon shows its current path setting.

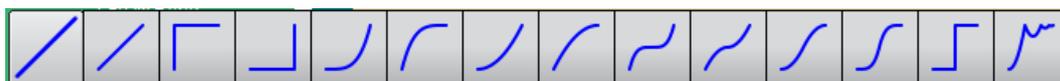


Programmer Timing Tab



Encoder Wheel Touchscreen

Clicking on the icon reveals the available curves and allows you to select a curve by clicking on it. The available curves are:



If multiple attributes are selected and they have different timing curves selected then three dots (***) are shown as the selected curve.

15.5.8 Filtering Times

Every attribute of every fixture can have its own individual set of times. It is common practice to set different times for different attribute groups.

For example:

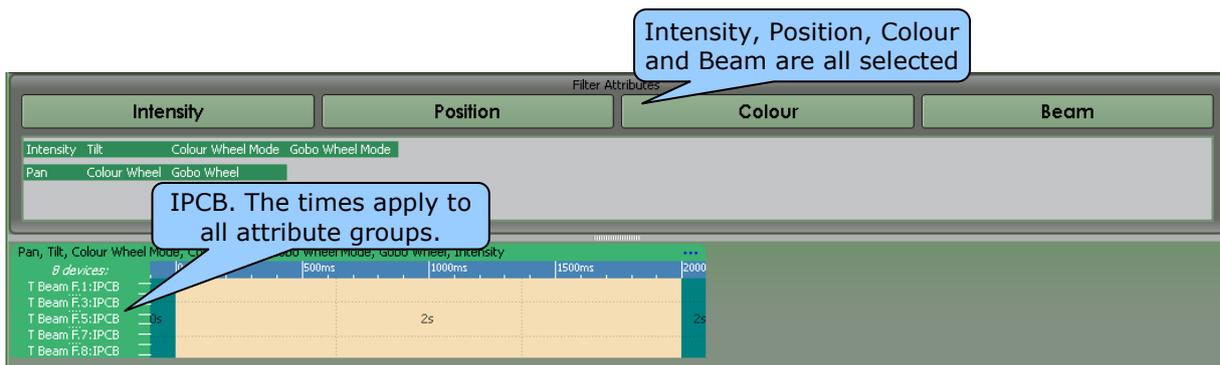
When a cue is played back, the colour might instantly go to the desired setting but the position might wait for a second then move for 2 seconds.

Or you might program different timing of the same attribute on different fixtures.

For example:

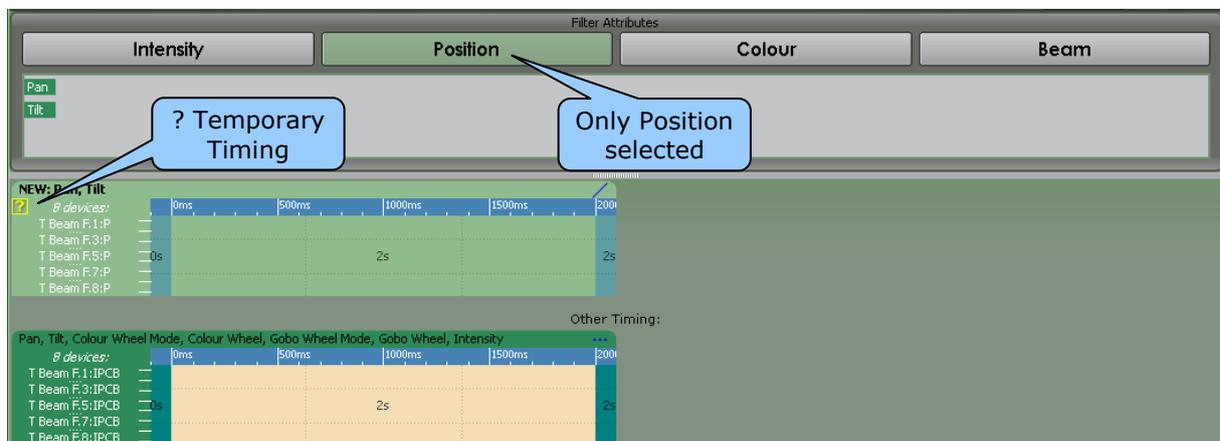
When a cue is played back, the tilt of the first fixture might have 0 seconds delay, the second fixture has 1 second delay, the third has a delay of 2 seconds etcetera giving a staggered playback of the tilts.

In the example of Timing Control shown below, the delay and fade times are the same for all of the attributes of the fixtures. This is indicated by "IPCB" (**I**ntensity, **P**osition, **C**olour and **B**eam) beside the fixture names.



Timing Control sets times for IPCB attribute groups

Filters are used to select different attributes so that individual times can be set. The Timing pane contains filters for the attribute groups of **Intensity**, **Position**, **Colour** and **Beam**. Selecting a filter's name will result in a new Timing Control appearing, showing potential timing information for the filtered attributes of the selected fixtures.

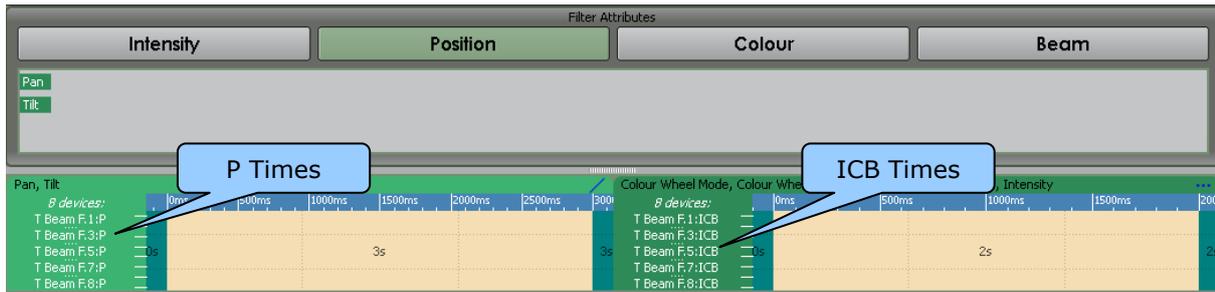


Position filter has been selected.

The lower Timing Control still controls IPCB (Intensity, Position, Colour, Beam) but the new Timing Control above it has been filtered for P (Position) information only. No change has yet been made and the new Timing Control is only temporary as indicated by the "?" in the top left corner of the Programmers Timing tab.

On LX consoles, the Encoder Wheel touch screen's **Menu** button is replaced by a **Confirm** button instead of a "?".

Selecting the "?" button or **Confirm** or changing the times in the temporary window will "lock in" the timing.

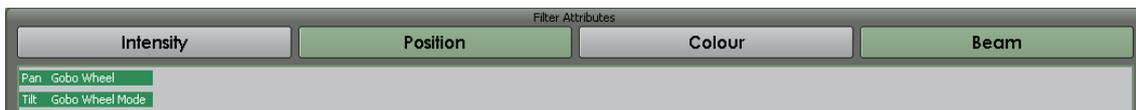


The right Timing Control now only controls ICB and the left Timing Control has taken control of P (Position) timing. You can now set the Position delay and fade timing independently of the ICB delay and fade timing.

15.5.9 Combining Filters

Combinations of the Filters Attribute groups of **Intensity**, **Position**, **Colour** and **Beam** groups can be selected by using **Function** + click to select and or de-select them.

Individual attributes within a group can be selected by selecting **Choose** then selecting the attributes. Combinations of individual attributes can be selected by using **Function** + click to select and or de-select them.



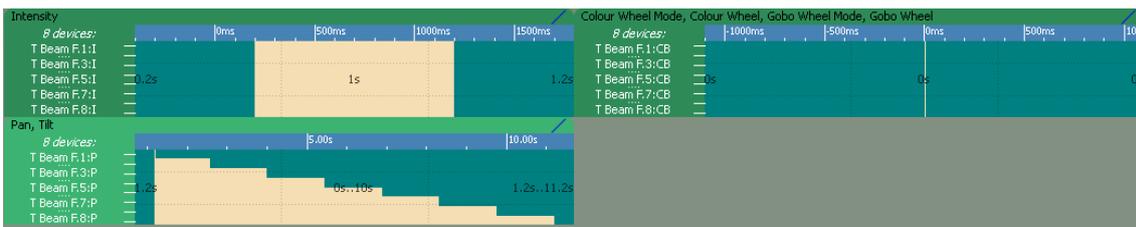
Position and Beam have been filtered.



Pan from the Position group has been filtered.

15.5.10 Complex Timing

The separate Timing Controls allow you to see a lot of timing information at a glance, even if attribute times are at very different orders of magnitude.



The above complex example has the following timing.

Intensity (I) is delayed for 0.2 seconds then fades up over 1 second.

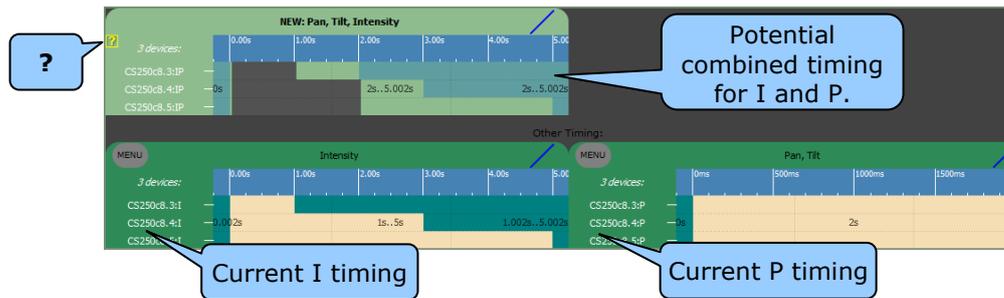
Colour and gobo wheels (CB) snap to their settings instantly (0 seconds), before the fade up begins.

Pan and Tilt (P) are delayed for 1.2 seconds (until the fade up is complete) then the position skews in over 10 seconds.

15.5.11 Combining Times

If you have created separate timing for different attribute groups or individual attributes and you want to combine those groups or attributes to have the same times, select the groups and or attributes you want to combine using the same techniques that were used to filter and separate them. See "Filtering Times" above.

Selecting multiple groups or attributes will result in a new Timing Control appearing showing potential timing information for the combined attributes of the selected fixtures.

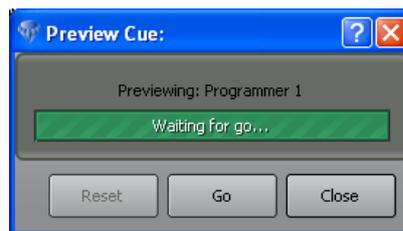


On LX consoles, the Encoder Wheel touch screen’s **Menu** button is replaced by a **Confirm** button (instead of a “?” as shown above in the Programmer tab). Selecting “?” or **Confirm** or changing the times in the temporary window will combine the timing and remove the separate timing windows.

15.6 PREVIEWING TIMES

If you have set some times, “Preview” allows you to rehearse the transition from the previous state to the cue that you are creating before you actually record it or save an edited time.

- Clicking **Preview** pops up the **Preview Cue** dialog and the fixtures revert (in 0.5 second) to their original attribute settings prior to being altered by the current Programmer session (if you are editing a cue-list, then they will revert to the state of the preceding cue).



- Click **Go** to see the fixtures change to the current programmer state (the cue that you are currently creating) using the times that you have set.
- To see the move again click **Reset** then **Go**.
- Click **Close** to finish.

If the new look or the timing is not satisfactory adjust the attributes or timing then preview the move again.

If the programmer settings are satisfactory, then record or save the cue.

15.7 COMMAND LINE FADE TIME ENTRY

When setting the intensity of a fixture from the keypad you can also enter a fade time.

- On LX consoles, after entering the intensity, press the **Time** button then enter the time.
- On Desktop Clarity, after entering the intensity, press the letter “**t**” then enter the time.

Times values can be entered as #.# seconds. Only fade times are accepted and delay is set to 0s.

For example, on a LX console:

1 @ 50 Time 3.5 Enter sets fixture 1 to an intensity of 50% and a fade time of 3.5s.

On desktop Clarity:

10 @ 80 t 6 Enter sets fixture 10 to an intensity of 80% and a fade time of 6s.

15.8 TIME PRESETS

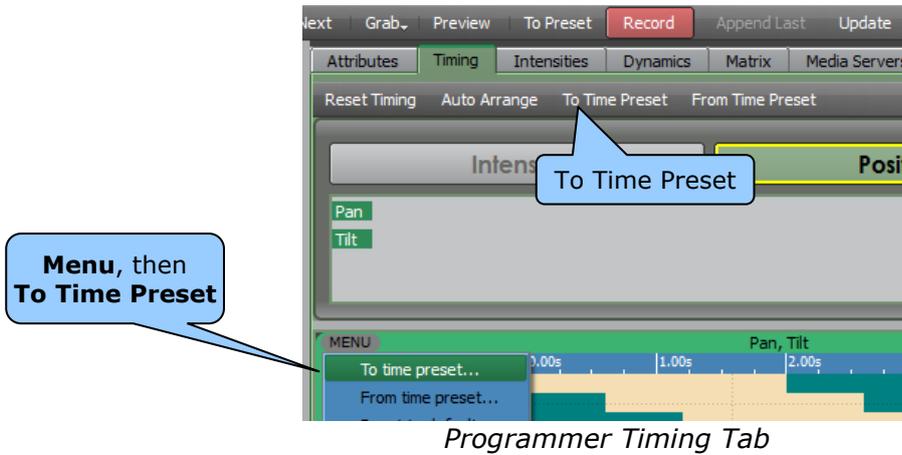
Time Presets and Freesets allow you to create building blocks of timing patterns for use when programming a cue or you can use them in live playback from the Palettes window.

15.8.1 Recording Time Presets

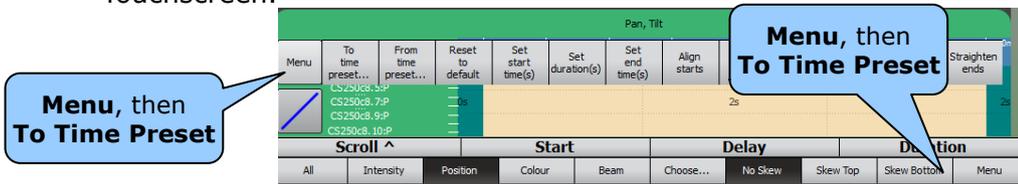
Select a fixture(s) and grab it in the programmer. Set the delay and fade times to the values that want to save as a Time Preset.

There are several places in Clarity where you can choose to save a Time Preset:

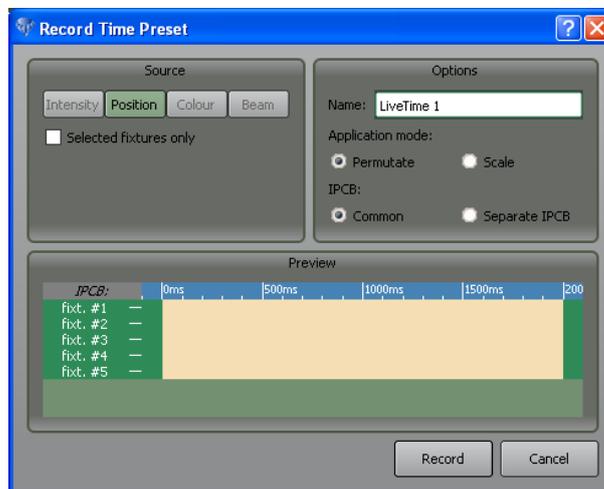
- The Programmers Timing Tab has a **To Time Preset** button. You can also click on the **Menu** and select **To Time Preset**.



- On either of the **Menu** buttons on LX consoles "Timing" tab on the Encoder Wheel Touchscreen.



The Record Time Preset dialog box opens and various options exist to control how these times are recorded and how they apply.



The Source pane allows you to filter the timing data that will be recorded by Intensity, Position, Colour and Beam. It also allows you to record the time data of the "Selected fixtures only". The Options pane allows you to name the Time Preset and to specify the:

"Application mode". Choose either:

- "Permutate". If the Time Preset was recorded using 3 fixtures and it is then applied to 12 fixtures, it will apply the Time Preset to the first 3, then apply it again to the next 3, the next 3 and so on. Permutate is the default setting.
- "Scale". A scaling Time Preset is created by selecting **only two fixtures** and setting one's attribute values to the start value and the other's attribute value to the end value. When this Time Preset is applied to a quantity of destination fixtures, the start value is applied

to the first fixture in the selection and the end value is applied to the last fixture in the selection. All of the other selected fixtures gets an intermediate value that is graduated between the start and end values.

“IPCB”. Choose either:

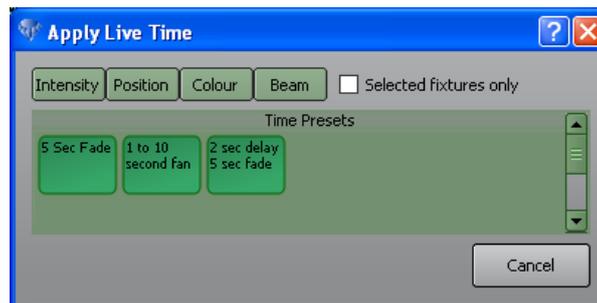
- “Common”. The Time preset will apply to any attribute type.
- “Separate IPCB”. The Time preset will apply to its specific attribute type.

The Preview pane shows a graphical preview of the resultant timing that will be saved in the Time Preset.

15.8.2 Applying Time Presets

Select fixtures and grab them in the programmer. To apply a Time presets:

- On the Programmers timing tab you will see the current times.
To apply a Time Preset to all timing groups click **From time preset**.
To apply a Time Preset to a specific timing group and click the **MENU** button of that group then select **From time preset**.
- On the LX consoles encoder wheel touchscreen’s **Timing** mode you will see the current times.
To apply a Time Preset to all timing groups click the bottom right **Menu** button then select **From time preset**.
To apply a Time Preset to a specific timing group and click the **MENU** button of that group then select **From time preset**.



You can optionally select which attribute groups (IPCB) to which the Time Preset will be applied then select the required Time Preset to apply it.

15.9 APPLYING PALETTES

If you select **Time** in the Palettes window you can use any time presets that you have recorded to control the timing for Presets and Freetsets that you apply. See section 19.14.3 for details.

15.10 THRUSTERS

Thrusters allow for global speed control of Cuelists, Chases and Dynamics (FX) Rate and Dynamics (FX) Size.

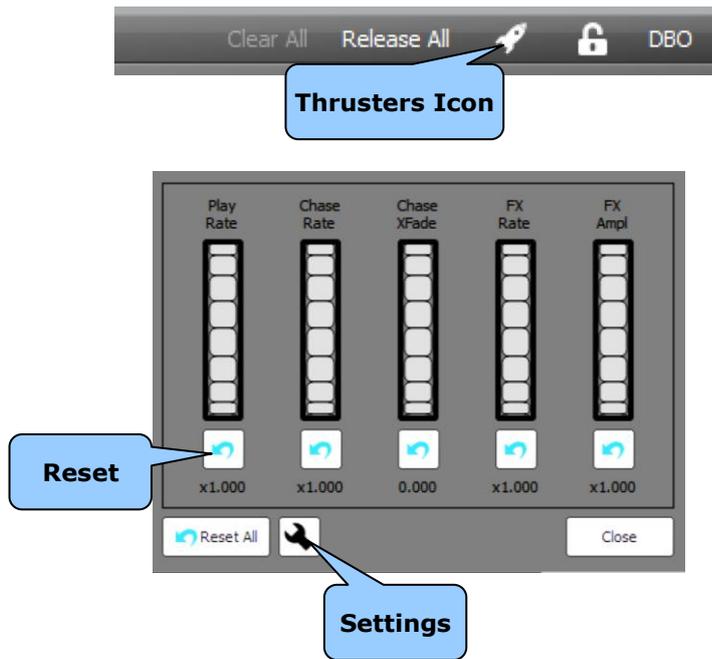
There are three ways to access the thrusters:

- Selecting the “Thrusters” icon.
- Assigning thrusters to faders on LX consoles or VX wings.
- Momentarily changing the encoder wheels on LX consoles to become thrusters.

A red box flashes around the Thrusters icon when any value(s) have been altered by any of the thrusters.

15.10.1 Thrusters Icon

- Touch the thrusters (rocket) icon on the toolbar to access the thrusters.

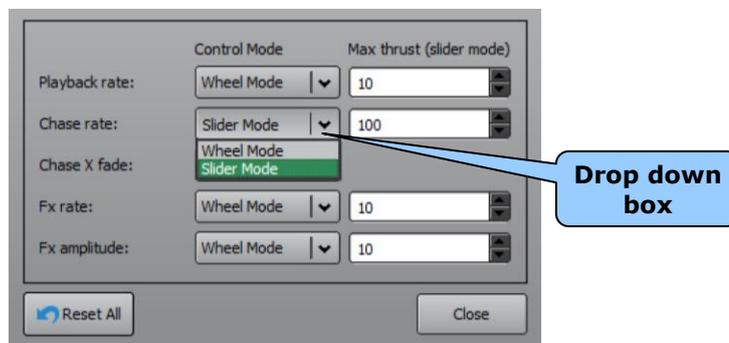


There are 5 controls:

- "Play Rate" temporarily overrides all of the timing information (wait, delay and fade) of all of active cues. Default = x1.
- "Chase Rate" temporarily overrides the rate of all running chases. Default = x1.
- "Chase Crossfade" temporarily overrides the crossfade between steps on all running chases. Default = 0
- "FX Rate" temporarily overrides the rate of all running effects (dynamics). Default = x1
- "FX Amplitude" temporarily overrides the amplitude of all running effects (dynamics). Default = x1

The amount of offset applied by each thruster is shown below its reset button. Each thruster can be individually reset by touching its Reset button. Touching **Reset All** resets all thrusters.

Touching the "Spanner" icon opens the "Settings" dialog which allows you to change the way that the thruster controls operate. Touching the drop down box allows you to select either a continuously variable "wheel" or a "fader" that sets an absolute value. When set as a fader they are linear from "x0" at the bottom of the fader to "x1" at the halfway point. The range from halfway to the top of the fader is exponential. The maximum value can be set from "x2" up to "x100". The default maximum is "x10". The "Max thrust" setting also affects thruster faders on LX consoles and VX wings. See 15.10.2.



Thruster Settings



Chase Rate controlled by a fader

15.10.2 Thruster Faders on LX consoles and VX Wings

On LX consoles and VX wings, thrusters can be freely assigned to any fader(s).
LX Consoles



and the faders on LX consoles and VX wings between a wheel or an absolute fader.

- On LX consoles thrusters are instantly available on the encoder wheels by holding down the **Function** button.
- Turning an encoder alters the value and pressing the encoder resets the value to default (x1).
-

Press button to access thruster GUI controls to set value and reset one/all.

16 Dynamics (real time effects)

16.1 OVERVIEW

Dynamics can save you hours of programming time by creating movement from an otherwise static cue. Dynamics mode allows you to add modulation (variation) to any attribute or combination of attributes.

When a cue has been played back, the attribute values will normally be steady on the recorded values in that cue. Dynamics add movement by continuously varying the (selected) attribute values. These varying values are created by waveforms. Different waveforms (such a sine wave, a ramp or a square wave etc) have different shapes and therefore cause different movements. Varying the rate, phase, duty cycle etc of a waveform will cause a corresponding change in the attributes that it controls.

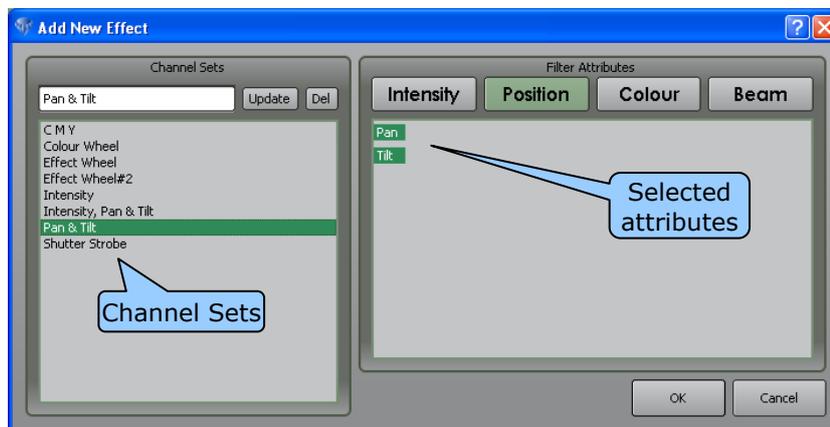
Dynamics are created in the programmer and can be recorded as part of a cue or as a Preset or Freeset.

Clarity comes pre-loaded with some Presets that contain dynamics such as circles and ballyhoos. These are known as "Dynamic Presets". If you select some fixtures and apply a dynamic preset then return to the Dynamics window you will see the values that have been applied to create the effect. Progllets can also be used to create and control dynamics. See section 22.

16.2 APPLYING DYNAMICS

Select the required fixtures then select **Dynamics** mode (on the encoder touch screen on LX consoles or in the Programmer window on Desktop Clarity) and select **New**.

The **Add New Effect** dialog box appears:



The **Channel Sets** pane on the left provides quick-access to some predefined attribute combinations. Touch on a channel set to select it.

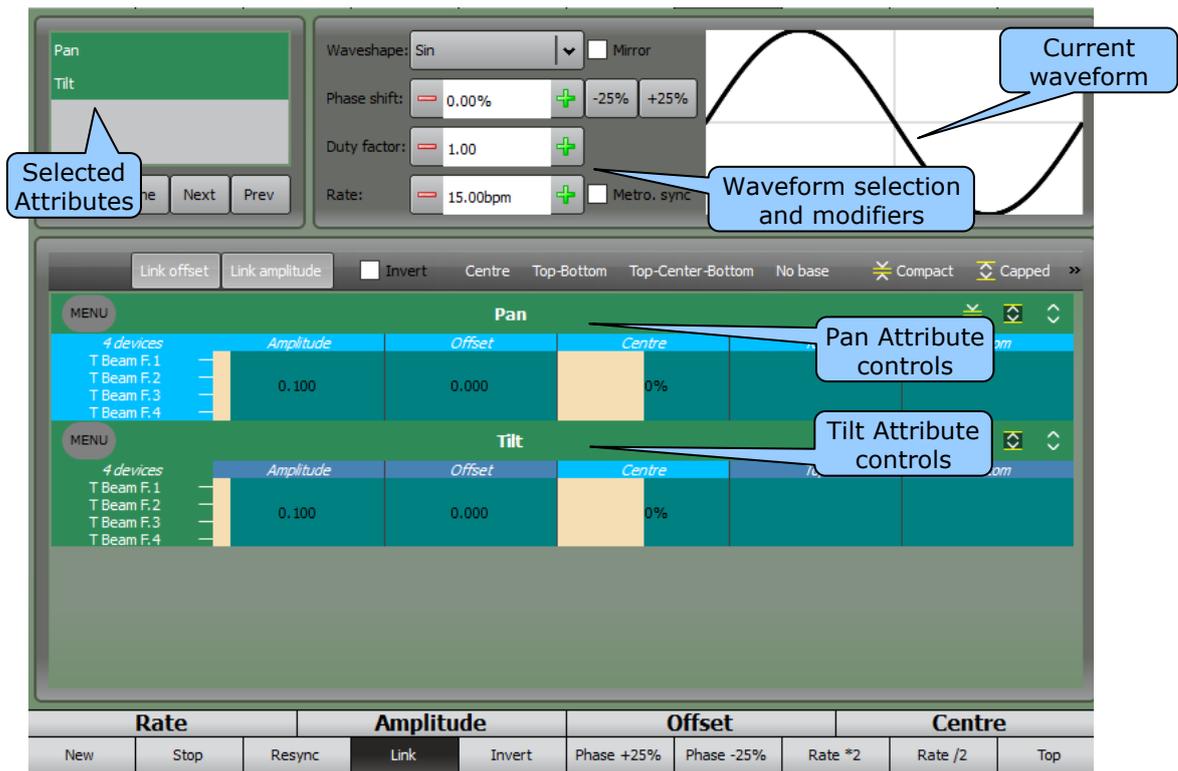
The channel set selected in the left pane can be further filtered in the right pane by touching Intensity, Position, Colour or Beam or on the individual attributes. Combinations of attributes can be selected by using by dragging.

If you select a channel set, then alter the selection of attributes in that channel set, you can save your new selections by either updating the current channel set or saving your selections as a new channel set.

- To update an existing channel set, make your new attribute selection then click on **Update**.
- To add your own channel set, click on the name box below **Channel Sets** and type a new name then click **Add**. The **Update** button changes between **Add** or **Update** depending whether the name entered matches a name in the list.

When you have selected the attributes to which dynamics are to be applied, click **OK**. A separate set of **Amplitude**, **Offset**, **Centre**, **Top** and **Bottom** dynamics Attribute Controls will appear for each attribute.

16.3 CONTROLLING DYNAMICS



The list at the top-left of the pane shows the attributes that you selected for dynamics to be applied to and at the bottom are the sets of dynamic Attribute Controls, one set per attribute.

The controls in the centre allow you to select a waveform and to modify various aspects of that waveform. The current waveform including the effects of the selected modifiers is shown on the right.

16.3.1 Waveform Control

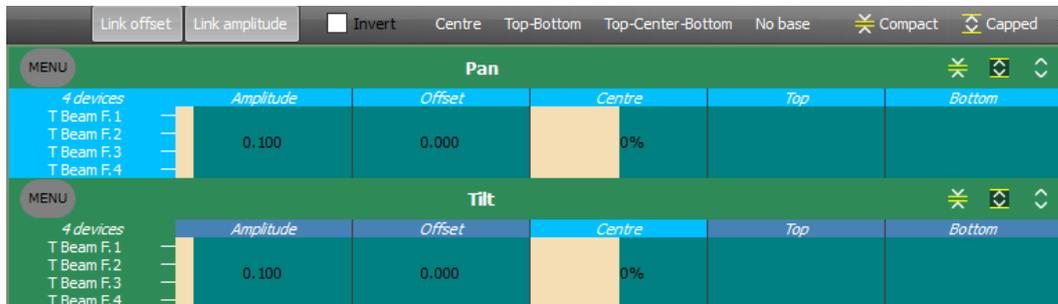
The following selections control the waveform:

- **Waveshape:** Select the waveshape used to modulate the selected attribute(s) by clicking on the drop down arrow. The available waveshapes are: Sine, Triangle, Square, Ramp-up, Ramp-down, Hump, Random (slow, med or fast), Random (Slow snap, Medium snap or Fast snap).
- **Phase shift :** when working with multiple attribute types (e.g. pan & tilt) each attribute can have its own phase offset from the others. The -25% and +25% buttons provide rapid phase shift alterations.
For example, if a sine wave is used to modulate Pan and Tilt, selecting only the Pan and setting its offset to 25% will achieve a circle.
- **Duty factor:** this controls how much of the total time is spent 'within' the waveform itself.
For example, if duty factor is set to 1, the waveform runs continuously. If duty factor is set to 2, the waveform runs for half of the time then waits for the other half of the time before it runs again. You can use this in conjunction with offset (see below) to establish chase type effects.
- **Rate:** Sets the rate of the modulation in bpm (Beats per minute).
- **Mirror** check box: Doubles the waveform and reflects it about the middle.
- **Metro. Sync:** Synchronizes the stepping of the waveform to the Performance window's metronome.

On the LX consoles, buttons at the bottom of the encoder wheel touch screen provide quick variations.

16.3.2 Dynamics Attribute Controls

The dynamics Attribute Controls allow you to modify the values that are applied to each individual fixture attribute being modulated by the selected waveform. The values can be directly changed by dragging with the mouse in their respective Attribute Control and they work in the same way as regular Attribute Controls. You can also select an attribute control by touching it or clicking on it and then apply a value by selecting a preset or using the colour picker in the Programmer.



Dynamics Attribute Controls

The **Offset**, **Centre**, and **Amplitude** Attribute Controls control how the waveform is applied to the attributes.

- **Amplitude:** sets the size of the waveform and hence the size of the effect.
- **Offset:** defines the starting position on the overall waveform. Offset is commonly used to spread the spacing of an effect between several fixtures. For example, a sine wave is applied to the position attributes of 4 fixtures. Only Pan is selected (filtered) and phase shifted by 25%. This produces a circle effect with all 4 fixtures focused on the same point as they move around the circle. Select both Pan and Tilt then fully fan the "Offset" values. The beams of all 4 fixtures are now evenly spaced apart as they move around the circle.

Hint: To fully fan the Offset, right click on Offset then select "Full Fan".

Hint: You can use Duty Factor in conjunction with the offset control to create interesting chase-type effects.

The **Centre**, **Top** and **Bottom** Attribute Controls can be used in different ways depending upon the selection of the **Centre**, **Top-Bottom**, **Top-Center-Bottom** or **No Base** buttons.

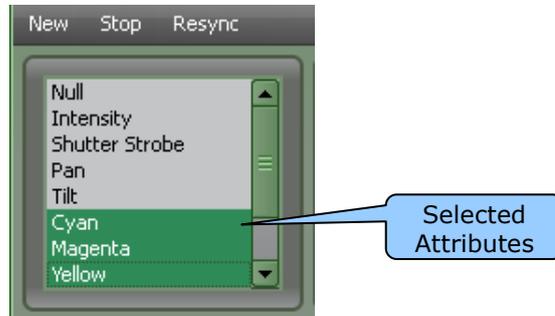
- **Centre:** uses just the **Centre** value with **Amplitude**, so that the centre value is modulated with an amount controlled by the amplitude.
- **Top-Bottom:** uses the **Top** and **Bottom** values together with **Amplitude**, so that the attribute moves between the top and bottom extents. **Amplitude** controls how far the output value travels towards the top and bottom value.
- **Top-Center-Bottom:** is the same as **Top-Bottom**, except that there is also a **Centre** value so that the output value can be asymmetrical.
- **No Base:** in this mode no base attribute values are specified, so that the current attribute value (e.g. from another cue-list) is modulated by the waveform. For example, this would allow you to create a cue that defines a circle effect that could be played over the top of any other cue-list, such as a cue-list that moves the circle position between points on the stage.
- **Link offset and link amplitude:** are for multi-attribute operation so that all attributes can be adjusted simultaneously. For example, when adjusting the size of a circle effect, clicking **Link amplitude** allows you to adjust the amplitude of both Pan and Tilt simultaneously by adjusting only Pan's Amplitude Attribute Control.
- **Invert:** this check box inverts the waveform for the selected fixtures. For example, to achieve a can-can effect, set a row of fixtures to tilt up and down. Next, select only the odd fixtures and tick **Invert**.

Selecting **Menu** allows you to reset all values to their defaults.

16.4 MULTIPLE ATTRIBUTE DYNAMICS

To control another attribute by dynamics click **New**.

The "Add New Effect" dialog box opens and you can select another attribute or multiple attributes as described at the start of this section. When multiple attributes are being controlled by dynamics you can select which attributes to alter by touching them. Combinations of attributes can be selected by dragging.



Each selected attribute(s) can have its own waveform and modifiers selected.

For example, select the pan and tilt attributes of a fixture and set them to a sin waveshape running at 15 cycles/min. Click on pan (only) select a different waveform and double the pan speed to 30 cycles/min. You now have a figure of eight effect.

16.4.1 Stopping Dynamics

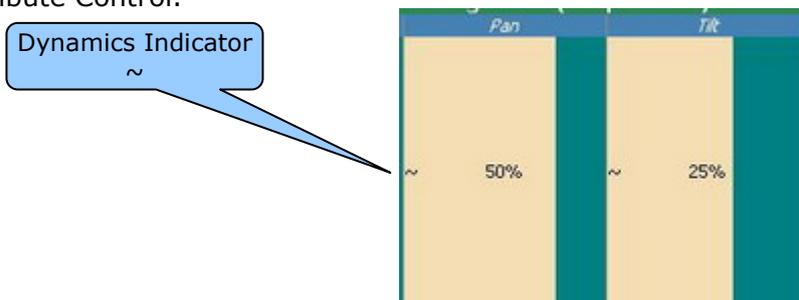
To remove the current dynamics from an attribute, select the attribute then select **Stop**.

16.4.2 Resync

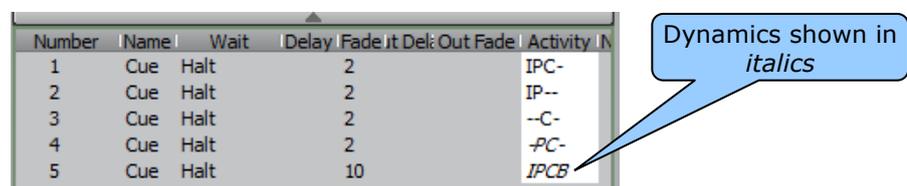
Selecting **Resync** (Re-synchronize) forces all current attribute waveforms to the same starting offset. Resync is useful if different waveforms are being used and you have adjusted the rate of one of them, causing it to get out of sync. If you then set it back to the original rate it will possibly still be out of sync with the other waveforms. Selecting **Resync** will restore the synchronization of the waveforms.

16.4.3 Attribute Control Dynamics Indicators

In the Universal, Direct or in the Programmers Attribute tab, any grabbed attributes that are currently being modulated by a Dynamic effect have a sine wave symbol on the left of their Attribute Control.



In the Control Booth's list of cues in a cuelist, in the activity column, when dynamics have been applied, the characters showing the attribute groups (IPCB) are shown in italics.



17 Matrix

17.1 OVERVIEW

The Programmers **Matrix** window allows you to place fixtures on a two dimensional grid and then display static or moving imagery on them. Therefore, the fixtures output can be tightly integrated into a complete lighting and visual show. Clarity allows you to control and program the imagery just like any another lighting fixture. The imagery can be displayed in colour on RGB, RGBA and RGBW (Red, Green Blue, Amber, White) LED fixtures or in monochrome on any fixtures that have an intensity channel.

When you patch LED arrays, Clarity automatically sub-divides them so that you can either work with the entire array or access the individual cells. For LED types that don't have dedicated intensity channels, virtual intensity channels are automatically created.

17.2 TERMINOLOGY

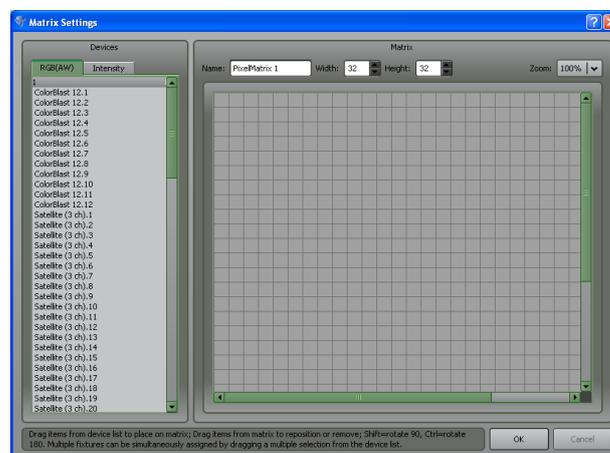
- Pixel Matrix
This is the physical mapping of lighting fixtures onto a rectangular area.
- Pixel Source
Each Pixel Matrix contains one or more Pixel Sources. You can add Pixel Sources to a Pixel Matrix by clicking **New Source**.
- Media
Each Pixel Source can contain one or more media files. You can add media to each Pixel Source by selecting that Pixel Source and clicking **Add Media**.
- Virtual Fixture
Clarity creates a virtual fixture for each Pixel Source. Virtual fixtures appear in the **Selection Sidebar** in the **PixSrc** tab as "PixelSource.1", "PixelSource.2" etc. This allows Clarity to treat each Pixel Source just like a regular lighting fixture. It can be manipulated in the programmer (media selection, size, position, shape, speed, etc), recorded into cues and it can also be controlled by Presets and Dynamics (real-time effects).

17.3 PATCHING A LED MATRIX

In the **Patch** window, select your manufacturer/model of LED matrix and patch the appropriate quantity to the DMX locations (addresses) that match the addresses of the fixtures. See section 11, "Patch" for details.

17.4 CREATING A MATRIX

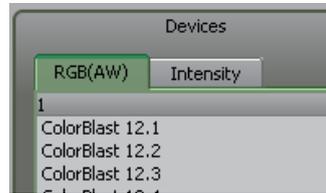
In the **Matrix** window, select **New Matrix** to create a new Pixel Matrix and display the Matrix Settings dialog box:



Use the controls at the top to select the appropriate width and height of the matrix to suit your physical array. You can enter a descriptive name for the matrix in the **Name** box.

The available (patched) devices are listed on the left-hand side and are divided into two categories:

- RGB(AW). All fixtures that use Red Green Blue colour channels including those with Amber or White. Typically these are LED arrays.
- Intensity. All fixtures with an intensity channel.



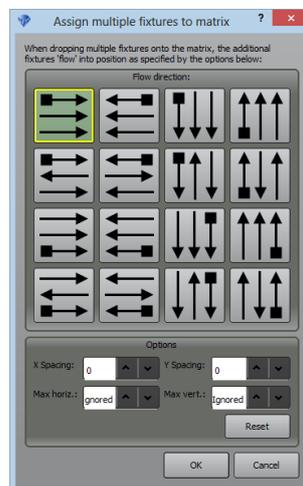
To setup a matrix select the category that matches your type of fixture then select your fixtures then drag them into place on the matrix.

Multiple fixtures can be selected by using **Function** + click (Shift + click on desktop version). You can rotate the device by 180° by holding **Function** whilst dragging. Double tapping **Function** rotates it by 90°.

You can also rotate the device whilst dragging, by using an external keyboard and holding the **Shift** key (90°) or **Ctrl** (180°) or both (270°).

If you use fixtures from the Intensity tab, the resultant output from the matrix will be in monochrome.

When multiple fixtures are selected and dragged onto the matrix, drop the fixtures at the starting point on the matrix from where the fixtures will be assigned. When the fixtures are dropped the **Assign multiple fixtures to matrix** dialog will appear and allow you to specify in what order you would like the selected fixtures to be laid out in the matrix.



The default order is left to right, top to bottom but you can select any of the ordering methods. In the "Options" pane you can set the "X and Y Spacing". If you enter a spacing number then that number of gaps will be left between the fixtures in the matrix. You can also limit the quantity of horizontal and vertical lines to which your selected fixtures will be applied to the matrix. To apply your selected fixtures to the matrix click **OK**.

When the fixtures are on the matrix they can be dragged to reposition them if required. To remove a fixture from the matrix, drag it back to the device list.

When all fixtures are correctly placed on the matrix, click **OK**.

A **PixSrc** tab is automatically created in the Programmer’s “Selection Sidebar”. It contains the virtual fixtures that are associated with each Pixel Source as described above.

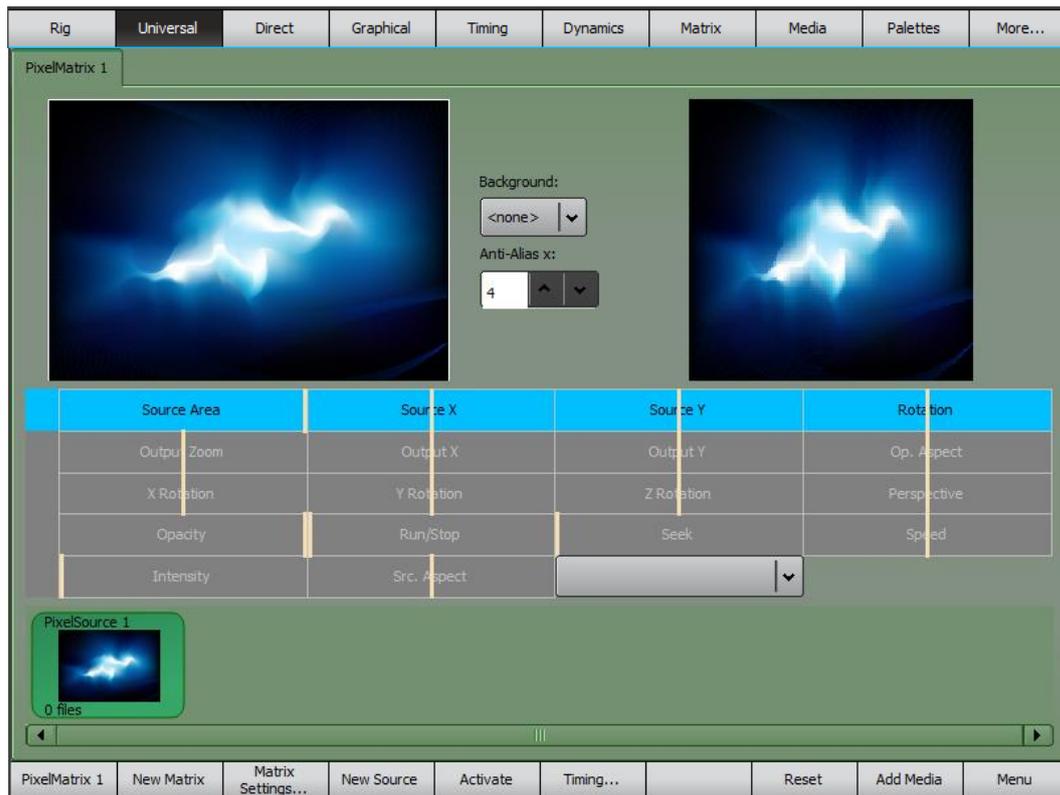
17.5 EDITING A MATRIX

To edit or check the settings of an existing matrix click **Matrix Settings** on the **Matrix** tab's toolbar. Editing a matrix uses the same methods as “Creating a Matrix” described above.

17.5.1 Deleting a Matrix

To delete a matrix, select the tab for the matrix to be deleted then click **Delete Matrix** on the **Matrix** tab's toolbar.

17.6 MATRIX CONTROL



LX console Matrix screen

The left hand image is a view of the source media for the selected Pixel Source and its cursor shows where the source areas transforms will be applied. In the example above, the cursor is full screen.

The right hand image shows you a preview of how the various transformations will affect the output image.

The transformations to the image are controlled by sliders in the centre section of the screen. A default media “place holder” image (coloured swirls) is shown until you add your own media files.

At the bottom of the view are the available Pixel Sources for the selected Pixel Matrix. Each Pixel Matrix can have one or more Pixel Sources assigned to it.

On LX consoles, the **Menu** button provides access to the following functions.....

- Activate
- Viewer
- Perf. Check
- Delete Matrix
- Delete Source

On Desktop Clarity these functions are on the toolbar. They are described below.

17.7 TRANSFORMS

In the middle of the screen are the transformation controls:

Source transform options allow you to isolate sections of the source area, change the source aspect ratio, apply rotation and control moving image playback.

Click and drag anywhere within each slider box to vary the setting.

- **Source Area.** Adjusts the size of the source area window allowing you to select all or only some of the source image.
- **Source X.** Adjusts the horizontal position of the source area window.
- **Source Y.** Adjusts the vertical position of the source area window. You can also click on the actual source window and drag its position.
- **Rotation.** Rotates the source image about the Z axis.
- **Source Aspect.** Adjusts the aspect ratio of the source image.
- **Seek.** Sets the current (still) frame of a movie, but only when the "Run / Stop" control is paused (at 0).
- **Run/Stop.** If the current media is a movie file, then this starts, stops or restarts the movie. When set to zero, playback is paused, and above zero, playback is running. If the control is moved to full, then the movie restarts from the beginning.
- **Speed.** Set the playback speed.

The remaining controls affect how the selected Pixel Source image is mapped onto the matrix. Output transformations allow you to scale and position the resultant image and apply rotation in the x, y and z planes. Perspective adds perceived depth to x and y rotations.

- **Output Zoom.** Sets the size of the output image.
- **Output X.** Adjusts the horizontal position of the output image.
- **Output Y.** Adjusts the vertical position of the output image. You can also click on the actual output image and drag its position.
- **X Rotation.** Rotates the output image about the X axis.
- **Y Rotation".** Rotates the output image about the Y axis.
- **Z Rotation.** Rotates the output image about the Z axis.
- **Perspective.** For X & Y rotation this controls the apparent perspective, and is more noticeable with larger matrices and/or higher anti-alias values (see below). To see the effect of this, zoom the output image out a little and set **Perspective** to full. When you then apply X or Y rotation you will notice that the image has a pronounced '3D' quality to it.
- **Op. Aspect.** Adjusts the aspect ratio of the output image.
- **Intensity.** Adjusts the intensity of the output image
- **Opacity.** Adjusts the opacity of the output image

Anti-Alias x: is not a recordable attribute. This effectively multiplies the size of the output image so that each LED gets an average of a number of pixel values, rather than just mapping to a single colour. Generally this achieves smoother movement on the LED with higher values, but at the expense of some computer processing speed. This is automatically set to an appropriate value when the matrix size is set.

Background: allows you to layer Pixel Sources. See section 17.14.

Reset sets all source image and output image controls to their default values.

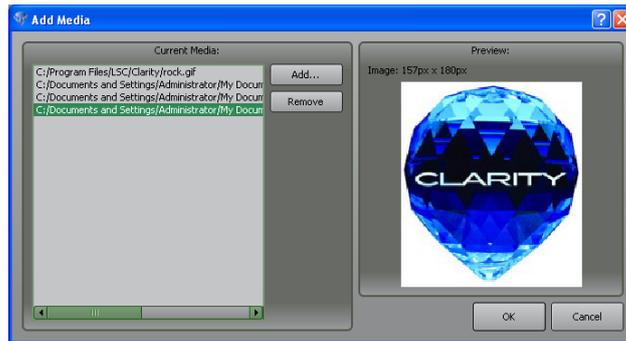
17.8 ADDING MEDIA TO A PIXEL SOURCE

Multiple media (still images or movies) can be added to a pixel source and then any one of the media can be selected. Many common static and FFmpeg image formats are supported.

To add media to a Pixel Source either:

- Select the Pixel Source (by clicking on it) then click **Add Media...**, or
- Right click on the Pixel Source and select **Add/Remove Media...**

The **Add Media** dialog box appears:



The media files currently assigned to the Pixel Source (if any) are shown on the left.

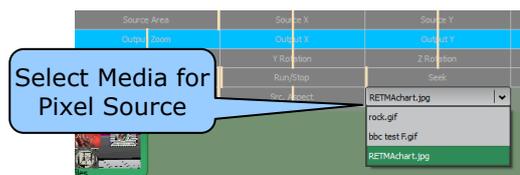
- To add media click **Add...** then select the file.
- Clicking on a file in the **Current Media** pane shows a preview in the **Preview** pane.
- To delete media, select the file then click **Remove**.

When finished click **OK**.

Note: When media is added to Clarity from elsewhere (audio files, images/movies, rig backgrounds), Clarity automatically adds it to the Clarity media folder. See section 30 for more details.

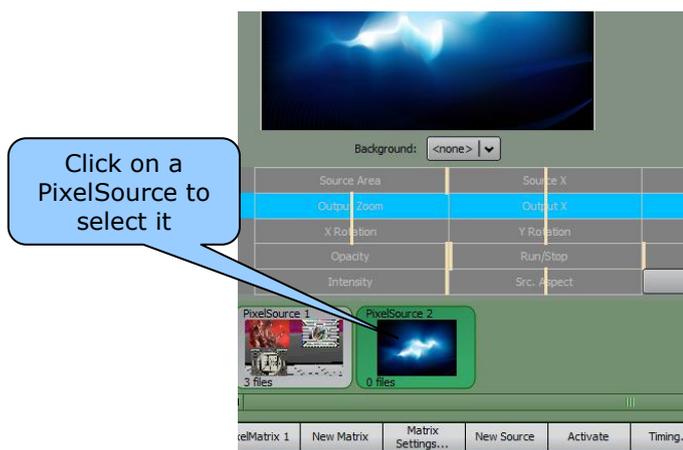
17.9 SELECTING MEDIA IN A PIXEL SOURCE

To select any one of the loaded media for a Pixel Source, select the Pixel Source by clicking on it then click on the drop down box at the bottom of the transform controls and select the required media.



17.10 ADDING AND DELETING PIXEL SOURCES

To create a new Pixel Source click **New Source**. The new pixel source appears at the bottom of the pane and it is automatically selected. Media is added to the new source as describe above. Clicking on a pixel source selects that pixel source.



To delete a Pixel Source click on that Pixel Source then click **Delete Source** or right click on the Pixel Source and select **Delete**.

17.11 VIEWER

Clicking **Viewer** activates the viewer window which allows you to see exactly what will be sent out to the pixel matrix. Images will not be shown on the output until the Pixel Source has been activated. See below for details.

17.12 ACTIVATING A PIXELSOURCE

Up to this point, all of your media selections and image transforms have been applied to the Pixel Sources (virtual fixtures) and grabbed in the current programmer session. No intensity information (media images) has been grabbed by the current programmer or sent to the output.

When you select a Pixel Source and click **Activate**, the relevant channels of the actual LED fixtures that make up your matrix are grabbed into the current programmer session so they can be recorded to the desired cue. The transformed image is sent to the LED matrix and you can also see it in the viewer (*see above*). The LED cells of your matrix array are sent intensity values that are calculated based on the current transforms (if any) and the current media data. This media data might be constantly changing if the media is a movie file.

- If you record a cue without clicking **Activate**, the cue will only contain any transformations and media selections that you have made.
- If you record a cue after clicking **Activate**, the cue will also contain the relevant channels of the actual LED fixtures to which the media data will be sent.

These choices allows you to create cues that only control the transforms or cues that only select the media or cues that control both the transforms and media.

For example:

Program a chase that only varies the image transformations of Pixel Source 1

Program a cue-list that performs transitions between Pixel Source 1 and Pixel Source 2 but does not contain any transforms.

17.13 ACTIVATING SELECTED CELLS

Selecting **Menu** then **Activate selected cells** allows you to activate a selected range of cells. You select a range of cells by dragging on the right hand preview image with the right mouse button.

Only the selected cells are included when a cue is recorded.

This allows you to isolate selectable areas of the matrix so that you could have different Pixel Sources applied to the different areas or you might want to control some areas of the matrix by conventional programming using the Attributes tab. You can right click (without dragging) to clear the selection rectangle.

17.14 PIXEL SOURCE LAYERING AND TRANSPARENCY

If you use multiple Pixel Sources you can blend the media files from each Pixel Source. Each Pixel Source can have any other Pixel Source set as its Background. If you vary the **Opacity** of the foreground image, then the background can blend into the foreground.

If the foreground PixelSource image file contains transparency, then the background image will be visible through the transparent parts of the foreground image.

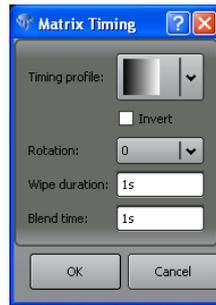
To select a background for a Pixel Source, select that Pixel Source then click in the **Background** drop down box and select another Pixel Source as the background.

Note: The background calculation is only performed one level deep - it is not possible to cascade backgrounds through more than one level.

17.15 PIXELSOURCE TRANSITIONS

You can transition between different Pixel Sources (and hence between different media) by recording them into successive cues in a cue-list. This transition is in the form of a timed wipe.

For example, add another Pixel Source (above) and add some media files to it. Select the required media for the next look on the new Pixel Source. Click **Activate** then click **Set Timing**. The **Matrix Timing** dialog box appears.



- **Timing profile** is a graphical representation of the direction of the wipe. Click the drop down arrow to select other wipes. In the example above, the wipe goes from left to right (from dark to light).
- **Invert** reverses the direction of the wipe.
- **Rotation** allows simple rotation of the wipe. Click the drop down arrow to select 90, 180 or 270 degrees.
- **Wipe duration** controls the speed of the wipe.
- **Blend time** controls how long each pixel takes to transition.

In the above example, the total crossfade time would be 2 seconds.

With the wipe selected, append this to the cue-list as the next cue (remember to **Activate** the Pixel Source).

You can add additional wipes as simple monochrome images that you can easily create with any paint program. Contact LSC for details.

17.16 DYNAMICS

You can add continuous dynamic effects to any of the transforms by using dynamics tab. Select the **Dynamics** tab then click **New**.



Select the attribute(s) to which you want to add dynamic effects then click **OK**. See "Dynamics (real time effects)", section 1 for more details.

17.17 RECORDING MATRIX SETTINGS

Matrix Settings are recorded as a cue in a cue-list, just like recording cues for regular lighting fixtures. The values that you set are grabbed in the current programmer (together with any timing values that you might set in the timing tab) and are included in any cues by clicking on the **Record** button. See "Record", section 24 for details.

18 Media

18.1 OVERVIEW

Media servers provide video and graphics playback for visual projection on video screens or LED walls. Clarity allows you to control media servers and program them just as if they were another lighting fixture. Therefore, their output can be tightly integrated into a complete lighting and visual show.

18.2 PATCHING MEDIA SERVERS

Media servers that you control from Clarity must be patched just like you would patch a lighting fixture. Many media servers use a "master" fixture that controls global aspects of the server such as brightness, contrast, mask, keystone etc. Each layer of the media server is also patched as a separate fixture. Servers usually require that the master and layers are patched in a contiguous fashion. This means that the last DMX channel used by the first fixture of the server must be immediately followed by the first channel of its next fixture, etc.

- In the **Patch** window's **Library** pane, select the manufacturer then the model of the media server. Drag and drop the media servers "**master fixture**" and each "**layer fixture**" onto the required DMX universe and starting slots (as set in the media server).

Refer to your Media Servers documentation for details on its DMX control and set-up.

18.3 NETWORK CONNECTION

Media servers broadcast their presence over Ethernet. If Clarity is on the same network, it picks-up these broadcasts and automatically connects to supported media servers. Clarity will then download the available thumbnails of the media in the server. Usually these are just media thumbnails but some will also supply effect thumbnails. Most media servers also broadcast their configuration, including their number of available layers and patch status. Once thumbnails are downloaded they are saved to a cache file so that they are available for (off line) programming without the physical media server being connected.

When the show is loaded, if the media server is not physically present, "cached" is shown on the relevant media.

18.4 CONFIGURATION

To configure a media server, in the encoder wheel touch screen's **Media** mode select **Menu, Configure, Auto Configure, OK**.

When a new media server is discovered on the network, its identity (name and IP address) is compared to the existing cached servers. If the identity of the new media server exactly matches that of an existing cached media server then it is automatically used. If the new media server has not been used before, a Configuration Wizard is displayed to walk you through some configuration choices. These choices include whether to replace another existing cached media server and whether to patch new matching devices or re-use some existing patched devices that are suitable for this media server.

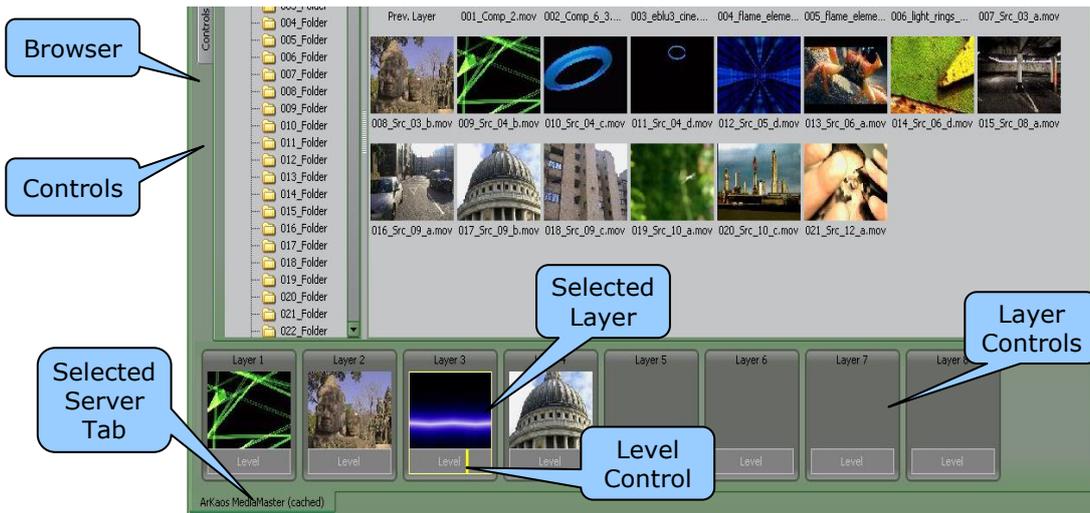
18.4.1 Reload

The thumbnails for the selected media server can be updated by reloading them from the server. Select the tab of the media server to be reloaded (described below), then on the toolbar click **Reload**. A progress bar shows the status of the reload operation.

18.5 MEDIA SERVER OPERATION

In the Programmer window, the **Media Servers** tab allows you to control a media server in the same manner as you would program the attributes of a lighting fixture and then to record your settings as cues in a cue-list. You can of course include Timing values and Dynamics in the cues that you record. *See the "Timing" and "Dynamics" sections for details.*

The available media servers are organized into individual tabs at the bottom of the screen and each server has two sub-tabs, the **Browser** tab and the **Controls** tab.



Media Server Browser tab

18.5.1 Browser

The **Browser** tab shows the available folders in the left hand pane and the contents (media items) of the selected folder in the right hand pane.

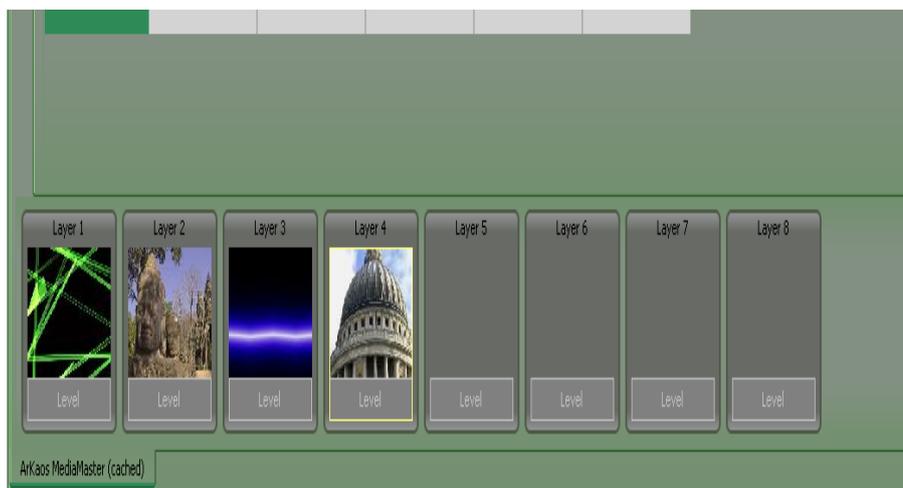
At the bottom are the "Layer Control" Attribute Controls, one for each patched media layer of the selected server.

- Select a **Layer** Attribute Control by clicking on it. The selected Layer has a yellow border.
- Clicking on a media item in the browser selects that item and sends it to the selected layer.

The output **Level** control at the bottom of each Layer Control Attribute Control can be varied by dragging with the mouse.

18.5.2 Controls

The **Controls** tab shows all of the attributes of the selected layer including the media selection and **Level** attributes controlled from the **Browser** tab.



Media Server Controls tab

Click on a layer to select it then use the Attribute Controls to adjust that layers settings. The available attributes will vary depending upon the type of Media Server that has been patched. Typical attributes are: effects, rotation, zoom, copy mode, masks, transitions etc. etc. These are varied by dragging in the Attribute Controls, just like controlling lighting fixtures.

18.6 RECORDING CUES

Media server settings are recorded as a cue in a cue-list, just like recording cues for lighting fixtures. The values that you set are grabbed in the current programmer together with any

timing values that you might set in the **Timing** tab and dynamics set in the **Dynamics** tab and are included in a cue by clicking on the red **Record** button. See *section 24, "Record" for details*.

18.7 SUPPORTED MEDIA SERVERS

Clarity currently supports the open-standard CIMP/MSEX protocol as well as the Hippotizer HMAP protocol for thumbnail exchange.

The following media servers are supported by Clarity.

- Green Hippo's Hippotizer.
- ArKaos VJ DMX.
- ArKaos Media Master.
- Pandoras Box.
- Catalyst.
- ROBE Digispots.

19 Palettes

19.1 OVERVIEW

Palettes is the home of groups, presets and freesets that you record and also for Clarity’s in-built library of groups, presets and freesets ready for you to use. (Freesets are a special type of preset described below). Every group and preset is automatically allocated a number by Clarity which can be used to select that group or preset when using command line (keyboard) programming.

Palettes can be found in **Palettes** window and also on the on the LX console’s encoder wheel touch screen’s **Palettes** mode. Both displays show the same palettes but they vary slightly in their presentation and features.

The displays can be viewed in the following categories:

1. All
2. Groups
3. Colours
4. Positions
5. Beam
6. Dynamics
7. Page Bookmarks
8. Timelines
9. Favourites

When **All** is clicked the screen is divided into five panes of Groups, Position, Beam, Colour and Dynamics. The panes can be freely re-sized by clicking and dragging on the pane dividers.



Palette’s Window with “All” tab selected



Encoder touch screen Palettes with “All” tab selected

Clarity automatically creates a group for every different type of fixture that has been patched. These group icons have bevelled corners. Groups that you record have icons with rounded corners.

Clarity also comes pre-loaded with a library of default Freesets. Freeset icons also have bevelled corners and Preset icons have rounded corners.

Hint: You can choose not to load the default Freesets when you change a show. See section 30.2.2

Automatically generated groups and library freesets cannot be edited however they can be duplicated and the copy can then be edited and renamed by right clicking on it.

When you record a group it will appear in the Groups category and when you record your own presets and freesets they are automatically sorted into the appropriate category of Position, Colour or Beam, depending upon the attribute(s) that they will affect.

Note that a single preset can exist in multiple panes, e.g. a preset that contains colour and position will appear in both the colour and position panes, but there is still only a single preset.

See section 19.12 for more details on palette icons.

19.2 ARRANGING PALETTES AND GROUPS

If you click **Safe (arrange)**, all presets, favourites and groups become **inactive**. This allows you to re-arrange and organize the individual presets or group icons by dragging and dropping them without activating them.

To re-activate the window click **Safe (arrange)** (toggle action).

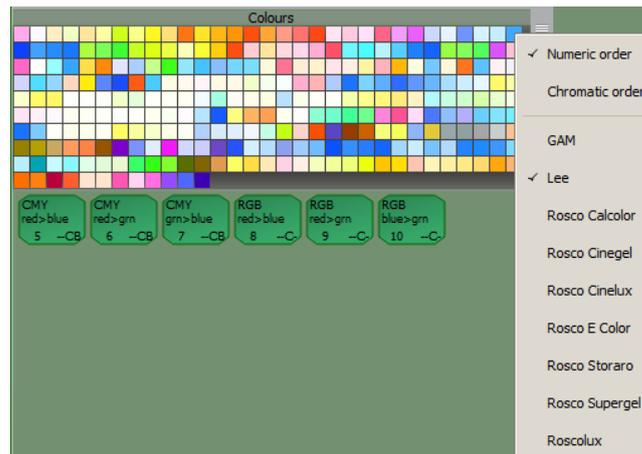
The icons in each pane can be automatically arranged at any time by **right-clicking** in a blank area of the pane and selecting **auto-arrange**.

19.3 GROUPS

A group is a selection of fixtures. Groups can be created by selecting the required fixtures in the required order and selecting **Record** then **Group** and entering a name. The selection order in the group is used by Clarity when applying effects and freesets. Groups can also be recorded in the programmer by selecting the fixtures and clicking **To Group**.

19.4 COLOUR PRESETS

The Colours Presets pane shows the colour presets and freesets. It has a configurable standard swatch colour picker. You can select between Lee, GAM and various Rosco colour swatches and can display the colours in either chromatic or numeric order. Right-click to configure the display.



Hover the mouse over a colour to see a larger view preview of that colour.

19.5 BEAM PRESETS

The Beam Presets pane shows the beam presets and also shows the gobos for the currently selected fixtures.



Hover the mouse over a gobo to see a larger view preview of that gobo.

19.6 FAVOURITES

Right clicking on any individual preset or group and selecting **Favourite** makes this preset or group also available under the **Favourites** tab. The same process can be used to remove a preset or group from the favourite's window.

The Favourites tab contains the **Favourite Groups** and **Favourite Presets** panes which can also be freely re-sized by clicking and dragging on the pane dividers.

Favourite presets are also available in a Favourites tab in the Programmer window for quick access to favourite palettes without selecting the Palettes window.

19.7 PRESETS

A preset is a special type of memory that can be recorded and recalled. It is stored with specific fixtures numbers or fixture types and usually with only specifically selected attributes (for example, only focus values). When a preset is applied to selected fixtures, they will change to the attribute values recorded in that preset. If a cue is then recorded, a reference to the preset is included in the cue, not the actual attribute values. When the cue is played back, it will automatically recall the values from the preset.

Multiple cues can include a link to the same preset. If a preset is updated, any cue that contains a reference to that preset will use the updated information.

For example:

Some Fixtures are focused onto the centre rostrum on stage and their focus (position) is recorded as a preset (named centre rostrum). You now record the cues for your show by creating different looks and recording each look as a cue. If a cue is to include the fixtures focused on the centre rostrum, you select the fixtures then apply the centre rostrum preset and record the cue. You might program 20 different cues that include the centre rostrum preset. The centre rostrum is now moved down stage by 2 meters so those 20 cues will no longer light the rostrum. You grab the centre rostrum preset in the programmer and adjust the position of the fixtures to the new down stage position and update the preset. All of the 20 cues that include the centre rostrum preset will now automatically recall the new position.

Presets can also be nested. That is, a new preset can be constructed from other presets. Presets can also contain dynamic (real time effects) values. *See section 1, Dynamics for more details.*

19.7.1 Fixture Specific Presets

If you record a preset that contains multiple fixtures with different values for each fixture, then that preset will be applicable only to the specific fixtures used to record the preset.

19.7.2 Fixture Type Presets

If you record a preset that contains a single value or if all values of the selected fixtures are the same, then the preset is recorded against the fixture type. The preset will then be applicable to all fixtures of that type, even ones added afterwards.

19.8 FREESETS

Freesets are fixture independent and store values that can be generically applied to any selected fixtures, no matter what the type. When freesets are used to set fixture attribute values and the look is recorded in a cue, the current value from the Freeset is translated to suit the destination fixtures and stored in the cue.

Note that because values are translated when the Freeset is applied, Freeset updates won't affect existing cues.

The advantage of freesets is that the values in a Freeset are automatically re-interpreted to suit the destination fixture. For example:

Select a dimmer and set its intensity to 100% then record it as a Freeset.

Select a Clay Paky Stage Scan then apply that Freeset to it.

The Freeset interprets the value and knows that a Stage Scan's intensity attribute must be set to 128 for it to output full intensity. If the same Freeset is applied to a dimmer it will set its intensity to 255.

The same applies to all attribute groups.

- Record a blue Freeset and apply it to any fixture that has colour ability and it will output blue.
- Record a chase Freeset and apply it to any type and quantity of fixtures and they will chase.
- Record a fanned tilt Freeset and apply it to any type and quantity of moving fixtures and they will fan their tilts.

Freesets can also contain dynamic (real time effects) values. See section 1, "Dynamics" for more details.

19.8.1 Permutating Freesets

Freesets “permutate” their values onto the destination fixtures. If the Freeset was recorded using 3 fixtures and it is then applied to 12 fixtures, it will apply the Freeset to the first 3 then apply it again to the next 3, the next 3 and so on. Permutate is the default setting.

For example:

A Freeset is created from 4 fixtures at 25%, 50%, 75% and 100% intensity.

When it's applied to 4 fixtures they will be set to 25, 50, 75 and 100%.

When it's applied to 8 fixtures the first 4 will get 25, 50, 75 and 100 and the next 4 will also get 25, 50, 75 and 100%.

19.8.2 Scaling Freesets

A scaling Freeset has only two values, a start value and an end value. When this Freeset is applied to a greater quantity of destination fixtures, the start value is applied to the first fixture in the selection and the end value is applied to the last fixture in the selection. All of the other selected fixtures gets an intermediate value that is graduated between the start and end values.

A scaling Freeset is created by selecting only two fixtures, and setting the first fixtures attribute values to the start value and the other fixtures attribute value to the end value. It is then recorded with the “Scale” option selected in the Create Preset dialog box (below).

For example:

Select 2 fixtures and set them to different colours. Record this as a Freeset and select the “Scale” option in the record dialog box. When this Freeset is applied, it will use the two colours as the start and end values thus creating an evenly spread rainbow across any quantity of selected fixtures.

19.9 DYNAMIC PRESETS

Dynamic presets are presets or freesets that contain dynamics (real time effects). See section 1, “Dynamics” for more information on dynamics. Clarity includes many dynamic presets in its inbuilt library, ready for you to use or you can create your own as described below.

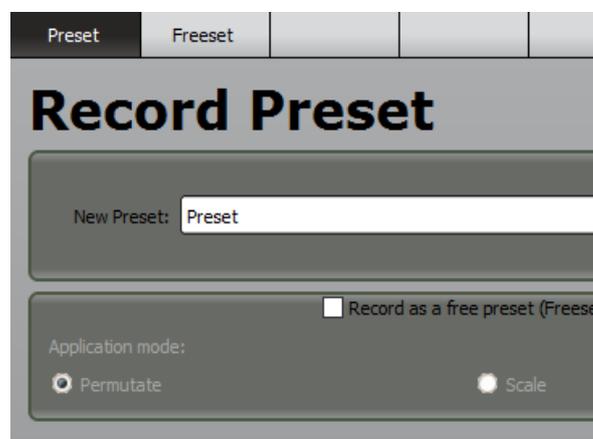
When a dynamic preset is applied, the selected attributes will be modulated by the dynamic effect.

19.10 RECORDING A PRESET OR FREESET

To record a Preset or Freeset, select the fixtures to which the Preset or Freeset will apply then using the programming controls (or other presets) set the attributes to the desired values or apply dynamics.

Either:

- Press **Record, Preset.**
- In the Programmer tab, click **To Preset** and the Record Preset dialog box appears.



The Contents pane automatically includes any attribute types that have been grabbed by the programmer by enabling the appropriate mask (Intensity, Position, Colour or Beam). You can

change the attribute masks by clicking on them. When an attribute mask is Green, it is included. A name for the preset can be entered in the name box.

Note that Intensity is excluded by default unless you are recording an intensity only preset.

Selected Fixtures only. When this check box is ticked, the attribute values that are recorded into a preset are only those of the selected fixtures in the programmer. Un-tick the box to record all grabbed attributes in the programmer.

If you applied any dynamics to the attributes, the Preset or Freeset that you recorded will automatically be placed in the Dynamics pane of the Palettes window.

Clicking the drop down arrow beside the name box and selecting one of the existing preset or Freeset names allows you to choose the appropriate **Update option** to either **Merge** with, **Remove** or **Replace** an existing preset or Freeset.

To record as a Freeset, tick the **Record as a free preset (Freeset)** check box. When this option is selected, you can also select the Freeset **Application mode:** as either **Permutate** or **Scale**. Scale is available when only 2 fixtures have been selected.

See "Scaling Freesets" above for more details.

Activate recorded preset. When this check box is ticked, the preset will be automatically activated in the programmer.

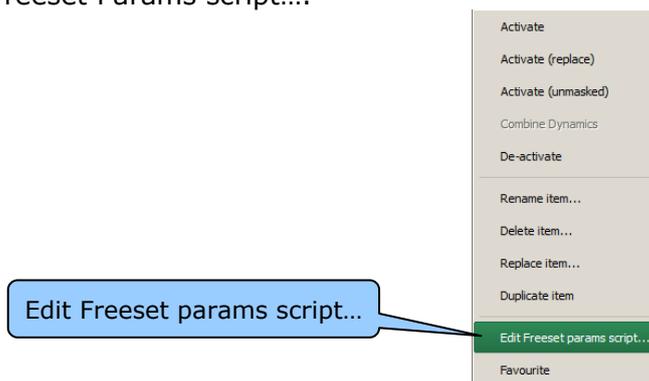
Set as Favourite. When this check box is ticked, the preset will be automatically added to the "Favourites" tab in the Palettes and Programmer windows.

19.11 FREESET PARAMETER SCRIPTING

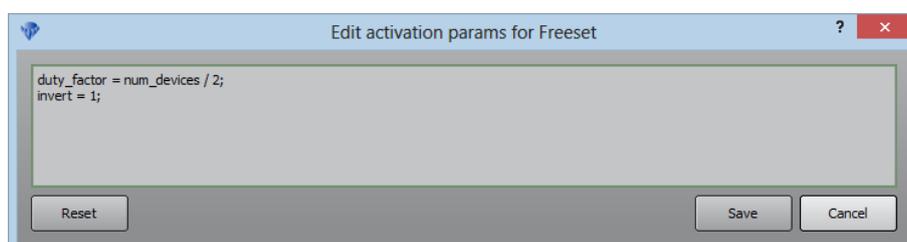
When you apply a dynamic freeset, the values for the dynamics are copied from the values stored in the freeset (for a permutating freeset) or calculated from the start and end values stored in the freeset (for a scale freeset) and applied to the Dynamics.

You can change the way that the dynamic effect parameters in the freeset are applied to the selected fixtures by adding some script commands to the freeset.

The scripts are accessed in the Palettes window by right clicking on a Freeset and selecting "Edit Freeset Params script..."



The "Edit activation params for Freeset" window pops up....



- Many of the Freesets that come with Clarity already have scripts to obtain their desired effects. Right click on some of these Freesets and take a look at the scripts.
- New Freesets that you have recorded will not have a script but will show a page of script instructions. The instructions are ignored in the script because they are preceded by two forward slashes as described below.

In the example above, Freeset number 14, "Chase" has the following script...

```
duty_factor = num_devices / 2;  
invert = 1;
```

If you click **Reset** it will delete any existing scripts and show the page of script instructions. You can either delete the instructions or leave them as they do not affect the script. Type in your script using the available commands as listed below.

All expressions in a script must be followed with a semicolon and are in the form:

```
variable = value;  
    where "value" is a literal value.
```

For example:

To assign a new value, the script might say:
phase_shift = 25;

or they can be in the form:

```
variable = value operator value;  
    where "value" is the name of an existing variable.
```

For example:

To assign a value based on an existing variable the script might say:
duty_factor = duty_factor * num_devices / 2;

The dynamic effect parameters that you can override by using a script are:

cycles	The rate in bpm.
phase_shift	Phase shift (0 to 1)
duty_factor	Duty factor
mirror	switch (0 = off, 1 = on)
invert	switch (0 = off, 1 = on)
amplitude	switch (0 = off, 1 = on)
offset	switch (0 = off, 1 = on)
strict_offset	switch (0 = off, 1 = on)

These parameters can be set to a specific literal value or to some special values that depend on the target fixture to which the freeset is being applied.

"Offset" and "Strict Offset".

Normally the offset is calculated in a special way that suits the 2 values of a scaled freeset so that the waveform is evenly distributed over the 'from' and 'to' offset values.

For example: the original scaled freeset would have the 'from' value as offset=0 and 'to' value as offset=0.5. When applied to 2 fixtures the target fixtures get those exact values. When applied to 3 fixtures they get 0, 0.33, 0.66. When applied to 4 fixtures they get 0, 0.25, 0.5, 0.75 etc.

When strict_offset is enabled (set to 1) then this calculation is skipped.

For the same examples as above: 2 fixtures get 0, 0.5; 3 fixtures get 0, 0.25, 0.5; 4 fixtures get 0, 0.166, 0.33, 0.5 etc.). Strict-offset can be used for the Medium Wave and Long Wave freesets.

There are several pre-defined variables that you can use. The examples below show the values for 8 fixtures.

`num_devices` The number of fixtures that the freeset is being applied to. For example, 8.

`device_index` This will identify the position of the current device within the target group as a whole number (i.e. 0 to `num_devices-1`). For example, first gets 0, second gets 1, last gets 7.

`device_position` The decimal "proportion" calculated from the fixture being applied to. For example, first gets 0, second gets 0.125, third gets 0.25, last gets 0.875). It is equivalent to `device_index / num_devices`.

You can name your own variables as intermediate values. For example,

```
fred = num_devices - 1;  
offset = device_index / fred;
```

This would set `offset` so that the first fixture gets 0 and the last fixture gets 1 and the intervening fixtures are evenly distributed.

`Repeat` This will divide the Freeset `n` times over the target devices. This is the same as "Subgroups" in the Programmer. For example: `repeat = 2`; This will split the target selection into 2 halves and apply the Freeset to each half independently.

`Blocking` This is the same as "Buddying" in the Programmer.

You can write comments that will be ignored in a script by prefixing the comments with a double forward slash. For example, `//All text until the end of the line will be ignored.`

19.11.1 Sample Scripts

The following lines are some script examples:

```
duty_factor = num_devices;  
// this will scale a chase effect to suit the number of fixtures.
```

```
duty_factor = num_devices / 2;  
// similar to the above, this will scale with a bit of overlap.
```

```
repeat = 2  
// this will split the selected fixtures into 2 groups and apply the freeset to each half independently.
```

19.12 PALETTE ICONS

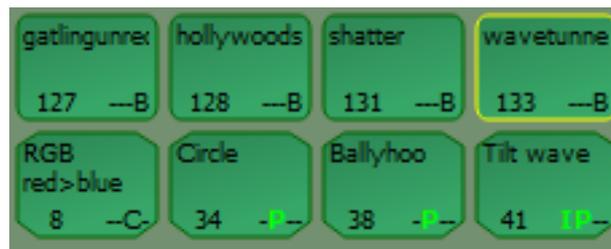
19.12.1 Group Icons



Group Icons

- Each group icon displays its name and a number.
- The number can be used for keyboard entry of groups.
- Clarity automatically creates a group for every different type of fixture that has been patched. These group icons have bevelled corners. These groups cannot be edited or deleted.
- Groups that you record have icons with rounded corners.
- When the icon has a **Yellow border**, the group is selected.
- If the border is **dotted**, only some of the fixtures in the group are selected, possibly by another group or by the current programmer.
- Clicking on an icon selects that group (refer to “Selection phase vs. Programming phase” earlier in this manual).
- If you right click on a Group icon you can choose...
 - **Activate**. This is the same as clicking on the group.
 - **Activate (replace)**. Selects this group **ONLY** and removes other selections.
 - **De-activate**. Deselects this group.
 - **Rename**.
 - **Delete**.
 - **Update**. Updates the group with the current fixture selection.
 - **Favourite**. Adds/removes this group in the Favourites tab.

19.12.2 Preset & Freeset Icons



Preset & Freeset Icons

- Each icon has the name of the preset or freeset and its number.
- A freeset icon has bevelled corners.
- A preset icon has rounded corners.
- The bottom right shows the attribute group(s) contained in the preset or freeset. I (Intensity), P (Position), C (Colour) and B (Beam).
- If the attribute group letters are **bright green**, then the preset or freeset contains **dynamics** (real time effects).
- A green background indicates that the preset or freeset can be applied to the currently selected fixture(s).
- A grey background indicates that the preset or freeset cannot be applied to the selected fixture(s).
- Clicking on a (green) icon applies that preset or freeset, subject to the masking rules described below.

- A yellow border indicates that the preset is currently in use. Since freesets are applied using hard values, there is no concept of 'in use' for freesets. Hence they only flash their border yellow as they are applied.

19.12.3 Preset and Freeset Shortcuts

If you right click on a Preset or Freeset you can choose the following shortcuts...

- **Activate** This is the same as just clicking on the preset or Freeset.
- **Activate (replace)** This activates this preset or freeset and removes all other programming from the selected fixtures.
- **Activate (unmask)** This activates this preset or freeset and applies it to all attributes in the preset (momentarily turning off auto mask, *see below*).
- **Combine Dynamics** Only available for presets. Allows a dynamic preset to be combined with any existing dynamics that have been applied. The resulting combined effect can also be recorded as another preset.
- **De-activate.** Clears all programming from the affected attributes.
- **Rename.** Enter a new name.
- **Delete.** The preset or freeset is instantly deleted. No undo.
- **Replace.** Only available for freesets. Freesets cannot be updated, but can be replaced with a new version. Previously recorded cues are not affected by the replaced freeset.
- **Duplicate.** Only available for freesets. Makes a duplicate that you can edit to create a variation of the original freeset.
- **Update.** Only available for presets. Updates the preset with the current programmer's settings for the attributes in the preset. The updated preset will be used when any cue with a link to that preset is played back.

19.13 APPLYING PRESETS AND FREESETS

Preset and freeset can be applied from the Palettes, Programmer or Performance windows or directly by keyboard command.

See section 26, "Performance Window" for details on how to use presets and freesets in the Performance Window.

19.13.1 Keyboard Commands

Every preset and freeset has a number. On an LX console, you can apply a preset or freeset number to the currently selected fixtures or to a group or to a playback. For example:

- To apply a preset to the currently selected fixtures press: **Preset, #** (enter a number on the keypad), **Enter**.
- To apply multiple presets to the currently selected fixtures press: **Preset, #, Preset, #, Preset, #, Enter**.
- To apply a preset to a group press: **Group, #, Preset, #, Enter**.

19.13.2 Apply in Palettes Mode

The encoder wheel touch screens **Palettes** mode allows you to select fixture groups and apply presets or freesets by touching them.



Select the fixtures in the **Groups** pane and then select the presets or freesets to apply them to the selected fixtures. When fixtures are selected, any applicable presets or freesets turn green to show that they are available. Masking rules apply (see below) to presets or freesets in the **Position Presets**, **Beam Presets** and **Colour Presets** panes.

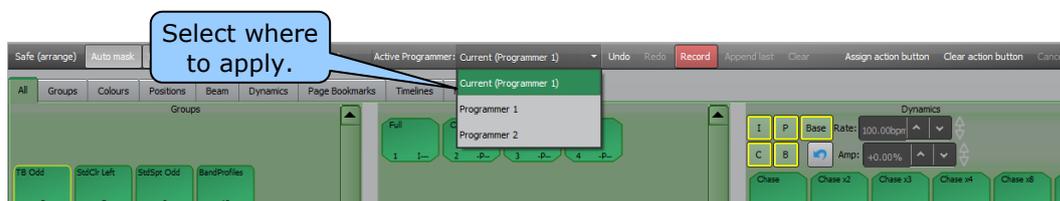
19.14 REMOVING PRESETS OR FREESETS

There are several ways to remove an applied Preset or Freeset.

- Right click on the Preset or Freeset and select **De-Activate**.
- If the Preset or Freeset was the last action select **Undo**.
- On desktop Clarity, if you hold down [Ctrl] (PC) or [Cmd] (Mac) and click on a Preset/Freeset it will be deactivated.
- On an LX console, if you hold down **Function** and select a Preset/Freeset it will be deactivated.

19.14.1 Apply in the Palettes window

The presets or freesets in the Palettes window can be applied to selected fixtures in either Programmer 1 or Programmer 2. Select the required programmer from the drop down selector.



If you select "Current" (default setting) the presets or freesets will automatically be applied to the programmer that is currently active in the Programmer window.

Select the fixtures in the **Groups** pane and then click on the presets or freesets to apply them to the selected fixtures. When fixtures are selected, any applicable presets or freesets turn green to show that they are available. Masking rules apply (see below) to presets or freesets in the **Position Presets**, **Beam Presets** and **Colour Presets** panes.

If you hold down [Ctrl] (PC) or [Cmd] (Mac) or **Function** on an LX console and click on a Preset/Freeset and it will be activated/deactivated with each subsequent click.

Also see "Build Mode" below for details on how to apply multiple presets simultaneously.

19.14.2 Build Mode

In the Palettes window, **Build** mode allows you to select combinations of groups/preset/freesets (with individual live timing as described below) and then trigger them all in one go.

On desktop Clarity the Palettes window has a **Build** button.

On LX consoles use the **Command** button.

When you click **Build** (Desktop Clarity) or **Command** (LX consoles), a command line appears at bottom of the screen. Now you can select a group or groups, select a time, select a preset (and repeat for any further combination of groups, times and presets as you wish) then press **Enter** to trigger them all in one go.

For example, you can “Build” a complex combination on the fly such as odd fixtures to the drummer and even fixtures to the guitar over 2 seconds with a fanned colour change over 5 seconds and a gobo snap after 10 seconds and then trigger it with a single press of the **Enter** key.

19.14.3 Live Times

In the Palettes window, Presets and Freesets are usually applied instantly when they are selected. When you are busking or Ad-libbing a show, you can use Clarity’s “Live Times” feature to apply Presets or Freesets over time and hence make smooth changes as you select each Preset or Freeset.

Selecting the **Time** button on the Palette window toolbar displays the “Live Times” dialog.



There are 3 methods of time selection:

1. Enter a time in the “Fade time” box (see below).
2. Select one of the time shortcut buttons.
3. Select a previously recorded Time Preset.

The entry in the “Fade time” box can type a simple fade time, a fade time range or a delay and fade time (with optional range). Use / to specify a range, d to specify a delay time and f to specify a fade time.

For example,

Fade Time Entry	Result
5	5 second fade
1/5	1 sec to 5 sec fade time spread across the selected fixtures
d2f2	Delay of 2 seconds then a fade of 2 seconds
d1/5f5/1	Delay of 1 to 5 seconds spread across the selected fixtures then a fade of 5 to 1 sec spread across the selected fixtures

The current entry in the “Fade time” box can be added to the shortcuts by clicking **+**. To delete a shortcut time, select it then press **-**.

Once a time is set or selected, the next Preset or Freeset that is activated will use the selection in the Live Times dialog.

By default, the Live Time value will be automatically reset every time that it is used. To retain the Live Time setting for continual use, un-tick the "Auto reset live time" checkbox.

By default, the dialog will close once a Preset or Freeset is triggered. You can keep it open by ticking the "Keep open when undocked" checkbox. You can also keep it open by docking it on the left or right edge of the palette window by dragging it to either side of the screen or by double clicking on its header to maximise it.

19.14.4 Apply Palettes in the Programmer window

On the Programmer tab, only "Favourites" palettes are available. To place palettes in the favourites tab, in either Palettes screen, right click on the palette and select "Favourite". Then, in the Programmer window, select the **Favourites** tab then click on the presets or freesets to apply them to the selected fixtures.

19.14.5 Masking

When you record a preset, Clarity automatically places it in the appropriate categories in the Palettes window according to the P (Position), C (Colour) and B (Beam) attributes that it contains. Intensity does not have a separate pane and is included in the Position pane. If a preset contains two categories (say C, B), it appears in both the Colour and Beam panes and if it contains all 3 categories (PCB) it will be in all 3 panes.

When **Auto Mask** is ON, (under **Options** on the encoder touch screens Palettes mode) activating a Preset from a Position, Beam or Colour pane, only applies the preset to that pane's type of attribute.



Encoder touch screen Palettes mode, Auto Mask.



Palettes tab, Auto Mask.

For example: A "CB preset" appears in both the Colour Presets and in the Beam Presets. When "Auto mask" is ON, applying the "CB preset" from the Colour Presets pane only applies the preset to Colour attributes of the selected fixtures. Applying the "CB preset" from the Beam Presets pane only applies the preset to Beam attributes.

When "Auto Mask" is OFF, activating a Preset from a category pane applies the preset to all types of attributes contained in that preset.

Hint: You can achieve the same result as Auto Mask OFF by right-clicking and selecting 'Activate (unmasked)'.

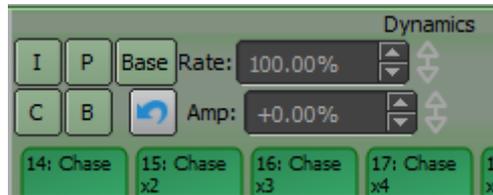
Presets and freesets in **Favourites** panes are applied to all of the attributes shown in their individual icons.

19.15 APPLYING DYNAMIC PRESETS

Presets and freesets in the **Dynamic Presets** pane are applied in the same manners as other Presets and Freesets (above) but you can also choose the following options that affect how the dynamics are applied and maintained.

19.15.1 Masking Dynamic Presets

If a Dynamic Preset or Freetset controls multiple IPCB (Intensity, Position, Colour, Beam) attribute groups, the IPCB filters in the Palettes window allow you to activate only the selected (IPCB) aspect of the effect. When an IPCB button is green, the dynamic will be applied to that attribute group.



Click either I, P, C or B to select only that attribute group. Hold **Function** whilst clicking to select multiple groups. The IPCB selectors also allow you to simplify your selection choices because only those Presets or Freetsets that affect the selected (IPCB) attributes of the effect are available.

19.15.2 Base

When a dynamic is applied, there is a base value plus a waveform that is applied over that base. Therefore, if you apply some programming to a fixture then apply a dynamic, the programming will be replaced by the base value plus the waveform.

For example, you position some fixtures to the right then apply a circle dynamic preset. The dynamic moves the fixtures to the centre (its base position) then causes them to circle around the base.

If you want to use your programming as the base for a dynamic effect you can do so by de-selecting the **Base** button. The Base filter masks the base values from dynamic Presets and Freetsets when they are applied.

For example, you position some fixtures to the right, de-select **Base**, then apply a circle dynamic preset. The circle will be added to the existing position values instead of replacing your position values with its base values.

19.15.3 Preserve Dynamics

Selecting a preset or freesets will usually replace any existing programming. There are times when you might want to apply a dynamic effect then apply a non dynamic preset or freeset to position the dynamic effect. To preserve any existing dynamics click **Preserve Dynamics** then apply the non-dynamic presets or freesets.



Encoder touch screen Palettes mode, Preserve Dynamics



Palettes tab, Preserve Dynamics

19.16 CONTROLLING DYNAMICS

The settings of the dynamics can then be varied by either:

- Selecting the Dynamics mode on the encoder wheel touch screen and adjusting the controls as described in the Dynamics section.
- Using the playback faders in “extended fader controls” mode. See section 8.7.16 for details.
- Using the “Rate” and “Amp” controls in the Palettes window.



To vary the rate you can either enter a value, click the up and down arrows or move the “spin box” roller which provides smooth variable control. Just click then drag with the mouse to activate a virtual spin roller wheel that adjusts the box values. When adjusting the value, you can drag over the entire height of the screen. If you hold [Ctrl] (PC) or [Cmd] (Mac) and click and drag, then when your mouse pointer moves above or below the virtual wheel it continues to spin with inertia.

When a dynamic effect is active in the rate control in the encoder wheel touch screen Dynamics mode will either display a “bpm” (beats per minute) value if all effects are at the same rate or a percentage change value if the rates are different. The amp (amplitude) control always displays a percentage change value.

19.17 DEACTIVATE A PRESET OR FREESET

To deactivate a preset or Freeset that you have applied, either:

- Press **Undo** immediately after applying the preset or Freeset
- Right-click on the Preset or Freeset and select **De-activate**. This removes all programming from the affected attributes.
- If you hold down [Ctrl] (PC) or [Cmd] (Mac) or **Function** on an LX console and click on a Preset/Freeset and it will be activated/deactivated with each subsequent click.

19.18 RECORDING CUES WITH PRESETS & FREESETS.

When you have created the desired look, record it as a cue using the **Record** or **Append last** buttons in the command centre. Cues containing a preset, only include a link to the preset so that if the preset is updated, the cue will use the updated values.

19.19 UPDATING A PRESET DURING PROGRAMMING

Attributes that have had a preset applied will display the name of the preset in their respective Attribute Controls as shown on the Encoder touch screen (Universal and Direct) and on the Programmer tab. If you adjust the attributes and want to update the preset to use these new values then either...

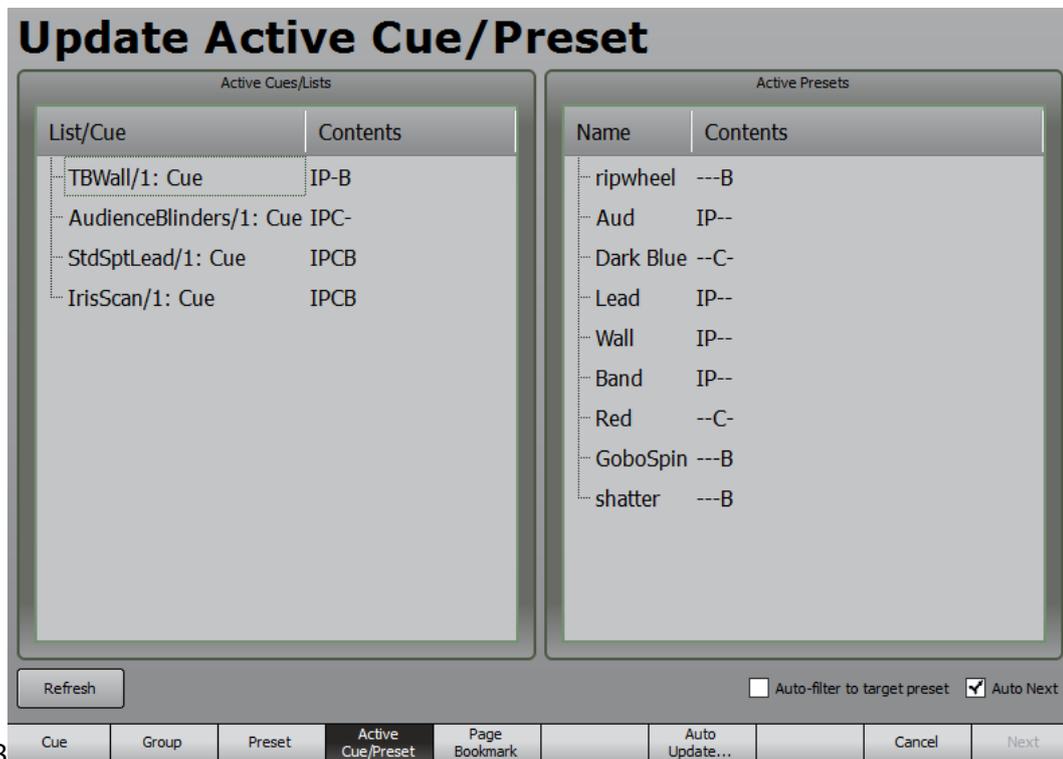
- Right click on the preset and select **Update item**
- Press **Record, Preset** then select the existing preset from the drop down box.



- To update the preset click **Record**.

19.20 UPDATING A PRESET DURING PLAYBACK

- Playback a cue that contains the preset.
- Press **Grab**. Attributes that have had a preset applied will display the name of the preset in their respective Attribute Controls as shown on the Encoder touch screen (Universal and Direct) and on the Programmer tab.
- Adjust the attributes to the new values.
- On the programmer toolbar, click **Update** and the Update dialog box appears:



- Select the Preset to be updated from the right hand pane then press **Next** then **Record**. See section 21.8.8 "Update" in the Programmer for more details.

20.2 CHANNEL CONTROLLER MODE

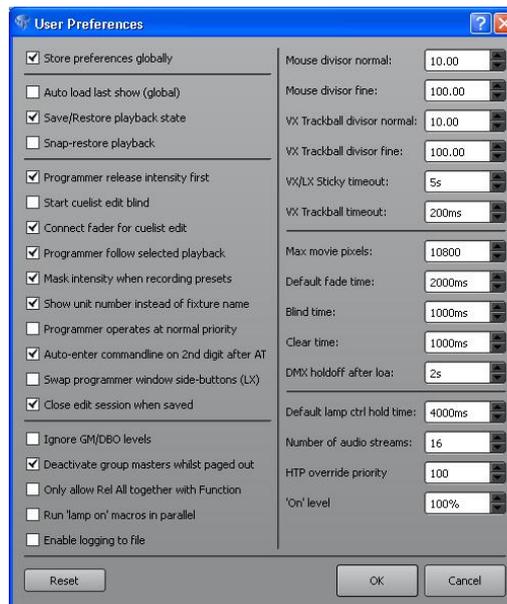
“Channel Controller Mode” is a method of lighting control commonly used in television production. Channel controller mode differs from “Programmer Mode” in that when a cue is edited the edits are live and the cue including its edited values remains under the overall level control of its playback master. Therefore if the playback master is at 100% then editing is live to stage, if the fader is at zero, the edits cannot be seen on the output. If the fader is at 50%, it is live to stage, but dimmed to half levels.

In Channel Controller mode, the edit session can remain open and the edited cue can be used without necessarily updating the original cue. This is useful for a “one off” edit that might not be required when the same cue is used again at a later time or on another day. The playback’s master still fades the cue up and down and if the cue-list is advanced to the next cue the edit session automatically keeps track. If the edit is to be kept, the changes are saved back to the original cue. If the edits are not to be kept the edit session is closed and the changes are discarded.

20.2.1 Settings for Channel Controller Mode

Channel controller mode of operation is achieved by the selection of certain user preferences and by the method in which Clarity is operated.

On the main menu click **Show, Preferences** and set the following User Preferences:



- **Start cue-list edit blind.** Not ticked.

Now when you edit a cue-list, the edit session will be live <on stage>.

- **Connect fader for cue-list edit.** ✓ Ticked.

If a cue-list on a playback is edited, the playbacks intensity fader controls the output level of its edit session.

- **Programmer follow selected playback.** ✓ Ticked.

If multiple edit sessions are open, the current session being edited will follow the selected playback.

- **Show unit number instead of fixture name.** ✓ Ticked.

This preference is not essential for Channel Control mode but it aids its operation because it shows the “unit number” of the selected fixtures name in the programmer attributes tab. The unit number is used when selecting fixtures using “command line” programming. Command line programming can speed up fixture selection. *See section 23 for details.*

20.2.2 Operating in Channel Controller Mode

When playing your show you can basically forget about the programmer. If you playback cues and you want to make changes, you edit the cue by pressing **Edit** and then any flashing button of the playback to be edited. The edit session opens in live mode. Select channels (use number

keypad entry for speed) and change levels using the intensity wheel. "Intensities" mode gives you an instant picture of the output intensity levels. The cue can still be faded up or down with the playback's master. Multiple cue-lists can be edited at the same time and the edit sessions will follow the selected playback and the active cue on that playback.

To keep the changes click **Save** (updates to the current playback) or to revert to the original cue values on the playback click **Close / Discard**.

Hint: If you record several cue-lists that only contain one cue each and load them onto playbacks, set the "Go on fader up" option for each cue-list. Now each playback will always be active when it is faded up.

21 Programmer

21.1 OVERVIEW

The Programmer window allows you to:

- Select Fixtures.
- Select Groups.
- Create new Groups.
- Control fixture attributes.
- Adjust timing and preview moves.
- Record cues and presets.
- Renumber fixtures.
- Grab the values of a DMX input.
- Flip selected attributes.

21.2 PROGRAMMER ATTRIBUTES TAB

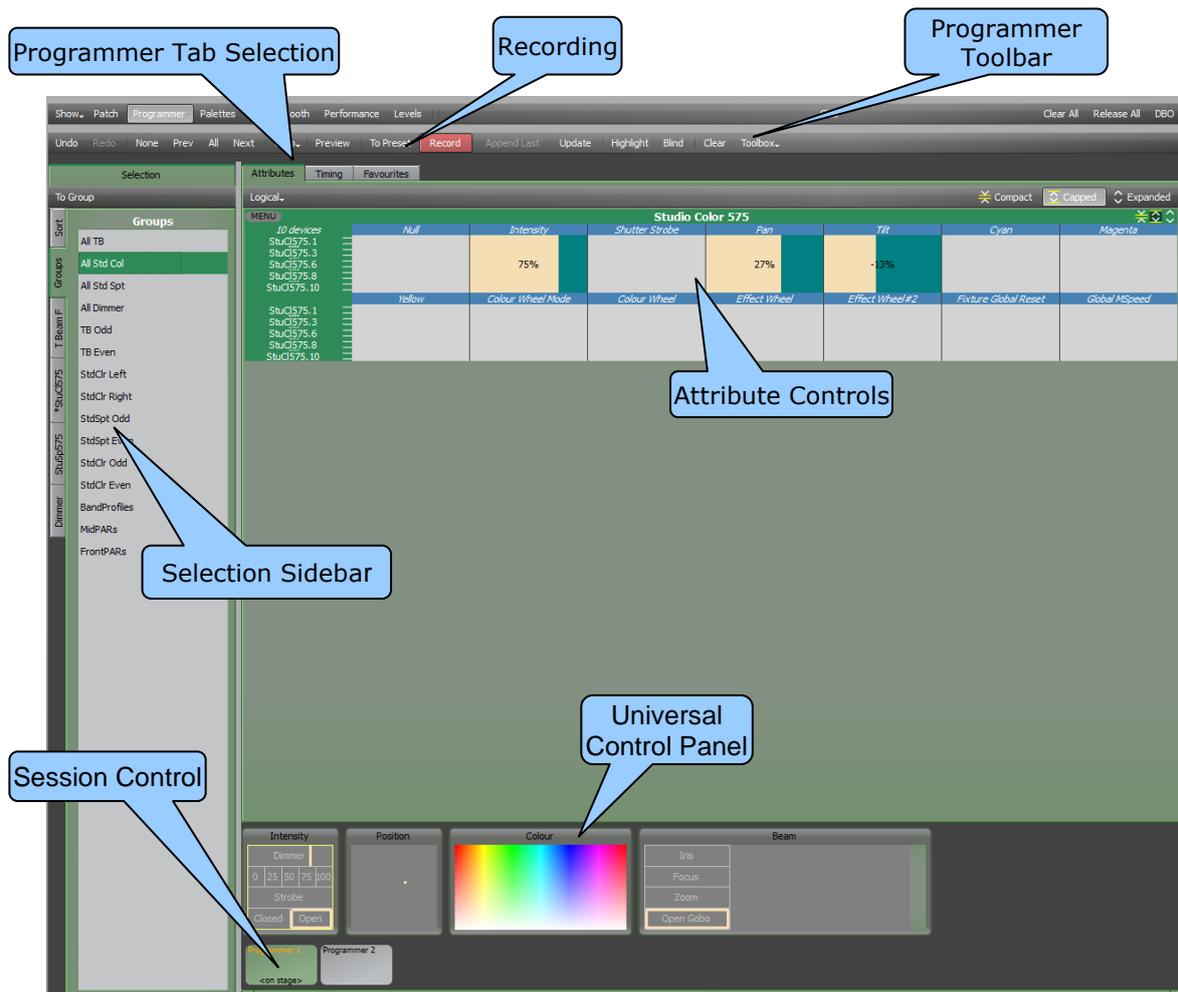
The "Selection Sidebar" is where you select fixtures.

"Session Control" is where you select a Programmer (2 available) in which to create your looks.

The Programmer Tabs are where you select what you want to control, Attributes, Timing or Favorites. When the Attributes tab is selected, the Attribute Controls that appear for the selected fixtures allow all attributes of those fixtures to be controlled.

The "Universal Control Panel" at the bottom the programmer can be used to control any type of selected fixture and provides basic controls. Just like Universal mode on the encoder wheel touch screen it allows you to control different types of fixtures at the same time.

The **To Preset**, **Record** and **Append Last** buttons allow you to record your programming.



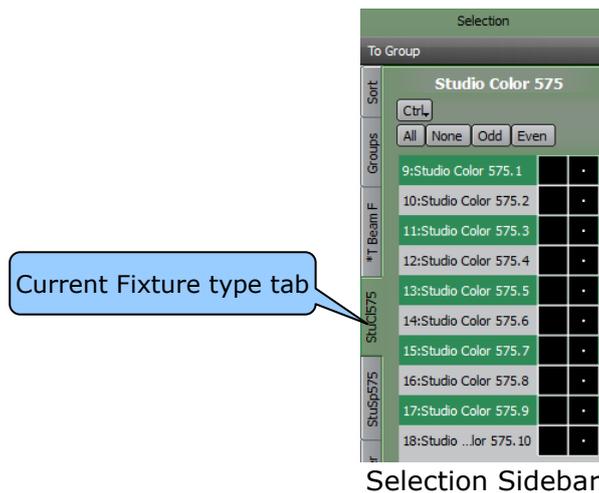
Programmer Window with Attribute tab selected

21.3 SELECTION SIDEBAR

All patched fixtures are available in the "Selection Sidebar". Patched fixtures are automatically organized into tabs of each fixture type and the **Groups** tab automatically contains a group for every type of patched fixture. You can create your own groups and add them to the groups tab. The **Sort** tab provides additional fixture sorting. Fixture tabs can be renamed by right-clicking on them. Groups and Sort are described below.

21.4 SELECTING FIXTURES

Clicking on a fixture type tab reveals a list of all of the patched fixtures of that type.



Selection Sidebar

- Select: **All**, **None**, **Odd** or **Even** to select relevant fixtures of that type. Selecting **Odd** or **Even** multiple times will create pairs, triples etcetera. The **All**, **Odd** and **Even** buttons are also available in the **Sort** tab below.
- Individual fixtures can be selected by clicking on them and deselected by clicking on them again. See "Selection phase vs. Programming phase" below.
- A range of fixtures can be selected by clicking the first fixture and dragging to the last fixture.
- A range of fixtures can also be selected by clicking on the first fixture then using [Shift]+clicking to select the last fixture in the range.
- [Ctrl] (PC) or [Cmd] (Mac) + [A] selects all fixtures in the current tab.

21.4.1 Selection phase vs. Programming phase

When selecting fixtures, every fixture or group that you select is added to the current selection. This allows you to build up complex selections of fixtures. Re-selecting a currently selected fixture or group removes it from the current selection. Clarity calls this the "selection phase".

As soon as you change any values of any of the selected fixtures Clarity changes to the "programming phase".

When the next fixture or group selection is made, Clarity changes back to selection phase and clears all previous selections. You can now build up your next selection of fixtures or groups to be programmed.

The selections from the previous selection phase can be retained by holding [Ctrl] (PC) or [Cmd] (Mac) key when making new selection.

21.4.2 Selecting Multiple Types of Fixtures

Select a different fixture type tab and select your fixtures as described above. Previously selected fixtures are retained as long as Clarity is in selection phase (see above).

21.4.3 Deselecting Fixtures

- Individual fixtures can be de-selected by clicking on them.
- To deselect all fixtures in the current type tab click **None** in the **Selection Sidebar**.

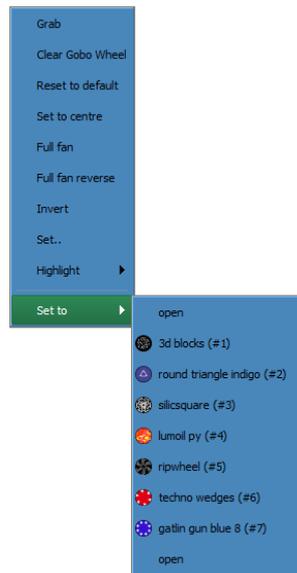
- To deselect all selected fixtures in all type tabs click **None** in the **Programmer Toolbar**. Keyboard shortcut = [Space-bar]
- To clear all programmers and deselect all fixtures click **Clear All** twice.

21.4.4 Selection Order

The order in which you select the fixtures is used for certain effects (such as fans and dynamics) and can be also utilized by the sort function described below. Selection order can be saved in a group (see below).

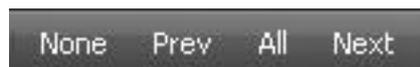
21.4.5 Attribute Quick Menus

As an aid to quick programming, the name of each Attribute Control can be clicked or the Attribute Control area itself right-clicked to access the Attribute Control Quick Menu. These menus provide rapid access to common settings. Each individual Attribute Control has its own specific quick menu, offering functions relevant to that attribute. For example:



Typical Attribute Quick Menu for Gobo

21.4.6 Programmer Toolbar Fixture Buttons



Programmer toolbar fixture selection buttons

The **All** button on the Programmer Toolbar has multiple functions:

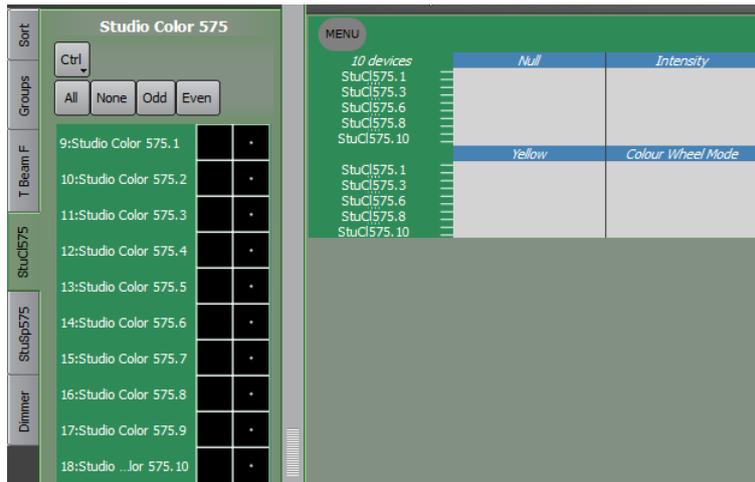
- If **Next** or **Prev** has been used to control individual fixtures from a selection of fixtures, clicking **All** restores control of all selected fixtures. See "*Individual Fixture Control*" below for more details.
- If any fixtures have attributes grabbed in the current programmer session, clicking **All** will select all of those fixtures. Further clicks of **All** will cycle between selecting all patched fixtures and selecting programmer contents.
- If the current programmer is empty, clicking **All** will select all patched fixtures.

21.5 INDIVIDUAL FIXTURE CONTROL

When more than one fixture is selected, you can use the Programmer Toolbar buttons (or the **Prev** and **Next** buttons above the Encoder wheels on LX consoles to refine your control to an individual fixture whilst still maintaining your multiple selections.



Programmer Toolbar



8 Fixtures (devices) are selected. Each Attribute Control controls all 8 fixtures.

- Pressing **Next** will refine control to a single fixture within the current selection.



8 fixtures (devices) are selected but control has been refined to a single fixture (StuCl575.1) allowing its attributes to be individually controlled.

- Step through the selected fixtures by pressing **Next**.
- Pressing **Prev** will step back to the previous fixture.

This function is especially useful when focusing fixtures one at a time, particularly when combined with the **Highlight** function. See *Highlight in the Programmer Toolbar later in this section for details*.

- Pressing **All** will restore control to all selected fixtures.

Next and **Prev** work in conjunction with the "Sort" functions. See below for more details.

Hint: You can also use the keyboard's [Cursor down] and [Cursor up] to select the next and prev fixtures. [Cursor left] restores control to all selected fixtures.

21.6 GROUPS

The **Group** tab shows all of the available groups of fixtures. Clarity automatically creates a group from each type of fixture that has been patched. Automatically created groups cannot be edited but they can be renamed.

- Selected fixtures can be saved as a new group by clicking **To Group**, entering a name and pressing **Record**.

The order in which the fixtures were selected is saved in the group. This order is used by Clarity when performing effects such as fans and dynamics. The group is automatically assigned a number. The number can be used to select the group.

21.6.1 Editing Groups

To edit a group that you have created:

- Select the group then use the fixture selection methods described above to alter the fixture selection.
- In the **Palettes** window, click on the group and select **Update item...**

21.6.2 Sort Tab

Clicking on the **Sort** tab shows the currently selected fixtures and automatically opens the "Sorting/Grouping:" pane. As the name implies, this pane allows you to perform "sorting" and "grouping" of the selected fixtures. These selection techniques can speed up your programming by automatically arranging and sub-selecting fixtures as described below.



Groups of, Subgroups and Buddying can be re-set to 1 by pressing **Reset Grouping**. If the "Auto reset" tick box is checked, buddying and subgrouping will be automatically reset when a new selection is started.

The Sort pane normally only appears when the Sort tab is selected but it can be retained on all Programmer selections and tabs by ticking the **Pin** box in the Sort pane.

21.6.3 Sorting

Clicking on one of the following buttons allows you to re-order the selected fixtures to suit the following criteria:

- **By ID** – by Unit ID order.
- **By Name** – Name in alphanumeric order.
- **Selection order** – by original selection order.
- **Random** – in random order.
- **Mirror** – in mirror order. Re-orders the current selection as first, last, second, second last, etcetera.

For **ID**, **Name** and **Selection order**, clicking the button a second time will reverse the sort order.

Clicking the **Random** button again will re-randomize the sequence.

Clicking the **Mirror** button again will mirror the mirror.

- **All** – re-selects all fixtures.
- **Odd** – selects odd fixtures.
- **Even** – selects even fixtures.

Selecting **Odd** or **Even** multiple times will create pairs, triples etcetera.

*Hint: For a quick symmetrical effect, select some fixtures in the order that they are rigged on stage. **Mirror** the selection. Set **Buddying** to 2. Right click on an attribute control and select **Full Fan**.*

21.6.4 Grouping

"Grouping" allows the selected fixtures to be subdivided into smaller groups. You can choose either:

- "Groups of.." the quantity of fixtures in each group.
- "Sub Groups.." the quantity of groups into which the selected fixtures will be divided.

21.6.5 Groups of...

When you have selected some fixtures (by either manually selecting them or selecting a group or groups) the "Groups of..." dialog box allows you divide the selected fixtures into smaller

groups. The number that you enter in the dialog box determines how many fixtures are in each group.

For example, a selection of...

10 fixtures with "Groups of" set to "5" will create 2 groups with 5 fixtures in each group.

20 fixtures with "Groups of" set to "5" will create 4 groups with 5 fixtures in each group.

10 fixtures with "Groups of" set to "2" will create 5 groups with 2 fixtures in each group.

20 fixtures with "Groups of" set to "2" will create 10 groups with 2 fixtures in each group.

21.6.6 Subgroups...

When you have selected some fixtures (by either manually selecting them or selecting a group or groups) the "Subgroups" dialog box allows you to divide the selected fixtures into subgroups. The selected fixtures are divided by the number that you enter in the dialog box.

For example, a selection of....

10 fixtures with "Subgroups" set to "5" will be divided into 5 subgroups with 2 fixtures in each group.

20 fixtures with "Subgroups" set to "5" will be divided into 5 subgroups with 4 fixtures in each group.

10 fixtures with "Subgroups" set to "2" will be divided into 2 subgroups with 5 fixtures in each group.

20 fixtures with "Subgroups" set to "2" will be divided into 2 subgroups with 10 fixtures in each group.

Only one type of grouping ("Groups of" or "Subgroups") can be applied at a time and therefore entering a value into either type will automatically set the other type of grouping to 1.

21.6.7 Next and Prev

The **Next** and **Prev** buttons respect the Grouping settings:

Normally, when grouping is not being used, the **Next** and **Prev** buttons allow you to individually select fixtures within a selection.

For example if you have 12 fixtures selected:

Button	Selection
All	1,2,3,4,5,6,7,8,9,10,11,12
Next	1
Next	2
Next	3
Next	4
Prev	3

Etcetera.....

However, if "Groups of" is set to 3, then these 12 fixtures will be subdivided into 4 groups of 3 fixtures and pressing **Next** will now select the individual fixtures in each group:

All	1,2,3,4,5,6,7,8,9,10,11,12
Next	1,4,7,10
Next	2,5,8,11
Next	3,6,9,12
Next	1,4,7,10

The **Fine** button can be used in conjunction with **Next** or **Prev** to further refine the selection:

Fine+Next	1
Fine+Next	4
Fine+Next	7
Next	2,5,8,11

Likewise, if "Sub Groups" is set to 3, then these 12 fixtures will be subdivided into 3 groups of 4 fixtures each and pressing **Next** will again select the individual fixtures in each group:

All	1,2,3,4,5,6,7,8,9,10,11,12
Next	1,5,9
Next	2,6,10
Next	3,7,11

Next 4,8,12
Next 1,5,9

The **Fine** button can be used in conjunction with **Next** or **Prev** to further refine the selection:

Fine+Next 1
Fine+Next 5
Fine+Next 9
Next 2,6,10

21.6.8 Budding

Entering a number in **Buddying** will group the fixture selection into buddies of 2, 3 or 4 etc. For example, a selection of....

10 fixtures with "Buddying" set to "2" will be treated as 5 pairs of fixtures.
20 fixtures with "Buddying" set to "2" will be treated as 10 pairs of fixtures.
12 fixtures with "Buddying" set to "3" will be treated as 4 trios of fixtures.
24 fixtures with "Buddying" set to "3" will be treated as 8 trios of fixtures.

The **Prev** and **Next** buttons also respect "Buddying".

For example, if you have 12 fixtures selected and Buddying set to 2:

All 1,2,3,4,5,6,7,8,9,10,11,12
Next 1,2
Next 3,4
Next 5,6
Next 7,8

The **Fine** button can be used in conjunction with **Next** or **Prev** to further refine the selection:

Fine+Next 7
Fine+Next 8
Fine+Next 7
Next 9,10

21.6.9 Programming Using Grouping

The following are some practical examples of how sorting and grouping can speed up your programming.

You have 12 fixtures rigged across the stage and you want to set the colours of the fixtures to be red, green and blue repeating across the stage.

Select the 12 fixtures and set "Groups of" to 3.

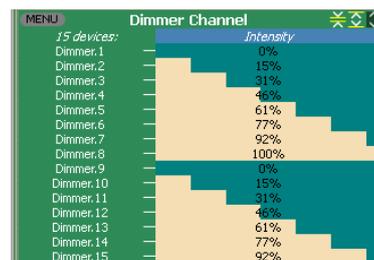
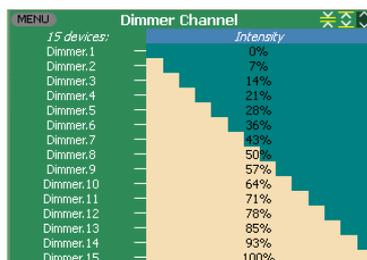
Press **Next** (this selects fixtures 1,4,7,10) then set the colour to red.

Press **Next** (this selects fixtures 2,5,8,11) then set the colour to green.

Press **Next** (this selects fixtures 3,6,9,12) then set the colour to blue.

All 12 fixtures have been programmed.

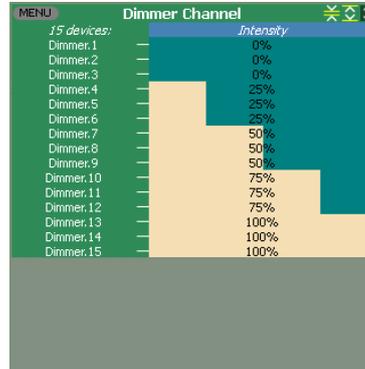
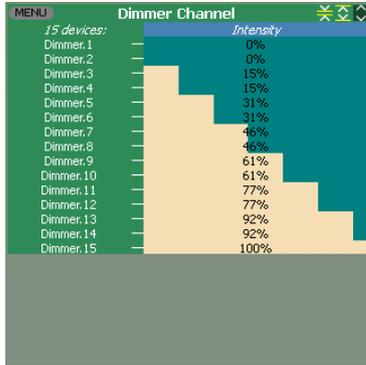
Grouping can be used when performing fans and applying dynamics (real time effects). See *Fanning and Dynamics for more details*.



In this example subgroups is set to 1, so when the intensity is fanned, the intensity fanning is performed across all of the fixture selection.

In this example subgroups is set to 2, so when the intensity is fanned, the fixtures are split into 2 subgroups and the fanning is performed separately on each subgroup.

Buddying can also be used when performing fans and applying dynamics.

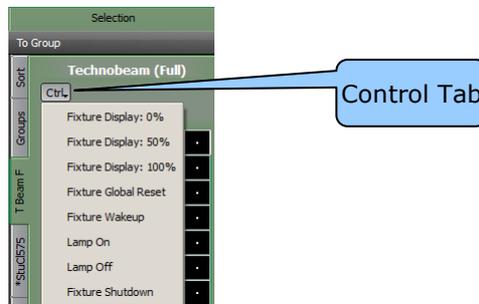


In this example, buddies is set to 2 and the intensity has been fanned, so that each pair of fixtures gets fanned by the same amount.

In this example, buddies is set to 3 and the intensity has been fanned, so that each trio of fixtures gets fanned by the same amount.

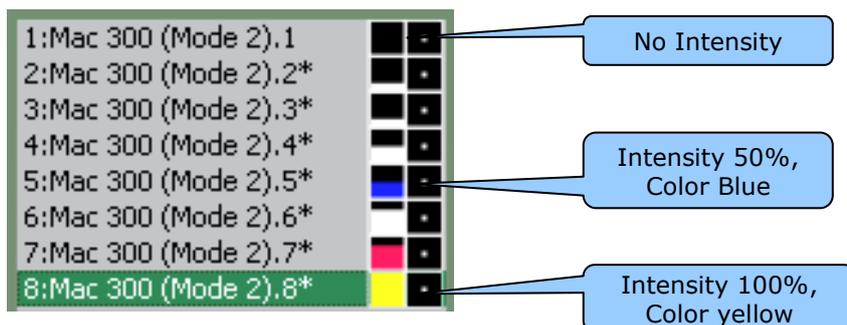
21.6.10 Ctrl Tab

The Ctrl tab is available when any suitable fixture tab is selected in the selection sidebar. Clicking on the **Ctrl** (Control) tab provides easy access to fixture-specific Control functions (Lamp on, Reset etc) for the selected fixtures. These will typically execute a pre-defined sequence as defined within the fixture library. The duration of these commands can be set in the user preferences.



21.6.11 Intensity and Colour Icons

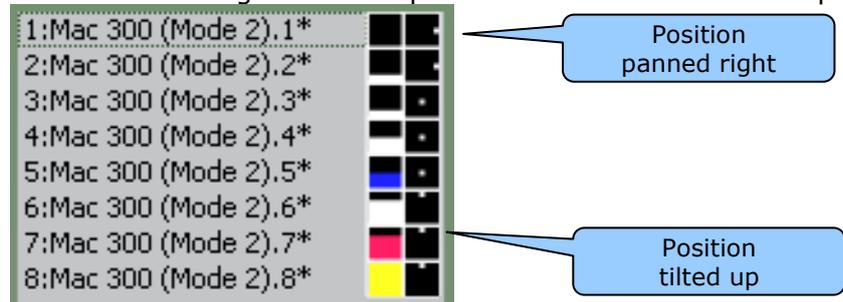
Each fixture has an icon showing its current intensity and colour at the output. The icon's area varies from all black (0% intensity) through to all white or colour (100% intensity) depending upon the intensity of the fixture. The colour changes to match the output of the fixture. If the current programmer is set to **Blind**, the icon shows the fixtures intensity and colour in the programmer, even though the Programmer does not contribute any intensity to the output. See **Blind** for more details.



In the above example there are a range of colours and fixture1 is at 0% (black), 2 & 3 are at 25%, 4 & 5 are at 50%, 6 & 7 are at 75% and fixture 8 is at 100%.

21.6.12 Position Icons

Each fixture has an icon with a white dot showing its current position of its beam at the output.



In the above example, fixtures 1 and 2 are panned to the right, 3, 4 and 5 are centred, and 6, 7 and 8 are tilted up.

21.7 SESSION CONTROL

The area at the bottom of the Programmer screen is called the Session Control. It contains two programmers and also any cue-lists that you have selected to edit. See "Editing Cues" for more details on editing cue-lists.



When you want to create a new look and record it into a cue, you do so by adjusting fixture attributes in a Programmer. Clicking on a **Programmer** (or a cue-list being edited) makes it the current session. The current session programmer (or cue being edited) is coloured green. Clarity's uses **Programmer 1** by default but you can use either programmer when you are creating looks to record as cues or presets.

The programmers have priority over all other controls except for the **GM** (Grand Master), **DBO** (Dead Black Out) and **Highlight** buttons (you can set the priority of cue-lists to be higher than the programmer in the "Configure playbacks" dialogue or in the control booth). The current session programmer grabs (takes control of) a fixture attribute as soon as you alter that attribute.

If a programmer has grabbed any attributes from any fixture then its name turns yellow and **<on stage>** or **BLIND** is displayed on that programmer.

21.7.1 Altered Fixture Indication

If a fixture has any of its attributes grabbed in the current session, an * is displayed beside the fixture name in the **Selection Sidebar**.



If any attribute of a fixture in any of the unselected fixture type tabs is grabbed in the current programmer a * is displayed on that fixture tab.

In the above example, Studio Colours 9 to 16 are not currently selected but they have had some or all of the attributes grabbed (altered) in the current session because they have an * beside their names. Studio Colours 17 and 18 are selected but none of their attributes have been altered. The * on the "T Beam F" tab indicates that some (or all) of these fixtures are also grabbed in the current session.

If the same attributes are grabbed in both programmers, the current session programmer has control of the attributes and the other programmer indicates "Overridden". If only some of its attributes have been overridden by the current programmer it shows "Part OVR".

When you record a cue, Clarity only records the contents of the currently selected programmer. Typically this is only the attributes that you have altered but there are options available.

21.7.2 Blind Programming

There are times when you might need to program or edit a cue without affecting the current look on stage. This is known as blind programming.

- To make the current session programmer blind, click **Blind** on the Programmer Toolbar or press **Blind** in the Command Centre.
- To make any programmer blind, right click on that programmer then select **Blind**.

When a programmer is blind, it has no effect on the output but any attributes that are in that programmer are still recorded as usual.

21.7.3 Clearing a Programmer

Clearing a programmer removes all attributes from that programmer.

- To clear the current programmer session, click **Clear** on the Programmer Toolbar.
- To clear any programmer, right click on that programmer then select **Clear**.
- To clear all programmers, click **Clear All** on the toolbar. Pressing **Clear All** a second time clears the fixture selection.

21.7.4 Clearing a Fixture from a Programmer

- To clear a fixture from a programmer, in the programmers **Attribute** tab, click the **Menu** button beside the fixture's Attribute Controller then select **Clear Fixture**.

21.7.5 Clearing an Attribute from a Programmer

- To clear a single attribute from a programmer, in Universal or Direct mode, select that attribute then hold **KO** whilst rotating it's encoder wheel or, in the programmers **Attribute** tab, click the name of the Attribute Control or right-click anywhere on the Attribute Control then select **Clear ###** (where "###" is the actual attribute name)

21.8 PROGRAMMER TOOLBAR

At the top of the Programmer window is the Programmer Toolbar. It provides additional functions that you can use as you program as listed below:



21.8.1 Undo / Redo

You can undo and redo all operations that you have performed in the Programmer window. A separate undo history is maintained for Programmer 1, Programmer 2 and any edit sessions. Repeatedly click **Undo** or **Redo** to step through the programming that you have performed.

Hint: The Control Booth window has separate undo and redo commands for every cue-list that is saved or edited.

Clicking **Toolbox, Show Undo View**, reveals the history list of all of the programming commands. You can instantly undo or redo to any step in the list by clicking on that step.

21.8.2 None, Prev, All, Next

When more than one fixture is selected, you can refine your control to an individual fixture whilst still maintaining your multiple selection by pressing **Prev** or **Next**. Clicking **All** restores control to all selected fixtures.

Clicking **None** deselects all fixtures. See "Selecting Fixtures" above for more details.

Hint: Use the "Highlight" function (below) to identify the fixture being controlled.

21.8.3 Grab

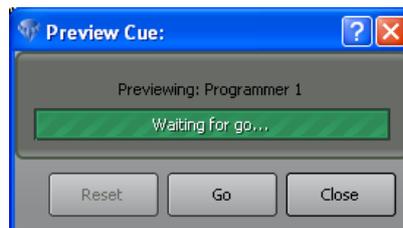
The Grab function automatically selects active fixtures. Clicking **Grab** offers two selections:

- **Grab Active.**
Grabs all attributes that are active on the output of Clarity into the current programmer.
- **Grab Active + Default.**
Grabs all attributes that are active on the output of Clarity PLUS all the other attributes of those fixtures that are at their "Default" level, into the current programmer. In other words, it grabs every attribute of any fixture that currently has any of its attributes active on the output of Clarity.

21.8.4 Preview

Preview allows you to rehearse the transition from the previous state to the cue that you are creating before you actually record it.

- Clicking **Preview** pops up the **Preview Cue** dialog and the fixtures revert (in 0.5 second) to their original attribute settings prior to being altered by the current Programmer session (if you are editing a cue-list, then they will revert to the state of the preceding cue).



- Click **Go** to see the fixtures change back to the current programmer state (the cue that you are currently creating) using the times that you have set in the **Timing** tab.
- To see the move again click **Reset** then **Go**.
- Click **Close** to finish.

If the new look or the timing is not satisfactory adjust the attributes or timing then preview the move again. See section 15, "Timing" for more details.

If the programmer settings are satisfactory, then record the cue.

21.8.5 To Preset

Clicking **To Preset** records a new Preset or Freeset, or updates an existing one. See section 19, "Palettes" for more information on Presets and Freesets.

21.8.6 Record/Save

- Clicking **Record** opens the **Record Cue** dialog box allowing you to record the current programmer settings as a cue in a cue-list.
- If the current session is editing a cue-list, this button becomes **Save**.

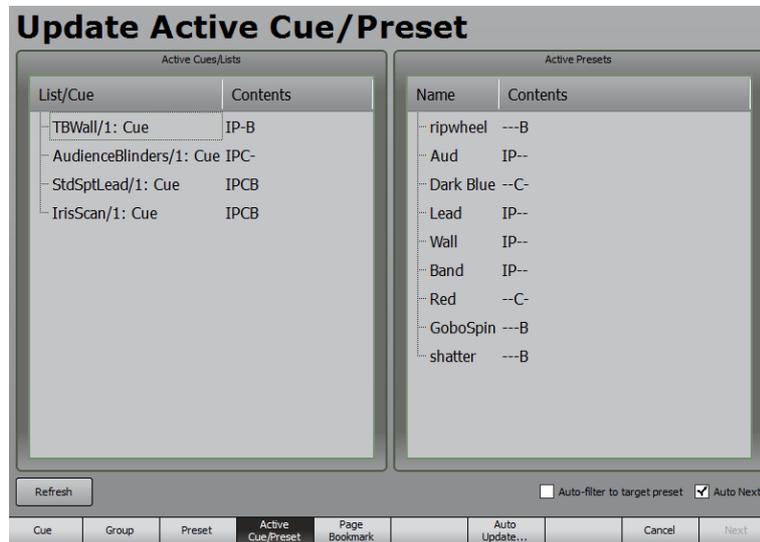
21.8.7 Append last/Save As

- Clicking **Append last** provides a one-click method of automatically recording a cue as the next cue in the last recorded cue list. If you hover over the button with the mouse pointer, a tool tip will tell you which cue-list will be appended to.
- If the current session is editing a cue-list, this button becomes **Save As**.

21.8.8 Update

The preferred method of adding new information into an existing cue is to create the new attribute values in the programmer, then “merge” those values into the cue. Update does the merge automatically for you.

When you have played some cues and you then make some changes to the look on stage using the Programmer, pressing **Update** opens the “Update Active Cue/Preset” dialogue box.



The currently active cues are listed on the left in chronological order of playback activity with the latest cue at the top. Active Presets are listed on the right.

- If you select a cue from the list on the left, Clarity will update that cue by merging the current programmer values into that cue.
- If you select a Preset from the list on the right, Clarity will update the preset using the current programmer values.

Select the cue or preset you wish to update with the current programmer values.

When you have made your selection press **Next**.

- If a cue is selected it opens the “Record” dialog box with the selected cuelist/cue and the merge option already selected. Press **Update** (or **Record**) to update the cue.
- If a Preset is selected it opens the “Update Preset” dialog box with the Preset already selected. Press **Update** (or **Record**) to update the Preset. If the “Auto-filter to target preset” box is ticked, the “Update Preset” dialog box will automatically select the filter(s) for the parameter group(s) that exist in the selected preset.

If the “Auto Next” box is ticked, you do not need to press **Next** as selecting a cue or preset automatically opens the appropriate cue or preset dialog box.

On LX consoles you can quickly update the active cue on a playback by pressing **Update, Select** (the select button of the playback containing the cue to be updated) then **Update** (or **Record**).

The original “Auto Update” function is still available via a button at the bottom of the new “Update Active Cue/Preset” dialog box and also in the “Tools” menu of the Programmer window.

See also “Auto Update” in section 26.2.2.

21.8.9 Highlight

Clicking **Highlight** toggles the highlight function on or off. There is also a **Highlight** button on the command centre. When more than one fixture is selected, clicking **Next** or **Prev** cycles through the currently selected fixtures one at a time. If Highlight is on, the single fixture that is selected by Next or Prev is set to the highlight settings and the remainder of the selection is set to the lowlight settings.

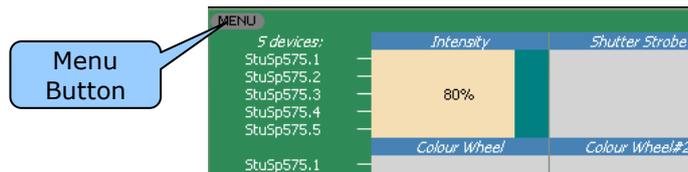
- The default highlight setting is an open clear beam at 100% intensity.

- The default lowlight setting is an open clear beam at 50% intensity.

This provides an easy means of identifying the single fixture that is currently under control. See also "Individual Fixture Control" earlier in this section for more details.

Hint: Use the [Home] key to toggle highlight on or off. Use cursor up [↑] or down [↓] arrows to select individual fixtures within your selection.

You can also load the current highlight/lowlight values into the programmer by clicking either the **Menu** Button (for an entire fixture) or clicking an Attribute Control name and selecting either "Load from Highlight" or "Load from Lowlight" from the pop up menu.



21.8.10 Highlight and Lowlight settings

You can set your own highlight and lowlight values for every attribute except position. In the Programmer's **Attribute** tab, select and adjust the attribute to the required value then right click on the Attribute Control. From the menu that appears, select either **Set as Highlight** or **Set as Lowlight**.

21.8.11 Blind

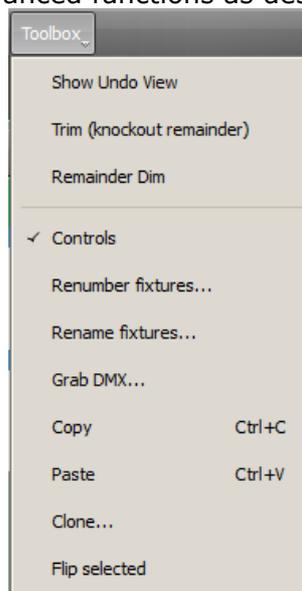
Clicking **Blind** toggles blind on or off for the currently selected programmer or cue-list being edited. When a session is blind, it will have no effect on the output. When a cue-list is selected for editing it is blind by default. This can be changed in the user preferences.

21.8.12 Clear/Close

- If the current session is in either **Programmer 1** or **Programmer 2**, this button reads **Clear**. Clicking **Clear**, clears the current programmer.
- If the current session is editing a cue-list, this button becomes **Close**. Clicking **Close**, closes the current cue-list being edited. You will be prompted to save your changes if you have edited a cue.

21.9 PROGRAMMER TOOLBOX

Clicking **Toolbox** access further advanced functions as described below:



21.9.1 Show Undo View

Show Undo View shows the entire undo history for the current session. Clicking on a line in the history instantly jumps to that undo level. A separate history is saved for each programmer and each cue-list being edited.

21.9.2 Trim (knock out remainder)

Trim (knock out remainder), clears all unselected fixtures in the current Programmer session.

21.9.3 Remainder Dim

When **Remainder Dim** is clicked, all unselected fixtures that are currently grabbed in the programmer have their intensity in the programmer set to zero. To reverse the Remainder Dim command, use the **Undo** button.

21.9.4 Controls

Controls shows or hides the Universal Control Panel controls at the bottom of the Programmer window.

21.9.5 Renumber Fixtures

Renumber Fixtures opens a dialog box allowing you to change the unit number (Unit #'s) of selected fixtures.

See section 23, "Command Line Programming" for more details.

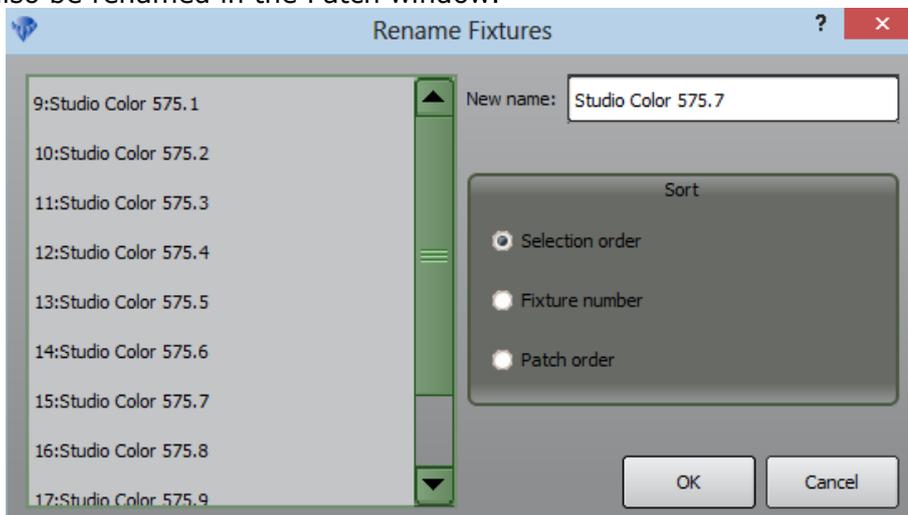
21.9.6 Rename Fixtures

Rename Fixtures opens a dialog box allowing you to change the name of currently selected fixtures. If multiple fixtures are selected then they can be sorted by either:

- Selection order
- Fixture number
- Patch order

The new name that you enter is automatically appended with a number according to the sorted order.

Fixtures can also be renamed in the Patch window.



21.9.7 Grab DMX

Grab DMX opens a dialog box allowing you to grab DMX values from an external universe and apply them to the selected fixtures in Clarity's current programmer.

See "DMX Input" below for more details.

21.9.8 Copy

Copy copies the attribute values of the currently selected fixture or multiple fixtures to the clipboard.

21.9.9 Paste

Paste pastes the attribute values from the clipboard to the currently selected fixture or multiple fixtures.

Hint: There are also Copy and Paste buttons on the front panel command centre. Copy and Paste is a powerful function. It allows you to duplicate attribute settings between different types of fixtures with just a few clicks or keystrokes.

For example, you have 12 fixtures that use Red, Green, Blue (additive) colour mixing and 12 fixtures that use Cyan, Magenta, Yellow (subtractive) colour mixing. Select the RGB fixtures and set them to a colour (or even fan a range of colours) then press Copy. Select the CMY fixtures then press Paste. All 24 fixtures are now set to matching colours. Clarity's fixture translation engine is very comprehensive and will attempt to convert all programming for all attribute types.

21.9.10 Clone

This Clone function operates on the current fixture selection rather than patch selection as described in the "Patch" section. See section 11.4.

21.9.11 Flip

Flip will alter the current pan and tilt values of the selected moving yoke fixture(s) to the other possible combination of values that achieves the same position on stage.

Moving yoke fixtures typically have 2 combinations of pan & tilt values that can aim the fixture at the same location. When a cue-list transitions from one position to another, it might be that the yoke does an undesired 'twirl' because its current pan and tilt values cause it to take the indirect route to the new position. If this occurs, edit the cue containing the starting position and select the fixture that is taking the wrong path, then from the programmer's **Toolbox** click **Flip**, then save the edit. The fixture will now transition to the next cue via the opposite route.

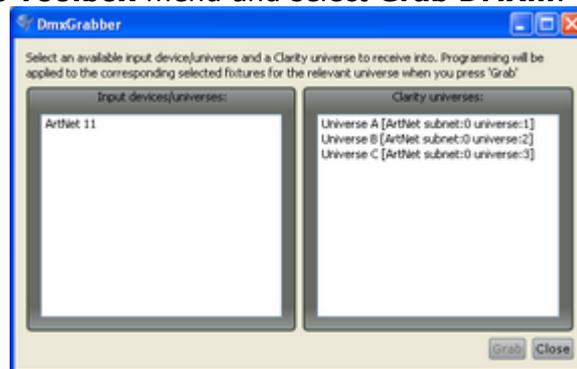
21.9.12 Personalizing the Toolbar

The Programmer Toolbar can be personalized by moving any button from the main toolbar to the **Toolbox** and vice versa.

- Right-click on any toolbar button and select **Move to toolbox**.
- Right-click on any toolbox item and select **Move to toolbar**.

21.10 DMX INPUT

DMX data from other DMX devices can be grabbed by the current programmer. Click on the programmer's **Toolbox** menu and select **Grab DMX...**



- In the **Input devices/universes** pane on the left, select an available DMX input. *At the time of writing only ArtNet input is supported.*
- In the **Clarity universes** pane on the right, select the Clarity universe to which the input DMX is to be applied.
- In the current programmer, select the fixtures to which the input DMX levels are to be applied.
- Click **Grab**, to apply the current input DMX levels to the selected fixtures in the current programmer.
- Click **Close** when finished.

21.11 PARKING FIXTURES

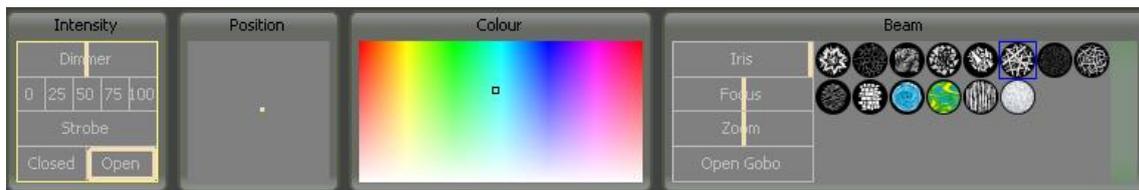
Fixtures (or just some attributes of fixtures) sometimes need to be isolated from regular programming and playback. For example, you want some work lights that always stay on at low level or a fixture has become faulty and you don't want it moving and making a noise during a show. When you isolate a fixture for these purposes it is commonly known as being "parked". Clarity provides a several methods of parking fixtures:

1. Select Programmer 2 then select the fixture(s) and set them as required. Now switch back to Programmer 1. You can now continue to programme the show using Programmer 1. The contents of Programmer 2 remain on but will not be recorded in your new cues.
2. If you want some channels to always be on whenever you start your show (such as those that control DMX power racks for moving lights) then you can do this by:
 - Recording a Cue-list with the channels you want set to 100% intensity.
 - Set the Priority of the Cue-list to be higher than the programmer (use 150).
 - Set the "Ignore Release All" option (found under the More button).
 - Set the Preferences in the Show Menu to "Restore Playback State".
 - Activate the cue and save the show.

Whenever you load the show this cue will automatically run and stay on for the duration of the show.

21.12 UNIVERSAL CONTROL PANEL

The bottom of the screen contains the Universal Control Panel which has generic controls for Intensity, Position, Colour and Beam. These controls work with any type of fixture that has been selected and are especially useful to simultaneously control selections of mixed fixture types.

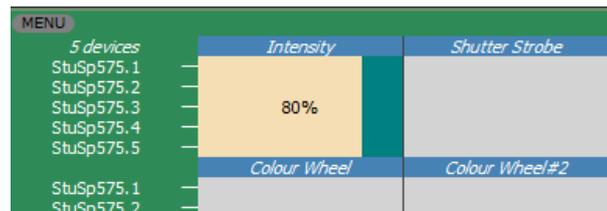


Clicking and dragging in these controls uses low mouse gearing for accurate control, but can be made even finer by holding down [Shift].

- In the **Intensity** box you can click on a preset value (0, 25, 50, 75 or 100%, Closed or Open) or drag in the **Dimmer** or **Strobe** areas.
- In the **Position** box you can drag to vary pan and tilt.
- In the **Colour** box you can drag to vary the colour. If the fixture only has limited colour selections (not full colour mixing) available, these will be indicated by small dotted boxes. Click on (or near) a box to select that colour.
- In the **Beam** box, you can drag to vary iris, focus and zoom. If the fixture has specific gobos, click on the gobo or **Open Gobo** to select it.

21.13 ATTRIBUTE CONTROLS

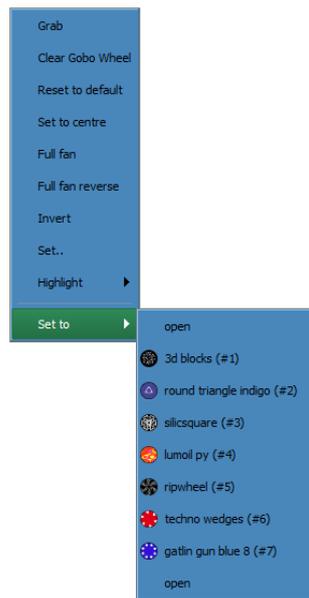
The area below each attributes name is known as an Attribute Control. The individual attribute values can be varied by dragging with the mouse in their respective area. You can also hold [Shift] when dragging for finer control.



In this example, the intensity of 5 fixtures has been dragged to 80%.

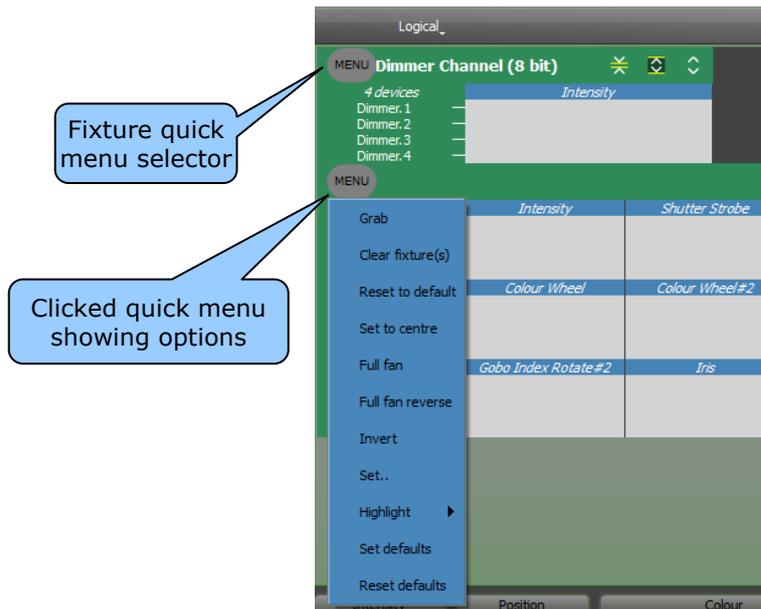
21.13.1 Attribute Quick Menus

The name of each Attribute Control can be clicked or the Attribute Control itself right-clicked to access the attribute quick menus. These menus provide rapid access to common attribute settings. Specific menus are available for each individual attribute. For example:



21.13.2 Fixture Quick Menus

The **Menu** button in the top corner each fixture type can be clicked to access the fixture quick menus. These menus provide rapid access to common attribute settings for all selected fixtures of the same type. For example:



21.13.3 Attribute Control Size

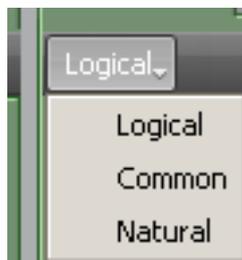
The Attribute Controls can be re-sized to allow you to trade off between screen area and detail by clicking either:

- **Compact:** One line is used for all devices of that type
- **Capped:** The height of the Attribute Control is limited to a maximum of 5 lines.
- **Expanded:** The Attribute Control is expanded to suit the number of selected devices.

See section 10.8 for more details.

21.13.4 Attribute Control Order

The order in which the Attribute Controls appear can be sorted by clicking the left-hand toolbar button:

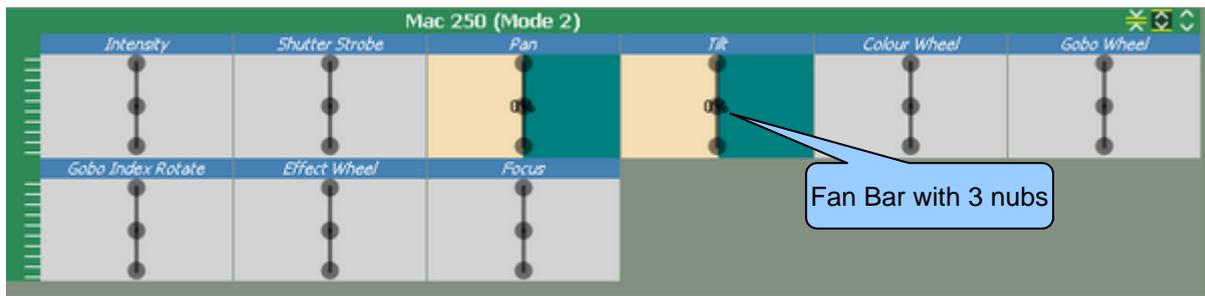


- **Logical:** This uses standardized attribute ordering grouped into Intensity, Position, Colour and Beam
- **Common:** When multiple fixture types are selected, only the attributes that are common to all selected types are displayed. It uses the same ordering as for Logical.
- **Natural:** Each fixture type has the attributes arranged in the order they appear in the fixture itself.

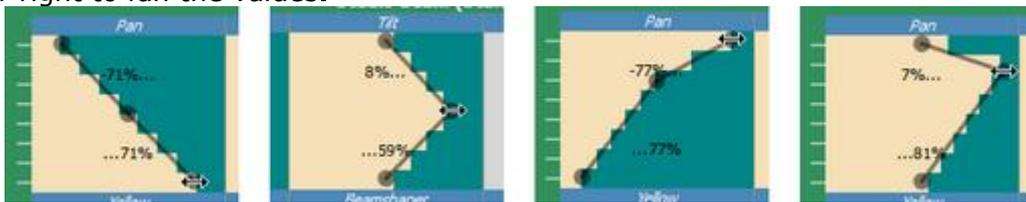
21.14 FANNING ATTRIBUTES

Fanning attribute values of multiple fixtures is a common procedure to achieve symmetrical looks on stage. Fanning spreads the values between the selected fixtures. For example, fanning the pan of several fixtures might spread their beams evenly across the stage.

Pressing and holding [Ctrl] (PC) or [Cmd] (Mac) on the keyboard activates the Fanning function and a vertical bar with three nubs appears on each Attribute Control.



Whilst holding [Ctrl] (PC) or [Cmd] (Mac), move the mouse cursor over the top or bottom nub, (it changes to a double headed arrow) then click and drag (whilst holding [Ctrl] or [Cmd]) the nub left or right to fan the values.



- [Ctrl] (PC) or [Cmd] (Mac) + dragging the top or bottom nub rotates the bar around the centre nub and fans the values accordingly.
- [Ctrl] (PC) or [Cmd] (Mac) + dragging the centre nub fans from the middle out to the ends.

21.14.1 Offset Fanning

Whilst holding [Ctrl] (PC) or [Cmd] (Mac), move the mouse cursor over the centre nub (it changes to a four headed arrow) then click and drag the nub up or down to move the fanning point off centre. Whilst still holding [Ctrl] or [Cmd], click and drag the top or bottom nubs left or right to create an offset fan.

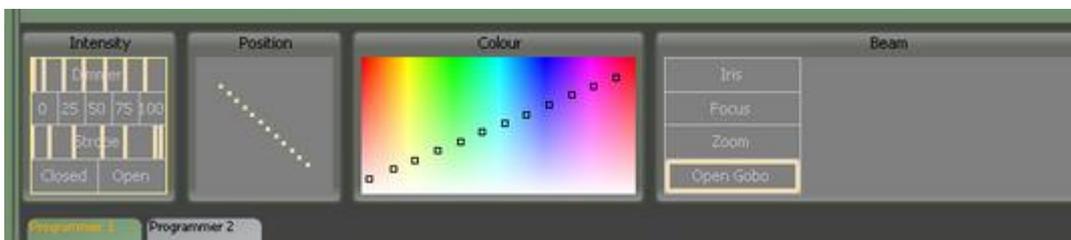
21.14.2 Fanning Selection Order

Fanning uses the order in which the fixtures were selected. You can change the look of the fan by changing the selection order. You can manually select fixtures in a specific order or your selection order can be stored as a group. See *Groups above*.

Selection order can also be varied by using the **Sort** tab. See *21.6.2 Sort, for details*.

21.14.3 Fanning in the Universal Control Panel

Selected fixtures can also have their attributes fanned by holding [Ctrl] (PC) or [Cmd] (Mac) and dragging in the Universal Control Panel.



Universal Control Panel showing Intensity, Strobe, Position and Colour all fanned.

22 Proglets

22.1 OVERVIEW

Proglets can be used to automate many operations of Clarity's Programmer. Proglets are similar to the popular 'Plug-Ins' concept that exist for many software programs and are written in JavaScript. Each Proglet creates a simple "User Interface" with buttons and sliders to allow easy control.

Version 2.2 of Clarity introduces Proglets and comes with some pre-loaded Proglets which are all focussed on making Dynamics easier and faster to create. Over time we add more features and also allow access to other parts of the User Interface.

Experienced users with computer programming skills can write their own Proglets. Full documentation on how to create your own Proglets is provided in the Appendix of this manual.

The LSC Clarity users forum provides a place to share Proglets with other users. It is an Open Source concept where you can create new Proglets and share them with other users to add power and features to Clarity.

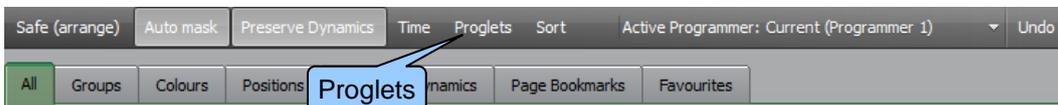
<http://forum.lslighting.com/forum/76-proglets-share-them-here/>

22.2 IN BUILT PROGLET

Version 2.2 of Clarity comes with some pre-loaded Proglets. You can access these Proglets from either the Programmer window or the Palettes window.



Programmer Window

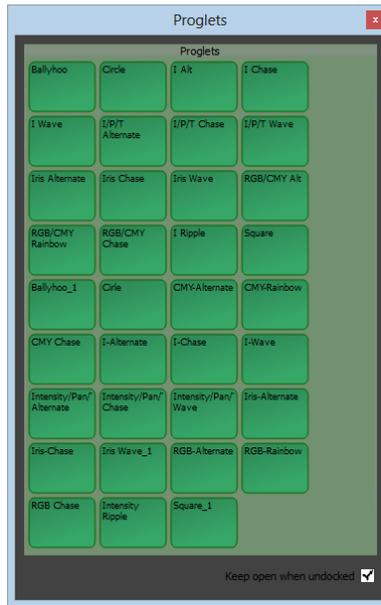


Palettes Window

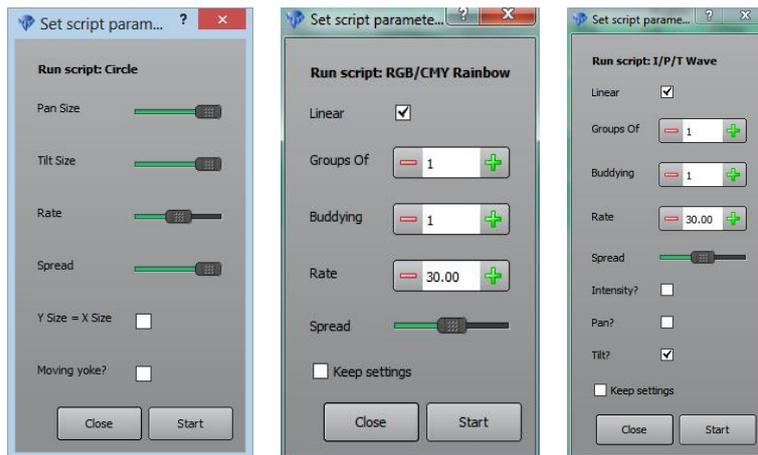
On LX consoles, Proglets can also be selected from the "Action Centre" where the **Proglets** button has replaced the **Append** button.



Clicking on any of these buttons reveals the Proglets pane.....



To use a Proglet, select the fixtures to be controlled then click on the Proglet. When a Proglet is selected, a box opens with the controls that have been programmed into that Proglet. Here are some examples:



To apply the Proglet click **Start**. You can use the sliders and controls to adjust the parameters.

23 Command Line Programming

23.1 OVERVIEW

You can use command line programming to directly select fixtures, groups, presets and set intensity levels and fade times.

If you type in a (fixture unit) number on the keypad, the "command line" automatically appears at the bottom of the encoder wheel touch screen. You can select multiple fixtures and enter intensity and fade time values as described below.



23.2 FIXTURE SELECTION

A Fixture can be selected by keying in a fixture unit number (*see fixture unit numbering below*) followed by **Enter**.

For example:

22 Enter selects fixture 22.

A range of fixture unit numbers can be selected by using either the **Thru/** key and you can also combine and subtract ranges using **+** and **-**.

For example:

1 Thru/ 10 Enter (selects fixtures 1 through 10).

1 Thru/10 + 20 Thru/ 30 Enter (selects fixtures 1 through 10 plus 20 through 30).

1 Thru/ 30 - 11 Thru/ 19 Enter (selects fixtures 1 through 30 except 11 through 19).

The order of number entry is respected so that

5 Thru/ 1 + 6 Thru/ 10 Enter, will get a fixture selection order of 5, 4, 3, 2, 1, 6, 7, 8, 9, 10.

If you omit the end of the range, then Clarity defaults to the highest fixture unit number of the same type of fixture.

For example:

1 Thru/ Enter will select all fixtures of the same type as fixture 1.

10 Thru/ Enter will select all fixtures of the same type as fixture 10 with fixture numbers above 10.

23.3 INTENSITY ENTRY

You can follow your fixture selection entry (above) with **@** (used as the command "AT") and specify a percentage intensity level, **On/Full** for full or just **Enter** to default to full.

For example:

1 Thru/ 10 @ 100 Enter

1 Thru/ 10 @ On/Full Enter

1 Thru/ 10 @ Enterall of these commands set fixtures 1 through 10 at 100% intensity.

You can also specify a range or a set of intensity levels.

For example:

1 Thru/ 10 @ 50 Thru/ 100 (1 through 10 at 50 through 100), will result in an intensity fan from 50% to 100% over fixtures 1 through 10.

1 Thru/ 10 @ 50 + 70 (1 through 10 at 50 plus 70) will set alternate fixtures at 50% and 70% (50,70,50,70 etc.).

Single digit values are also accepted as a shortcut value.

For example:

1 Thru/ 10 @ 5 Enter will set fixtures 1 through 10 at 50%.

Previously selected fixtures can be given an intensity.

For example, if some fixtures is already selected, to set them all at full intensity press:

@ Enter

To set them all to 0% press: @ **0** Enter

*Hint: You can alleviate the need to press **Enter** when entering 2 digit intensity values by ticking the box for "Auto-enter commandline after 2nd digit after AT" in the "User Preferences" located in the "Show" tab.*

23.4 INTENSITY WHEEL

You can follow you fixture selection entry (above) by rotating the intensity wheel to set a level.

23.5 FADE TIME ENTRY

You can specify a fade time by pressing **Time** after the intensity followed by a time value in seconds.

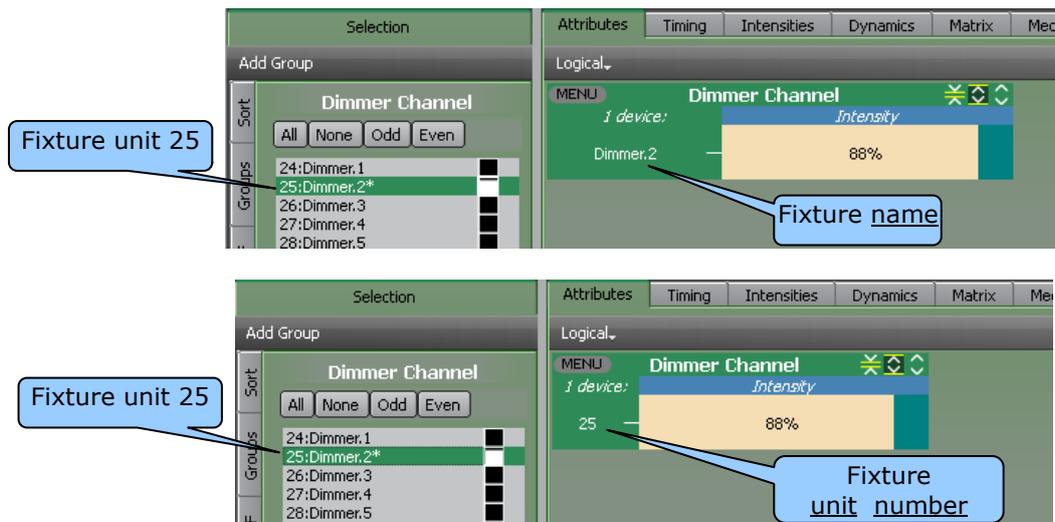
For example:

1 @ 50 Time 3.5 Enter sets fixtue 1 to an intensity of 50% and a fade time of 3.5s (only fade times are accepted and delay is set to 0s)

23.6 FIXTURE NUMBERING FOR KEYPAD ENTRY

Keypad entry uses the fixture "unit number" to select fixtures. The unit number is allocated in the patch and shown beside each fixture in the programmer's Selection sidebar.

The attributes tab shows the fixture name by default. You can change this to show the Unit number by clicking **Show, Preferences** and ticking: "Show unit number instead of fixture name".



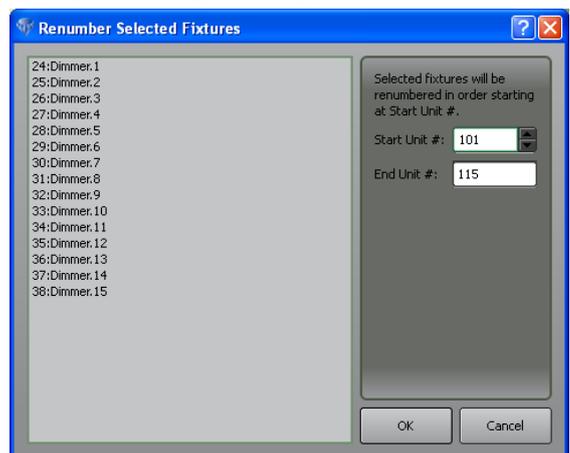
23.6.1 Changing Fixture Unit Numbers

Fixture (unit) numbers can be easily changed to assist programming via keypad number entry.

- Select the fixtures to be renumbered in the order that you want to renumber them.
- In the **Programmer** window, click on the **Toolbox** and from the drop down menu select **Renumber Fixtures...**

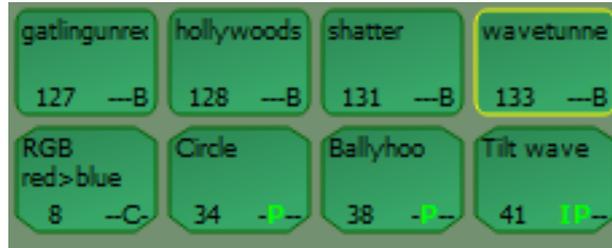
Use the dialog box to set the new **Start Unit #** number. The **End Unit #** number is automatically shown. The **OK** button is disabled if the currently specified range clashes with existing unit numbers.

Alternately, individual fixtures can have their unit numbers changed in the Patch window. See section 11 for details.



23.7 GROUPS AND PRESETS

All groups and presets have a number automatically allocated to them.



You can use these numbers to select the particular group of preset.

- On LX consoles press **Group** or **Preset** then enter its number on the keypad.
- On desktop Clarity press **G** (Group) or **P** (Preset) then enter its number.

Presets and freesets use the same numbering, so freesets are also selected using Preset or P.

24 Record

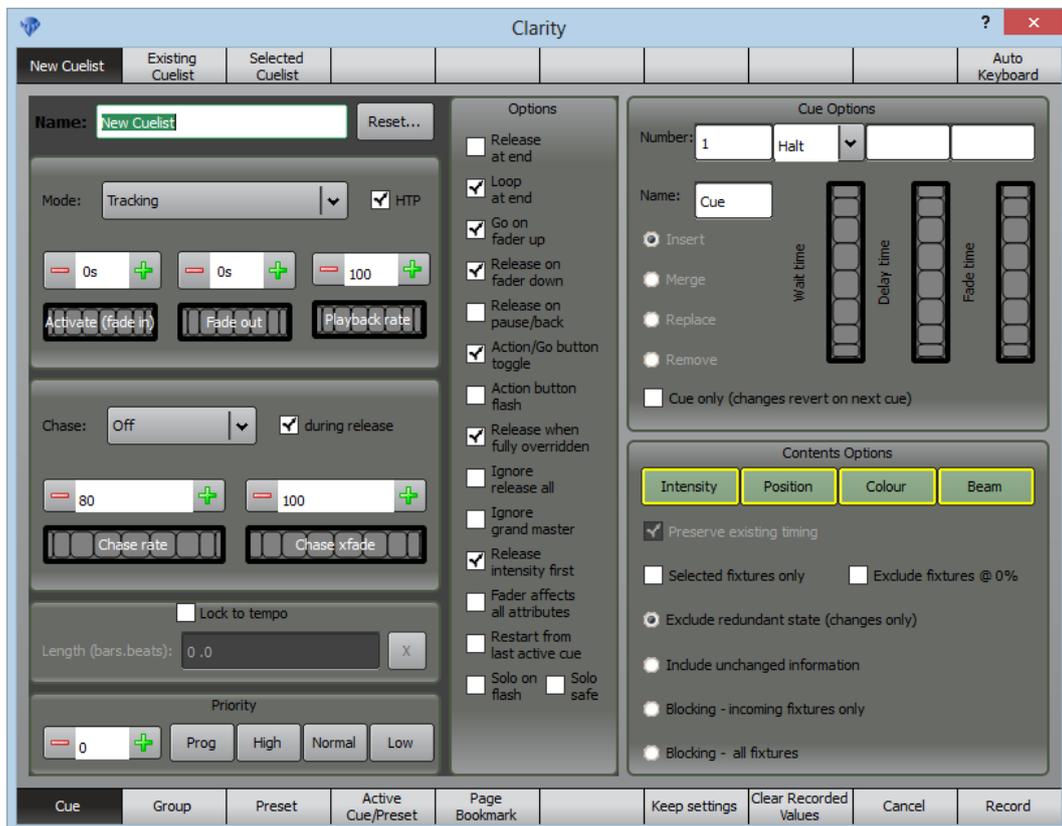
24.1 OVERVIEW

The looks that you create with the programmer can be recorded into Cue-lists for later playback. A cue-list can contain any quantity of individual cues. The transition from one cue to the next in the list can be set to be either manually started or automatically started at the completion of the previous cue. Each cue can have its own in and out delay and fade times. A cue-list can be set to automatically chase through the cues at a set rate. Chases can be synchronized to a common tempo (Metronome) or to a tapped beat that you enter. The cues that you record can also include dynamics (real time effects). They might also contain values that you have created for Matrices (LED arrays) or Media Servers. Times, Dynamics, Matrices and Media Servers are all described in their relevant sections.

24.2 RECORDING A CUE

There are many options to consider when recording a cue. These options control exactly what is recorded in each cue and its suitability to different modes of playback.

When you have selected and programmed your fixtures for the desired look you press **Record**. The Record Cue dialog box appears:



Record New Cue-list

The tabs on the top left allow you to choose to record a **New Cue-list** or to add a cue to an **Existing Cue-list** or a **Selected Cue-list**.

24.2.1 New Cue-list

To create a new cue-list and record the first cue select the **New Cue-list** tab. To accept the default settings and record the first cue press **Record**.

The default settings are:

- Cue-list name = New Cue-list
- Playback Mode = Tracking
- Cue name = Cue
- Fade in = 0 seconds

- Fade out = 2 seconds

Prior to pressing Record, you can enter your own names and settings as described below.

24.2.2 Cue-list Playback Settings and Options

When recording a **New Cue-list**, setting "Playback" to either "Tracking" (Default) or "Cue Only" is very important as it will automatically select the appropriate options in the "Contents Options" pane for playback in that mode. However you can change these options if you desire or select exactly which attribute groups you want to include in the cue. See section 24.2.6

Many playback options can be selected in the Mode, Chase, Lock to Tempo and Priority panes and also by ticking your required Options. Selecting these settings and options is not essential when recording a new cue-list because these panes and options are also available when you configure a Playback and in the Control Booth window. You can save programming time by ignoring all of these settings and configuring them later (if needed), prior to playback.

If you do change any of these settings they can be restored back to their default values by pressing **Reset...** Red boxes flash around the various sections of the screen. Touch a box to reset the values within the box.

These Playback settings are described in section 25.2 Playback.

24.2.3 Cue Options

The Cue Options pane offers the following options.....

- Halt. The cue is manually played by its GO button
- Follow. Click in the drop down box beside "Halt" and select "Follow". The cue is automatically played immediately after the previous cue finishes.
- Wait time. Click and highlight the word "Halt" or "Follow" then type in a time value or move the "Wait Time" wheel. The cue is automatically played after the wait time expires after the previous cue finishes.
- Delay Time. The time from when the cue starts until the selected attribute(s) begin to change. The default delay time is 0 seconds.
- Fade Time. The time taken for the attribute(s) to change to the value in the cue. The default fade time is 2 seconds.

24.2.4 Existing Cue-list

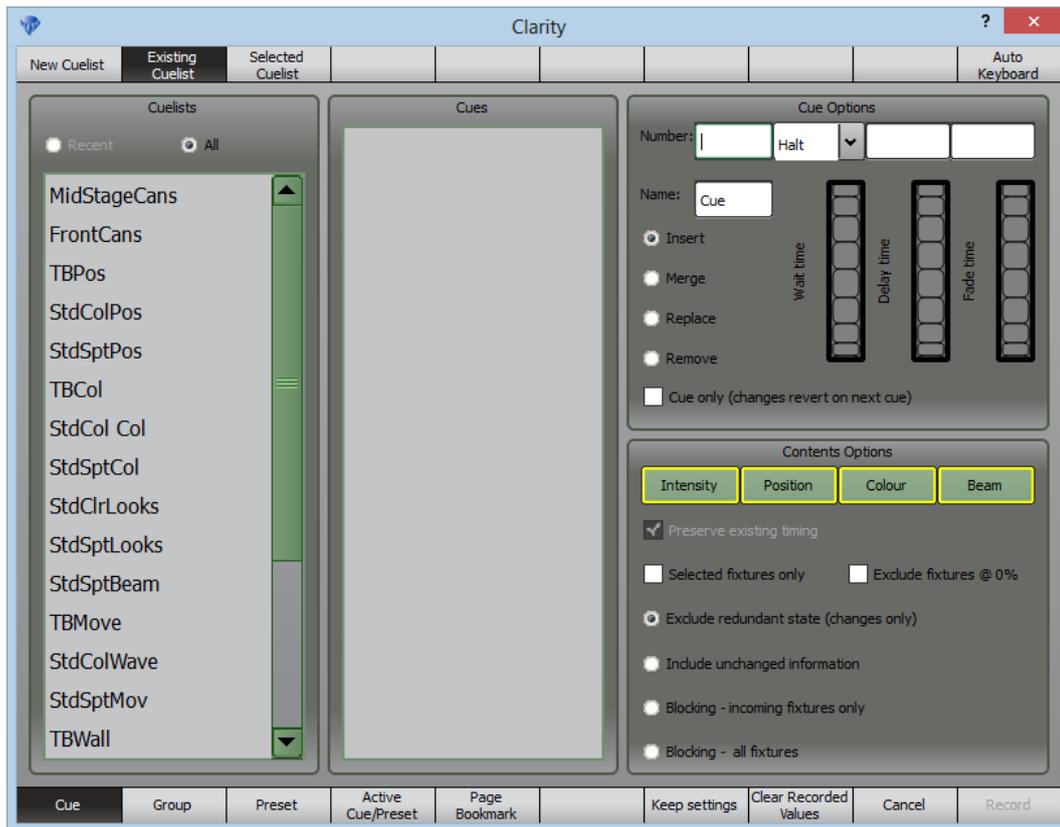
When recording a cue to an existing cue-list, the new cue is usually appended to the end of the cue-list. In the **Record Cue** dialog box, selecting **Existing Cue-list** allows you to select either **Recent** or **All**. Tap on a cue-list to select it. The Cues pane lists all of the existing cues in the cue-list. The default setting is to append the new cue to the end of the existing cue-list (at the position of the green bar as shown below).

To insert the new cue between any existing cues, touch a cue and the new cue will be inserted before that cue. It will be automatically given an appropriate (decimal point) cue number.

To Merge or Replace and existing cue touch either **Merge** or **Replace** then touch the existing cue to be affected.

Cue Only (changes revert on next cue) is an advanced function. When you are playing back in tracking mode, there might be occasions where you want to playback a "one off" cue and you do not want the values in that cue to track into later cues in the cue-list. This is achieved by recording a cue as "cue only". Ticking **Cue only (changes revert on next cue)** will record a cue that contains all of the touched values in the programmer and tag those channels for playback as "q only". When a cue-list is played back in tracking mode, any channels that are tagged as "q only" will only affect the output state for that cue. When the next cue in the cue-list is played back, the state from the most recent (non "cue only") cue is restored automatically plus any new values in the incoming cue are used. *See section 42.7.5 for more details.*

Merging a "cue only" cue into a non "cue only" cue, will only tag the merged values as "q only". See section 26.5 for more details.



Record to Existing Cue-list

24.2.5 Record to Selected Cue-list

You can record the contents of the Programmer directly to a Cue-list that is on a Playback that you select. Press **Record, Select** (the "Select" button of the Playback containing the Cue-list)

24.2.6 Contents Options

When recording a **New Cue-list**, setting "Playback" to either "Tracking" (Default) or "Cue Only" will automatically select the appropriate "Contents Options" for playback in that mode. However you can change these options if you desire or select exactly which attribute groups you want to include in the cue.

- You can choose which attribute groups (**Intensity, Position, Colour and Beam**) are included in each cue by clicking on them. When an attribute group is Green, it is included. Clarity includes all attribute groups by default.
- If you are merging a new cue into an existing cue you can choose to **Preserve existing timing** of the existing cue.
- **Selected Fixtures only** check box.
The fixture attribute information that is recorded into a cue is usually dependent on the settings of 4 Radio Buttons listed below. It doesn't matter if the fixtures are still selected in the current programmer session or not. However, by placing a tick in the check box, you can further filter the recorded information by limiting it to include **Selected Fixtures only**.
- **Exclude fixtures @ 0%** check box.
Fixtures that have their intensity set to 0% are not recorded. This option is primarily designed to be used with dimmers. If a fixture has an intensity set in the programmer and then the intensity is reduced to zero, the fixture remains in the programmer (with an intensity of 0%). It is not seen on the output but it will be recorded in a cue. The ideal operation is to clear a fixture (or a parameter) from the programmer if it is not required but some operators simply dim it off. This usually does not cause any problems when the cue is played back but if the cue is examined it will be found to be cluttered

with many unwanted channels, all at 0% intensity. This option automatically excludes any fixtures that have their intensity set to 0%. Warning! If a multi parameter fixture has its intensity set to 0% and this option is ticked, none of the parameters for the fixture will be recorded. If this option is ticked, then either the intensity must be above 0% or the intensity must be cleared (knocked out) from the programmer to enable the other parameters of the fixture to be recorded.

The following four Radio Buttons are mutually exclusive. Selecting one deselects all others.

- **Exclude redundant state (changes only).**

This only records the changes that have been made in the programmer since the last cue was recorded. All other grabbed values in the programmer are considered as redundant and are excluded from the cue.

This cue is suitable for tracking playback and is automatically selected if you set a new cue-list to 'Tracking' playback mode in the Record Cue dialog box.

For example, if intensity is set to 100% in cue 1 and you record the same intensity into cue 2, then the intensity information will not be recorded since it would already exist in the cue-list and will track forward from cue 1 when cue 2 is played back in tracking mode.

- **Include unchanged information.**

This records all grabbed values in the current programmer session.

This cue is suited to playback in Cue Only mode and is automatically selected if you set a new cue-list to 'cue only' playback mode in the Record Cue dialog box.

- **Blocking – incoming fixtures only.**

This only records the attributes that are currently grabbed in the programmer.

- **Blocking – all fixtures.**

This records hard values for all attributes of all patched fixtures. It effectively takes a snapshot of Clarity's output.

If this cue is played back in a tracking cue-list, it will Block any tracked values from affecting any fixtures.

24.2.7 Keep Settings

The selections that you make can be retained for future recording by selecting the **Keep Settings** box.

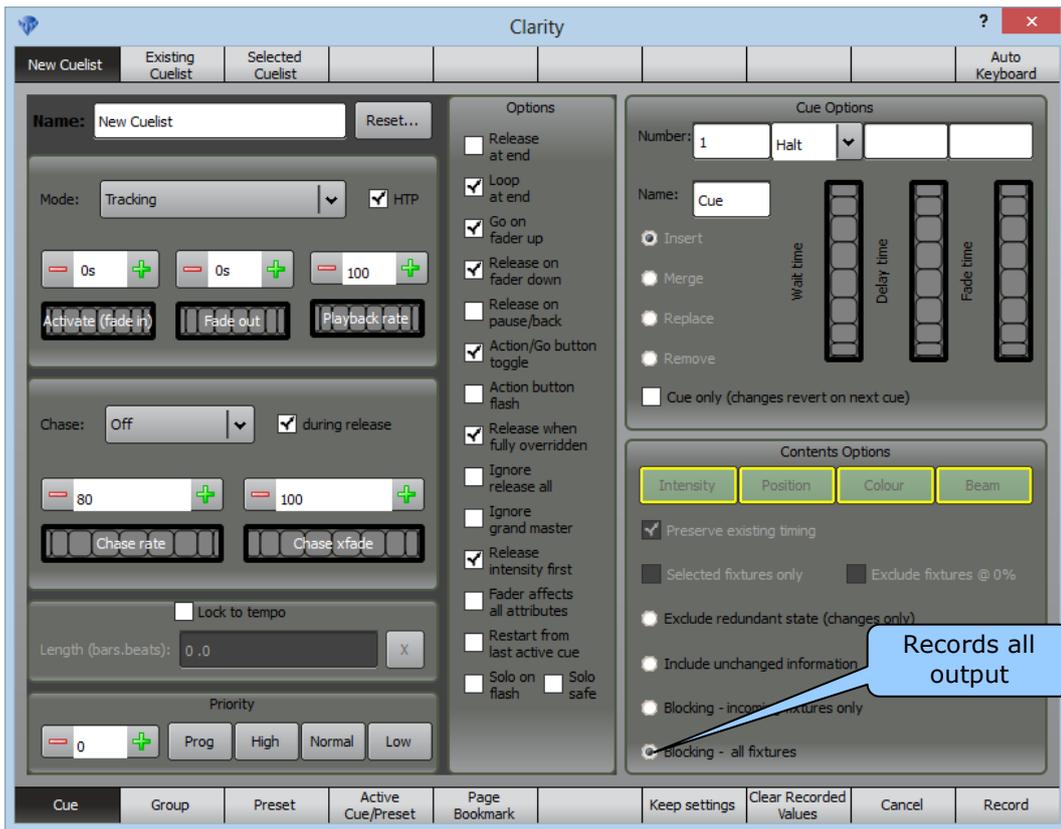
24.2.8 Clear recorded values

Selecting **Clear recorded values** will clear the programmer every time that a new cue is recorded.

- When cues are to be played back in tracking mode, clearing the programmer after every recording can give unexpected results. For example, you turn on fixture 1 and record it as cue 1. If "clear recorded values" is ticked, the programmer is automatically cleared so fixture 1 goes off. Turn on fixture 2. You see only fixture 2 on stage and you record it as cue 2. The programmer is automatically cleared so fixture 2 goes off. Now playback cue 1 and fixture 1 comes on. Playback cue 2 and fixture 2 comes on but fixture 1 stays on (due to tracking). So the look on stage when cue 2 is played back is not the same as the look on stage when cue 2 was recorded.
- Clearing the programmer after every recording is often used when cues are to be played back in Cue only mode. This is because what you see on stage from the programmer is what will be reproduced when the cue is played back, irrespective of whether you choose to exclude or include unchanged information when you record the cue.

24.3 RECORD OUTPUT

To record the current output of Clarity press **Record** then, in the record dialogue box, select "Blocking – all fixtures" in the "Contents Options" pane. This records a snapshot of the lights on stage, complete with the proportional levels of any playback masters.



24.4 EDITING CUES

When a cue-list that you have recorded is selected for editing (see section 26), the cue-list appears in the Programmer window **Session Control** showing the Cue-list name (beside the Programmers) and the individual cues within the cue-list above. This cue-list becomes the "current session" and by default it Blind (not seen or affecting the output).



Cue-list containing 5 cues.

You can click on any of the cues in the list to edit them. When a cue is selected, the attributes in that cue can be altered in exactly the same manner as when creating a cue. If you want to see the changes that you are making on the output click **Blind** on the Programmer toolbar to toggle the current session to <on stage>.

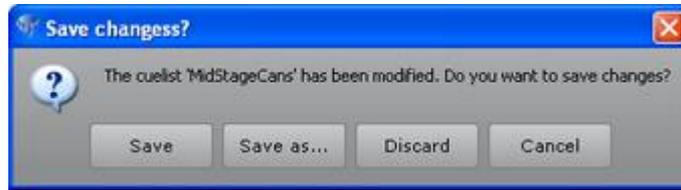
Hint: You can always open an edit session <on stage> by un-ticking "Start cue-list edit blind" in the Show/Preferences dialog box.

Multiple cue-lists can be in the session control at the same time. Clicking on a cue-list shows the cues in that list and makes it the "current session".



If a cue-list has had any of its cues edited, then the cue-list name turns yellow and so does the name of the individual cue(s) that have been edited.

When finished editing, either right-click on the cue-list and select **Close** or click **Close** on the Programmer toolbar. If you have made any changes to the cue-list, a dialog box will



ask.....

Selecting **Save as....** allows you to keep the original cue-list and save the edited cue-list with a new name.

24.4.1 Undo Redo

Any recording or editing of cues in the Programmer can be by pressing the Control Booth's **Undo** (on the Command Centre) or they can be undone or redone by clicking on **Undo** or **Redo** at the top of the Control Booth window.

25 Control Booth

25.1 OVERVIEW

The **Control Booth** window is the location of all cue-lists and provides controls to set the playback modes and settings of cue-lists, organise cue-lists in folders and to arrange the order of cue-lists and cues.

When a Cue-list has been selected, clicking **List** allows you to manage the selected cue-lists from the drop down menu. If a long cue-list is selected, **Follow** (active by default) causes the cue-list to automatically scroll to keep the latest active cue on the screen.

Learn allows you to capture (and time stamp) the button presses that you make when you playback cues over time. See section 25.11

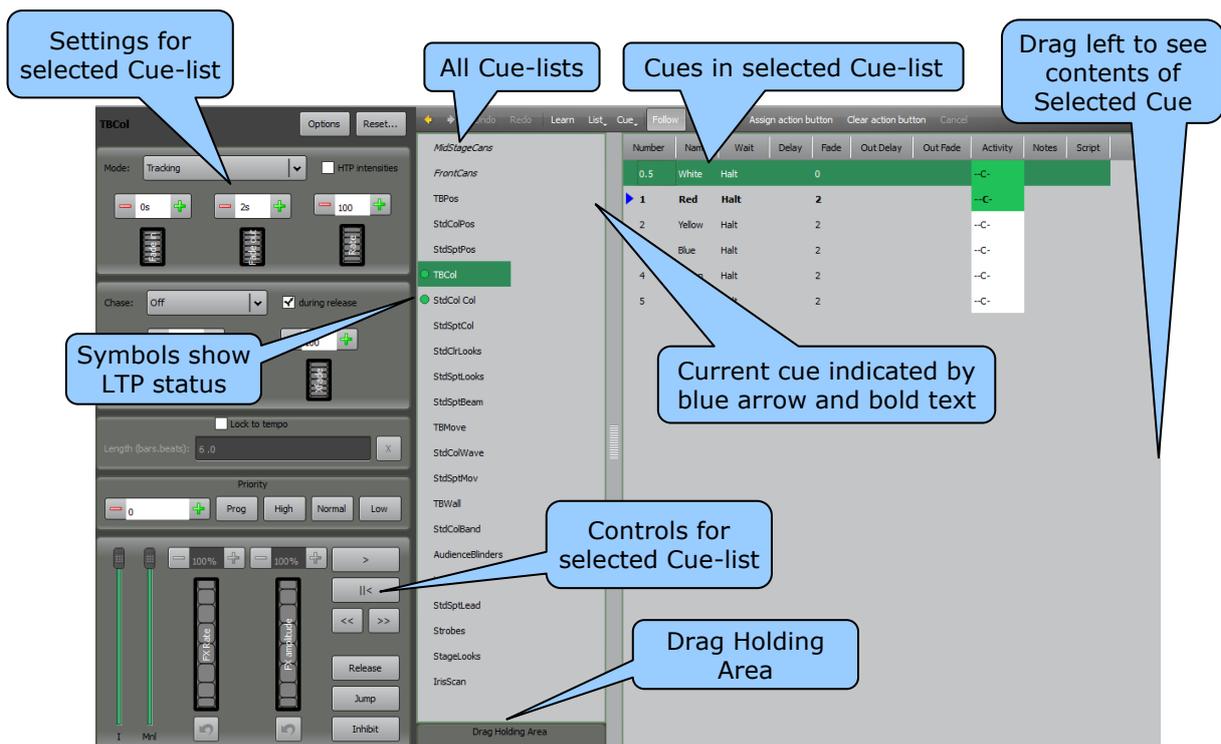
Audio resources can be added and synchronized to playback. See section 25.9

Bookmark allows you to record a page bookmark for rapid recall of a Playback pages. See section 25.12

Scripts can be added to cue-lists to automate other functions. See section 25.10

The central right pane is divided into 3 columns which display from left to right:

- All cue-lists.
- Cues within the selected cue-list.
- Contents of the selected cue. This column is usually hidden. You can drag this column into view to see the contents of a cue.

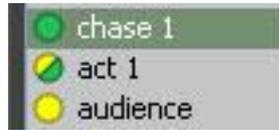


Clicking on a cue-list in the first column shows the cues of that cue-list in the second column.

Clicking on a cue in the second column shows the contents in that cue in the right (normally hidden) column.

If the selected cue-list is active, the current cue is displayed in bold text with a blue arrow.

In the cue-list column the coloured icons shows the LTP (Latest Takes Precedence) status of each cue-list.



Cue-list LTP Icons

- **Green.** All of the LTP channels in the cue-list are active.
- **Yellow/Green.** Some of the LTP channels in the cue-list have been overridden.
- **Yellow.** All of the LTP channels in the cue-list have been overridden. Note that this will only be seen for cue-lists that are overridden by the programmer or cue-lists that are not set to "Release when fully overridden".

The left-hand side has 5 panes that provide controls for the currently selected cue-list. These settings can also be accessed on console models by double clicking on a Playback's touch screen. See sections 25.2 and 25.3

The order of the cue-lists can be re-arranged by dragging and dropping a cue-list or multiple cue-lists. A "Drag Holding Area" assists drag operations when there are a large quantity of cue-lists. See section 25.4

25.2 CUE-LIST PLAYBACK SETTINGS

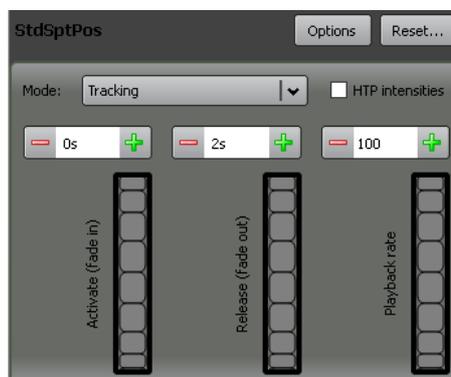
To see or alter the playback settings of a cue-list, select the cue-list in the cue-list column then use the Chase, Playback, Tempo and Priority controls on the left hand side to set the required options as described in the following three sub-sections. All selected settings are automatically saved with the selected cue-list.

Each group of settings can be reset to the "standard" settings by clicking on a cue-list and selecting "**Reset**". Flashing red boxes appear around each group of settings. Click inside a red box to reset those controls.

Hint: The current settings that you choose for a cue-list can be used as the defaults for all new cue-lists by right clicking on a cue-list and selecting "Use Current options as default".

25.2.1 Cue-list Playback Options

These options affect the way a cue-list will playback.



Clicking the Mode drop down box allows you to select the way that the information in the incoming cue is applied:



- **Tracking.** (Default setting). When a cue is played back, the attribute values in the cue are applied to the output. Any attribute information from previous cues that has not been updated by the new cue is retained on the output. Therefore, the cue-list will track unchanged information from previous cues to the current cue until overridden by a new value.

For example:

Cue 1 = fixtures 1 & 2 to 100%

Cue 2 = fixture 1 to 50%.

When cue 2 is played back, fixture 2 stays at 100% because it has no new value in cue 2. Fixture 2 levels have tracked through.

A random **jump** in Tracking mode from one cue to a later cue will collect all the intervening value changes so that the destination cues exact state is achieved as if the playback had stepped through all cues up to that point.

For example: Jumping over (missing) a cue that changes colour will still get the colour change at the completion of the jump.

- **Tracking (Not jumps).** Tracking applies as above, but if you jump out of order to a later cue in the list, then the values in the jumped cues are NOT tracked forward to the current cue.

For example:

Cue 1 = intensity to 100%.

Cue 2 = colour to green.

Cue 3 = intensity to 50%.

If you play cue 1 then jump to cue 3, you do not collect the values in cue 2. That is, the lights don't go green.

- **Cue Only.** The entire cue-list does not track. The next cue replaces the previous cue. When a cue is played back, its recorded attribute values are applied to the output and any attributes from the previous cue that are not present in the current cue will be released from the playback.

For example:

Cue 1 = intensity to 100% and colour to green.

Cue 2 = Colour to red.

When you transition from cue 1 to cue 2, the intensity attributes will be released.

Activate (fade in) time.

Default time = 0 seconds. This is the time taken for a Cue-list to fade in when the first cue is played. Normally this would be left at 0, and the affected fixtures in cue 1 would fade in over their programmed time for that cue. However, you can enter an activate time to scale the fade in over time. This is most useful with chases or when cues are set to automatically follow each other. For example:

If you had a fast chase that moved between the 4 corners of the stage you may not want the fixtures to jump to the full extent of the first corner in the time of the first chase step, but for the 4 corners to gradually enlarge, like a spiral, over several chase steps. If the chase rate is set to 120 BPM, each step takes 0.5 seconds, so the fixtures would go from default to the full extent of the first corner in 0.5 seconds and then continue from corner to corner. If you set the **activate** time to 2 seconds, the fixtures would go 25% of the way to the first corner, 50% of the way to the second corner, 75% to the third and then 100% to the fourth.

Release (fade out) time.

Default time = 2 seconds. This the time taken for the Cue-list to fade out when released from a Playback.

The Activate and Release settings can both be altered by either entering a value in their respective boxes or by moving their wheel which provides smooth variable control.

Playback Rate.

Proportionally changes all of the timing information in a cue-list. By default it is set to 100%. The range is 1 to 1000.

For Example: If Rate is set to 50% it slows all of the fades (all times are doubled). 100% = no change to rates.

The Rate % can be altered by either entering a value in its box, clicking the up and down arrows or by clicking and moving the "spin box" roller which provides smooth variable control.

The Playback Rate setting can both be altered by either entering a value in the box, clicking the up and down arrows or by moving the wheel which provides smooth variable control.

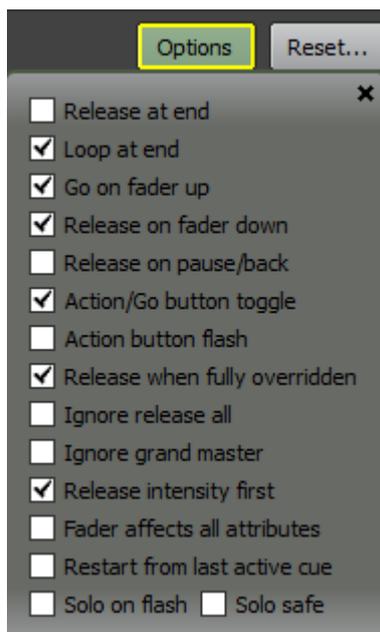
HTP intensities (check box).

If the intensity value for a fixture is contained in several active cue-lists and HTP (Highest Takes Precedence) is ticked, the intensity will come from the play back with the highest intensity level. The default setting (HTP not ticked) is known as LTP (Latest Takes Precedence). In LTP mode, the latest cue to be played back will take control of the intensity.

Options

Clicking **Options**, offers more playback options.

Tick a settings box to activate the option.

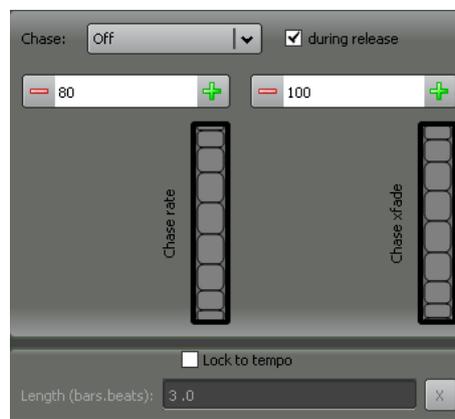


Playback Options

- **Release at end.** When the last cue in the cue-list has completed its fade, the cue-list is automatically released. If not set to release at end, it will loop back to the first cue.
- **Loop at end.** (*Default setting*) When the last cue has completed its fade and the cue-list is not set to release at end, it will loop back to the first cue. If not ticked it will remain on the last cue.
- **Go on fader up.** The first cue of the cue-list is automatically started and faded up when the playback fader is raised above zero. Subsequent fader movement only controls intensity.
- **Release on fader down.** The cue-list is automatically released when the playback fader is lowered to zero.
- **Release on pause/back.** Causes the pause/back button to release the playback instead of stepping back (useful for chases).

- **Action/Go button toggle.** When a cue-list is assigned to a Playback or to an LX600 or LX900 "Action" button, if the cue-list is not active, pressing the Playbacks **Go** button or the LX600 or LX900 **Action** button will play the cue-list. If the cue-list is active, pressing the button will release the cue-list.
- **Action button flash.** When a cue-list is assigned to an LX600 or LX900 "Action" button, pressing the Action button will flash the cue-list. You will also need to select the cue-list option "Go on fader Up" if you want the cue-list to Go the first time the flash button is pressed.
- **Release when fully overridden.** (*Default setting*) The cue-list is automatically released if all of its channels/fixture attributes have been overridden by another playback.
- **Ignore release all.** The cue-list is not released by the Release All button.
- **Ignore grand master.** The cue will not be affected by the grand master. Useful for cues such as work lights or providing constant power to fixtures.
- **Release intensity first.** (*Default setting*) When released, intensity fades out (in the release time) then other attributes snap release. This prevents unwanted fixture movements being seen.
- **Fader affects all attributes.** The playback fader normally only affects intensity. When ticked, the playback fader acts as a master over all attribute levels, in the same way as the manual fader on the playback control panels.
- **Restart from last active cue.** When a cue-list is released, then restarted, it will go immediately to the last active cue. Normally, when a cue-list is released, it will start from the first cue.
- **Solo on flash.** When a playback is set to "Solo on flash", it will black out the intensity of all other playbacks' intensity levels when it is flashed. If multiple playbacks are set to "Solo on flash" they will not black out each other if flashed at the same time.
- **Solo safe.** When a playback is set to "Solo safe", it will not be affected by the solo action of any other playbacks.

25.2.2 Cue-list Chase Options



Clicking the drop down box in the **Chase** pane allows you to select the chase mode for the currently selected Cue-list. The 5 choices are:

- **Off.** The cue-list does not chase and behaves like a normal cue-list. It will use the Delay and Fade times and Halt or Follow settings of each step. This is the Default setting.
- **Forwards.** The cue-list will run as a Chase in the forwards direction. It ignores the Delay, Fade, Halt and Follow settings of each step and uses the BPM and Xfade scale % settings (below).
- **Backwards.** As for Forwards but in the reverse direction.
- **Bounce.** The cue-list will run as a Chase and will automatically change direction when it reaches the first or last step.
- **Random.** The cue-list will run as a Chase with random step selection.

Note: When a cue-list is set to any of the chase modes above, its name will be displayed in Italics.

If any of the chase options above are selected, the following settings affect the chase.

- **Chase Rate:** Sets the chase RATE in **Beats Per Minute**.
- **Chase Xfade:** Sets the transition between steps.
When set to 0, the chase snaps from step to step. When set to any other value the chase Xfades (Cross-fades) from step to step. The duration of the Xfade is a percentage of the step time. For example:
BPM = 60 (1 step per sec). Xfade scale % = 50. Therefore, Xfade time = 0.5 sec. (50% of 1 sec)

The Chase BPM and Xfade settings can both be altered by either entering a value in their respective boxes, clicking the up and down arrows or by moving the wheel which provides smooth variable control.

Hint: You can also set the rate of a chase by tapping the “go” button of the playback to which the chase is assigned. This is known as “Tap to Tempo”. If you start tapping at a CONSISTENT rate then the Clarity matches your rate. However if you start at one rate and then speed up or slow down, Clarity tries to cover for your lack of rhythm and slowly ramps to the new rate. If you have tapped a tempo and then want to change the tempo, pause for 2 seconds then start tapping the new tempo.

Chase during release.

If ticked, when the chase is released, the cues keep stepping and the intensities will fade out in the release time.

If not ticked, when the chase is released, the chase will immediately stop on the current step and the intensities will fade out in the release time.

Lock to tempo: When ticked, this causes the cue-list/chase to use the metronome timing as set at the top of the Performance window. The cue-list is scaled to fit into a predetermined musical duration (bars and beats). The initial length is calculated automatically based on the number of cues in the cue-list.

- **Chases** are scaled so that each cue maps to a single **beat** (1/4 note).
- **Cue-lists** are scaled so that each cue maps to a single **bar**.

You can manually change the length by entering a length value in the form “bars.beats”. For example: 2.0 for 2 bars duration.

The **X** button returns the length to the automatically calculated value.

For more information see “Metronome” in section 27.6 “Performance Window”.

25.2.3 Cue-list Priority Settings



Priority. Default value = 0. When fixtures are being controlled by multiple cue-lists, attributes are normally controlled on a LTP (Latest Takes Precedence) basis. However, you can override the LTP action by entering a priority value for each cue-list. Higher numbers have priority over lower numbers. The value can be set as a positive or negative number (+150 to -150).

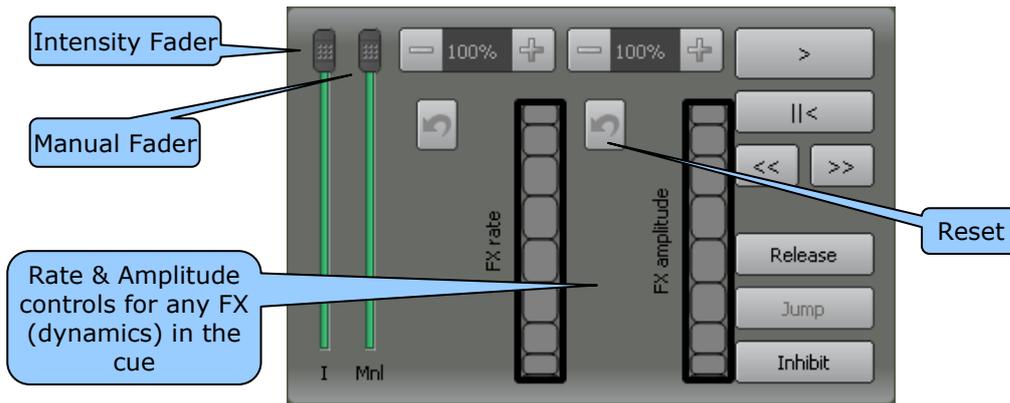
Preset values for priority can be easily applied by clicking:

- Prog** Sets LTP priority to Programmer (100)
- High** Sets LTP priority to High (50).
- Normal** Sets No LTP priority (0).
- Low** Sets LTP priority to Low (-50).

Manually setting a priority higher than 100 prevents a Programmer grabbing control of the fixtures in the cue-list.

25.3 PLAYBACK CONTROL PANEL

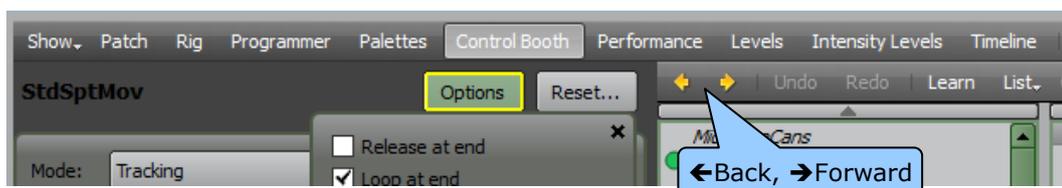
Clicking on a cue-list allows you to control it from the Control panel.



- The **I** (Intensity) fader controls the overall intensity of the fixtures in the cue-list.
- The **Mnl** (Manual) fader controls the overall level of **all attribute values** in the cue-list. It is normally set at full, but can be used to manually fade the entire cue-list in and out.
- **>** (Go) Plays the next cue in the cue-list or restarts a paused fade. Pressing **>** will start the fade to the next cue even if the current fade has not finished.
 - If the playback contains a chase, pressing **>** will start the chase. If you continue tapping **>** (to the beat of the music) it will automatically adjust the chase rate to match the beat of your tapping. If you want to change the rate simply tap the **>** button at the new rate. Always leave at least two seconds after tapping a beat before starting a different beat.
- **||<** Pauses any fades in progress. If no fades are in progress, it fades back to the previous cue.
- **>>** Snaps to the next cue in the cue-list, ignoring all times.
- **<<** Snaps to the previous cue in the cue-list, ignoring all times.
- **Jump** Allows you to jump out of order and fade directly to any cue that you select in the cue-list. Select the cue by clicking on it then press the **Jump** button to perform the jump.
- **Inhibit**. If Inhibit is active (green), no output from the selected cue-list is permitted and an X is displayed beside the cue-list name. This setting is retained by the cue-list until "Inhibit" is de-selected.
- **Release**. Releases the cue-list from the output.
- If the cue contains any dynamics then the **Fx Rate/Amp** controls become active and can be used to vary the dynamics by either entering a value in their respective boxes, clicking the up and down arrows or by moving the wheel which provides smooth variable control.

25.4 MANIPULATING CUES AND CUE-LISTS

In the Control Booth window, click on a cue-list to select it. Clicking **◀**(Back) or **▶**(Forward) lets you step through your previous selections.



The order of the cue-lists and cues can be re-arranged by dragging and dropping.

When dragging and dropping, if there are a large number of cue-lists or cues that extend beyond the screen you can drag any cue-list or cue to the "Drag Holding Area" as a temporary holding place. Now scroll the screen to reveal the new position for the cue-list or cue then drag the cue-list or cue from the "Drag Holding Area" and drop it in the new location.

Right-clicking on a cue-list offers the following options:

- Rename cue-list
- Delete cue-list
- Insert new cue-list
- Edit cue-list
- Duplicate cue-list
- Reset options to standard
- Use current options as default
- Add to folder

Right-clicking on a cue offers the following options:

- Rename
- Sync Fx
- Delete cue
- Insert new cue
- Insert mark cue
- Edit cue
- Change cue only
- Insert loop
- Export to current Programmer.

25.4.1 Cue-list Folders

Cue-lists can be organized in folders. Select one or more cue-lists and click **List** on the menu bar and select **Add to folder** (or right-click and select **Add to folder**) to move the selected cue-list(s) into a new or existing folder. If the selected lists are already in a folder you can also remove them this way. Alternatively if there is an existing folder you can drag and drop onto the folder itself. Folders are arranged alphabetically.

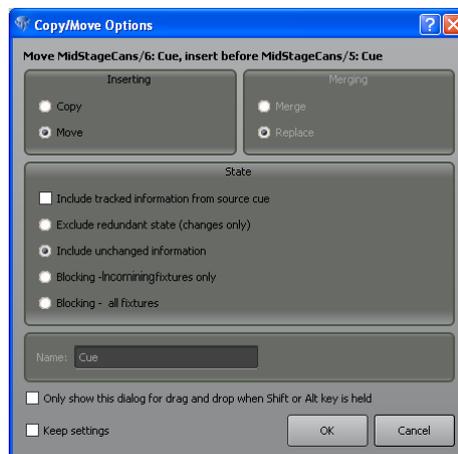
You can drag and drop multiple cue-lists.

25.4.2 Copying and Merging Cues

When a cue-list is selected (above), clicking on a cue allows it to be dragged and dropped to different locations within that cue-list or to another cue-list. This can be performed as a move or a copy. The selected cue can also be merged with or can replace an existing cue.

Dragging a cue to a new location will show the drop point as either an insert (a green arrow points to a line between the two cues) or as a merge (a green arrow points to the selected cue).

When the cue is dropped in its new location the "Copy/Move Options" dialog box opens:



The options to insert or merge will be automatically pre-set by where you drop the cue.

- Dropping a cue on a cue selects the "Merging" options.
- Dropping a cue between two cues selects the "Inserting" options.
- Holding **Function** whilst dragging and dropping between two cues selects the "Copy" option.

You can change any of the pre-set options (if applicable) by clicking on them. If you are copying or replacing a cue you can enter a name for the new cue.

The settings of the state of the resultant cue (Tracking or Cue only) will be automatically set by Clarity, depending upon the playback setting of the destination cue-list.

- **Include tracked information from source cue** check box.
When checked, the copy contains the hard values in the source cue and any tracked values from previous cues in the cue-list.

When unchecked, the copy only contains the hard values in the source cue.

The four Radio Buttons are mutually exclusive. Selecting one deselects all others.

- **Exclude redundant state (changes only/tracking).**
Hard values from the source cue will be copied or merged into the destination cue with the exception that Clarity will exclude any hard values from the source cue that are not required (redundant) because they would exist in the destination cue due to tracking from an earlier cue.
- **Include unchanged information (non-tracking).**
Hard values from the source cue will be copied or merged into the destination cue.
- **Blocking – incoming fixtures only.**
The cue contains hard values for all attributes of all fixtures in the cue-list.
- **Blocking – all fixtures.**
The cue contains hard values for all attributes of all patched fixtures.

25.4.3 Copy Full State

If you have a cue that you want to use again later in a show and you want it to look exactly the same next time you use it then you must ensure that you copy the full state of the playback. The default settings of the copy cue function in a tracking cue-list will copy the tracked and hard values of a cue but it might not include a value for every attribute of the fixtures in the cue-list. Therefore, the copy might not produce the identical output because some attributes might take on tracked values from earlier cues.

To copy the full state of the source cue, drag the source cue and drop it in its new location as described above. In the "Copy/Move options" dialog box that opens, select

- "Blocking - incoming fixtures only".
- Click **OK**.

*Tip: If you are plotting a theatre show, it might be a good idea to record your first cue with every fixture having a value. This ensures that when you are copying full states later in your cue list, the state of your source cue will always be reproduced correctly. To do this, select every fixture in your show and then in the Programmer click **Grab** then select **Grab Active + Default** and record this in your cue list as cue 0.1 and make it a follow cue so that it will automatically advance to Cue 1 (which could be your curtain warmers or walk in look for example).*

25.4.4 Undo Redo

All copies and merges as well as any recording or editing of cues in the Programmer can be undone or redone by clicking on **Undo** or **Redo** at the top of the Control Booth window and in the command centre.

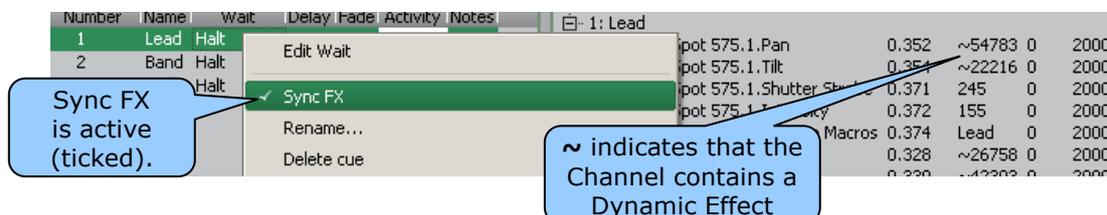
25.4.5 Cue Notes

Notes can be added to any cue by clicking on the cue then double clicking on the cue's **Notes** cell and entering your text.

25.5 SYNC FX

If a cue contains dynamic effects (created in the dynamics tab of the programmer or applied by a dynamic preset or freeset), the "rate" of the effect can be kept "relative" to the performance window's metronome.

Right clicking on a cue that contains dynamic effects and selecting **Sync FX** toggles whether the effects are synchronized to the metronome or not.



- If "Sync FX" is **not active**, the dynamic effect will run at its recorded rate.
- If "Sync FX" is **active**, the effect will run at a rate that is normalized to a metronome rate of 60BPM (Beats Per Minute).

Therefore, when "Sync FX" is active, the run rate of the effect will be equal to its recorded rate divided by 60 then multiplied by the metronome rate.

$$\text{Run rate} = \frac{\text{Recorded rate}}{60} \times \text{Metronome rate}$$

For example,

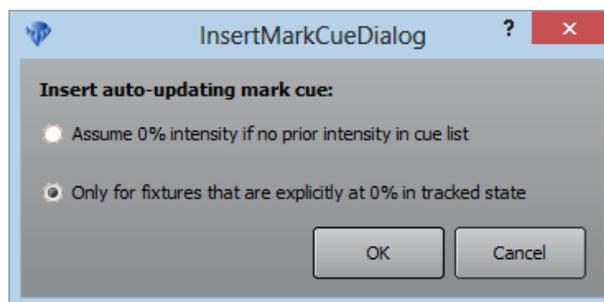
Recorded Rate	Metronome Rate	Run Rate with Sync FX ON
60	60	60
30	60	30
60	120	120
30	120	60
60	30	30
30	30	15

25.6 MARK CUES (MOVE IN BLACK)

A Mark cue is a special type of cue that you can insert in a cue-list. Mark cues are also known as "move in black" and are used to pre-position fixture attributes without their movements or changes being seen on stage because the fixture has no intensity.

To insert a Mark cue in a cue-list, right click on the cue that needs the mark cue to precede it and select **Insert mark cue**.

The "Insert Mark Cue Dialog" opens.....



When you insert a Mark cue, Clarity looks at the previous cue(s) and selects any fixtures that have no intensity. Fixtures might have no intensity because they have a recorded intensity of 0%. The recorded intensity of 0% might be in an earlier cue if tracking playback applies. Fixtures might also have no intensity because intensity has not been recorded in the cuelist. Clarity lets you choose which fixtures to include in the Mark cue:

- The first option selects all fixtures in the cuelist that have no intensity whether recorded or not. It is perfect for new users and also for simple single cuelists. This option gives the most predictable results.
- The second option only selects fixtures with a recorded intensity of 0%. This will only insert a Mark Cue if the intensity is actually set to zero INSIDE the current cuelist. Some advanced users control intensity from other cuelists and use this option to prevent a Mark cue including fixtures that may be getting an intensity from somewhere else. Remember that no light at the output might be caused by a closed shutter while the intensity is actually above 0%.

Using this fixture selection, Clarity looks at the following cue and copies all the attributes of those fixtures (except intensity) and inserts them into the new Mark cue which is placed between the two cues.

When the cue-list is played back and the cue prior to the mark cue finishes its fade, the Mark cue is automatically executed. The Mark cue will move all of the attributes (except intensity) to their settings in the following cue. They therefore “move in black”. When the next cue is executed, the fixtures fade up, but nothing else changes because all other attributes were pre-set by the Mark cue. Mark cues have a default fade time of 0.5 seconds.

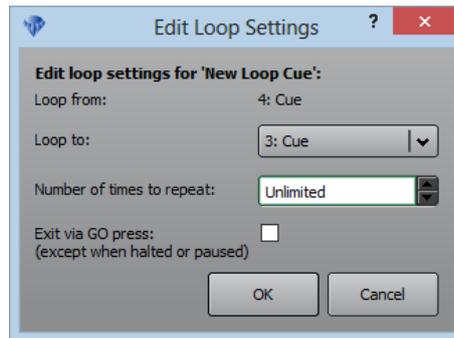
25.7 CHANGE CUE ONLY

There might be occasions where you do not want the values in a cue to track into later cues in the cue-list. This is achieved by changing the status of the required channels to “cue only”. See section 26.5

25.8 LOOP CUE

You can create loops within cuelists.

To make a cue loop to a previous cue in the same cuelist, in the Control Booth, right click on the cue and select “Insert Loop...”. The “Edit Loop Settings” dialog box opens.



Select the cue to loop back to from a drop down list. Set the “Number of times to repeat” using the up or down arrows or choose “Unlimited” for continuous looping.

You can manually exit from a loop by pressing **Go** if the “Exit via GO press” is ticked. This option is automatically selected if “Unlimited” loops are selected. If the cue-list is halted or paused, pressing the Go button will not exit from the loop.

The loop settings are shown in the “Name” column of the cuelist in the Control Booth.

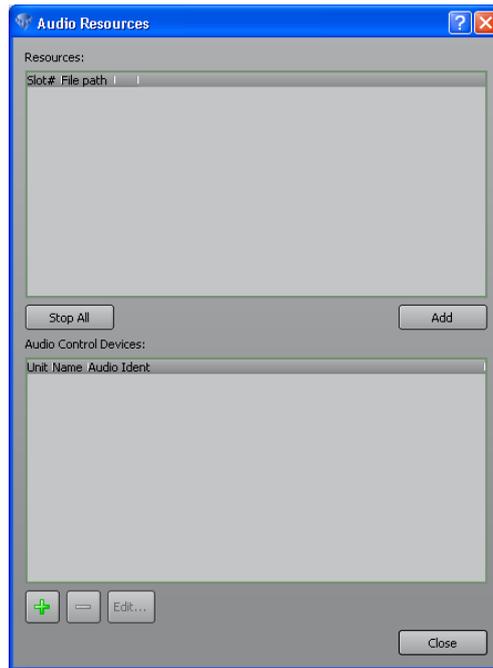
4	Cue	Follow	2
4.5	Loop to: '3: Cue' x4 (exit on go)	Follow	0
5	Cue	Halt	1

To change the settings of an existing loop cue right click on the cue and select “Edit Loop...”.

25.9 AUDIO PLAYBACK

You can include an MP3 music file that will be played when a cue is triggered. All MP3 files that need to be played must be loaded into the Audio Resources dialog box.

In the Control Booth window, selecting **Audio** will open the Audio Resources dialog.

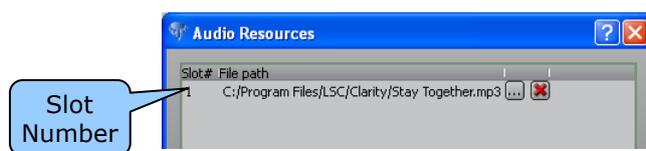


Audio tracks can be added by clicking **Add** and navigating to the required audio file. Insert your USB stick containing the file and in the file dialog browse to the USB stick (which is found in "Computer" in desktop Clarity).

Select the file(s) and click Open. After a short pause the file(s) will appear in the Audio Resources folder.

Note: When media is added to Clarity from elsewhere (audio files, images/movies, rig backgrounds), Clarity automatically adds it to the Clarity media folder. See section 30 for more details.

Each audio file that is added is automatically given a slot number. Later, when you are programming your cues, these slot numbers can be used as a quick reference to the file instead of entering the file name.



You can add multiple files whilst the dialog box is open. You can also clear individual slots by clicking on the red **X**.

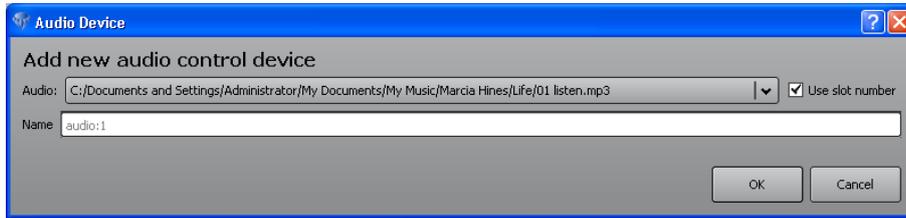
There are several methods of playing audio files:

- Audio file can be played by either entering a command in the script column of a cue as described below in the "Simple Script Language" section.
- Audio files can be played as part of a "Master Cue-list" as described below in section 25.11, "Learn New Cue-list".
- Audio files can be played by creating an audio fixture and controlling that fixture as if it was a lighting fixture as described below.

25.9.1 Audio Fixture

Clarity has an inbuilt "Audio Fixture" available. This "fixture" has two attributes, Volume (Intensity) and Play Mode (Play/Pause/Stop). This allows you to program Audio as if it was a lighting fixture. You can set the level on a cue by cue basis, give it fade times (with wait, delay, etc) and do anything else that you can do with a normal dimmer channel. You can even change the fade curve via the timings tab, or use the fader to control the level.

The lower section of the "Audio Resources" dialogue box (above) allows you to add "Audio Control Devices" by clicking on the + sign.



Select the previously loaded audio file from the drop down box. If you tick the "Use slot number" check box, the new audio fixture will be assigned a slot number (described above) instead of using the track name. If it refers to a slot number, then you can change the file assigned to the slot at a later date and keep the audio control device's assignments.

This fixture now appears in the Patch, Programmer, Rig view etcetera as if it was a normal fixture. It has two parameters:

- Audio Volume
- Media Run Stop

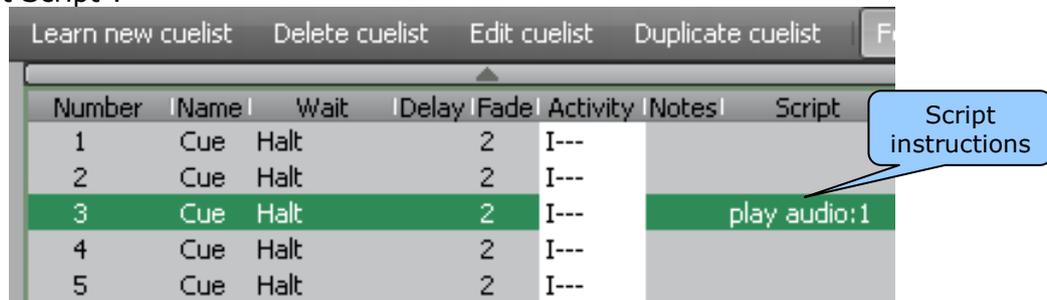
You can create cues using these attributes and record them in cuelists.

25.10 SIMPLE SCRIPT LANGUAGE (MACROS)

Scripts are instructions that you can insert in each step of a cue-list. When that cue is played, the instructions in the script are automatically executed.

For example, when a cue is played, its script can automatically play another cue-list or even a specific cue from a cue-list or it might play an audio file (see above).

To enter script instructions in a cue, in the Control Booth window, click on the cue-list then click on the cue that is to contain the script. Either double click on the script cell or right click on it and select "Edit Script".



The simple instructions that you can enter in a script are described in the following table. All spaces and punctuation marks as listed in the table must be included in your script. Names of cues and cue-lists are case sensitive.

<p>Script Instruction</p> <p>play audio: #</p> <p>pause audio: #</p> <p>stop audio: #</p> <p>pause</p> <p>stop</p>	<p>Description</p> <p>Plays (or resumes if paused) the specified audio file. Audio files must be pre loaded in the "Audio Resources" dialog via the Audio button.</p> <p># is either the "slot" number from the Audio Resources dialog.</p> <p>e.g. play audio:1</p> <p>or the name of the file preceded by a / (forward slash).</p> <p>e.g. play audio /prettyfly or play audio /prettyfly.mp3 (There is no need to include the path).</p> <p>Pauses the specified audio file.</p> <p>Stops the specified audio file.</p> <p>Pauses the last played audio file.</p> <p>Stops the last played audio file.</p>
---	---

play	Resume the last played/paused audio file.
go listname	Plays the named cue-list. e.g. go StdColPos
jump listname,cuenum	Plays the specified cue number in the named cue-list. e.g. jump StdColPos,2
snapjump listname,cuenum	Snaps to the specified cue number in the named cue-list.
goprev listname	Plays the previous cue in the named cue-list.
goend listname	Plays the last cue in the named cue-list.
pauseback listname	Pauses the last cue in the named cue-list. If the cue-list is already paused, it steps it backwards.
skipnext listname	
skipprev listname	
inhibit listname,1	Activates "Inhibit" on the named cue-list. No output from the cue-list is permitted and an X is displayed beside the cue-list name.
inhibit listname,0	De-activates "Inhibit" on the named cue-list.
release listname	Releases the named cue-list.
reinstate listname	Gives the named cue-list "latest" (LTP) priority.
setfader listname, ##	Sets fader level to ## for list named listname
this	'this' as a list name, refers to the cue-list that contains the script being executed. e.g. setfader this, 50

Multiple instructions can be included in the one script by separating them with a ; (semi-colon). For example:

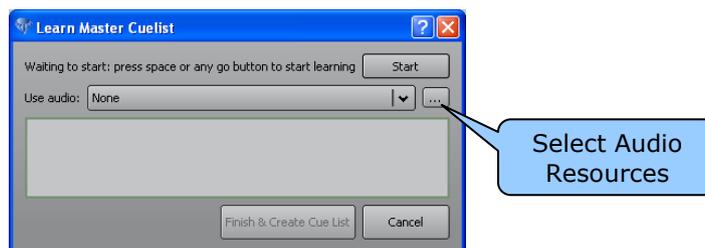
play audio:2;go band

When the cue containing this script is played, it will play the audio file listed in slot 2 (of the audio resources) and also play a cue-list named "band".

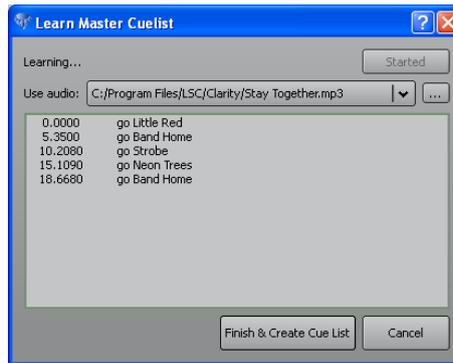
25.11 LEARN MASTER CUE-LIST

The "Learn Master cue-list" function allows you to capture (and time stamp) the button presses that you make when you playback cues over time. This can be in time with an audio track that you can optionally select. When you playback the Master cue-list your cues will be automatically played back exactly as you played them.

In the Control Booth window, pressing the **Learn** button opens the "Learn Master Cue-list" dialog.



Clicking the drop down box for "Use audio" reveals a list of all audio files that you have loaded in the "Audio Resources" dialog. If the audio file you require has not been loaded you can click the small box beside the drop box to swap to the "Audio Resources" dialog and load the file. The new master cue-list will start learning your playback commands when you press any cue-lists **Go** button or when you press the **Start** button. If an audio file has been selected it will automatically start at the same time. Playback your lighting cues (in time with the optional audio file) and Clarity will capture your playback commands as time stamped script events.



Press **Finish & Create Cue List** to create the new master cue-list. If you selected an audio file then the name of the audio file will be used for the name of the master cue-list.

Press **Release all** then playback the master cue-list that you have just created. The cues (and optional audio) will be played back with the same timing as when you manually played them. If your original playback timing was not correct you can select any cue in the master cue-list and edit the timing to suit.

Also see section 33 (Timelines) for another method of synchronizing playback to audio tracks.

25.12 BOOKMARK

Bookmark allows you to record a page bookmark for rapid recall of a Playback pages. See section 8.7.14

26 Editing Cues and Cue-lists

26.1 OVERVIEW

Playback settings, times and names can be changed in the Control Booth window (Section 25) and in the Playback configuration (Section 8.7.10). The selected settings are automatically saved with the cue-list.

To change the contents of a cue you can either:

- Make your changes in the programmer and then use Clarity’s **Update** function to update the cue.

or

- **Edit** the cue.

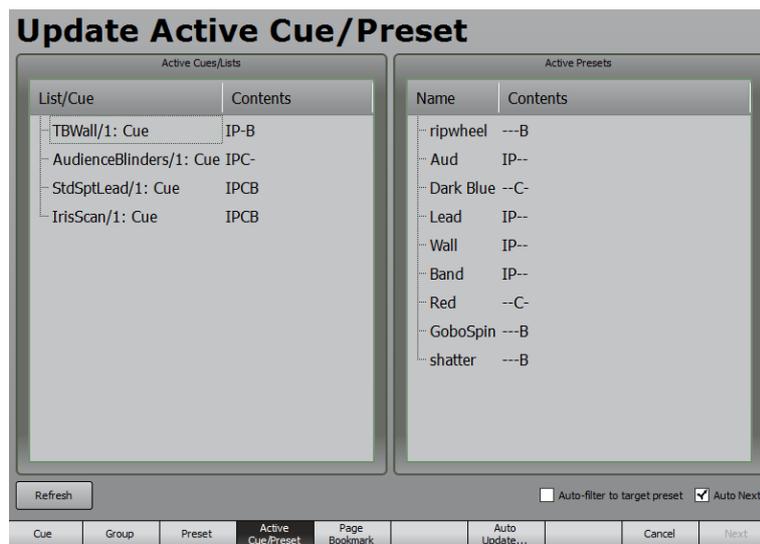
26.2 UPDATE

Clarity has two update functions, “Update” and “Auto Update”.

26.2.1 Update

The preferred method of adding new information into an existing cue is to create the new attribute values in the programmer, then “merge” those values into the cue. “Update” does the merge automatically for you.

When you have played some cues and you then make some changes to the look on stage using the Programmer, pressing **Update** opens the “Update Active Cue/Preset” dialogue box.



The currently active cues are listed on the left in chronological order of playback activity with the latest cue at the top. Active Presets are listed on the right.

- If you select a cue from the list on the left, Clarity will update that cue by merging the current programmer values into that cue.
- If you select a Preset from the list on the right, Clarity will update the preset using the current programmer values.

Select the cue or preset you wish to update with the current programmer values.

When you have made your selection press **Next**.

- If a cue is selected it opens the “Record” dialog box with the selected cuelist/cue and the merge option already selected. Press **Update** (or **Record**) to update the cue.
- If a Preset is selected it opens the “Update Preset” dialog box with the Preset already selected. Press **Update** (or **Record**) to update the Preset. If the “Auto-filter to target preset” box is ticked, the “Update Preset” dialog box will automatically select the filter(s) for the parameter group(s) that exist in the selected preset.

If the "Auto Next" box is ticked, you do not need to press **Next** as selecting a cue or preset automatically opens the appropriate cue or preset dialog box.

On LX consoles you can quickly update the active cue on a playback by pressing **Update, Select** (the select button of the playback containing the cue to be updated) then **Update** (or **Record**). You can also HOLD **Update**, press **Select** (the select button of the playback containing the cue to be updated) then release **Update**.

The original "Auto Update" function is still available via a button at the bottom of the new "Update Active Cue/Preset" dialog box and also in the "Tools" menu of the Programmer window.

26.2.2 Auto Update

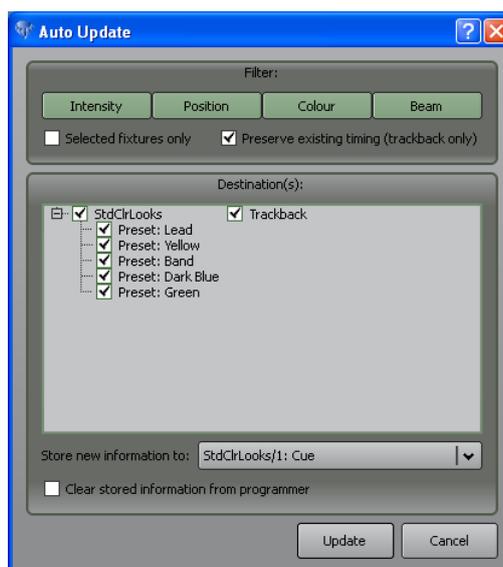
The "Auto Update" function is available via a button at the bottom of the "Update Active Cue/Preset" dialog box and also in the "Tools" menu of the Programmer window.

When you are playing back a show, the look on stage may be built up from several cues from different playbacks at the same time. You might decide to change the look on stage by using the programmer to override the attribute values from the cues or possibly add new attribute values. When you want to save the changes that you have made to the look, it can be difficult to know into which cue to record each altered values because the current look is made up of several cues plus the programmer output. The cues might also have been linked to presets and the cues might include tracked values from previous cues.

Clarity's **Auto Update** function can guide you through this operation by showing you which cues and presets have been overridden by the programmer. It offers you options to update the current cues or if the cue-list was in tracking mode you can select **Trackback** so that the changes are made to the earlier cue containing the hard values for the altered attributes. If a preset has been used you can choose to update the preset or to update the cue that linked to the preset.

If some values in the programmer are new attributes and not overridden from a cue, you can either ignore them or select one of the cues contributing to the current look and merge the new attributes with that cue.

- To update cues that are currently on stage, make your changes in the programmer then click **Update**, then select **Auto Update**:



The **Destinations** pane shows the cue-lists, cues and palettes that are contributing to the look on stage that have been overridden by the programmer. Each cue-list is ticked by default. If you don't want to update a particular cue-list, deselect its tick box.

Each cue-list has a **Trackback** option ticked by default. This means that if this is a tracking cue-list, Clarity will, if necessary, trackback through the cues and update the cue with the hard value that has been tracked through to the current cue. If you deselect **Trackback**, the updated attribute values will only be applied to the current cue.

Any presets that have been overridden are shown and ticked by default. This means that the changes in the programmer will update the preset. After the preset is updated, any remaining changes in the programmer will either be tracked back or applied to the current cue according to your selection.

If the programmer also contains some new attributes that are not present in any of the cues currently contributing to the output, then these will, by default, not be stored. If you want to store this new information, select a location for it by clicking the drop down list near the bottom of the **Auto Update** dialog box. You can choose to add this new information to any of the cues currently contributing to the output.

In addition to all of these choices, the top of the **Auto Update** dialog box allows you to:

- Mask any of the **Intensity, Position, Colour** and **Beam** attribute groups
- Only include selected fixtures.
- **Preserve existing timing (trackback only).**

Finally, you can choose to **Clear stored information from programmer** when finished by ticking the box – any information that wasn't stored remains in the programmer.

To update all of the selected cues and/or presets click **Update**.

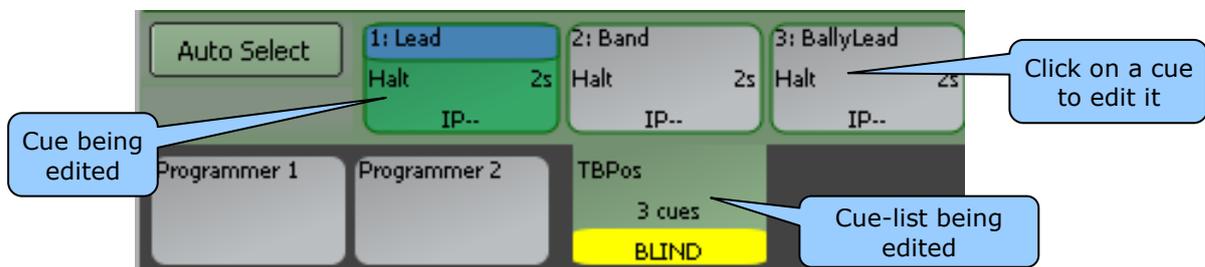
26.3 EDITING A CUE

When the selected cue or cue-list is edited, it automatically opens an edit session in the Programmer window and that session becomes the "current session" meaning that the encoder wheel touch screen and controls can be used to perform the editing.

There are several methods of selecting a cue to be edited.

- To edit the contents of a playback, press **Edit** then press any flashing button on the playback to be edited.
- To edit the contents of a cue-list, in the Control Booth window, select the cue-list by clicking on it then click **List, Edit cue-list**. You can also edit cues and cue-lists by **right-clicking** on the cue or cue-list in the Control Booth or the Performance windows and selecting **Edit Cue-list** or **Edit Cue**.

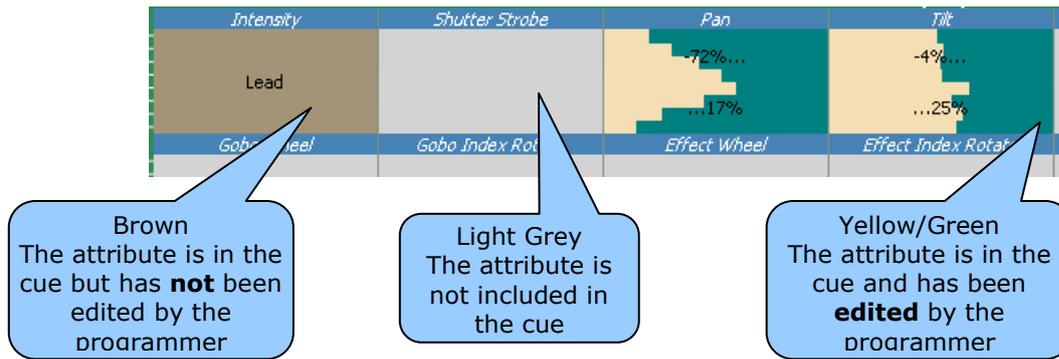
Editing a cue or a cue-list will load the cue-list into a new edit session at the bottom of the programmer window and pre-select the relevant cue in the list.



Clicking **Auto Select** will automatically select all of the fixtures in the cue allowing them to be edited by the programmer session. Alternatively you can select individual fixtures or multiples or groups and use the Programmer controls to edit the cues. You can click on any of the cues in the edit session to edit them.

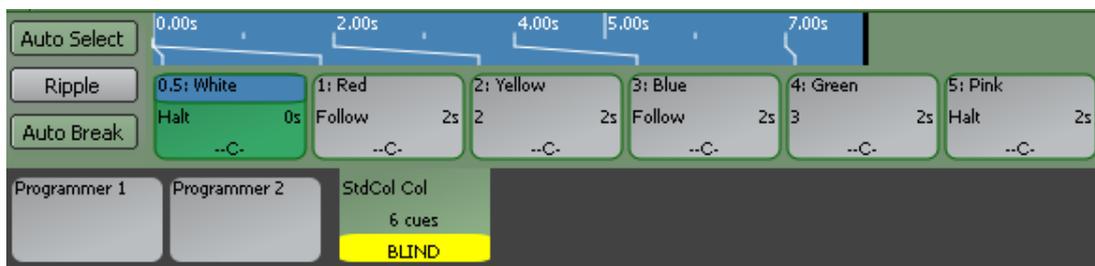
The Record button changes its name to **Save** and the button below to **Save As**.

Edited cue-lists and cues can be identified by their different coloured attribute controls that show if the attribute's value has been altered by the programmer.



26.4 EDITING FOLLOW OR WAIT TIMES

Any cues that you edit that are set to immediately “follow” or “wait” for a specified time and then follow, will display a timeline above those cues in the edit session.



Programmer Window

The time line shows the actual time when each cue will play, counting from the first cue from which the others will automatically follow.

For example, if you want to know when cue 4 will be played you can read it directly from the time line rather than adding up all of the fade and wait times from the preceding cues. In the example above, cue 4 will be automatically played 7 seconds after cue 1 is played.

Note: If the cue-list only has halt cues then you won't see the timeline. There must be a follow-on or a wait time to see the timeline.

You can change the timing of a follow or wait cue by dragging its cue box and this will move the cue with respect to its predecessor as shown on the timeline.

If **Ripple** is selected, then when a cue is dragged, all following cues (up to the next halt) will also move by the same amount. When Ripple is deselected then only the cue being dragged is affected.

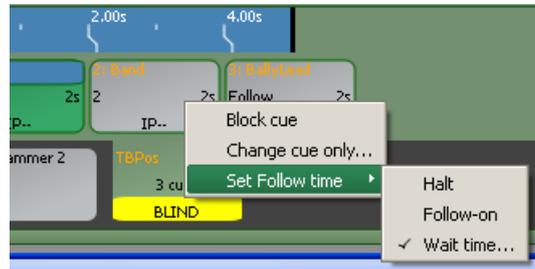
The timeline handles complex timings by auto-breaking the timeline into separate sections so that you can see the detail.



If you turn off **Auto Break** then you will see a continuous timeline.



You can also change the “Follow-on/Halt/Wait” settings for a cue by right clicking on the cue, selecting “Set Follow time” and choosing from Halt, Follow-on or Wait time.



If you select “Wait time....” a dialogue box opens allowing you to enter a specific time.

Note: If you edit the levels in a cue it can alter the times. Clarity will attempt to apply suitable timing derived from the current cue contents by examining the timing of existing parameter types and falling back to less-filtered types. For example, if you touch RGB, it will use existing RGB timing if there is any, otherwise it will use any pre-existing colour timing, else it will use overall cue timing, else it will use 2s. Clarity also tries to match ranged timing. For example, if you have fanned delay or fade values, it will try and apply the same fan on the incoming fixtures.

26.4.1 Saving the Edit

When finished editing there are several choices:

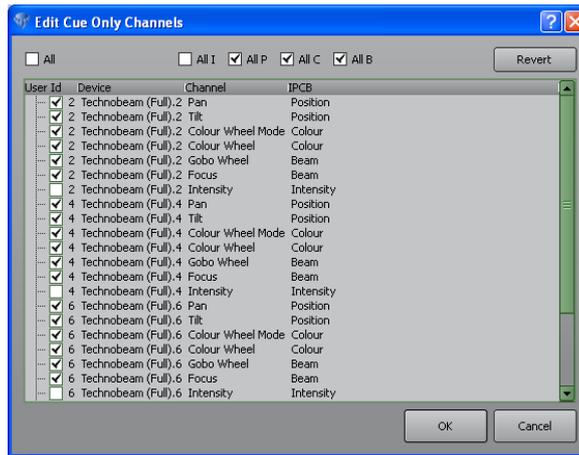
- To save the edited cue press **Save** on the command centre or click **Save** on the Programmer toolbar (instantly saved without warning).
- To save the edited cue with a new name click **Save As** on the Programmer toolbar and enter a name.
- Click **Close** on the Programmer toolbar or right click on the cue-list in session control and click **Close**. You can then choose either Save, Save as or Discard.
- To **Record** as a new cue or in a new cue-list, press **Save As** on the command centre then name the new cue or click the drop down box beside **Save As** on the Programmer toolbar. Choosing **Record** opens the **Record Cue** dialog box.

26.5 EDITING CHANNELS TO BE “CUE ONLY”

There might be occasions where you do not want the values in a cue to track into later cues in the cue-list. This is achieved by changing the status of the required channels to “cue only”.

When a cue containing “cue only” channels is played back in tracking mode, the cue only channels values are hard values in the cue. When the next cue is played back, the state from the most recent (non cue only) cue is restored automatically plus any new values in the incoming cue. In other words, when the next cue is played back, the output tracks the values as if the “cue only” channels did not exist.

You can select individual channels in a cue and make them “cue only” by right-clicking on the cue in the control booth and selecting “**Change cue only**”. This will bring up the “Edit cue only channels” dialog box.

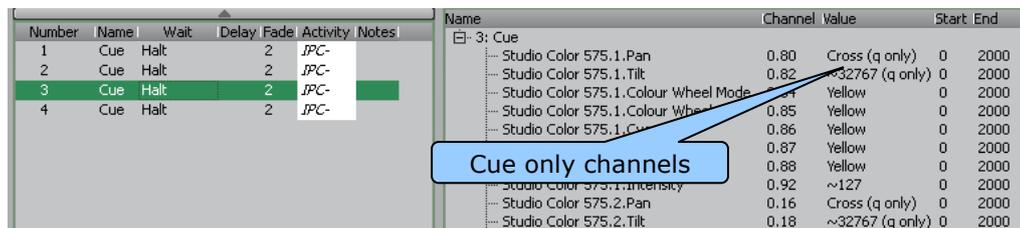


All of the channels in the cue are listed in the “Device” column and their status as a “cue only” channel is set by ticking their box. The boxes at the top allow you to select either all channels, specific groups of channels (Intensity, Colour, Position or Beam). Clicking **Revert** will restore the settings from the cue. Click **OK** to save the settings.

You can also access this dialog from the programmer when editing a cue, by right-clicking on the relevant cue in the edit session and selecting “**Change cue only...**”.

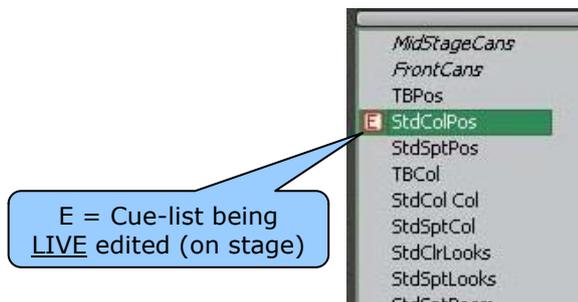
26.5.1 “Cue Only” Indication

You can see the “cue only” status of any channels in a cue by clicking on that cue in the Control Booth window. Channels that are “cue only” are shown as “q only” beside their value.



26.5.2 Live Edit Indication

In the Control Booth any cue-lists being edited live <on stage> have a red E beside their name.



26.6 BLOCK CUE

Cues that are recorded to be used in tracking playback mode only contain the changes that are required when the cue is played back. In tracking playback, any unchanged values from previous cues will track through to the present state.

If you want to prevent values from tracking through to a cue, you can edit the cue and change it into a **Block** cue. When you do this, Clarity takes all of the tracked values that would exist on the output of the playback (as if the cue-list had been played back) and converts them into hard values then adds them to the cue. See *Operating Concepts and Terminology at the end of this manual for more details.*

- To change a cue into a blocking cue, edit the cue as described above then in the edit session in the programmer window, **right-click** on the cue and select **Block cue**.

All Block cues in a cue-list can be unblocked. When you unblock a cue-list, Clarity compares each cue to the cue that preceded it and removes any duplicated values. Therefore, each cue in the cue-list will only contain changes.

- To remove all blocking cues from a cue-list, edit the cue-list as described above then in the edit session in the programmer window, **right-click** on the cue-list and select **Unblock cue-list**.

26.7 UNDO REDO EDITS

Edits can be undone or redone by clicking **Undo** on the Control Centre or **Undo** or **Redo** in the Control Booth window.

26.8 EXPORTING A CUE TO THE PROGRAMMER

When you edit a cue (above) it opens a separate cue-list session in session control. If you want to build a new cue-list based on the contents of an existing cue, you can export the cue directly into the current programmer session.

- In the Control Booth window, select the cue-list by clicking on it then right-click on the cue and select Export to current programmer.

If the current programmer is not empty, you can choose to either replace or merge with the current contents.

27 Performance Window

27.1 OVERVIEW

The performance window provides a unique and intuitive method of playback especially designed for busking, punting or improvising a show.

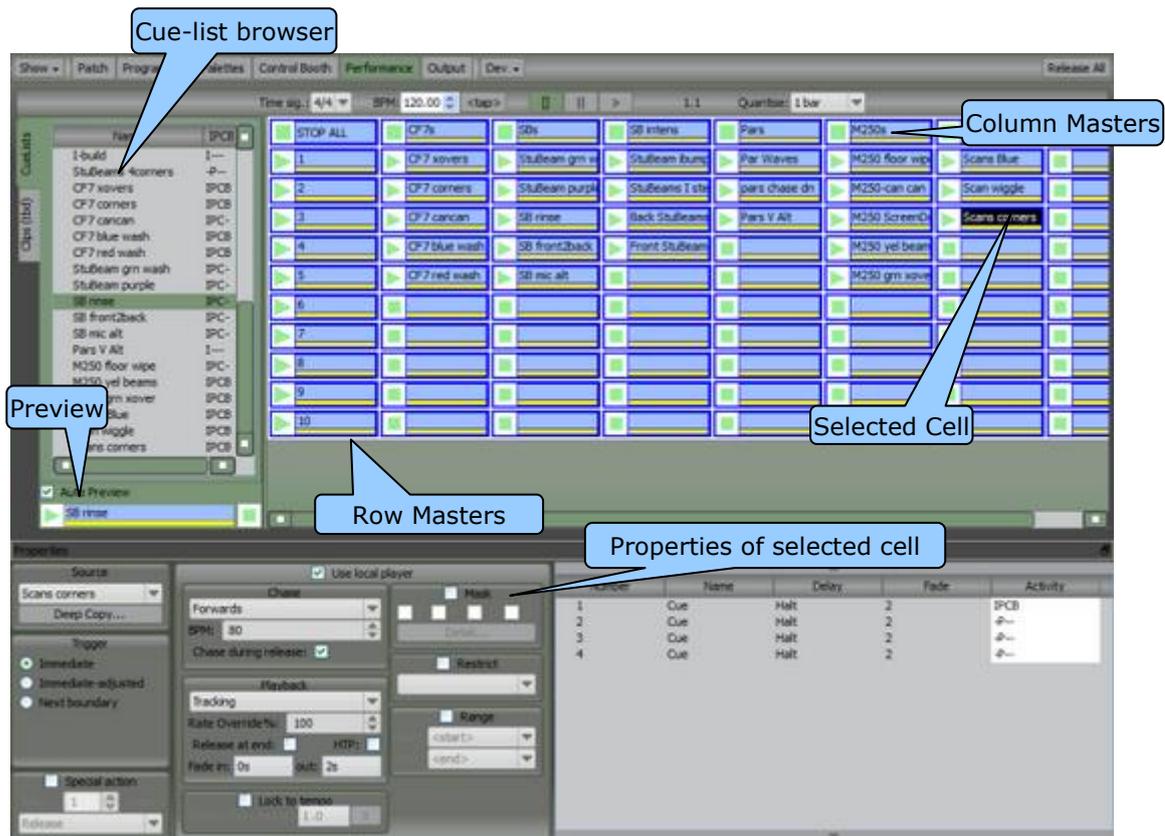
The grid area of the performance window is arranged as a grid of playable items. The top row is fixed and provides column master stop buttons. The left column is also fixed and provides row master go buttons.

Existing cue-lists are dragged from the cue-list browser and dropped onto locations on the grid providing one-click triggering of a large and expandable number of playbacks. The columns are designed to contain looks that are to be mutually exclusive, so that playback swaps between each look as it is triggered.

Playing a cell in a column releases any previously active cue in that same column. For example: one column might contain different positions for a certain type of fixture whilst another row might contain different colours for the same fixtures.

Unlimited rows and columns with copy, drag and drop allow you to create extremely versatile playback variations.

Clicking in a playable cell shows the properties of that cell in the Properties pane at the bottom of the screen where you can select ranges, filter attributes and generally modify the cue-list in that cell to achieve unlimited combinations and permutations, all without duplicating or changing the original cue-lists. Clicking the **Properties** tab at the top of the window will close the Properties pane allowing you to see a larger grid.



Playable cells can be freely moved, copied or swapped to any cell of the grid. Each cell displays concise activity information including cue and overall list progress, as well as time-to-release and time-to-start.

There is no fixed limit to the number of columns or rows that are available and the grid is automatically expanded whenever an item is dropped on a cell in the last row or column.

27.2 PREVIEWING CUE-LISTS

The selected cue-list in the cue-lists browser can be previewed without having to drop it onto a cell by using the preview ► (play) and ■ (stop) controls at the bottom of the browser. Selecting another cue-list automatically stops the previous preview. The **Auto Preview** check-box causes the preview to start automatically whenever a cue-list is clicked.

27.3 THE GRID

The grid consists of Columns and Rows.

- Each **column** plays **one** cell. Playing another cell in that column will release any other currently active cell in that column.
- Each **row** can play **multiple** cells. Playing another cell in that row has no effect on any other currently active cell.

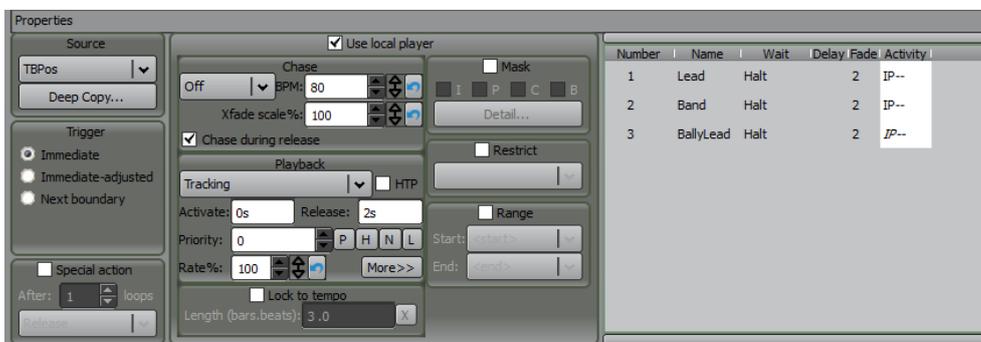
The various cell types in the grid are:

- **Stop All:** Top left. A fixed stop button for the entire grid.
- **Column Masters:** Top button of each column. A fixed stop button for the whole column and a place to label a column.
- **Row Masters:** Left button of each row. A fixed play button for the whole row and a place to label a row.
- **Cue-list:** a cell with a play button that will run the cue-list in that cell using its current properties.
- **Stop button:** an empty cell with a button that stops any other active cell in the same column.
- **Blank cell:** a non-functional empty cell.

27.4 ADAPTING EXISTING PROGRAMMING

The real power and creative potential of the performance window comes from the arrangement of Row Masters and the ability to quickly adapt and re-use existing cue-lists without duplicating them. When an existing list or chase is dropped onto a cell, the cue-list is *referenced* instead of being duplicated, so that any future edits to that cue-list will propagate to any cells where it is being used. Most importantly, each cell can be optionally configured to have different playback characteristics from the source cue-list and to only use a selected range of cues from within the cue-list.

For example, you may have a cue-list that has a nice sequence of position moves between cues 11 to 14 that you would like to re-use as a separate chase. You can drop this cue-list onto a new cell and change the cell properties to operate as a chase and to limit the range of cues to start at 11 and end at 14. You can also restrict the cell to only use fixtures from a specific fixture group and to ignore all colour and beam information. These changes do not affect the source cue-list in any way. In fact the same source cue-list can be used on multiple different cells, all with different playback/chase options, ranges of cues, IPCB (Intensity, Position, Colour, Beam) filtering and fixture groups.



27.4.1 Sync FX

If a cue contains dynamic effects (created in the dynamics tab of the programmer or applied by a dynamic preset or freeset), the "rate" of the effect can be kept "relative" to the performance window's metronome.

Right clicking on a cue that contains dynamic effects (in the Properties pane above) and selecting **Sync FX** toggles whether the effects are synchronized to the metronome or not. See section 25.5 for more details on Sync Fx.

27.5 MANAGING THE GRID

To manage **columns**, **Right-Click** in the **top cell** of the column and select either:

- Insert blank column.
- Delete selected column

To move a column, click and drag the **top cell** of the column.

Dropping a cue-list anywhere in the **right column** of the grid will automatically add a new column.

To manage **rows**, **Right-Click** in the **left cell** of the row and select either:

- Insert blank row.
- Delete selected row.
- Clear selected row. (Sets entire row to stop buttons).
- Capture to new row. (Copies active cells to selected row – see below).

To move a row, click and drag the **left cell** of the row.

Dropping a cue-list anywhere in the **bottom row** of the grid will automatically add a new row.

27.5.1 Copying Active Cells to a Common Row

If you have played some cells from different rows and you find a combination on stage that you like, you can copy all of the active cells to a single row.

To record all active cells into a blank row of your choice, hold **Function** and the Row Masters of all blank rows turn into a red record button. Whilst holding **Function**, click on a red record button.



Scattered active cells and blank row Record buttons.



Active cells copied to row 6

The previously scattered combination of cells can be simultaneously played with a single Row Master ► (Play) button.

27.5.2 Cell Properties

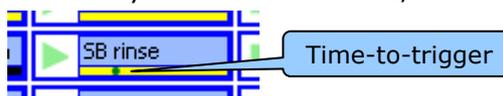
Clicking in an active cell reveals the properties of that cell in the Properties pane at the bottom of the screen. The Properties pane provides a comprehensive set of options that apply to each individual cell.



- **Source.** This allows you to select the source for the cell or to make a deep copy of the current cue-list. A deep copy duplicates the cue-list and sets the new copy as the current source.
- **Trigger.** These options are used in conjunction with the metronome (at the top of the Performance window, see below for details) and rely on the concept of a boundary which is given by the metronome's Quantize setting.
For example: if quantize is set to 1 bar, then the next boundary is when the song position reaches the start of the next bar. If quantize is set to ¼ note then the boundary is the next down beat.

The available options are:

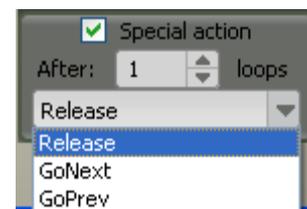
- **Immediate:** the cell is triggered as soon as it (or it's Row Master) is pressed.
- **Immediate-adjusted:** the cell is triggered immediately, but jumps forward to suit the quantize setting so that it's at the same position it would have been if it had been triggered on the boundary.
For example: if quantize is set to 1 bar and a chase is triggered on the second beat of the bar, then the cell will trigger immediately but will jump forward to the point that corresponds to the second beat as if it had been triggered at the start of the bar and will continue from there as normal.
- **Next boundary:** the cell will wait until the next boundary is reached before triggering. For example: if Quantize is set to 1 bar, then the pressed cell will trigger at the start of the next bar. This allows you to easily pre-trigger one or more cells that will start at exactly the same moment, in time with the music.



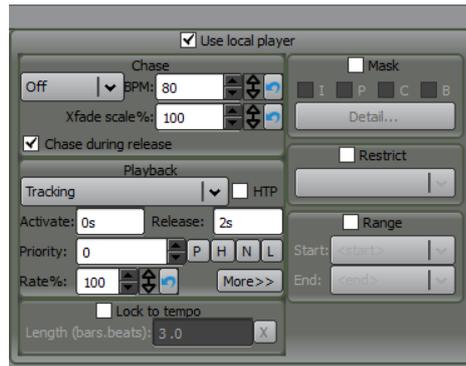
The time-to-trigger is indicated by a green dot moving from right-to-left.

- **Special action.** Ticking **Special action** will provide a degree of automated variation by taking the action that you select after an adjustable number of loops. The available actions are:

- **Release** will release the cell.
- **GoNext** will trigger the cell below this cell.
- **GoPrev** will trigger the cell above this cell.



- **Use local player.** By default, each cue-list cell in the Performance window uses its own local player playback options that are entirely separate from the source cue-list. Changing these won't affect how the cue-list behaves in the Control Booth window.



The Chase and Playback controls are identical to those in the Control Booth window. See section 25.2.1 "Cue-list Playback Options" in the Control Booth for details.

- **Lock to tempo:** When ticked, this causes the cue-list/chase to use the metronome timing as set at the top of the Performance window. The cue-list is scaled to fit into a predetermined musical duration (bars and beats). The initial length is calculated automatically based on the number of cues in the cue-list.
 - **Chases** are scaled so that each cue maps to a single **beat** (1/4 note).
 - **Cue-lists** are scaled so that each cue maps to a single **bar**.
 You can manually change the length by entering a length value in the form bars.beats. For example: 2.0 for 2 bars duration. The **X** button returns the length to the automatically calculated value.
- **Mask:** when enabled, allow you to selectively **ignore** parts of the cue-list. You can choose to ignore any combinations of I (Intensity), P (Position), C (Colour) or B (Beam). Clicking in the **Detail** box opens the **Set mask** box that allows you to or drill down for a custom selection of specific attribute types. For example: you could choose Position and then select Pan only.
- **Restrict:** when enabled, allows you to restrict playback to a specified group of fixtures. Clicking the drop down arrow allows you to select any fixture group so that playback will only affect fixtures that are both in the cue-list and in the selected group.
- **Range:** when enabled, allows you to specify a limited range of cues to playback from the cue-list. Clicking the **Start** drop down box allows you to select any cue from the cue-list. Clicking the **End** drop down arrow allows you to select any later cue from the cue-list.

The bottom right of the properties window shows the cues of the currently selected cell.

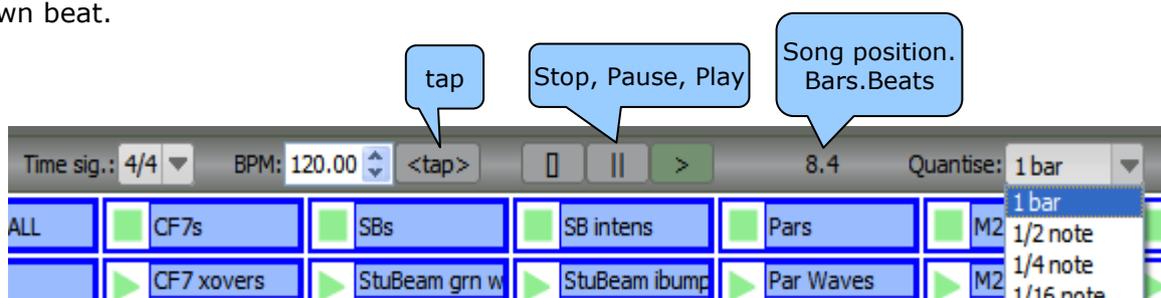
27.6 THE METRONOME

The metronome toolbar at the top of the Performance window provides control over Clarity's internal musical time base.

Cue-lists and chases can be locked to tempo and the Programmer's Dynamics (real time effects) can be synchronized to the metronome so that the playback rates keep a uniform time and achieve perfect synchronization.

Cue-lists in the Performance window can use the metronome to synchronize triggering to the next boundary which is given by the metronome's Quantize setting.

For example: if quantize is set to 1 bar, then the next boundary is when the song position reaches the start of the next bar. If quantize is set to 1/4 note then the boundary is the next down beat.



27.6.1 Metronome Settings

- **Time sig:** Time signature allows you to select the number of beats within a bar, 2/4, 3/4, or 4/4.
- **BPM:** (Beats Per Minute) is the tempo of the metronome. Set the tempo by either entering a BPM number or by using the **<tap>** button to set the tempo rhythmically. The first tap sets the down beat and subsequent taps will modify the tempo. The more taps in succession the more accurate the tempo will be. You can also use the keyboard's **Ins** (insert) key to tap the tempo.
- **Stop:** Metronome stops and the song position will start from 0.0 the next time that the play button is pressed.
- **Pause:** Metronome pauses and retains the song position count.
- **Play:** Starts the metronome.
- **Song position:** Displays the current bar and beat
- **Quantize:** Controls the **boundary** to provide exact trigger timing. This can be used in conjunction with the cell's Trigger options (Immediate, Next Boundary or Immediate Adjusted) to synchronize stepping of multiple cells. For example, if quantize is set to 1 bar, then the next boundary is when the song position reaches the start of the next bar. If quantize is set to ¼ note then the boundary is the next down beat.

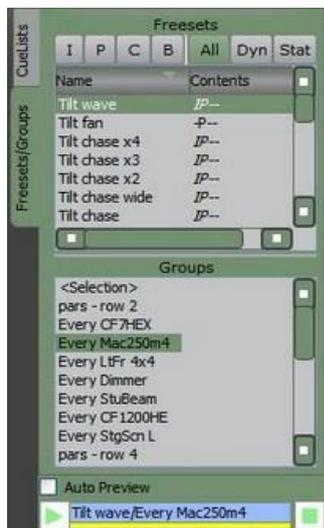
27.7 PERFORMANCE FREESETS/GROUPS

The **Freesets/Groups** tab at the top left of the performance window offers a rapid method of putting together clips by combining freesets and groups and playing them from a cell in the Performance grid.

Select a group of fixtures from the Groups pane and a Freeset from the Freesets pane. Drag either the selected group or Freeset and drop it on the desired cell in the grid. The selection that you drag will take the other selection with it.

The I,P,C,B (Intensity Position, Colour, Beam) buttons can be used to filter the attribute of the selected Freeset that you want to apply to this clip.

The cells containing these clips can be manipulated in exactly the same ways as cells containing cue-lists as described above.



28 Levels Window

28.1 OVERVIEW

The Levels window provides comprehensive monitoring of levels and activity within Clarity. The selection tabs allow you to view:

- DMX.
- Output.
- Programmer. The levels of all attributes controlled by either programmer.
- Cue-list. The contents of any cue in any cue-list

28.2 DMX VALUES

The DMX tab at the top left allows you to select any of Clarity's DMX Universes via the drop down box and to view the levels in Percent, Decimal, or in Hexadecimal.

The screenshot shows the DMX Values window with a grid of percentage values. The columns represent different attributes, and the rows represent different DMX universes. The values range from 0% to 100%.

28.3 OUTPUT VALUES

The **Output** tab allows you to view either the values or the source of control for every attribute of every fixture via the drop down box.

The screenshot shows the Output Values window with a grid of values for various attributes. The values include percentages, 'open', 'Lamp On', and 'Frost'.

Values sent to each fixture

The screenshot shows the Output Source window with a grid of source names for various attributes. The sources include 'Programmer 1', 'test_111: Cue', and 'Piston MSpeed'.

Source of control for each fixture

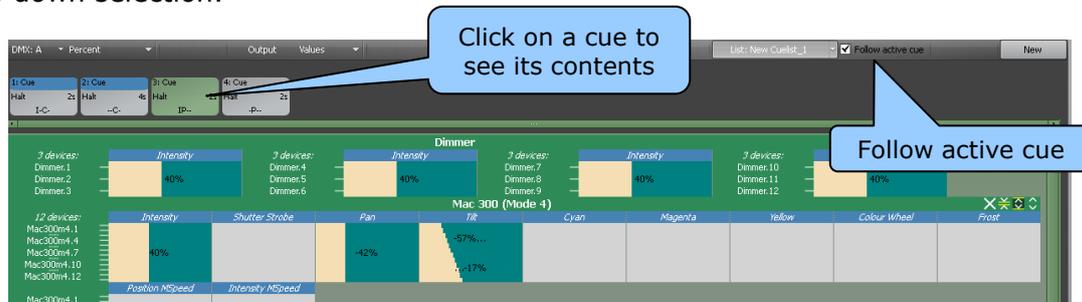
If the source is a playback, each Attribute Control shows you the name of the cue-list plus the cue number and name.

28.4 PROGRAMMER VALUES

The Programmer tab allows you to view the output of either Programmer or any edit sessions that are open by clicking on the drop down box or you can tick the **Follow current** check box to show the contents of the current programmer.

28.5 CUE LIST VALUES

Selecting the Cue List button allows you to view the output of any Cue List by clicking on the drop down box and selecting from the Cue List box. Recently viewed cue-lists are also listed in the drop down selection.



Click on a cue to see its contents.

Tick the **Follow active cue** check box to automatically see the contents of the active cue in the selected cue-list.

28.6 CUSTOMIZING THE DISPLAY

Clicking the icons in the top right corner of each type of fixture type allows a trade off between screen area and detail.



Minimized, Compact, Capped or Expanded

- **Minimized** only displays a heading for the type of fixture.
- **Compact** uses a one line display for the type of fixture.
- **Capped** uses a maximum of 5 lines for the type of fixture.
- **Expanded** shows all fixtures of that type.

28.7 NEW WINDOW

To create a new un-docked window of the currently selected Level window click **New**. Multiple windows can be opened and each window can be set to any of the available display tabs. Multiple windows are most useful when using large monitors or multi-screen set-ups.

29 Intensity Levels

29.1 OVERVIEW

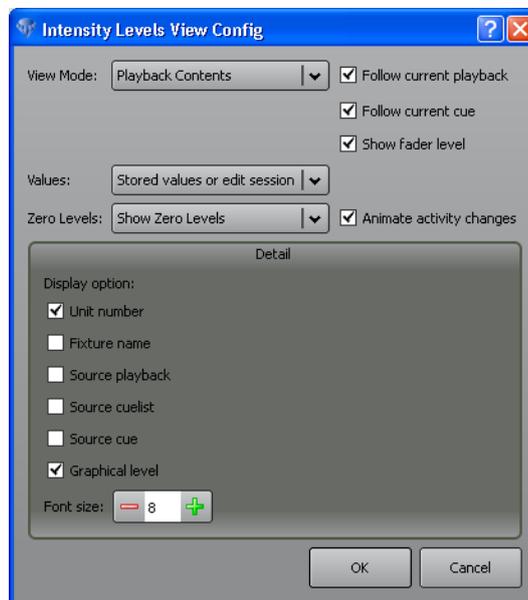
The Intensity Levels view complements the normal Levels views by providing intensity specific information with optional auto-compression (hiding levels that are at zero). This makes it much easier to see all of the channels in use when there a large quantity of fixtures. The window provides two default views:

- "Console" which (by default) shows the source of each fixtures level and hides zero levels.
- "Follow" which (by default) follows the current cue-list and shows its contents.

You can open "New" windows and set them to show either of the above views and also customize their settings to your requirements as described below. Views can be undocked and dragged onto other monitors.

29.2 VIEW SETTINGS

To configure an intensity view on the Intensity Levels tool bar click **Settings** or right click on a view and click "**Configure**".



The options for each view are:

View Mode:

- If you are configuring a new window you can set it to display either:
 - Playback contents (with additional options to follow current playback, follow current cue and show fader level of the playback).
 - Console Output.

Values: (only for playback contents mode)

- Stored values only. Always display the values stored in the current cue, irrespective of whether the cue is active or under edit.
- Stored values or edit session. Same as above but channels being edited are shown in red.
- Live values. Only values from the current cue are shown if they are active.

Zero levels:

- Show zero levels. All levels are shown.
- Hide zero levels. Zero levels are removed from the view and all non-zero levels shuffled up to avoid empty space.
- Shade zero levels. This also hides zero levels by making them appear very faint, but doesn't shuffle non-zero levels so all channels always appear in the same place.

Animate Activity changes. If ticked, the channel number will be highlighted in yellow whenever its level is changing.

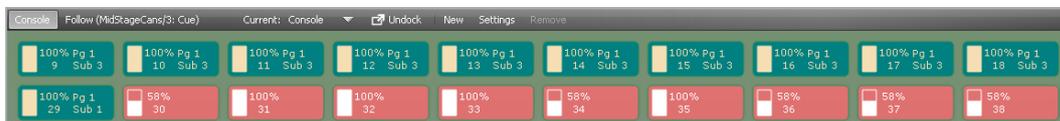
The Detail pane allows you to select the detail that is displayed for each channel number:

- Unit number.
- Fixture name.
- Source Playback.
- Source Cue-list.
- Source Cue.
- Graphical Level.

The font size can also be set.

29.3 CONSOLE VIEW

The "Console" view in the Intensity Levels window shows all intensity levels on the output of the console. The channel displays can be configured as described above. Channels shown in red are under Programmer control.



29.4 FOLLOW VIEW

The "Follow" view shows the contents of the selected cue-list (or current cue-list as selected in the views configuration) as described above. Pressing the **Select** button of a playback will show its contents on the "Follow" view.



30 Show Files & Import/Export

30.1 OVERVIEW

“New show”, “Change Show”, “Save Show” and “Save Show as” are used to manage your shows internally on your LX console or desktop Clarity.

“Export show” and “Import...” are used when exporting or importing to an external storage device for backup or to use on another Clarity system. Import and export use “Clarity Show Packages” that contain the show as well as (optionally) any media, backups and fixtures associated with the show.

Shows can also be merged. You can select which elements of a show you wish to merge with your current show.

30.2 SAVING AND CHANGING SHOWS

“Change Show”, “Save Show”, and “Save Show as” only operates on the Clarity/shows folder and uses just the show name without an extension or file location.

To save a show select **Show/Save show** or to keep the original show and save the changes select **Show/Save show as ...** and enter a new name.

To load a show select **Show/Change show/Open**

You can choose to either a “Load” regular Clarity show file (.cls) or “Import” a previously exported Clarity Show Package (.csp) (see below). When you select one of the available shows the **Load backup** button is enabled (if any back up shows are available). Selecting **Load backup** opens the “Load Backup Show” dialogue where you can select a backup copy from the drop down list showing the date and time that each backup was created.

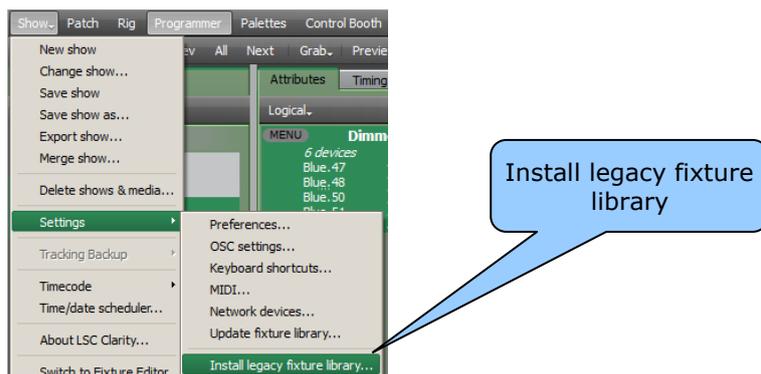
If you select a backup file then it is copied into the main shows directory as {showname}-{backupfilename}. If you want to keep the backup as your new show file name then you must use the “Save show as” option to overwrite the original show name.

Any Clarity shows created prior to Version 2 can only be opened by “importing” them (see below). Once you have imported them you can save them again and they will now reside in the clarity/shows folder as a show. You can also export them as described below.

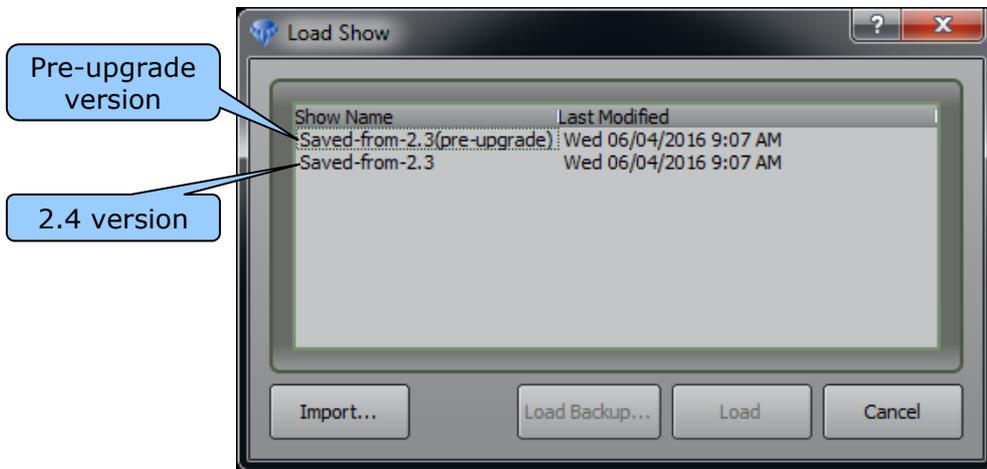
Any Clarity shows created prior to Version 2.3 can still be loaded in Clarity version 2.4. However, these shows do not include their patched fixtures (as they do in version 2.4 and on) so Clarity looks to see if there is a pre-2.4 fixture library available. This original library is known as the “Legacy Library”.

- The location/name of the “Legacy Library” is: Clarity/library.
- The location/name of the new (v2.4 and on) fixture library is: Clarity/fixlib.

Clarity checks that the legacy library is the latest version available. If it does not find the latest legacy library you will be prompted to download and install the legacy library from the LSC website. Download it to a known location then select **Show/Settings/Install legacy fixture file**.



When a pre-2.4 show is opened and then saved it will be automatically converted to version 2.4 format (with its fixtures embedded in the show file). In addition Clarity automatically creates a "pre-upgrade" copy (without the embedded fixtures) that can be used in any older Clarity systems still running versions earlier than 2.4.



Shows created and exported using version 2.4 cannot be imported into earlier versions of Clarity.

30.2.1 Read Only

To make a show file "read only" click **Show/Show is read-only**.

A show that is set to "read-only" can only be saved by using a different name.

See also "Lock System" xxx

30.2.2 Default FreEsets

Clarity normally loads with a variety of default Freesets, ready for you to use. If you don't want to use these Freesets you can omit them when you change a show. In the "Change Show" dialog, click **More**, then tick "Don't load default Freesets".



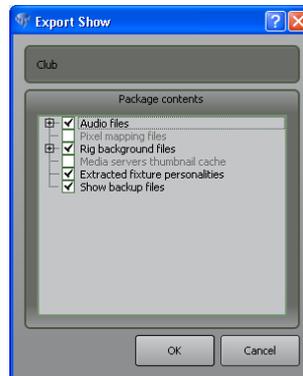
If you want to remove the default Freesets from your current show, save the show then click **Change Show**, tick the box then open the same (Last) show.

30.3 IMPORTING AND EXPORTING SHOWS

Shows are imported or exported as a Clarity Show Package file to an external storage device for backup or to use on another Clarity system. This file contains the show file plus optionally any of the following:

- Audio files.
- Pixel mapping files.
- Rig view background images.
- Media servers thumbnail cache.
- Extracted fixture personalities. The "extracted fixture personalities" will generate a standalone fixture library (.sfl) file that contains just the personalities used by the show. When the show is imported on another system, if any fixture types are not found in that system's fixture library then this "sfl" file is also searched.
- Show backup files. These are just the backup_*.cls files that exist in the show's data directory that are automatically created by Clarity.

Only the current (saved) show can be exported. To export the current show, select **Show/Export show...** The "Export Show" directory opens where you select the destination (your external memory device) for the Clarity Show Package file and enter a name for the file. The "Export Show" dialog box opens and it allows you to choose which elements go into the show package file.



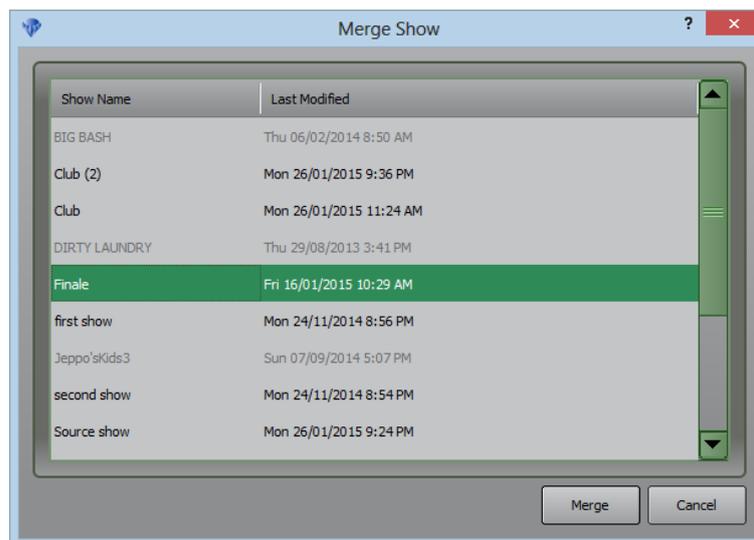
Select **OK** to complete the show export.

To import a show select **Show/Change show....** The "Change Show" dialogue box opens. Select **Open** then **Import**. When you import a show, all the files in the package are copied to their relevant Clarity destinations.

30.4 MERGING SHOWS

You can selectively merge the programming from another show into your current show. If the show to be merged is on another console or computer then it must first be "Exported" to a storage device (USB stick) and then "Imported" (described above) into Clarity on the destination console or computer.

Open the show that you want to merge programming into. To merge another show into this show select **Show/Merge Show...**



Note: Shows created with earlier versions of Clarity cannot be merged in their current form and are greyed out. To merge a show created with an earlier version, load the show onto a Clarity system running V2.3 or later and save the show. It will now be able to be merged into your current show.

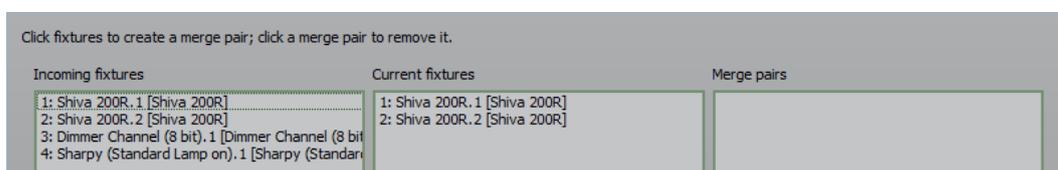
Select the show to be merged and click **Merge** or double click on the shows name. The "Merge Show" dialog box offers you the following choices.....



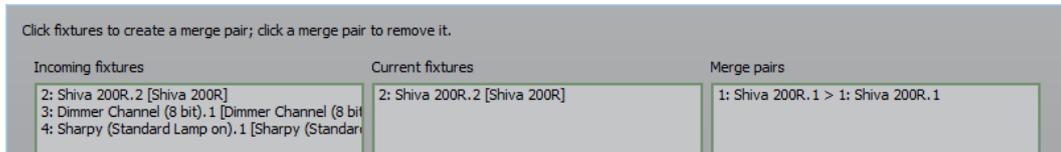
30.4.1 Merge Fixtures

You can choose to "Ignore", "Append" or "Merge" Fixtures.

- **Ignore:** If you choose "Ignore" then Groups, Cuelists and Playbacks cannot be merged because they need fixture information.
- **Append:** Select this option if all of the incoming fixtures are different to the current fixtures. It will add the incoming fixtures to the current patch in the next available universe. You can leave a gap between universes by entering a number in the "Patch universe offset". For example, if the current show has all of its fixtures patched in Universe A and the offset is set to 2, then the appended fixtures will be patched to Universe C.
- **Merge:** Select this option if any of the incoming fixtures are the same fixtures as in the current show. It opens the "Merge Pairs" dialog box:



To merge an incoming fixture with the same type of fixture in the current show, select the incoming fixture and the current fixture to which it will be merged. The selected fixtures are removed from the "Incoming fixtures" and "Current fixtures" panes and appear as a single fixture in the "Merge pairs" pane.



To undo a merge, select the Merge pair.
Any unmerged fixtures will be appended (as above).
To finish click **OK**.

30.4.2 Merge Groups

Groups can only be merged if fixtures are also selected.
You can choose to "Ignore", "Append" or "Merge by name".

- **Ignore:** If you choose "Ignore" then Group Masters cannot be merged.
- **Append:** Adds the incoming groups to the current groups. If the same name is used then both will be present but the appended group will be assigned the next available group number.
- **Merge by name:** If an incoming group has the same name as a group in the current show, then the fixture selection of the two groups is merged. All other groups are appended.

30.4.3 Merge Presets

You can choose to "Ignore", "Append" or "Merge by name".

- **Ignore:** If you choose "Ignore" then Cuelists and Playbacks cannot be merged.
- **Append:** Adds the incoming preset to the current presets. If the same name is used then both will be present but the appended preset will be assigned the next available preset number.
- **Merge by name:** If an incoming preset has the same name as a preset in the current show, then programming from the incoming preset is used. All other presets are appended.

30.4.4 Merge Cuelists

You can choose to "Ignore", "Append" or "Merge by name".

- **Ignore:** If you choose "Ignore" then Playbacks cannot be merged.
- **Append:** Adds the incoming cuelist to the Control Booth. If the same name is used then both will be present but the appended cuelist will be made unique by adding a number to it. If you tick the "Keep separated" box, the incoming cuelist will be placed in a new folder called "merged". You can optionally enter a different "folder name/prefix:" for this folder.
- **Merge by name:** If an incoming cuelist has the same name as a cuelist in the current show, then programming from the incoming cuelist is used. All other cuelists are appended.

30.4.5 Append Playbacks

You can choose to "Ignore" or "Append".

- **Ignore:** No Playbacks are changed.
- **Append:** Adds the incoming pages of Playbacks to the next available (unused) pages. You can optionally enter a "Page offset number" to leave gap between pages.

30.4.6 Append Rig Schematic Views

You can choose to "Ignore" or "Append".

- **Ignore:** No Rig Views are changed.
- **Append:** Adds the Rig View(s).

Hint: When merging shows it's a good idea to arrange your cuelists in folders prior to merging so that they can be easily managed when merged.

30.5 EXAMPLES OF MERGING

In very large setups or when programming time is limited is often advantageous to use two consoles when programming and then merge all of the programming for playback on a single console. One console controls the dimmers and the other controls the movers. In this case you would use "append" for the fixtures and all programming.

In another example there are two shows that use the same fixtures/patch but have different programming. You want to use some of the presets from the first show in the second show. In this case you would "merge" the fixtures and "append" the presets.

30.6 DESKTOP CLARITY LOCAL MEDIA LIBRARIES

When adding media to a show (rig view background, audio files, pixel mapping) desktop versions of Clarity will ask if you want to copy the media the Clarity media folder. If you agree then a copy will be placed there and that will be the file added to the show. This allows you to use a local media library that already exists on your computer.

If you use existing media libraries that are not in the Clarity media folder and you export your show to another computer running Clarity, save it on this machine and then import it back to the original machine, you need to be aware that the second machine will place the media in its Clarity media folder. When you import the show back on the original machine you will end up with a copy in the Clarity media folder (as well as the original file) but the show will now be referencing the Clarity media folder and not the original file. In this case it would be best if you declined to either include the media files when exporting the show or un-tick the media files when importing onto the target machine. You will get the usual warnings that the media files can't be found but the media paths won't be changed by the export/import/export/import process.

31 MIDI

31.1 OVERVIEW

MIDI (Musical Instrument Digital Interface) is an international standard for data communication between musical instruments, computers and other equipment such as lighting controllers. The MIDI IN connector on LX consoles and VX wings receives signals from a MIDI device such as a keyboard, MIDI sequencer or computer with MIDI output and uses the signals for various functions.

Desktop Clarity also supports 3rd party USB-MIDI devices allowing you to interface Clarity to external MIDI controllers without using a VX wing.

Clarity uses MIDI in three ways:

1. MIDI Control of Selected Playback (Simple MIDI).
2. MIDI Control of a Cuelist.
3. MIDI Timecode can be used to playback cues at specific times.

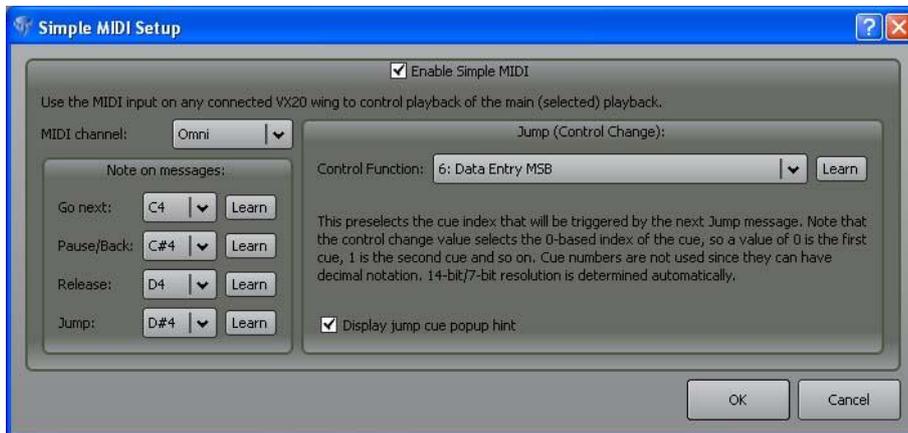
31.2 MIDI CONTROL OF SELECTED PLAYBACK

A MIDI signal can be used to remotely control the playback of the “selected” playback. On an LX console, a playback is selected by touching it’s touch screen. The cue-list name of the currently selected playback is displayed in black text on a white background. The MIDI commands can be used as follows:

- MIDI “Note ON” messages can be assigned to trigger the Go, Pause/Back, Release and Jump functions of the selected playback.
- MIDI “Control Change” messages can be used to pre-select a cue in the cue-list of the selected playback that will be triggered by the next “Note on” message to be received that is assigned to the “Jump” function.

31.2.1 MIDI Settings

To enable and setup Simple MIDI, select **Show, Settings, MIDI**. The “Simple MIDI Setup” dialog box appears:



To enable MIDI, tick the “**Enable Simple MIDI**” box.

31.2.2 MIDI Channel

MIDI signals are sent and received on 16 separate channels on the one cable. Use the MIDI channel drop down box to select the MIDI channel on which your MIDI transmitting device is sending its messages. Selecting “Omni” receives on all 16 channels simultaneously.

31.2.3 MIDI Note On Messages

The MIDI protocol uses many different types of messages. “Note on” is one type of MIDI message. Each note on the MIDI keyboard has a number assigned to it and when that note is played, MIDI sends a “note on” message for that note.

You can assign any note’s “note on” message to control the **Go next, Pause/Back, Release** and **Jump** buttons of the selected playback. Clicking on the drop down box beside each button

name allows you to select the note that will activate it. The currently assigned note is shown beside each button. *See also "Learn MIDI" below.*

When Clarity receives a MIDI "note on" message that is assigned to a playback function button, it triggers that function on the selected playback.

31.2.4 MIDI Control Function

"Control Change" is a type of MIDI message. This message consists of a function and a value. The value that is sent with that message is used by Clarity to "pre-select" a cue in the currently selected cue-list. Then, when the next MIDI note on message assigned to the Jump button is received, Clarity will jump (cross-fade) to that "pre-selected" cue.

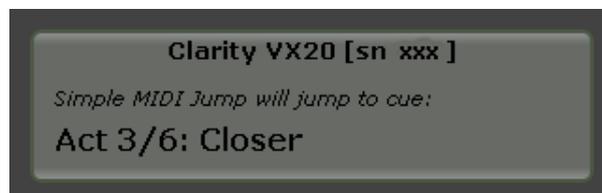
Clicking on the drop down box beside "Control Function" allows you to select the control change that will activate it. The currently assigned control change is shown in the box. *See also "Learn MIDI" below.*

The Control change value pre-selects a cue number in the cue-list by counting up from zero. Therefore, a value of 0 pre-selects the first cue, a value of 1 pre-selects the second cue, 2 pre-selects the third cue and so on. This system is used because cue numbers do not always count up in units and can have decimal notation such as cue 1.5 etc.

Control change values can consist of either one byte (7 bit) or two bytes (14 bit) of data. Clarity automatically determines the resolution of the values it receives.

If the "**Display jump cue popup hint**" is ticked, then when a Control change message is received, a popup hint box will appear showing the cue-list name and the cue number and name of the pre-selected cue.

For example, If Clarity has just received the selected MIDI control change message with a value of 5, the jump cue popup hint appears:



The next time Clarity receives the midi note on message that is currently assigned to the jump function it will jump to cue 6 (Closer).

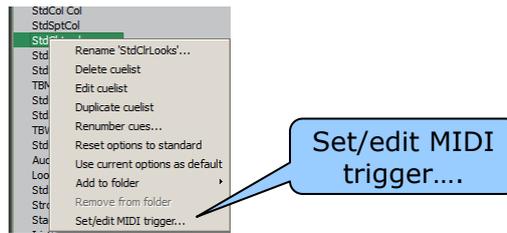
31.2.5 Learn Midi

If you are unsure of the actual MIDI note number or Control Function that you will be sending from the MIDI device, clicking the **Learn** button beside each "Note on" or "Control Function" selector turns that button green. Clarity now listens for the next MIDI message to be sent and automatically assigns it to that function. The learn button automatically turns off in 5 seconds if no MIDI signal is detected.

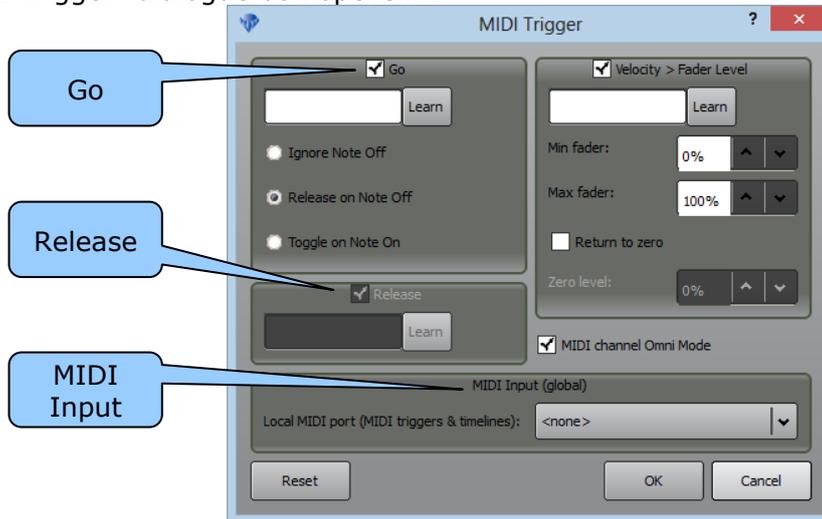
31.3 MIDI CONTROL OF A CUELIST

A MIDI signal can be used to remotely control any cue-list, even if it is not assigned to a playback.

In the control booth window, right-click on a cue-list and select **Set/edit MIDI trigger...** Alternately, select the cue-list then select **List** and select **Set/edit MIDI trigger....**



The "MIDI Trigger" dialogue box opens.....



The "MIDI Input (global)" pane allows you to select the source of the MIDI signal that will control Clarity.

Ticking the **Go** box allows a MIDI note to play the cue list.

To select the MIDI note, click the **Learn** button (it turns green) and Clarity now listens for the next MIDI message to be sent and automatically assigns it to the "Go" (play) function for the cue list. The MIDI note is displayed in the box beside the Learn button.

There are three options for releasing the cue list:

- The default setting is for Clarity to **Release on Note Off**.
- **Ignore Note Off** activates the "Release" pane. Ticking the **Release** box allows a MIDI note to release the cue list. Click the **Learn** button and Clarity now listens for the next MIDI message to be sent and automatically assigns it to the "Release" function for the cue list. The MIDI note is displayed in the box beside the Learn button.
- **Toggle on Note On** plays the cue list when Clarity receives a Note On and releases the cue list when Clarity receives the same Note On message.

Ticking the **Velocity > Fader Level** box allows the Velocity value of a MIDI note to control the Intensity fader level of the cue list. To select the MIDI note, click the **Learn** button (it turns green) and Clarity now listens for the next MIDI message to be sent and automatically assigns its Velocity value to the Intensity fader for the cue list.

There are options for:

- Minimum fader level.
- Maximum fader level.
- Return to zero with adjustable level.

If you have return to zero checked, then a note off will reset the fader level to the zero level (which, if you want, can be changed from the default of 0 to be any level you like).

You could, for example, have a MIDI note flash the intensity between 50% and 100%.

31.4 MIDI TIMECODE

MIDI Timecode information can be received by Clarity and used to control the playback of cues at specific times. This allows Clarity's playback to be perfectly synchronized with other elements of a production that are also locked to MIDI Timecode. See Section 32 Timecode for more details.



32 Timecode

32.1 OVERVIEW

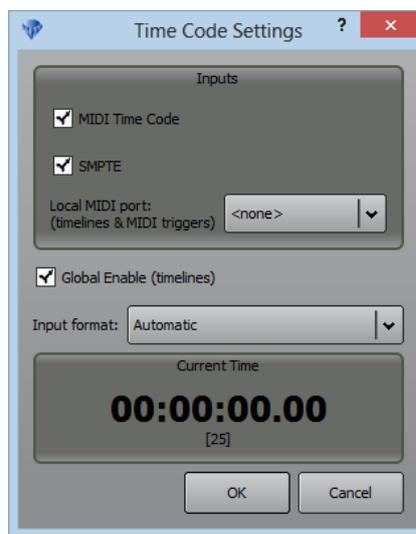
Timecode information can be received by Clarity and used to control the playback of cues at specific times. This allows Clarity’s playback to be perfectly synchronized with other elements of a production that are also locked to the same Timecode.

- Desktop Clarity uses MIDI timecode.
- LX600 and LX900 consoles can use either SMPTE linear timecode or MIDI timecode.

32.2 TIMECODE CONFIGURATION

To configure Timecode, select **Show/Timecode/Configuration...**

The “Time Code Settings” dialog box opens:



The “Inputs” pane has two check boxes:

- MIDI Time Code. Selects MIDI time code.
- SMPTE Enable. Selects SMPTE (linear) time code (LX600 & LX900 consoles)

“Local MIDI port: (timelines & MIDI triggers)”..... The drop down box allows you to select the port that Clarity will use to receive the MIDI signals.

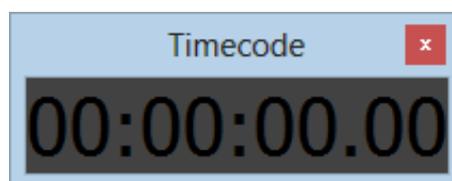
- Global Enable. Enables timecode playback from Timelines. See section 33.

Then “Input Format” can be set from the drop down box. The choices are:

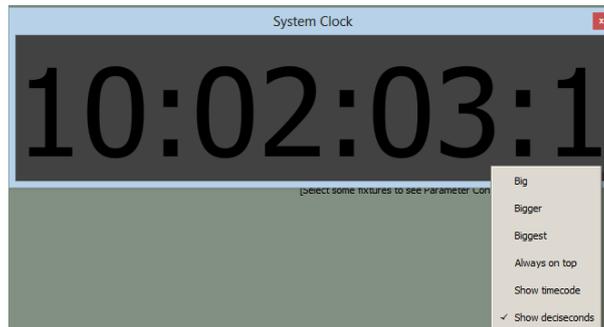
- **Automatic**.
- **24 Frames**. For film projection rate.
- **25 Frames**. For PAL video rate.
- **30 Frames – non drop**. Non-drop Timecode for NTSC video rate.
- **30 Frames – drop frame**. Drop-frame Timecode for NTSC video rate.

32.3 BIG TIME

Selecting **Show/Timecode/Big Time...** opens a time code reader box that displays the current Timecode.



If you right click on the time display you can change the size of the display or show the system clock (with optional tenths of seconds) instead of the Timecode and also make the display persistent over all Clarity windows by selecting "Always on top".

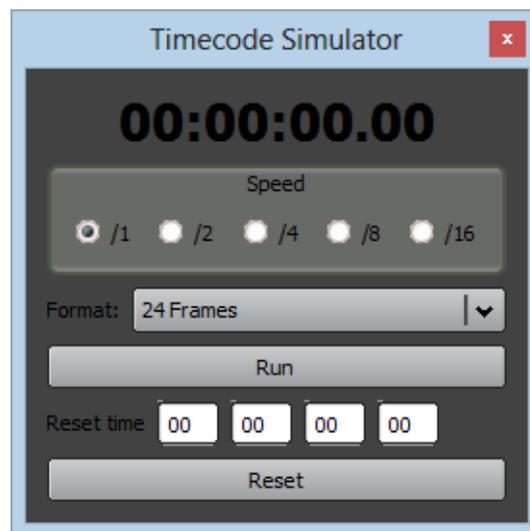


32.4 SIMULATOR

Selecting **Show/Timecode/Simulator...** opens a Timecode generator that provides Timecode for testing time code controlled "Timeline" playback when an external feed of Timecode is not available.

- Click **Run** to start or stop the clock.
- Click **Reset** to set the time to zero.

The reset time can be changed by entering a time in the "Reset time" window. This can be useful if you want to repeatedly rehearse a part of a sequence that occurs at a specific time.



The speed of the timecode can be reduced to assist in analysing "timeline" playback. The speed choices are:

- /1, Normal speed.
- /2, Half speed.
- /4, Quarter speed.
- /8, One eighth speed.
- /16. One sixteenth speed.

Clicking in the Format box allows you to select your required Timecode format from the drop down box.

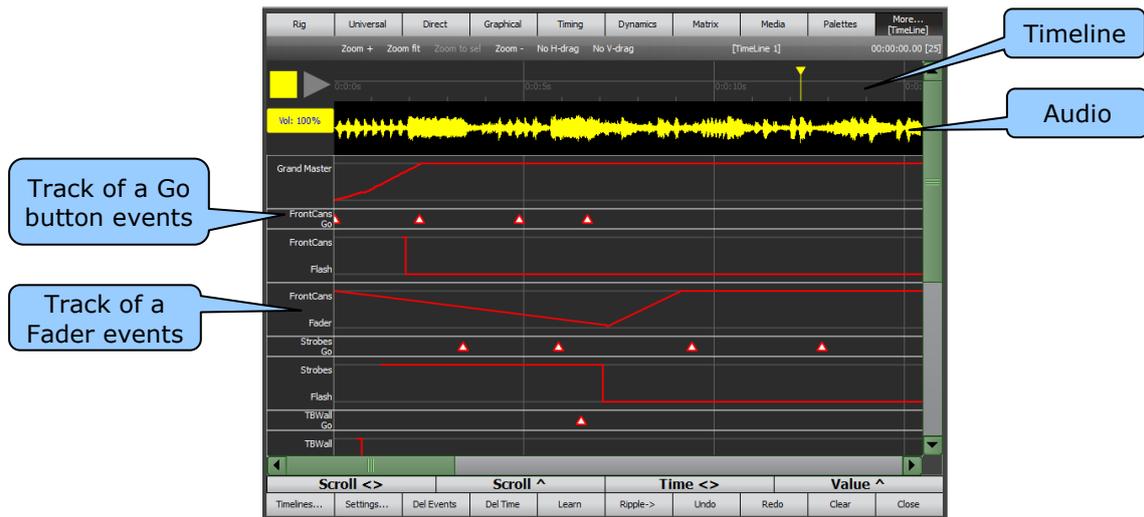
- **24 Frames.** For film projection rate.
- **25 Frames.** For PAL video rate.
- **30 Frames – non drop.** Non-drop Timecode for NTSC video rate.
- **30 Frames – drop frame.** Drop-frame Timecode for NTSC video rate.

33 Timeline

33.1 OVERVIEW

Timeline allows playback to be synchronised to either timecode, an “internal” timer or to an audio track played back by Clarity. When timecode or the internal timer is running or an audio track is played, Clarity can “Learn” all of your playback commands (Go, Pause, Flash, Release, Page change) and fader movements including the Action buttons on LX600 and LX900 consoles.

When “Learn” is active, each playback button that you press or fader that you move creates an event. The events for each button and fader are recorded on their own tracks.



An “Audio” Timeline.

When a timecode timeline is “Enabled” and the matching Timecode is received, or when the internal timer or audio track is played back, Clarity will exactly playback the actions that were previously “Learned”.

Note: Timelines learn playback button presses and fader movements. They do not learn the contents or current step of a playback. When a timeline is played back, you must ensure that the correct cuelist and step is loaded on the playback.

Events on a timeline can be easily edited by drag and drop.

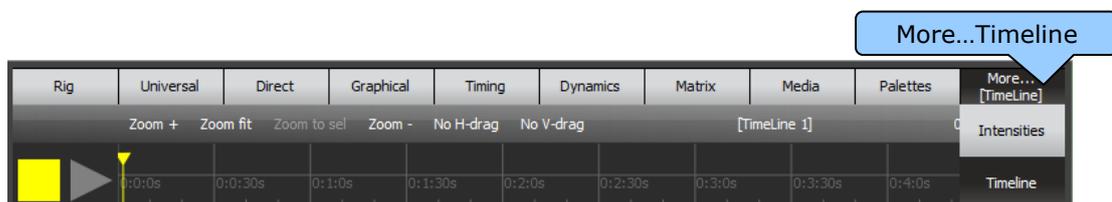
Multiple timelines can be created.

Note: Timelines cannot learn any playback from the “Control Booth” window. If you are using desktop Clarity and you do not have a VX10 or VX20 wing attached then you must playback your cues from a “virtual wing” for them to be learned. See section 3.16.2 for details on virtual wings.

This “Timeline” feature (introduced in version 2.3 of Clarity) replaces the “Timecode Configuration” playback used in earlier versions. See section 33.9 for more information.

33.2 TIMELINE WINDOW

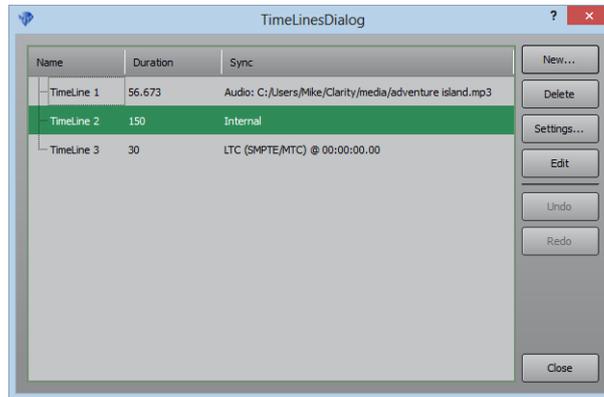
On LX consoles, the “Timeline” window is on the “Encoder Wheel Touch Screen”.



On Desktop Clarity the "Timeline" window is on the main menu bar.

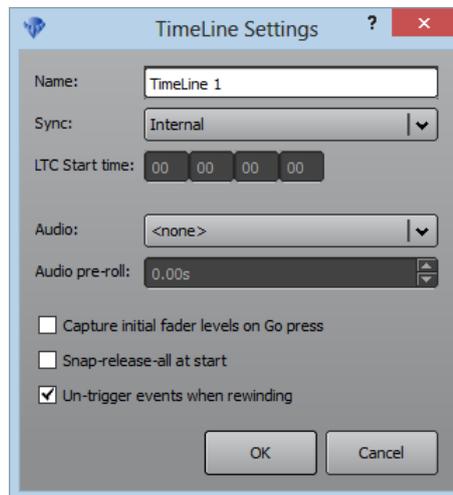


To create a new Timeline, in the Timeline window select **Timelines**. This opens the "Timelines Dialog".



Any existing timelines will be shown. You can select an existing timeline and change its **Settings** (below) or **Delete** it. **Undo** will recover a deleted timeline. To use or edit an existing timeline, click on its name and select **Edit** or double click on the name.

To create a new timeline select **New**. This opens the "Timeline Settings" dialog.



"Name:" You can enter a name for the Timeline or accept the default name.

"Sync:" Allows you to choose either:

- LTC (Linear Time Code). This will be either:
 - SMPTE (the SMPTE input on LX600 and 900 consoles or Clarity's internal Timecode simulator)
 - MTC (MIDI Time Code).
- Internal. Clarity's own internal timer.

LTC and Internal are only available when "Audio" is set to "<None>".

- Audio. This sync source is automatically selected when an "Audio" track is selected as described below.

"LTC Start Time:" Sets the start time of the Timeline when using LTC.

“Audio:” Select an audio track from the drop down box. See section 25.9 for details on how to load audio tracks into Clarity.

“Audio pre-roll:” Adds an optional delay on the timeline before the audio track is played.

“Capture initial fader level on Go Press”.
When ticked (default), Clarity will learn the current fader level of the first playback to be played and use this fader level when the timeline is played, irrespective of the physical fader position. If not ticked, a fader level will only be learned from the time that a fader is first moved.

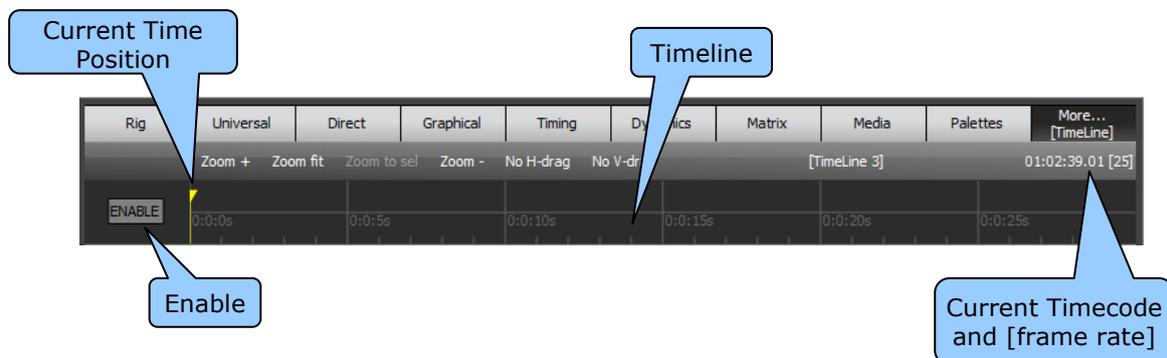
“Snap “Release-All” at start”.
When ticked (default), Clarity will instantly release all playbacks when the timeline is played. This ensures that cuelists start at their first cue.

“Un-trigger events when re-winding”.
When ticked (default), Clarity will un-trigger events in the timeline when the timeline is dragged backwards or when the time code is re-wound.

Select **OK** to create the timeline.

33.3 LTC TIMELINES

LTC (Linear Time Code) sync allows Clarity’s playback to be perfectly synchronized with other elements of a production that are also locked to the same Timecode.
When “LTC (SMPT/MT/TC)” is selected as the “Sync:” source (above), the timeline window displays a timeline of the Time Code.



To enable the timeline press **Enable**. It turns yellow. When multiple LTC timelines are created, each LTC timeline has its own “Enable” button. There is also a “Global Enable” control in the “Timecode Configuration” window that affects all timelines. This allows you to quickly disable all LTC timelines. See section 32.2. Disabling LTC timelines ensures that no unwanted playback will occur from Clarity. Both “Enables” must be active for a LTC timeline to be active.

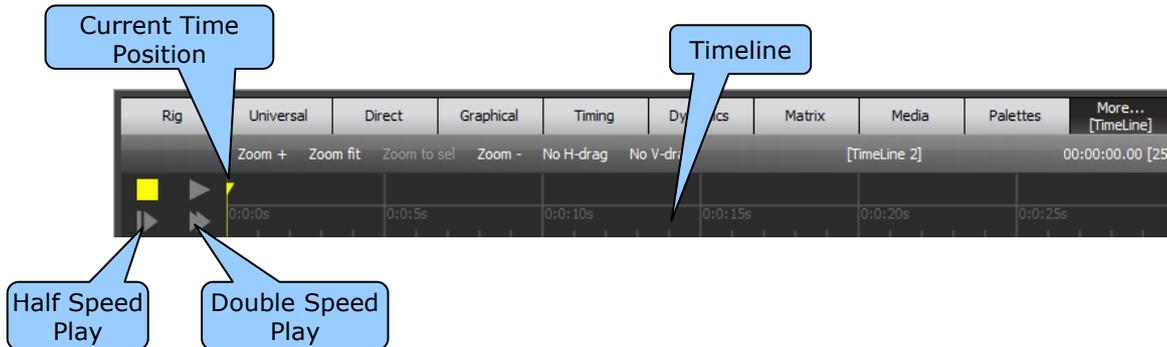
The basic operation is:

- Select **Learn** mode.
- Start the timecode and play your required cues.
- De-select “Learn” mode.
- Re-cue the timecode.
- Play the timecode again and Clarity will playback what was learned.
- Edit any cue timing as required (see below).

33.4 INTERNAL TIMELINES

“Internal” sync allows Clarity’s playback to be synchronized to a timer so that the same performance can be exactly repeated.

When the "Internal" timer is selected as the "Sync:" source (above), the timeline window displays a timeline of the internal timer.



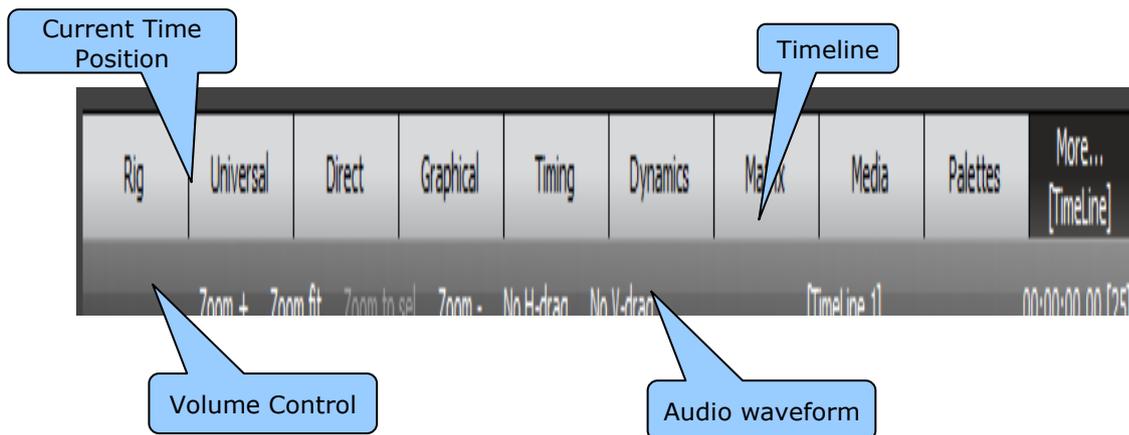
The basic operation is:

- Select **Learn** mode.
- Play your required cues. The "Timer" starts automatically with your first cue.
- Press ■ to stop learning.
- Pressing ■ when stopped re-winds to the start. You can drag the yellow "Current Time Position" marker to start the playback from any time position
- Play the timeline again and Clarity will playback what was learned.
- Edit any cue timing as required (see below).

33.5 AUDIO TIMELINES

"Audio" sync allows Clarity's playback to be synchronized to an audio track that is played back from Clarity so that the same performance can be exactly repeated.

When an audio track is selected as the "Audio:" source (above), the timeline window displays a linear waveform of the audio signal.



The basic operation is:

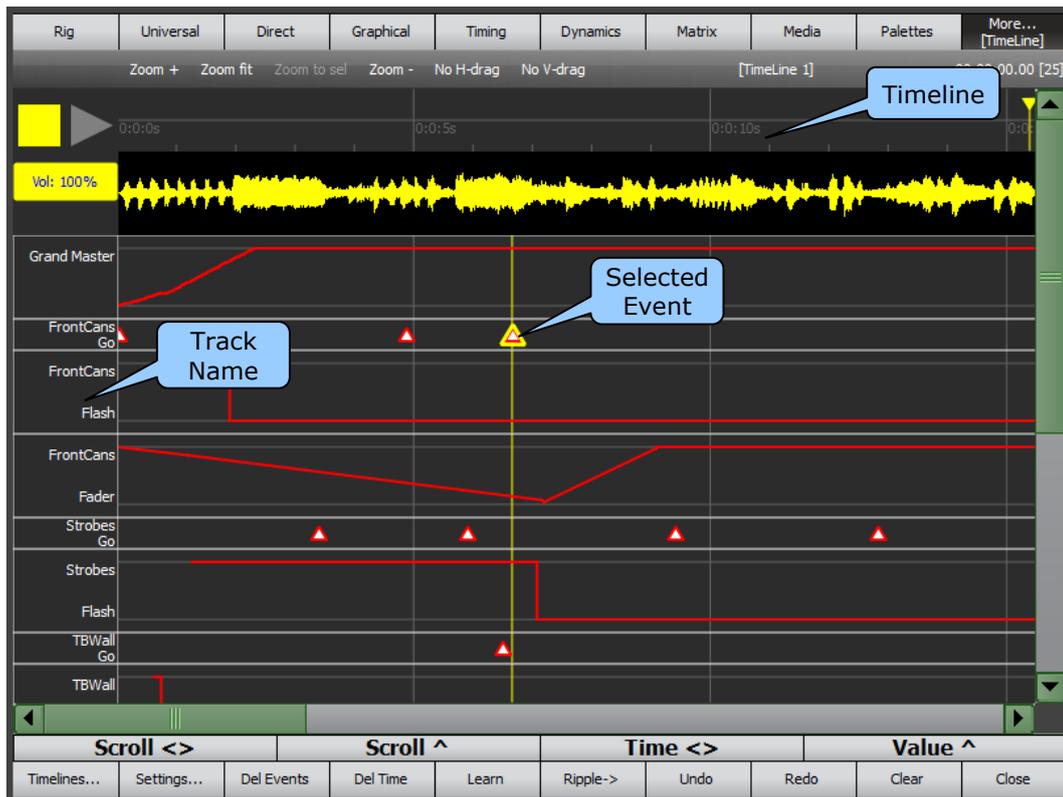
- Select **Learn** mode.
- Play your required cues. The "Audio" plays automatically with your first action.
- Press ■ to stop learning.
- Pressing ■ when stopped re-winds to the start. You can drag the yellow "Current Time Position" marker to start the playback from any time position
- Play the timeline again and Clarity will playback what was learned.
- Edit any cue timing as required (see below).

To adjust the audio volume click and drag in the “Vol:” box. You can drag left and right or up and down. The volume value is also “learned” as part of the timeline.

See also section 25.11 (Learn) for another method of synchronising playback to audio tracks.

33.6 EDITING TIMELINES

The following description uses an “Audio” sync timeline but the process is the same for LTC and Internal timelines.



There are “**Zoom +**”, “**Zoom fit**” and “**Zoom -**” controls to zoom the timeline. You can zoom to a specific selection of the “Timeline” by clicking and dragging on the timeline then selecting “**Zoom to Sel**”.

Click on an event to select it.

Events are moved by selecting and dragging.

To prevent unwanted changes when dragging fader levels you can select **No V-Drag** so that only the time is changed or **No H-Drag** so that only the level is changed.

Multiple events can be selected by dragging a box around them.

All events in a certain time period can be selected by dragging a box in the timeline.

All events in a track can be selected by clicking in the track name.

When **Ripple->** is active, all events to the right of the selected event(s) will also move when the selected events are moved.

Events are deleted by selecting them and clicking **Del Events**.

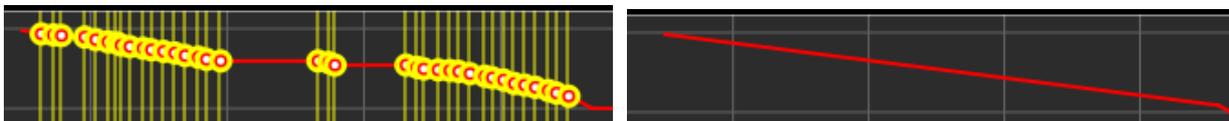
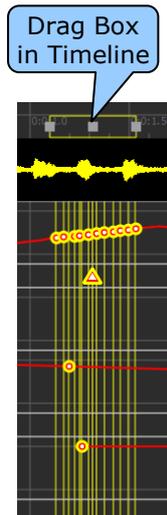
If all events in a certain time period are selected then clicking **Del Time** will delete all of those events and also remove that time so that all following events move forward by the amount of time deleted.

On LX consoles, events can also be moved selecting them and using the **Time<>** encoder wheel. When events extend beyond the screen you can scroll the display using the **Scroll<>** and **Scroll^** encoder wheels. When a fader event is selected you can also vary its level using the **Value^** encoder wheel.

Selecting **Clear** will remove all events from the timeline.

You can **Undo** and **Redo** all of your actions.

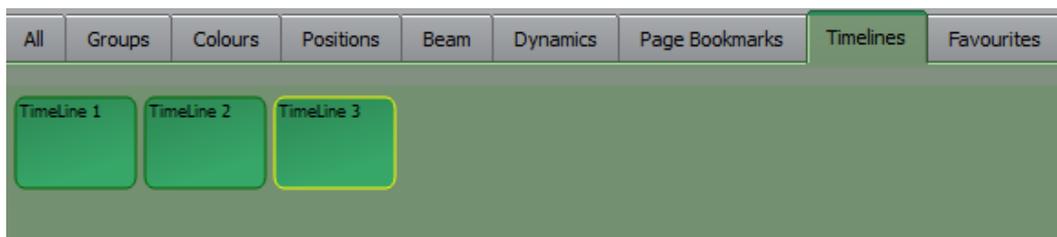
Hint: When you move a fader, the action might not be smooth and multiple events are learned. To smooth out a fade, select all of the events from just before the start to just before the beginning of the fade then delete those events.



Un-smooth fader events selected then deleted to create a smooth fade.

33.7 PALETTES

Timelines can be controlled from the Palettes window. On LX consoles they only appear on the large "Palettes" window, not on the "Encoder Wheel Touch Screen" Palettes window.



On "LTC" timelines, the Palette button "Enables" or "Disables" the timeline.

On "Internal" and "Audio" timelines, pressing the Palette button plays the timeline. If the timeline is playing it stops and rewinds the timeline.

33.8 ACTION BUTTON CONTROL

On LX600 and LX900 consoles you can assign timelines to "Action Buttons". In the Palettes window, select the "Timelines" tab then press **Assign Action Button**. Select the



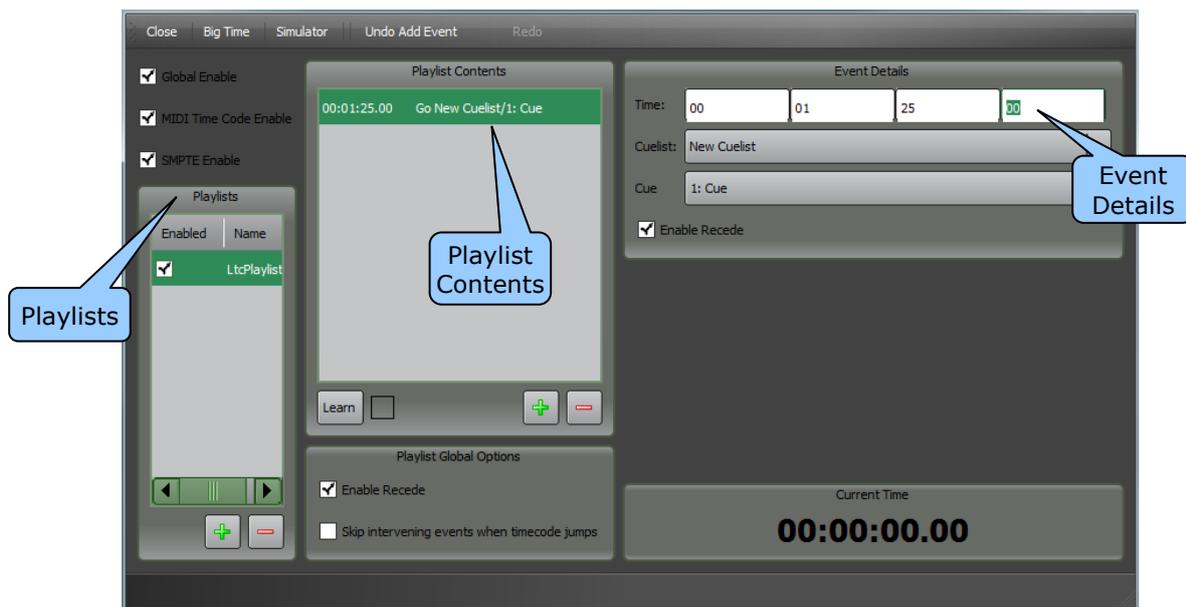
The physical action buttons perform the same functions as the buttons in the Palettes window above. When multiple timelines exist, the touch screen buttons select the timeline that is displayed in the Timeline window.

33.9 LEGACY LTC FEATURE

The "Timeline" feature above introduced in version 2.3 of Clarity replaces the "Timecode Configuration" playback used in earlier versions. If you load a show that was recorded using a previous version of Clarity and that show included "Timecode Configuration" playback, then the old version of timecode playback is still available by selecting **Show/Timecode/Legacy LTC Configuration...**

Note: This menu is only present when an old show containing a Timecode Configuration Playback is loaded.

The "Timecode Configuration" dialog box opens:



At the top left are three check boxes:

- Global Enable. Controls all timecode playback. Individual Playlists can also be enabled or disabled.
- MIDI Time Code Enable. Selects MIDI time code.
- SMPTE Enable. Selects SMPTE (linear) time code (LX consoles only)

There are three main panes, "Playlists", "Playlist Contents" and "Event Details".

Playlists are created by clicking the + symbol in the Playlists pane. Multiple "Playlists" can exist. When you select a playlist, the "Playlist Contents" shows the events (cues) in the selected Playlist. When you select an event (cue) in a playlist, the "Event Details" shows Cuelist and cue in that cuelist plus the time that the cue will be played.

Events can be added to a Playlist either automatically as you play back cues in real time by using the "Learn" function or cues can be manually entered by selecting a cue-list, cue number and time for each event. No matter which method you use, you can manually alter the cues and the times.

33.9.1 Automatic Entry of Events (Learn)

If Timecode is being received by Clarity, events can be automatically entered into a Playlist as you play them back in real time. When you play a cue, a new event is automatically created in the selected playlist.

- To create a new Playlist, click on the **+** symbol in the Playlists pane.
- At the bottom of the Playlist Contents pane, click **Learn**. The Learn button turns green. If Clarity is receiving Timecode, the box beside the Learn button will flash red and automatic entry of events is possible.
- Playback your show using any of Clarity's playbacks. Each time a cue is played back a new event is automatically created containing the cue-list, cue number and the current Timecode when the cue was played.
- When finished click **Learn** to de-select it.
- If necessary you can edit any of the events and their times as described below.

33.9.2 Manual Entry of Events

You can manually enter the events in a Playlist as a cue-list, cue number and the timecode reading when the cue is to be played.

- To create a new Playlist, click on the **+** symbol in the Playlists pane.
- Clicking on the new **Playlist** that was created will enable the "Playlist Contents" pane.
- In the Playlists Contents pane, clicking on **+** symbol will add a new **Event**. This event has no details as yet.
- Clicking on that **Event** will enable the "Event Details" pane.
- In the Event Details pane, clicking on the **Cue-list box** allows you to select a cue-list (that you have previously recorded) then clicking on the **Cue box** allows you to select a cue in that cue-list. *See also "Recede" below.*
- The time for an event can be set by clicking in the time boxes and either entering a number or using the mouse wheel. Timecode is entered in Hours, Minutes, Seconds and Frames. Press [Tab] to advance to the next time field.
- To add another event, click on the **+** symbol in the Playlists Contents pane.
- Clicking on that **Event** allows you to select a Cue-list, Cue and Time for that event.

33.9.3 Editing Events

The contents of any event including its Timecode value can be edited by clicking on the its Playlist then clicking on the event and altering the Event Details as described in the manual entry of events above.

33.9.4 Managing Playlists

- Multiple Playlists can be created by clicking on **+** symbol in the Playlists pane.
- To delete a Playlist, click on the Playlist then click the **—** symbol in the Playlists pane.
- To delete an Event in a Playlist, click on the Playlist then click on the Event in the Playlist Contents pane, then click the **—** symbol.
- Deleted Playlists and Events can undone or redone by clicking **Undo Del Event** or **Redo Del Event**.
- Playlist names can be edited by double clicking on them.

33.9.5 Timecode Playback

To enable Timecode playback, select **Show/Timecode/Configuration.....**

- Tick to enable the type of Time Code (MIDI or SMPTE) that is connected to Clarity.
- Tick the "**Global Enable**" box.
- To enable a Playlist to be controlled by Timecode, tick that Playlists "**Enable**" box.

If Global Enable is not ticked, no Timecode playback is possible. A Playlist needs both its own enable and the global enable ticked for it to be played back by Timecode.

When Clarity is receiving Timecode, any "enabled" Playlist will play each event when the time in the Event Details box matches the Timecode being received by Clarity. *See also "Recede" below.*

33.9.6 Recede

There are two Recede options, Global Recede and Event Recede and they work together. If Global Recede is not ticked, no Event Recedes will work. An event needs both its own recede and the global recede enabled for it to recede.

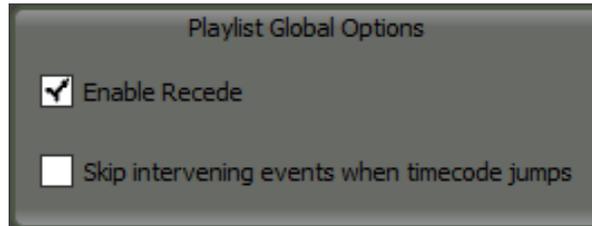
When Recede is enabled (default), events will follow the absolute value of the Timecode in both directions of time. If the Timecode jumps back in time, the events will follow. When "Recede" is NOT enabled, events will only follow forward changes in Timecode.

For example, if recede is enabled, an event to trigger cue 2 at 0:0:10:0 will trigger cue 2 when the Timecode first becomes later than 0:0:10:0 and will trigger cue 1 when the Timecode first becomes earlier than 0:0:10:0.

- Receding from the first cue in a cue-list will release the cue-list.

33.9.7 Skip Intervening Events

If the incoming Timecode suddenly skips to a new point in time, you can choose whether or not to skip any events that would have been triggered in that missing time period.



34 Remote Control

34.1 OVERVIEW

Clarity can be remotely controlled and can also control other devices. There are several methods available:

- MIDI (Musical Instrument Digital Interface) is an international standard for data communication between musical instruments, computers and other equipment such as lighting controllers. Clarity receives signals from a MIDI device such as a keyboard, MIDI sequencer or computer with MIDI output and uses the signals for various functions. See section 31.
- OSC (Open Sound Control) is a protocol for real time control between computers and multimedia devices. This allows Clarity to control OSC devices and also to be controlled by OSC devices. See section 34.2 below.
- The "Network Devices" feature allows Clarity to interface with UDP (User Datagram Protocol) network devices so that they can be controlled by Clarity and they can trigger playback actions in Clarity via a network. See section 34.3

34.2 OSC CONTROL VIA AN IPHONE/IPAD/ANDROID

Clarity can be remotely controlled via a wireless network by an iPhone, iPad or Android device running the "TouchOSC" app loaded with the appropriate dedicated Clarity "touchosc" template.

34.2.1 Setting up OSC on an iPhone, iPad or Android

To setup an iPhone, iPad or Android device you will need a computer with internet access. The computer and the iPhone/iPad/Android must both be connected to the same wireless network.

On your iPhone/iPad, go to the app store and purchase and install the "TouchOSC" app.
On your Android device, go to the app store and purchase and install the "TouchOSC" app

On your computers web browser, go to.....

hexler.net/software/touchosc

Scroll down to the "Downloads" section then download and install the "TouchOSC Editor". Select the version that is suitable for the operating system on your computer.

If you have Clarity installed on your computer, navigate to your Program Files/LSC/Clarity/Extras folder where you will find the Touchosc templates for the iPad and iPhone/Android. If you do not have Clarity installed on your computer, on your computers web browser, go to.....

lsclighting.com/help-centre/downloads/Clarity-LX-Consoles/

Download the "Touchosc template for your device".

Run the previously downloaded "TouchOSC Editor" and open the iPhone/Android or iPad template.

Make sure your iPhone/iPad/Android is connected to the same wireless network as your computer. This allows Touch OSC layouts to be transferred directly from the OSC Editor to your device.

On your computer, in the TouchOSC editor press "Sync".

On your iPhone/iPad/Android, run the "TouchOSC" app and from the "Layout" page select "Add". On the "Add Layout" page you should see your computers name. Select your computer. The "Clarity Remote" layout will be downloaded to the device. On the "Layout" page select the downloaded "Clarity Remote" by touching it.

On your computer, close the TouchOSC editor.

On your iPhone/iPad/Android, in the TouchOSC app on the "Connections" pane, set OSC to "Enabled". Make a note the settings for the "Port (outgoing)" and "Port (incoming)". You will need

to enter these into the Clarity. You can also note the "Local IP address" of your iPhone/iPad. This can optionally be entered into Clarity as described below.

More detailed instructions can be found at:

<http://hexler.net/docs/touchosc-configuration-layout-transfer-wifi>

34.2.2 Setting up OSC on Clarity

On a desktop version of Clarity, ensure that your computer has its wireless turned on or connect the computer to a wireless router or wireless network.

On LX consoles, the easiest method is to purchase a low cost "Wireless Router" and connect it to the LX console's Ethernet connection. Alternately you can connect the console to an existing wireless network. LSC recommends using the "Ethernet 2" port to connect to the wireless router or a network because Clarity's default setting for Ethernet 2 is "DHCP". This allows the router or network to automatically assign an IP address to Clarity.

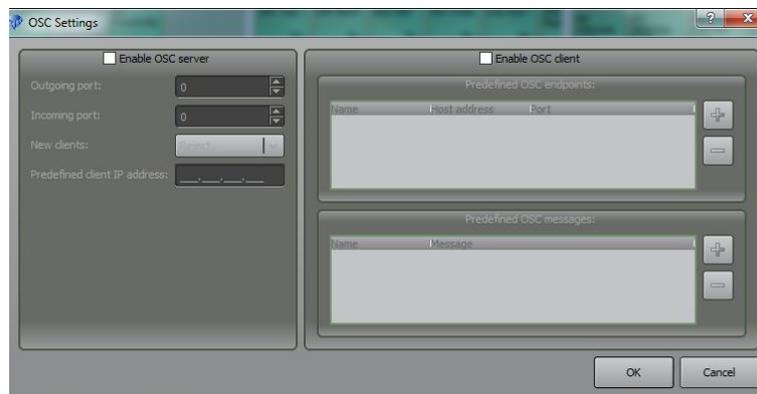
Make sure your iPhone/iPad/Android is connected to the same wireless network as Clarity.

On a desktop version of Clarity, navigate to your computers network connections and make a note of your computers IP Address.

On the LX console, start the LX Tools by pressing **Function+Fine+Fine** at the same time. Navigate to the "Networking" screen and make a note of the IP address of the Ethernet connection to which the wireless network is connected.

On your iPhone/iPad/Android, in the TouchOSC app on the "Connections" pane, select "OSC" and in the "Host" enter the IP address of Clarity that you noted down above.

On Clarity, from the "Show/Settings/OSC settings" menu open Clarity's **OSC server**.



In the OSC Server Pane make the following settings:

- Tick "Enable OSC server".
- Setup the "Outgoing port:" to match the Incoming port on the iPhone/iPad.
- Setup the "Incoming port:" to match Outgoing the port on the iPhone/iPad.
- "New Clients:". This can be set to either "Reject", "Ask" or "Allow".
If set to "Ask", then any newly detected OSC client will cause a pop up screen to appear to confirm the operation. This "pop up" can be bypassed. See below.
If set to "Allow" then it will automatically connect but beware that unwelcome users might connect without your knowledge.
- "Predefine client IP address:". If "New Clients:" is set to "Ask" and you enter your iPhones "Local IP address" then it will bypass the confirmation pop up.

34.2.3 Controlling Clarity with Touch OSC

Run the Touchosc app on your iPhone/iPad/Android.



When your iPhone/iPad/Android and Clarity are both correctly configured (described above) and connected to the same wireless network, the five tabs at the top of the screen can be used to select:

- Groups
- Keypad
- Pan/Tilt
- Playback
- Update

Your iPhone/iPad/Android will automatically show the names of the Groups and cuelists that exist on Clarity.

34.2.4 Controlling Clarity From an OSC Client

Clarity can be directly controlled by a remote device such as a show controller. The device acts as an OSC client that sends messages (listed below) to Clarity.

To receive OSC messages you must enable the OSC server inside Clarity as described above (section 34.2.2) and use a client to send the messages.

The OSC messages that Clarity responds to are:

```
/cuelist/go {cuelist name}  
/cuelist/go {cuelist name} {cue number}  
/cuelist/pauseback {cuelist name}  
/cuelist/skipnext {cuelist name}  
/cuelist/skipprev {cuelist name}  
/cuelist/release {cuelist name}  
/cuelist/setflash {cuelist name} {boolean}  
/cuelist/setfader {cuelist name} {0.0 ... 1.0}  
/setgrandmaster {0.0 ... 1.0}  
/setdbo {boolean}  
/releaseall
```

{cuelist name} can include wildcards, and is case-insensitive. If it matches more than one cuelist then all cuelists will be affected.

For example you can send /setfader "*" 1.0 to set all faders to full.

Setflash only works for cuelists that are assigned to a VX wing or LX console playback.

34.2.5 Controlling Other Devices From Clarity

To allow Clarity to control OSC devices, open Clarity’s OSC server from the “Show/OSC settings” menu and tick the “Enable OSC client”.

OSC messages can be defined in the “Script” fields of cues in the Control Booth. See section 25.10 for information on the script field. When the cue containing the script is played, the message is sent to the device.

For example:

The script “osc(192.168.1.7):/audio/volume 50” sends the value 50 to the OSC address /audio/volume at OSC endpoint IP address 192.168.1.7

The script “osc(192.168.1.7):/message/label “ha ha” sends the string “ha ha” to /message/label.

The script “osc(cdplayer):\$play sends the predefined OSC message play to the pre-defined OSC endpoint called cdplayer. You can pre-define endpoints and messages in the OSC setting dialogue box.

34.3 NETWORK DEVICES

“Network devices” allows Clarity to interface with UDP (User Datagram Protocol) network devices over a standard network. This allows the network device to trigger playback actions in Clarity and also allows Clarity to control the network device.

Typical applications include:

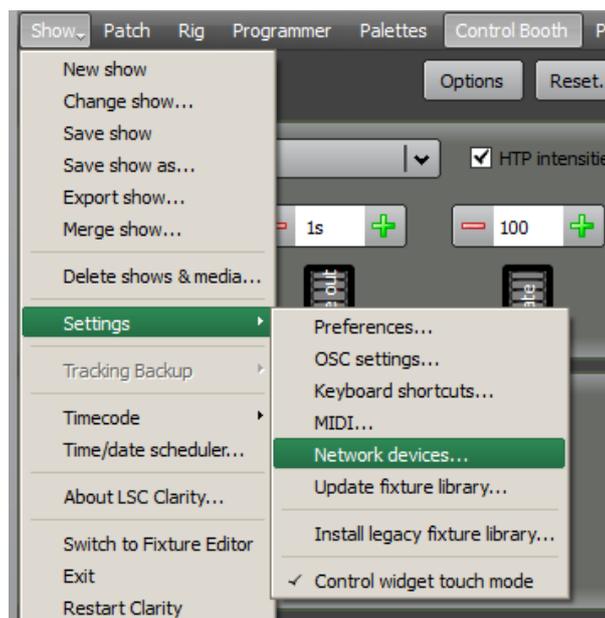
- Allowing remote contact closures to active Clarity over a network connection.
- Allowing Clarity to communicate with a building automation system allowing the system to control Clarity playback or for Clarity to activate building lighting systems.

One commonly used network device is a KissBox © Input/Output card frame. See www.kissbox.nl for more details and to download the KissBox control software.

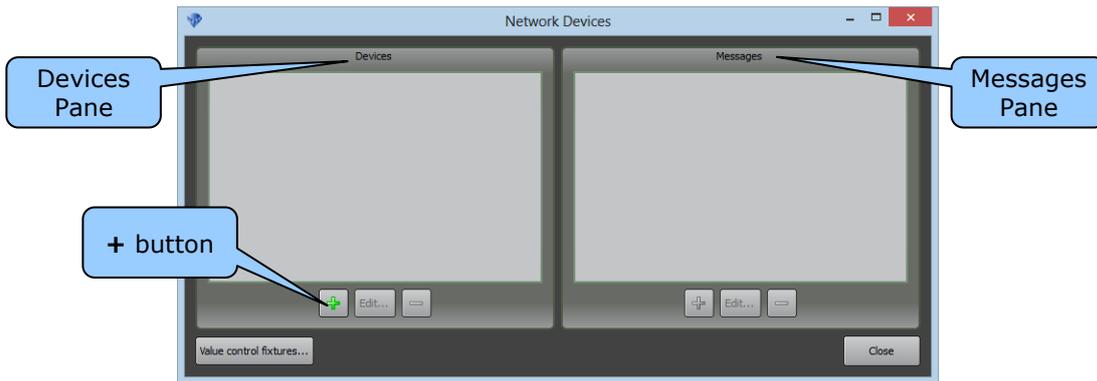
A typical application of using a KissBox with Clarity is to allow a contact closure to control an action in Clarity via a network. Clarity and the KissBox must be connected to the same network and the KissBox must be provided with POE (Power Over Ethernet).

To configure “Network Devices” from the main menu bar select:

Show/Settings/Network devices...

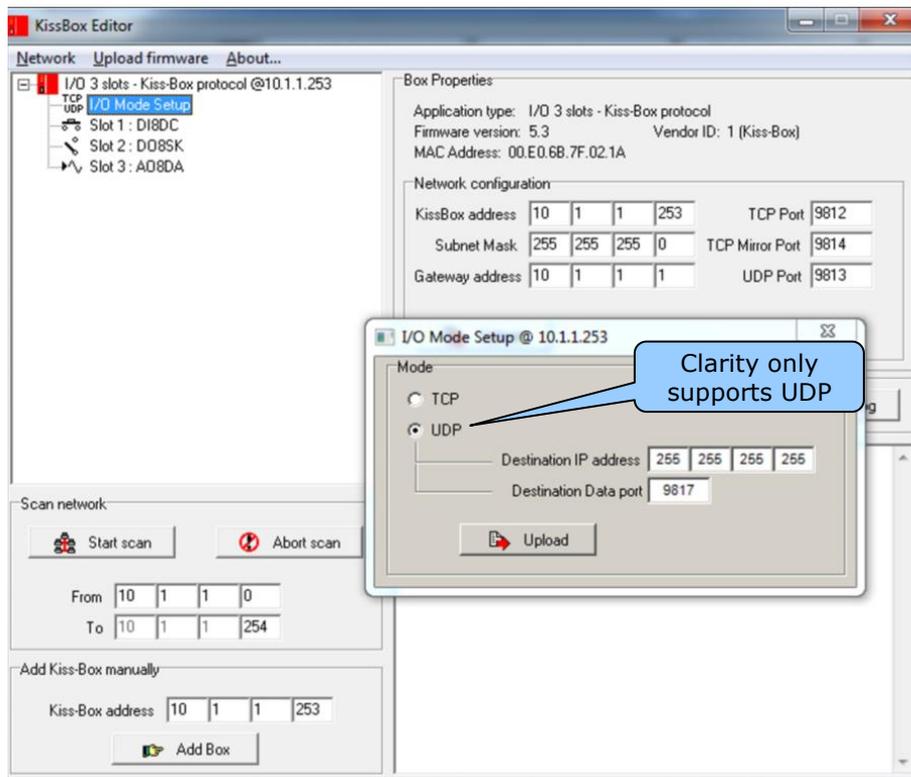


The "Network Devices" dialog opens.....

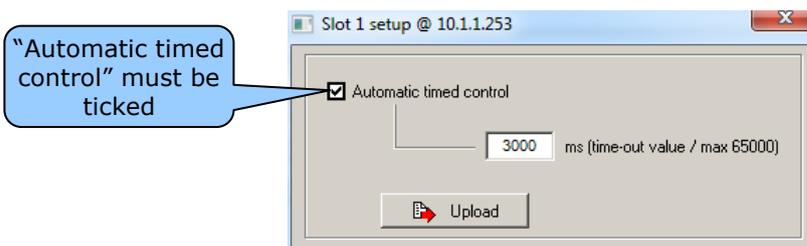


Click the + button on the Devices pane to create a new device and enter the settings for that device. The settings are obtained by running the KissBox editor program on a computer connected to the same network as the KissBox.

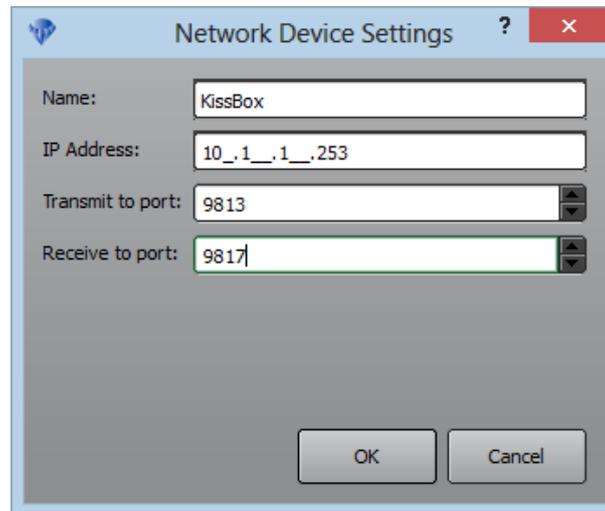
The KissBox Editor shows the settings for the KissBox.....



Note: In the KissBox software, when you setup a slot, you MUST have the "Automatic Timed Control" box enabled (ticked).



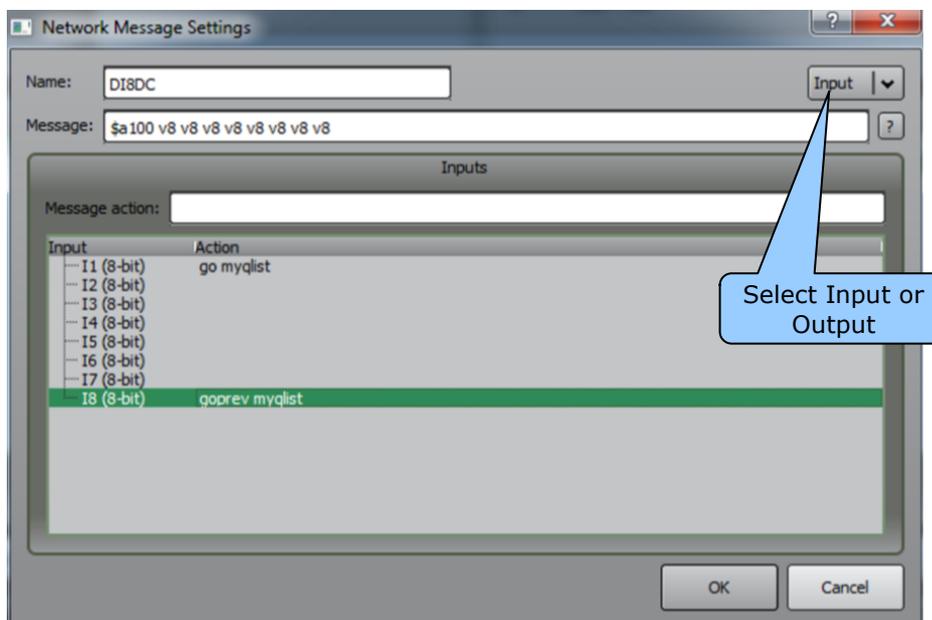
Using the information from the KissBox editor screen, enter the information in the Clarity "Network Devices" dialog.



Press **OK** to close the dialog and add the new device. In the "Network Devices" dialog, select the device and press **+** on the Messages pane to open the "Network Message Settings" and define a new message.

A "Network Device Message" defines a message that is either sent from Clarity to the device or one that Clarity should receive from the device.

Below is a message that corresponds to the output that would be received from a KissBox DI8DC IO card (which is an 8 channel digital contact closure card).



Network Message Settings

Messages can either be output messages or input messages. Received messages are matched against any defined Input messages until a match is found. The message body uses a special syntax to define how parts of that message should be defined and/or interpreted.

The syntax is as follows:

- `#{hex data}` Network byte order data. E.g. `#{a100}` will send 2 hex bytes: A1, followed by 00.
- `"string data"` The data between the quotes is sent as ASCII text.
- `v8` 8 bit hex data input value. This forces the message type to be an Input message. When the message is received, Clarity will interpret the next byte as a hex value (0 to 255) and normalise the value to a 0.0 to 1.0 range.
- `v16` 16 bit hex data input value (network order). Interprets the next 2 bytes as a 0 to 65535 value and normalises to a 0.0 to 1.0 range.
- `v32` 32 bit hex data input value (network order). Interprets a 4 byte value and normalises to a 0.0 to 1.0 range.
- `vbool` This is a variant of the `v8` syntax, where the 8 bit value is interpreted as either 0.0 (if the input value is 0) or 1.0 (if the input value is greater than 0).
 - * Don't care (byte). The next input byte is skipped (i.e. considered a successful match).
- `ov8` 8 bit hex output value. This forces the message to be an Output message. An internal control value (see below) in Clarity is de-normalised to a 0 to 255 range and output as a single hex byte.
- `ov16` 16 bit hex output value. As above, but de-normalises to a 0 to 65535 range.
- `ov32` 32 bit hex output value. You get the gist.
- `obool` Variant of `ov8`, this outputs 00 for a 0.0 control value and ff for a control value greater than 0.0.

If a message does not define any input or output values, then you will need to manually specify whether it's an Input or Output message.

Input messages can trigger an action defined in the Message action field and this follows the same syntax as for the simple script commands used by Clarity as defined in section 25.10. For fader level actions you can also use `#{percent}` to map the input value to a percentage fader level.

For example:

```
setfader myq1ist, #{percent}
```

...the 8, 16 or 32 bit input value is normalised to a 0 .. 100 range and used as the fader level.

Output messages can be triggered by a new cuelist script action, defined as:

```
net send {network device name}.{network message name}
```

For example:

```
net send KissBox.RelayOneOff (note that names are not case sensitive)
```

When input values are defined, you can then assign individual actions to each input value. In the "Network Message Settings" screenshot above, the first and last inputs have been assigned to control 'myq1ist'. When trigger actions like this are assigned to input values, they are only triggered when the input value is greater than 1.

Clarity ignores the case where a value is unchanged. So if Input "I1" is set to 01 in one message, then in a subsequent message it is still at 01, then that action would not be re-triggered.

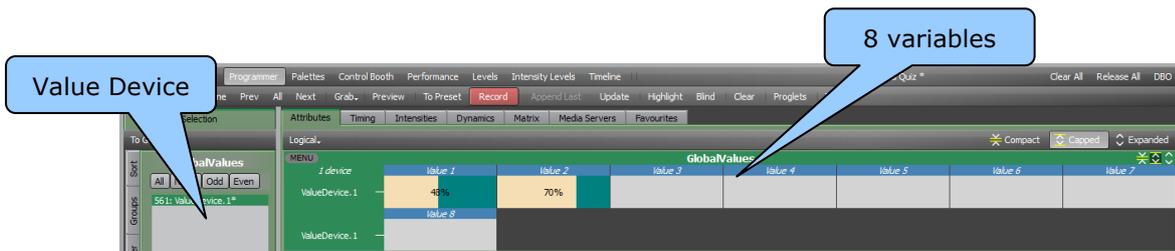
Note that in that example, you could equally use "vbool" in place of "v8", but this wouldn't make any difference with this specific device as it only ever sends 00 or 01. If, however, these actions were mapped to a device that returns value in a wider range, then it would trigger for every message received where that value has changed and is greater than 0. Using "vbool" would avoid this.

34.3.1 Internal Control Values and Value control fixtures.

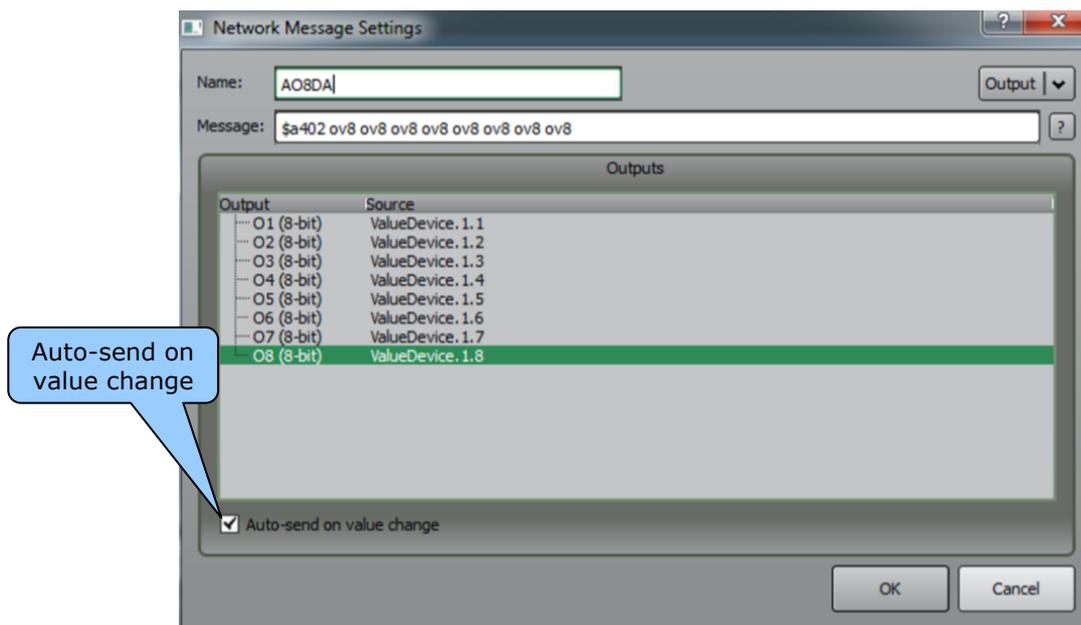
In the "Network Devices" dialog, clicking on **Value control fixtures...** allows you to add special control fixtures to the Clarity show. These are internal fixtures similar to Audio Control Devices or Pixel Source Devices, but they simply control 8 internal variable values.



Each value is defined as the device name plus the value number. So a device called ValueDevice.1 will control 8 individual variables: ValueDevice.1.1, ValueDevice.1.2 to ValueDevice.1.8.



When you define a message with output values, then these can be assigned to each individual output value:



When 'Auto-send on value change' is ticked, the message will be output when any of its assigned values are changed, otherwise it would have to be triggered by a script command.

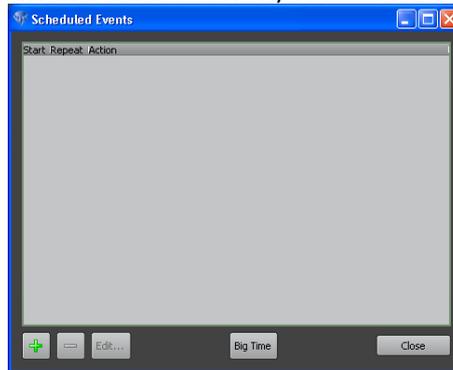
35 Scheduler

35.1 OVERVIEW

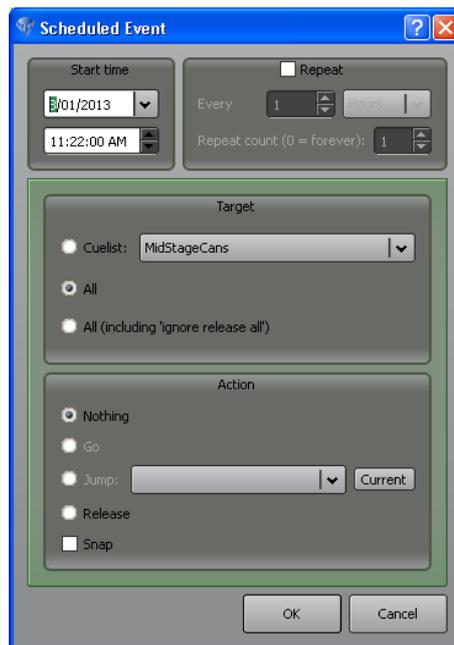
Clarity can also be configured to automatically execute various playback actions at specific times and dates with optional repeats for "n" repeats or forever. This function is intended for scenarios where Clarity operates unattended.

35.2 SCHEDULE AN EVENT

To schedule an event, from the menu select "Show/Time date scheduler".



To add an event click on the + button.



In the "Start time" pane, select the date and time for the action to occur.

The action can be repeated by ticking the "Repeat" box and selecting how often the action will repeat. The drop down box allows you to choose from "seconds, minutes, hours, days, weeks, months or years. The number of repeats can also be set. Setting "Repeat count" to "0" will make the action repeat forever.

The "Target" pane allows you to select either a specific "CueList" from the drop down box, "All" cuelists or All cuelists including those set to ignore "Release All".

The "Actions" pane allows you to play (Go) the selected cueList or jump to and play a specific cue in that cueList. Selecting **Snap** will instantly play the cue without any times being used. If you select "All" in the Target pane then the only "Action" available is to "Release" the cueLists.

36 Tracking Backup

36.1 OVERVIEW

Tracking Backup allows another LX console to track a master instance of Clarity on the LX console so that the playback state and show contents are kept in sync on both sessions via a network connection. If the master fails for any reason then the slave can be used to keep the show running.

Tracking Backup automatically tracks:

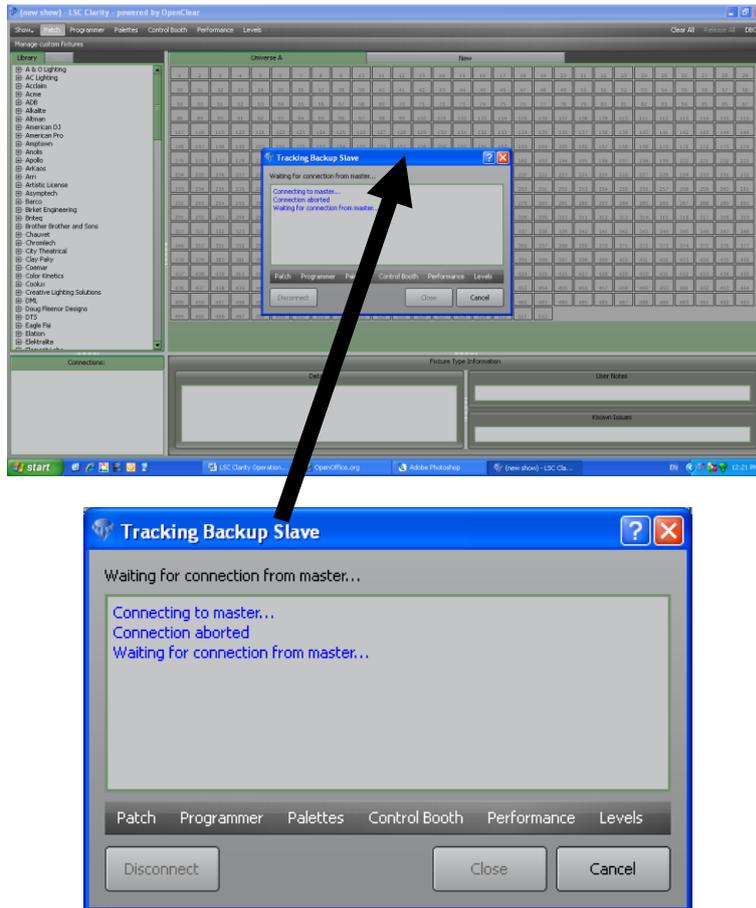
- Playback state
- Cues/cue-lists
- Groups
- Presets/freesets

And keeps them up to date on the back-up computer.

Any other changes in the master will require a manual back-up to the slave. When this is required, a red warning banner will inform you. A single button click will complete the back-up. The prompt is necessary because these back-ups can cause a couple of seconds of interruption to the operation of Clarity. This allows you to choose an appropriate moment that does not affect your show.

36.2 SETTING UP TRACKING BACKUP

- Both master and slave must exist on the same network segment and subnet.
- On the master ensure that your show is loaded or your current show is saved. You cannot start tracking backup on an empty show or on a modified show.
- On the slave console, run Clarity then select **close** on the load show dialog box to leave a blank new show.
- On both master and slave click **Show, Preferences**, and ensure that the user preferences on the slave match those of the master.
- On the master select **Show > Tracking Backup > Connect to slave...**
- On the slave select **Show > Tracking Backup > Connect to master...**
- On the master, once the connection is established, **Close** the "Tracking Backup Master" dialog. You can reshoot it at any time by selecting **Show > Tracking Backup > Status...**
- On the slave, the "Tracking Backup Slave Dialog" must remain open whilst tracking backup is active. This is to prevent any inadvertent changes to the slave show whilst it is tracking the master.



Although the “Tracking Backup Slave” dialog box must remain open on the slave, you can still observe the operation of the slave’s windows in the background by clicking on the **Patch**, **Programmer**, **Palettes**, **Control Booth**, **Performance** or **Levels** buttons in the dialog box.

The slave operates on the same show file name as the master, but with “_tb” (tracking backup) appended to the name. This alerts you as to which show file is the master and which is the slave, preventing you from inadvertently operating the backup computer and tracking in reverse thus overwriting any changes to the proper master show.

As the master show is modified, the items listed above are automatically tracked by the slave show which is also automatically saved whenever the master show is saved.

As mentioned above, anything that modifies the master show that is not automatically tracked will cause a warning banner message to be displayed on the master. This tells you that tracking is suspended and a resync is needed and a button is presented for that purpose. When you resync, the master sends the show data over the network to the slave which will load the data (via a restart) and reconnect with the master. Click on “Tracking Backup Slave” and Clarity will start and automatically connect to the master. The slave will auto-reconnect if the connection is lost.

36.3 OPERATING FROM THE SLAVE

In the event of a main system crash, **Close** the “Tracking Backup Slave” dialog box on the slave and the slave back-up will already have the same looks running live.

37 Preferences and About

37.1 USER PREFERENCES

Selecting **Show, Settings, Preferences**, from the main menu, allows you to customize the operation of Clarity. The default settings for new cue-lists can also be customized or reset to standard. *See section 25.2 for details.*

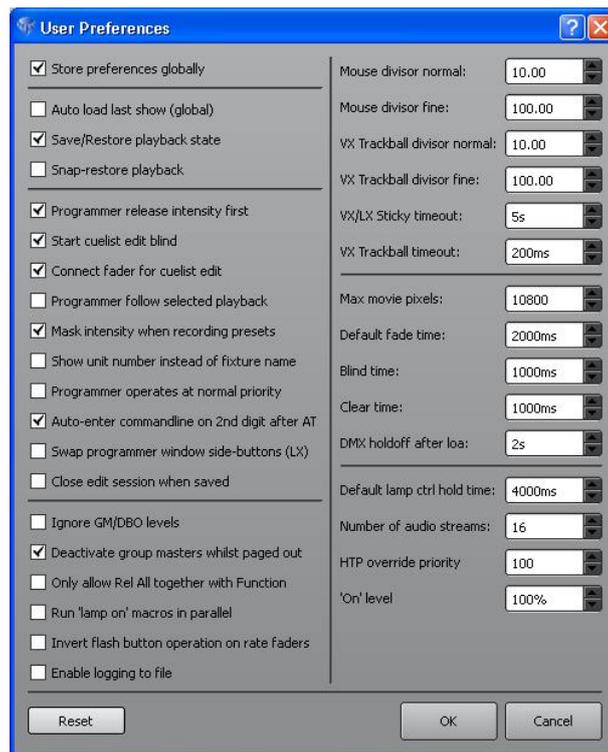
When a show is saved, the user preferences and new cue-list default settings are always saved as part of the show file.

When an existing show is loaded:

- If **"Store Preferences Globally"** is ticked, the user preferences as set in the dialog box and the new cue-list defaults are retained.
- If **"Store Preferences Globally"** is NOT ticked the user preferences and new cue-list defaults in the show file are loaded.

When a NEW show is loaded:

- If **"Store Preferences Globally"** is ticked, the user preferences as set in the dialog box and the new cue-list defaults are retained.
- If **"Store Preferences Globally"** is NOT ticked the default preferences and standard cue-list settings are loaded.



To reset the user preferences to their default settings (shown above), click **Show, Settings, Preferences, Reset**.

- **"Auto load last show"**. Default = un-ticked.
If ticked, when Clarity is started it will automatically load the last used show.
- **"Save/Restore playback state"**. Default = ticked.
If ticked, Clarity will include currently active playback states when saving a show so that loading that show restores its exact playback state.
- **"Snap-restore playback"**. Default = un-ticked.

If ticked, all playbacks will snap to their saved values when Clarity loads.
If not ticked they will fade to their values using the fade times recorded in the cues. Only available if "Save/Restore playback" is ticked. *See also "DMX holdoff after load" below.*

- **"Programmer release intensity first"**. Default = ticked.

If ticked, when a Programmer is cleared, all intensity attributes will fade out before any other attributes are cleared. This prevents unwanted movements and colour changes being seen on the output.

If not ticked, all attributes are cleared at the same time.

- **"Start cue-list edit blind"**. Default = ticked.

If ticked, when a cue-list is edited, Clarity will open a blind edit session to edit the selected cue. De-selecting blind on the edit session will cause the edit session to jump to the current cue if the cue-list is active.

If un-ticked, when a cue-list is edited, it will open a live edit session so that the changes (edits) that you make will be seen on the output. If a playback advances the cue-list to the next cue, the edit session keeps track so that the current cue can be instantly edited by the Programmer. If you release the cue-list then the edit session is automatically sent to blind.

See "Channel Controller Mode" below for more details.

- **"Connect fader for cue-list edit"**. Default = ticked.

If ticked, the level fader of any playback whose cue-list is being edited live <on stage> will control the output level of the live edit session.

See "Channel Controller Mode" below for more details.

- **"Programmer follow selected playback"**. Default = un-ticked.

If ticked and if multiple cue-lists are being edited at the same time, you can automatically switch the programmer to any playbacks edit session by selecting that playback.

Press **Select**, and then press any of the required playbacks **flashing buttons**.

See "Channel Controller Mode" below for more details.

- **"Mask intensity when recording presets"**. Default = ticked.

A preset is usually recorded with only specifically selected attributes (for example, only focus values or only colour values).

If ticked, intensity will not be included when a preset is recorded. You can temporarily override this by clicking on the intensity button when recording the preset.

- **"Show unit number instead of fixture label"**. Default = un-ticked.

Each fixture has a unique "Unit # (number)" and a "Name" as set in patch. The unit number is used to select fixtures when using "command line programming".

If un-ticked, fixture names are displayed in the programmer and the levels windows.

If ticked, fixture unit numbers are displayed in the programmer and the levels windows.

- **"Programmer operates at normal priority"**. Default = un-ticked.

If ticked, the Programmer has the same priority as a normal playback and therefore can be overridden by a playback on a Latest Take Precedence basis.

- **"Auto-enter commandline on 2nd digit after AT"**. Default = ticked.

If ticked, this alleviates the need to press [**Enter**] after entering a 2-digit intensity value when using command line programming.

- **"Swap programmer window side buttons (LX)"**. Default = un-ticked.

This only applies to the console models of Clarity. If ticked, it swaps the buttons on the side of the encoder wheel touch screen.

- **"Close edit session when saved"**. Default = un-ticked.

If ticked, any edit session in the programmer will be automatically closed when the edit session is saved.

- **"Ignore GM/DBO"**. Default = un-ticked.

If ticked, the GM (Grand Master) and DBO (Dead Black Out) functions are disabled.

- **"Deactivate group masters while paged out"**. Default = ticked.

When ticked, a playback configured as a group master will be deactivated when it is not on the currently selected page.

- **"Only allow Rel All together with Function"**. Default = un-ticked.

Applies to VX20 wing only. When ticked, the **Release All** button will only operate if the **Function** button is pressed at the same time. This is a safety mechanism to prevent the inadvertent releasing of all playbacks.

- **"Run "lamp on" macros in parallel"**. Default = un-ticked.

Normally the 'Lamp on' command is executed sequentially for each fixture to avoid overloading the rig, but in some cases this is unnecessary so this option causes all selected fixtures to be lamped-on at the same time so that the operation completes quicker.

- **"Invert flash button operation on rate faders"**. Default = un-ticked.

If a cue-list is loaded on a playback and there are un-used (clear) playbacks to the right of the loaded playback, then the unused playbacks can be linked to the loaded playback to provide greater live control of Chase Rate, Playback Rate, FX Rate and FX Amplitude. Normally you need to hold the Flash button while moving the rate/amplitude fader to adjust the value. If you reach a fader end-stop but you need to more range, you can release the flash button and move the fader to the opposite end, then hold flash and move fader to continue adjusting the value. If "Invert flash button operation on rate faders" is ticked you just move the fader without holding flash to adjust the value, then (if you reach the fader end stop) hold flash to reposition the fader.

- **"Enable logging to file"** Default = un-ticked.

When ticked, many of Clarity's actions are logged to a file called clarity.log and stored in a public documents location. These log files can be used by LSC to check the operation of Clarity. Only tick this box if instructed to by LSC. If the box is ticked it has no effect on the operation of Clarity but if the log files are not required they can accumulate over time.

- **"Trackball & mouse divisor settings"**.

These setting adjust the sensitivity of the mouse or trackball movements. The fine mouse setting is used when the **"Shift"** button is held whilst the mouse is dragged. The fine trackball setting is used when the **"Fine"** button is held whilst the trackball is moved.

- **"VX Sticky timeout (s)"** Default = 5 seconds.

When you press either **Select**, **Release** or **Edit**, all of the playback buttons flash waiting for you to select a playback. If you do not immediately make a selection, sticky timeout sets how long they wait before they stop flashing.

- **"VX Trackball timeout (ms)"** Default = 200 ms.

Unlike a mouse where you click, drag then release, a trackball does not have a button to click and release. Therefore, a trackball movement cannot be "finalized" by a release of a button so this time sets the delay from when the trackball stops moving to when the move is finalized. A finalized move can be undone by clicking on the **Undo** button.

- **"Max movie pixels"** Default = 10800 pixels.

Movies are pre-processed by Clarity before being sent to the matrix display. If the movie is of a much higher resolution than the matrix can display, then a lot of processing power can be wasted on unseen resolution. This preference limits the resolution to be pre-processed and thus saves processing power.

- **"Default fade time"**. Default = 2000 ms (2 seconds).

Set the default fade time that will be used for new attribute values in the programmer when recording a cue.

- **"Blind time"**. Default = 1000 ms.

The fade time that the programmer uses to go in and out of blind mode, entered in ms (milliseconds). For example 2 seconds = 2000ms.

- **"Clear Time"**. Default = 1000 ms.

The fade out time that the programmer uses when it is cleared, entered in ms (milliseconds). For example 2 seconds = 2000ms.

- **"DMX holdoff after load (s)"** Default = 2 seconds.

All output is delayed for n (the time you set) seconds after loading a show.

In the unlikely event that Clarity stops responding and needs to be restarted, the playbacks will hold the last DMX state and the Grand Master and DBO still control all intensity channels. When the show is reloaded, any active cues will fade up using their recorded fade times. Therefore there could be a dip in intensity between the held state in the playback and the fade up of the restored playback. If you set the DMX holdoff time to be slightly longer than the cue fade up time, the intensity levels will not dip on the output.

This setting can be made redundant enabling the "Snap-restore playback" setting above.

- **"Default lamp ctrl hold time"**. Default = 4000 ms.

The duration of the "Lamp on" command that is sent when using the **Ctrl▼** button on the Programmers Selection window.

- **"Number of audio streams"**. Default = 16.

The maximum number of audio streams that can be running at one time .

- **"HTP override priority"**. Default = 100.

LTP playbacks at this priority or higher will override HTP playbacks, otherwise HTP takes precedence over LTP.

- **"On level"**. Default = 100%.

Sets the intensity level that a selected fixture(s) will be set to when the On button is pressed on an LX console or **F** is pressed on a keyboard . If an On level other than 100% is set, then the first press of the On or F button will turn on the fixture at that level and a second press will set it to 100%.

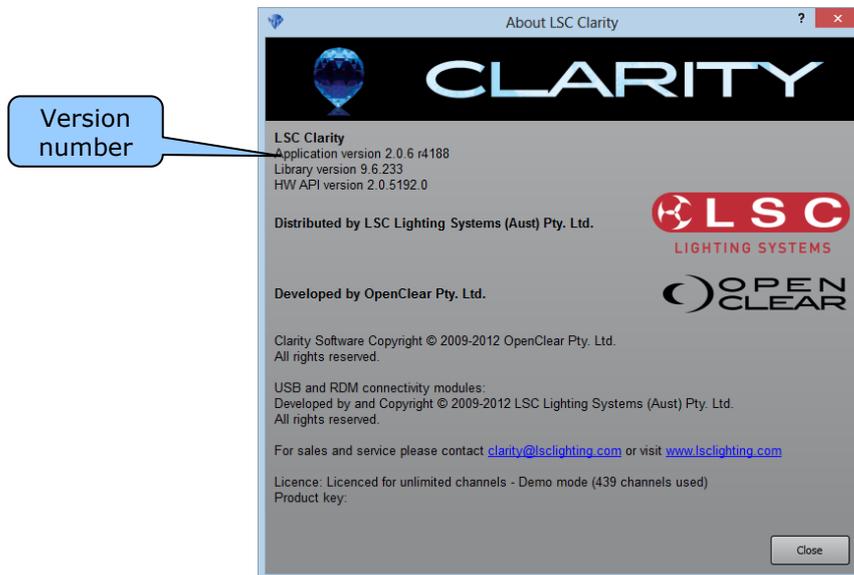
37.1.1 New Show Preferences

When a new show is opened, Clarity allows you to use either your preferred default settings or the standard default settings (factory defaults). This includes the settings in the "User Preferences" and the playback settings for a new cue-list in the control booth.

- To open a new show with your preferred default settings click **Show, Settings, Preferences** then tick the "Store preferences globally" check box. Set your required preferences in the "User Preferences" dialog box and also set your playback preferences in the control booth. Re-start Clarity, then when "Load show?" appears, click **Close**.
- To open a new show with the standard default settings click **Show, Settings, Preferences** then un-tick the "Store preferences globally" check box. Re-start Clarity, then when "Load show?" appears, click **Close**.

37.2 ABOUT CLARITY

Selecting, **Show, About LSC Clarity...**, displays the About LSC Clarity dialog box.



Here you can find information about your version of the Clarity software.

38 LX Tools

38.1 OVERVIEW

LX Tools is a utility program that provides access to hardware configuration, help files and software upgrades on the LX consoles.

38.2 STARTING LX TOOLS

- To start LX Tools from the console press **Function+Fine+Fine** at the same time.
- To start LX Tools from the keyboard press **Ctrl+Alt+L** at the same time.
- To start LX Tools from the menu select "Shows/Help"

The LX Tools utility appears on the encoder wheel touch screen.....



There are two pages of options. Press **More** to select the other page.

38.2.1 Brightness

The LX Tools **Brightness** button allows you to independently adjust the brightness of the backlit buttons, touch screen monitor, mini-screens and the LED desk lamp. There are five settings of "Bright" (fixed), "User 1", "User 2", "User 3" and "Dark" (fixed).

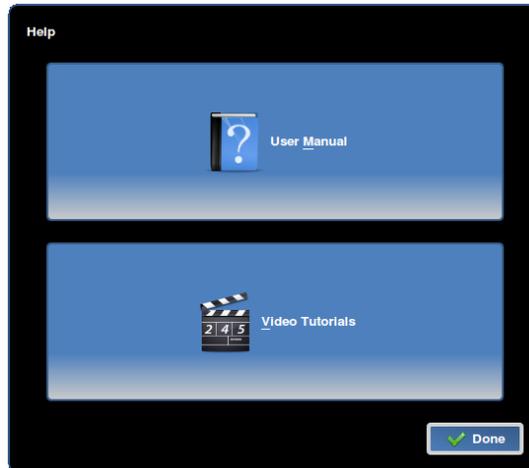


38.2.2 Software Management

The LX Tools **Software Management** button provides tools for upgrading the software. See also section 39, "Software Upgrade".

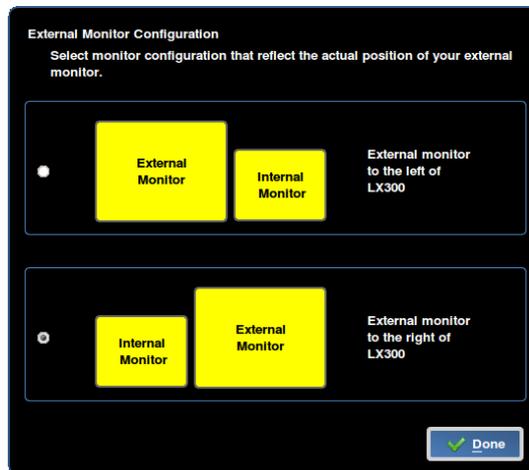
38.2.3 Help

The LX Tools **Help** button, provides a copy of this manual and video tutorials.



38.2.4 Configure Monitors

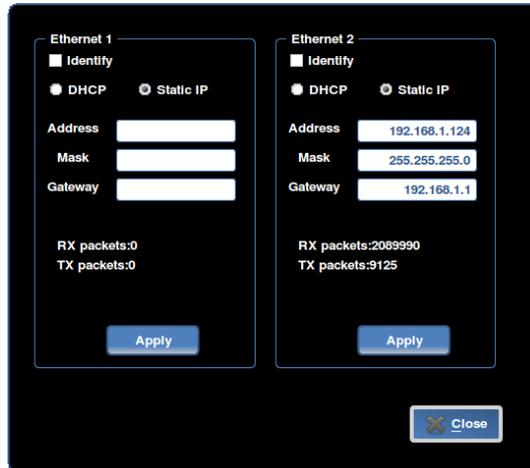
The LX Tools **Configure Monitors** button allows you to optimise the displays for the physical location(s) of the external monitor so that moving the mouse off the inbuilt monitor(s) moves it onto the correct external monitor(s).



LX300 Monitor Configuration

38.2.5 Networking

The LX Tools **Networking** button allows you to setup the network connection of the two Ethernet ports.

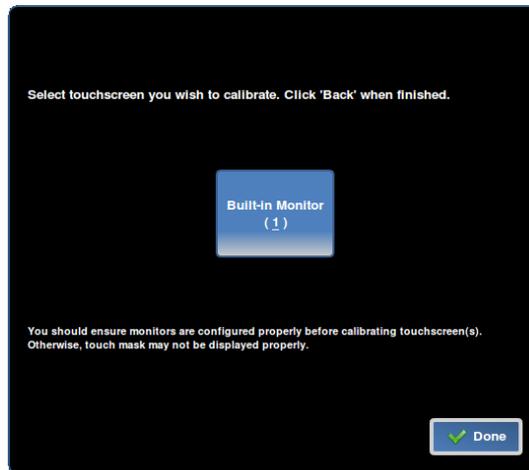


Ethernet 1	Ethernet 2
<input type="checkbox"/> Identify	<input type="checkbox"/> Identify
<input checked="" type="radio"/> DHCP	<input checked="" type="radio"/> DHCP
<input type="radio"/> Static IP	<input type="radio"/> Static IP
Address: <input type="text"/>	Address: <input type="text" value="192.168.1.124"/>
Mask: <input type="text"/>	Mask: <input type="text" value="255.255.255.0"/>
Gateway: <input type="text"/>	Gateway: <input type="text" value="192.168.1.1"/>
RX packets:0 TX packets:0	RX packets:2089990 TX packets:9125
<input type="button" value="Apply"/>	<input type="button" value="Apply"/>

See also section 40 for details on how to allow LSC to connect to your console via the internet to resolve problems.

38.2.6 Calibrate Touch Screens

The LX Tools **Calibrate Touch Screens** button allows you to calibrate the inbuilt touch screens.



LX300 Calibrate Screen

38.2.7 Clock

The LX Tools **Clock** button allows you to set the Clock that is displayed beside the Playbacks.

38.2.8 Diagnostics

The LX Tools **Diagnostics** should only be run when instructed by LSC technical support. It requires a password.

38.2.9 System Information

The LX Tools **System Information** button provides system information such as

- Software versions.
- Bootloaders.
- Hardware.

38.2.10 Keyboard

The LX Tools **Keyboard** button allows you to select:

- **International Keyboard Layouts.**
- **Show/Hide Visual Keyboard.** Displays a keyboard on the touch screen that can be used if the external keyboard is not available.

39 Software Upgrade

39.1 OVERVIEW

Both LSC Lighting Systems (Aust) Pty. Ltd. and OpenClear Pty. Ltd. have a corporate policy of continuous improvement covering areas such as product design and documentation. To achieve this goal, we undertake to release software updates for all products on a regular basis.

39.2 DESKTOP UPGRADE

Upgrading Desktop Clarity uses the same procedure as installing Desktop Clarity except that the Hasp installation does not need to be included. See section 3 for details.

39.3 LX CONSOLE UPGRADE

Download the latest service pack from:

<http://www.l sclighting.com/help-centre/downloads/Clarity-LX-Consoles/>

These service packs include all software updates for the LX consoles in one package. The downloaded file can be used to update an LX300, LX600 or LX900 console.

Before carrying out an update:

- Don't attempt an update if your show is about to start.
- Do make sure that you have taken a backup of your show before commencing your upgrade.

To install a Service Pack onto a console:

- 1) Download the latest Service Pack file.
- 2) Create a folder titled LSC on a formatted USB stick.
- 3) Copy the Service Pack file into this folder.
- 4) Turn on the console and wait for it to start up.
- 5) Insert the USB and wait for the console to prompt you to install the update.
- 6) Follow the on-screen instructions.
- 7) Shut down and re-start the console.
- 8) View the about box to confirm that the console is running the loaded Service Pack.

If you have problems, contact your local LSC agent or LSC directly.

You can step back to previous software versions using the LX tools utility. See section 38 for details.

40 Technical Support

If you are experiencing problems with Clarity either contact your local LSC agent or post a message on the LSC forum at <http://www.lsclighting.com/forums/>

LSC technical support staff can remotely interrogate any LX console that is connected to the internet. This is accomplished using a Remote Desktop application called TeamViewer that is pre-installed on LX consoles.

To use this facility:

- Connect a network cable from your network (with internet access) to the console's "Ethernet 2" connector.
- Start LX Tools by pressing **Function+Fine+Fine** at the same time.
- Select the "Networking" page and ensure "Ethernet 2" (right panel) is configured as "DHCP".
- Select the "System Information" page and select **Remote Support**. This will start TeamViewer. When TeamViewer connects to the internet it will populate "Your ID" field with a 9 digit number and "Password" field with a 4 digit number.
- Send "Your ID" 9-digit number to LSC. Leave the console running and connected to the internet until contacted by LSC.

41 Fixture Editor

41.1 OVERVIEW

There are thousands of different types of lighting fixtures available and new types of fixtures are constantly being introduced. The lighting controller (Clarity) needs to know the DMX assignments and ranges for every different type of fixture that you might use. The controller gets this information for each fixture from a fixture template when that fixture is patched. This allows the controller to assign control channels to the different parts of the controller, intensity to faders, Pan and Tilt to the position controls etc. It also tells the controller the range for each function, its default value and can include thumbnails of gobos and effects.

Clarity contains a fully integrated fixture library comprising of many thousands of fixture templates supplied by Carallon, a UK based specialist company producing fixture templates for a wide variety of console manufacturers. The Carallon library is regularly updated (about once every three months) and the updates can be downloaded from the LSC web site. The latest library is also included in any new releases of Clarity.

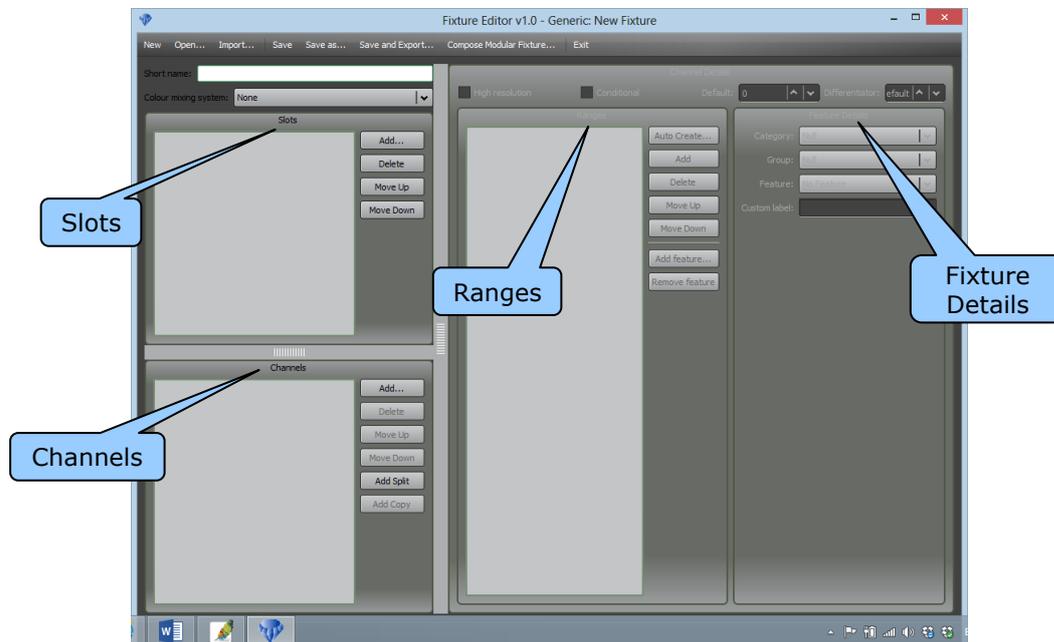
If you have a new fixture that is not in the library you can either request a fixture template file from LSC or use the Clarity fixture editor (described below) to create your custom fixture template.

41.2 FIXTURE EDITOR

To create your custom fixture template, start the fixture editor. From Clarity's **Show** tab select....

Switch to fixture editor.

The fixture editor opens.....



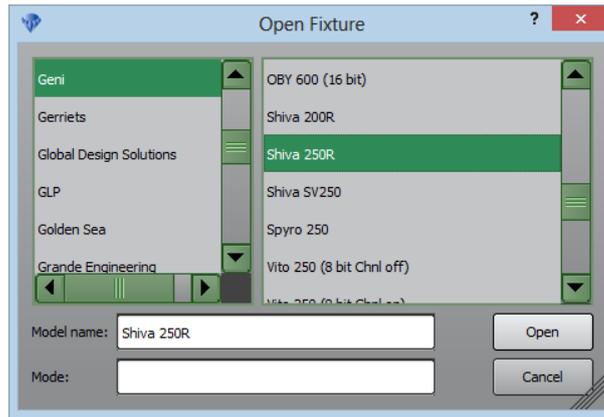
Fixture Editor

The screen is divided into 4 main panes:

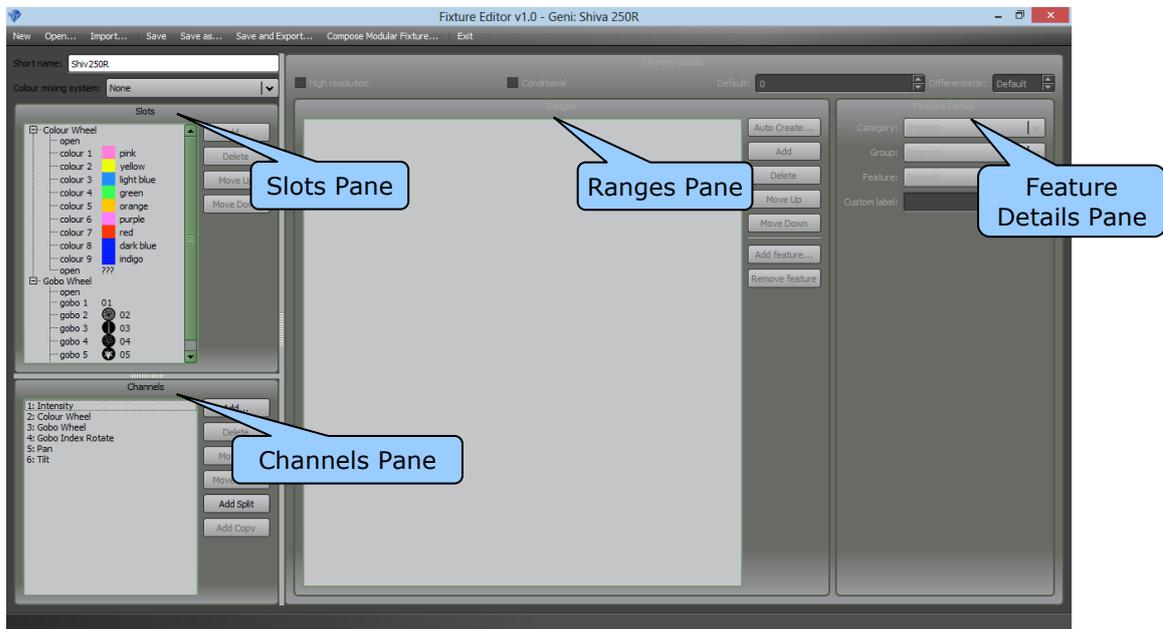
- Channels... shows the DMX channels and their functions for the fixture.
- Slots... shows the divisions of the fixture's wheels (if any) such as gobo, effect or colour.
- Ranges... shows the ranges for the channel selected in the Channels pane.
- Fixture Details... shows the details of the range selected in the Ranges pane.

There are two methods that you can use to create a new fixture template:

- Write a new template from scratch.



Select the fixture/model and click **Open**.



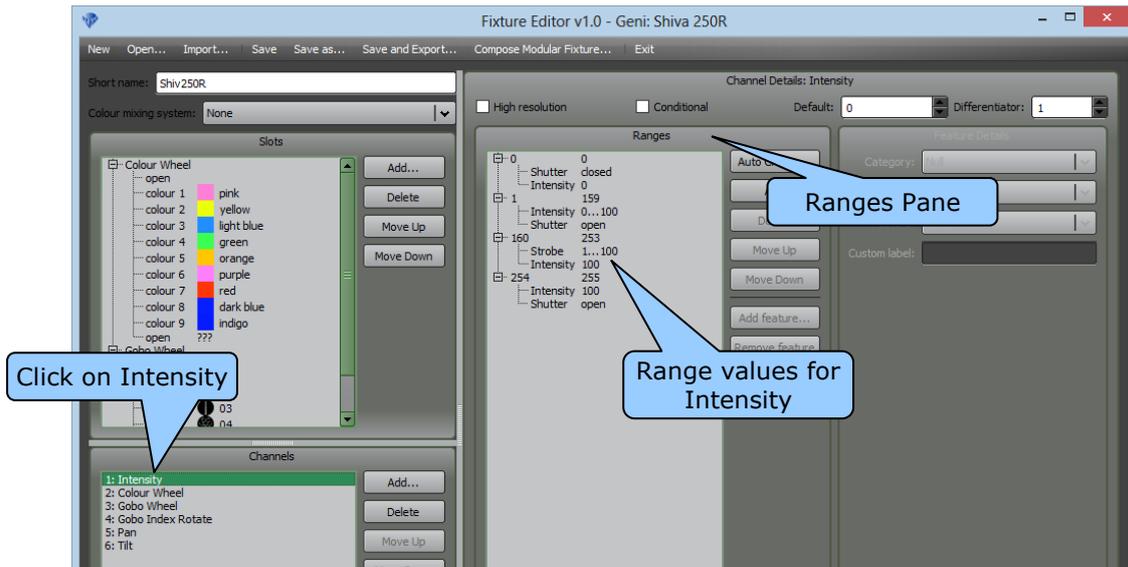
The "Channels" pane shows the 6 DMX channels used by this fixture.

Clicking on any channel in the "Channels" pane shows the DMX ranges and features for that channel in the "Ranges" pane. Then, in the "Ranges" pane, clicking on any range allows the DMX values to be altered and clicking on any Feature name shows the details of that feature in the "Feature Details" pane.

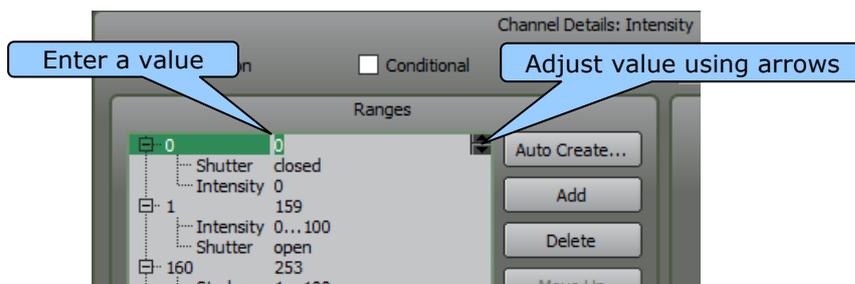
The "Slots" pane shows the slots for the colour wheel and gobo wheel. Only fixtures with gobo, colour, animation or effects wheels or a scroller will have values in the "Slots" pane.

Let's examine the channels of the Geni Shiva.

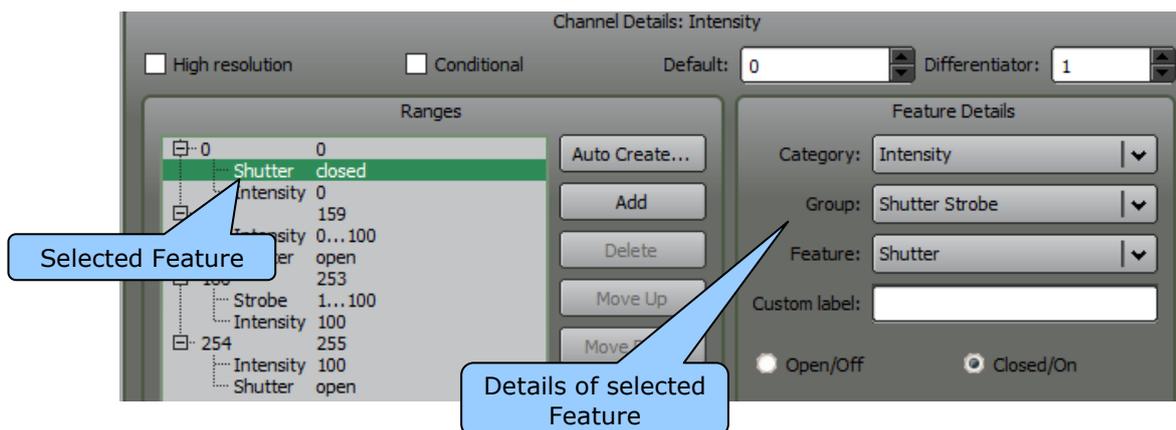
In the "Channels" pane, click on "1: Intensity". The "Ranges" pane now shows the DMX levels for the intensity channel.



In the "Ranges" pane, click any numeric value to change the value. You can either enter a new value or use the up and down arrows that appear.



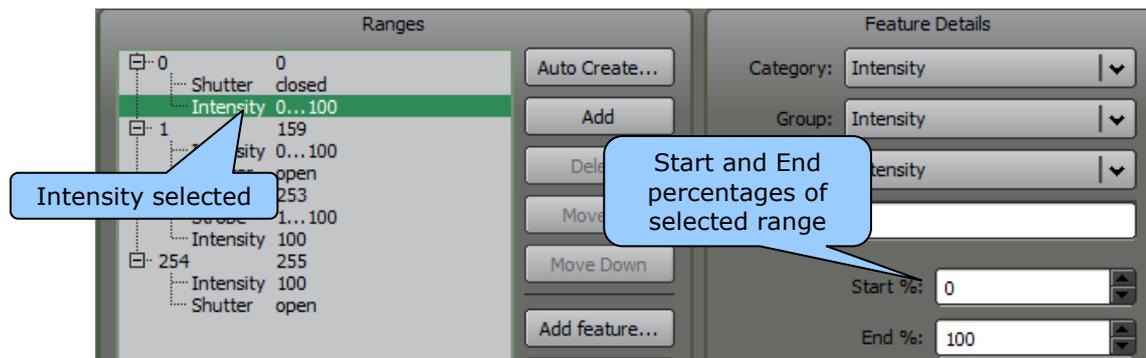
If you click on a Feature name, the "Fixture Details" pane shows its details and allows you to edit those details.



Different types of "Features" display different "Feature Details" panes.

In the example above, the Shutter feature is selected so there are radio buttons for either "Open/Off" or "Closed/On" because the "Group" is a "Shutter Strobe".

If you click on the "Intensity" feature in the "Ranges" pane then the Feature Details allow you to set the "Start" and "End" percentages. If you need to invert the operation of a channel you can set the start at a high percentage and the end at a low percentage.



Any of the other "Channels" can be viewed and modified by clicking on them in the "Channels" pane. Click on "2: Colour Wheel". The "Ranges" pane now shows the DMX levels for the Colour Wheel channel.



Once again in the "Ranges" pane you can click on any numeric value to change the value or click on any feature to edit the "Feature Details".

41.4 WRITING A NEW FIXTURE TEMPLATE

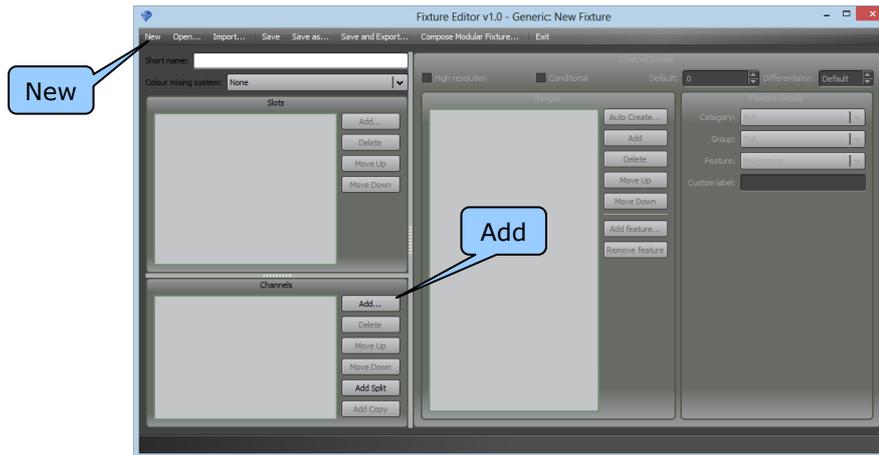
To write a new fixture template you will need the DMX channel details for the fixture. These are usually supplied with the fixture or can be downloaded from the manufacturer's web site.

The easiest method of creating a new fixture is to load an existing fixture that has similar functions to that of the new fixture and then edit the attributes to match those of the new fixture. Most new fixtures will have many similarities to an existing fixture. The differences might be in the DMX channel numbers that are used for each function or in the colours or gobos. If you can't find a similar fixture from a manufacturer you might be able to use one of the templates listed under "Generic" as a starting point.

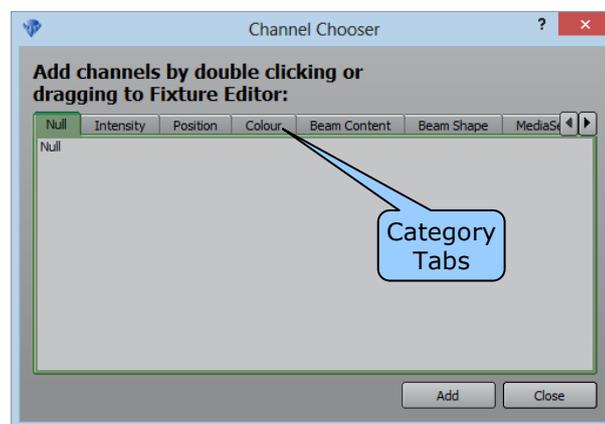
When you have made the edits, click **Save as...** and enter the new fixtures name.

See also the "Quick Tour" above for basic information on how to interpret an existing fixture in the fixture editor.

If you can't find an existing template on which to base your new template then you must create your new template from scratch. To create a template from scratch, in the Fixture Editor menu bar click **New**.



In the "Channels" pane click **Add**. The "Channel Chooser" opens.....

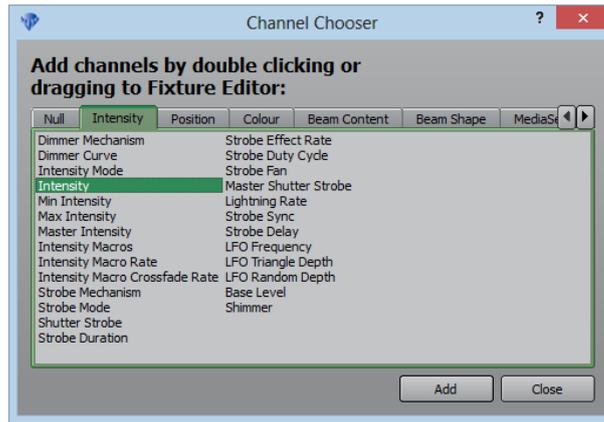


Select the appropriate tab for the "Category" of the first DMX channel of the fixture. The category choices are:

- Null
- Intensity
- Position
- Colour
- Beam Content
- Beam shape
- Media Server Intensity
- Media Server Colour
- Media Server Content
- Media Server Geometry
- Media Server Effects
- Media Server Control
- Media Server Audio
- Projector
- Camera
- Control
- Effects
- Pixel Source
- Open Clear

Every category offers a selection of group types specific to that category. Select the appropriate group type from that category.

For example, the Intensity category offers the following groups.....



Add the channel by either double clicking the name, dragging the name to the Fixture Editor or selecting the name and clicking **Add**.

There are a large amount of category/group combinations available to choose from, however the vast majority of fixtures use only a small selection of groups as listed below.

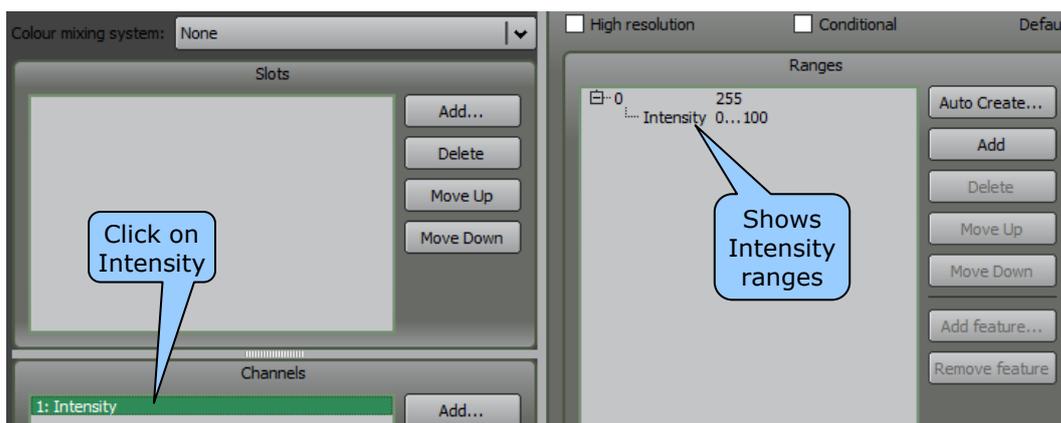
The most commonly used categories and groups are:

Category	Most Common Groups
Intensity	Intensity. Shutter Strobe.
Position	Pan. Tilt
Colour	Cyan. Magenta. Yellow. Red. Green. Blue. Amber. White. CTO. Colour Wheel (for 2 colour wheels add a second colour wheel. See "Differentiator" below)
Beam Content	Gobo wheel. Gobo Index Rotate.
Beam Shape	Focus. Iris. Zoom. Frost. Effect Wheel (use for a prism or similar effect).
Control	Lamp Control.

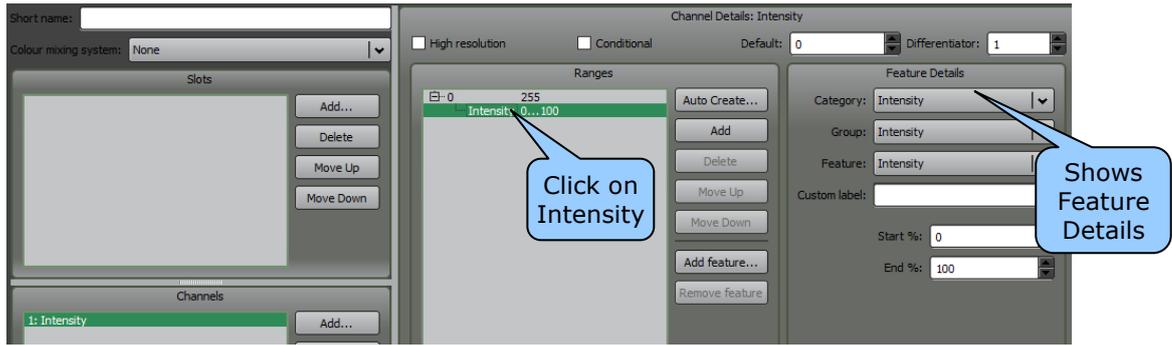
For example, to create an intensity channel:

In the "Channels" pane click **Add**. Select the **Intensity** tab then select the **Intensity** group then click **Add**.

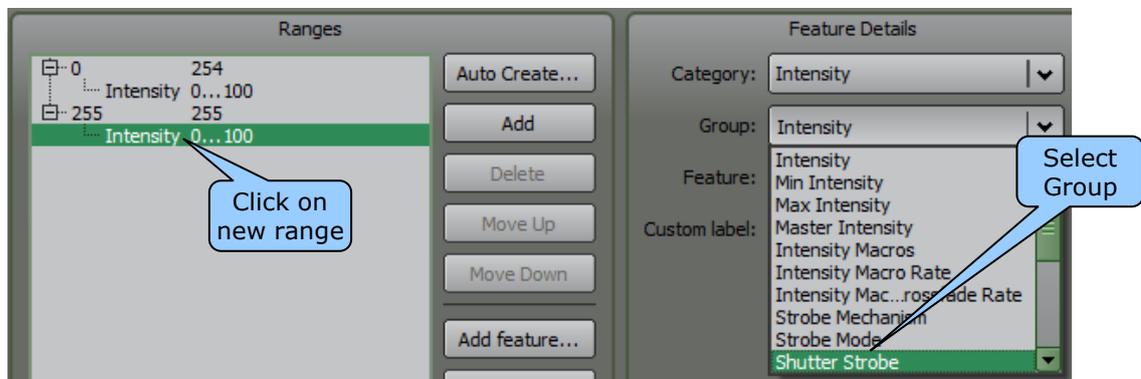
"1:Intensity" now appears in the channels pane. Click on "1:Intensity" and the "Ranges" pane shows the ranges for this Intensity channel.



In the "Ranges" pane click on "Intensity 0...100" and the "Feature Details" pane shows the details of the range.



The Fixture Editor has assigned the DMX values of 0 to 255 to represent intensity from 0 to 100%. If your new fixture uses this channel for additional purposes (such as a shutter) then, in the Ranges pane, click **Add** to create the range for the shutter. This new range is created as another Intensity group. To change it to a "Shutter" click on its name in the Ranges pane and then select **Shutter Strobe** from the **Group:** drop down box.



If the channel operates as intensity from DMX 0 to 128 and as a shutter from 129 to 255, enter 128 in the upper intensity range. The other ranges automatically adjust.



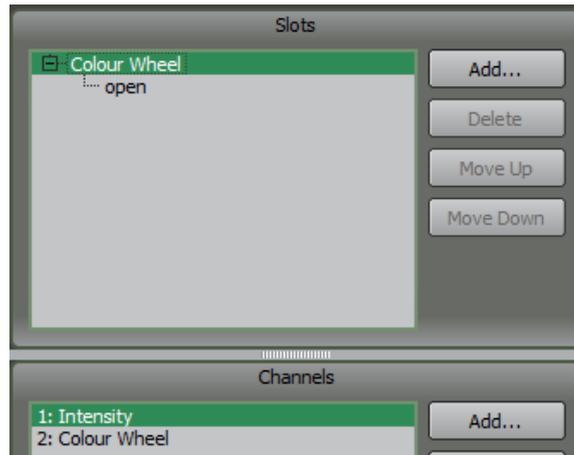
Repeat the above procedure for all of the channels of your fixture.

See below for additional information on other channel conditions such as Gobo wheels, high resolution channels, colour mixing, etcetera.

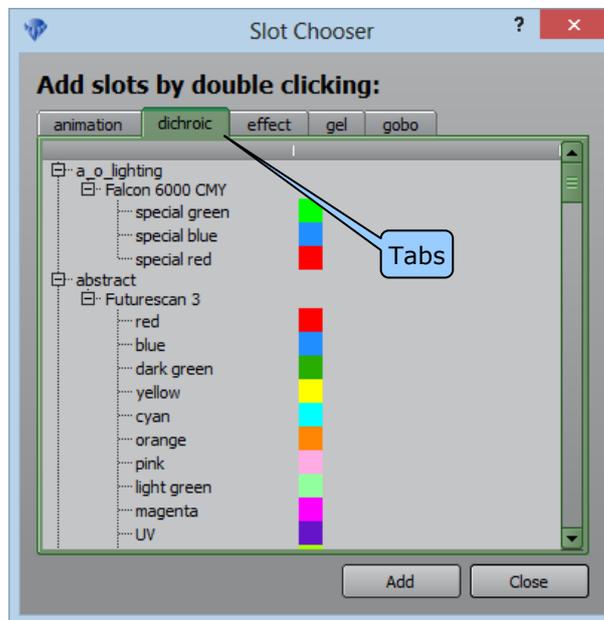
41.4.1 Slots

If you add a channel that is a gobo wheel, colour wheel, animation wheel, effects wheel or a scroller, then it will be automatically added to the Slots pane. The Slots pane allows you to create the slots that can be selected with this DMX channel.

Note: The terms "Effects Wheel" is used to describe a wheel that can contain Prisms, Frost, Lenses and whatever else gets invented in the future.



When a slots channel is added it automatically has the first slot created as an "Open" slot. To create the other slots for this channel, in the "Slots" pane, click on the name of the wheel or scroller then click **Add**. The "Slot Chooser" opens.....



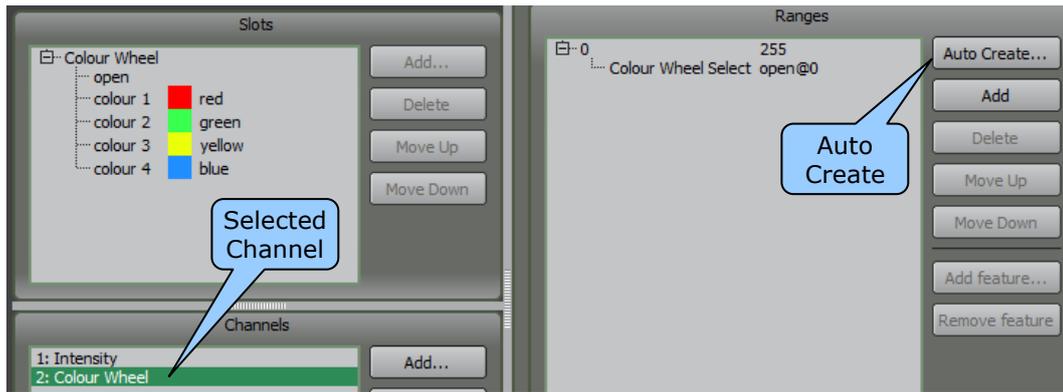
Select the appropriate tab for the type of channel you are adding. Each tab has colours or gobos or effects as appropriate, listed under manufacturer and model or range. Select the colour or gobo or effect for this slot then either double click it or click **Add**.

If you can't find the exact match for your fixture then choose the closest match.

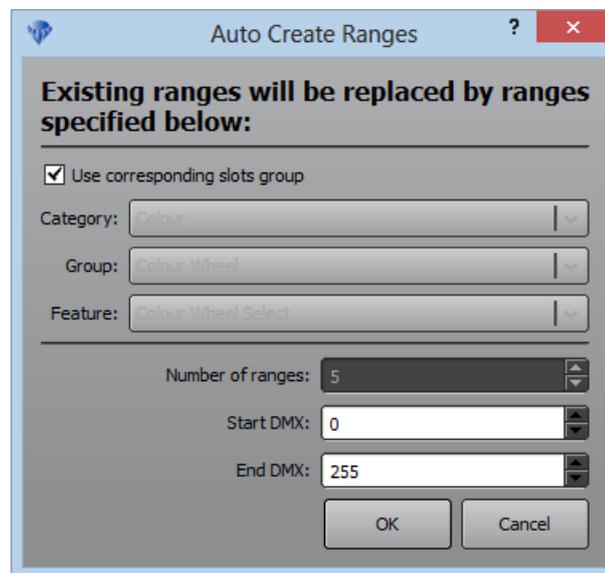
The colours that you choose are used by Clarity to allow colour selection from the "Colour Picker" in the "Programmer". The more accurate you are, the better the fixture will work. If you do not add colour slots, then it will not be possible to control the colour wheel via the "Colour Picker".

Add all off the slots for the channel of your fixture.

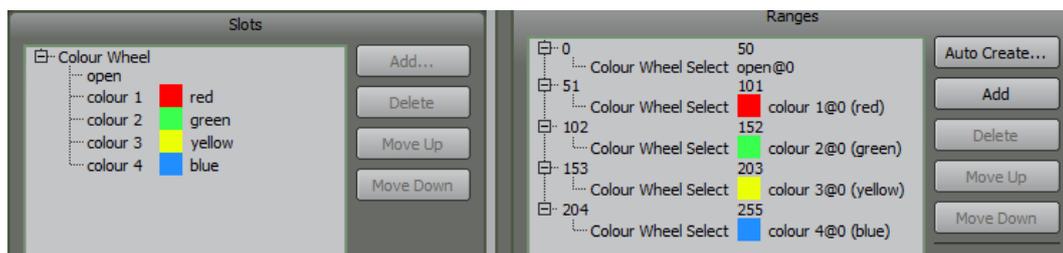
Ensure that the channel containing the slots is selected in the Channels pane then in the Ranges pane click **Auto Create...**



The "Auto Create Ranges" dialogue opens.....



Ensure that the "Use corresponding slots group" box is ticked then click **OK**. The ranges will be automatically generated based on the slots that you created.

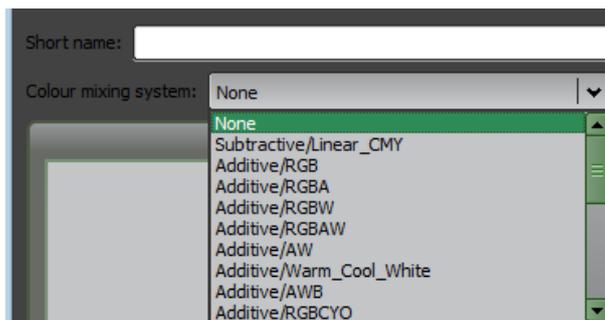


If the automatically generated DMX values for the range of each slot are not correct you can manually edit them by clicking in them and entering the correct value or using the increment/decrement arrows that automatically appear when you click on a value.

Repeat the above process for all of the DMX channels of the fixture that use slots.

41.4.2 Colour Mixing System

If the new fixture has individual colour channels, select the appropriate colour mixing scheme for those channels. LED fixtures produce colours by adding individual colours. Single source fixtures produce colours by subtracting colours using dichroic filters or gels. For example, a led fixture that has red, green and blue channels will be set to "Additive/RGB".



41.4.3 High Resolution

If a parameter of the fixture uses high resolution (two DMX channels to control course and fine respectively), add the course channel first then with that channel selected in the Channels pane, tick the "High Resolution" box in the Channel Details pane. The "Fine" channel is automatically added to the next DMX number. If the fixture's fine channel is located at a different DMX slot (for example, at the end of the channel assignments) select the fine channel and click "Move Up" or "Move Down" or drag and drop to change the order

41.4.4 Conditional Channel

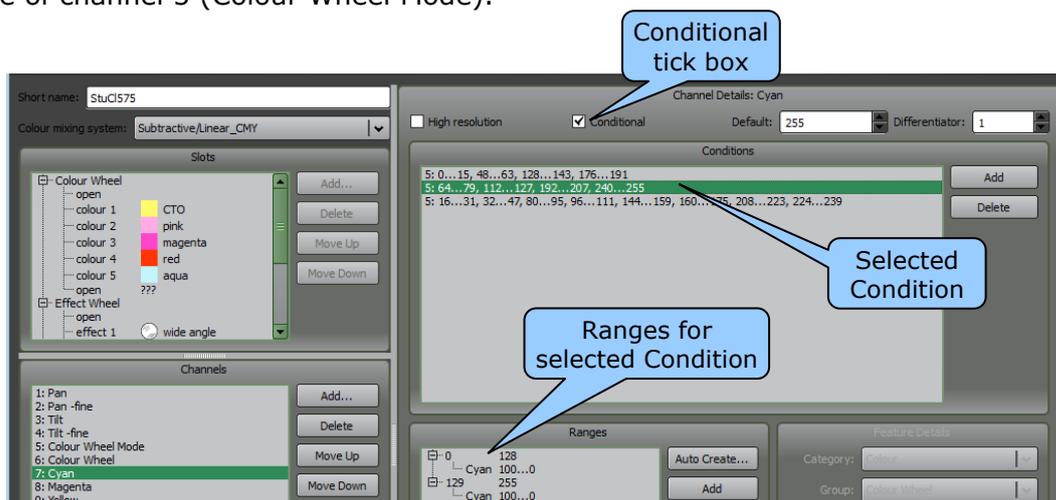
Some fixtures use the values of one DMX channel to determine the functions of another DMX channel. This is known as a Conditional channel.

To make the selected channel conditional upon the values of another channel tick the "Conditional" box. When the "Conditional" box is ticked, the "Conditions" pane opens. In this pane you type in the channel number that sets the conditions and the DMX values of this channel for each condition. The format is...

#(channel number that sets the conditions):#...#(DMX values for the condition)

In the Ranges pane you enter the definitions for the conditional channel. Each entry in the "Conditions" pane leads to a different definition for the conditional channel in the Ranges pane.

For example, on the High End Systems Studio Color 575, channel 7 (Cyan) is conditional upon the value of channel 5 (Colour Wheel Mode).



Click on a line in the Conditions pane to see the ranges for that condition in the Ranges pane. In the example above, the second line of Conditions is selected so the ranges pane shows that the Cyan channel is split into two ranges. When channel 5 is either 64..79, 112..127, 192..207, 240..255, the Cyan channel maps DMX 0..128 to Cyan 100..0 and maps DMX 129..255 also to Cyan 100..0.

If you click on the other two conditions for channel 7 you will see in the ranges pane that:

- When channel 5 is either 0..15, 48..63, 128..143 or 176..192, the Cyan maps DMX 0..255 to Cyan 100..0.

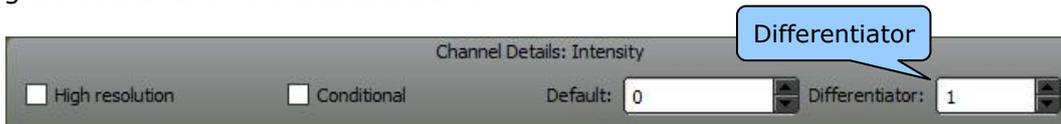
- When channel 5 is either 16..31, 32..47, 80..85, 96..111, 144..159, 160..175, 208, 223, 224..239, the Cyan channel maps DMX 0..255 to “No Feature”

41.4.5 Default Value

You can enter a “Default” value for each channel in the Channel Details pane. This is the value that Clarity will use when a parameter is “Reset to Default” or sent to its “Home” position on an LX console.

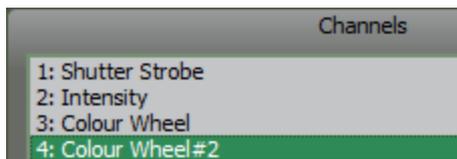
41.4.6 Differentiator

If a fixture has two or more channels of the same “Category” then each channel is differentiated by adding a number after the channel name.



The default differentiator number is 1. If you add another channel of the same category then the differentiator is automatically set to 2. A third channel of the same category would be set to 3 etcetera. You can manually set the differentiator number if desired.

For example, a Martin Mac 500 has 2 “Colour Wheel” channels. The second channel is named “Colour Wheel#2”.



41.4.7 Virtual Intensity

Some fixtures require a “virtual intensity” channel. The Clarity fixture editor cannot create a “virtual intensity” however you can still create a template for your new fixture by opening and modifying a “Generic/LED RGB (No I)” fixture template which already has a virtual intensity.

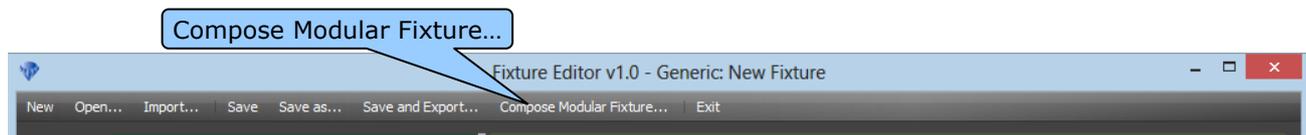
41.4.8 Compose Modular Fixtures

Modular fixtures are an array of fixtures within a fixture. These type of fixtures are also known in the industry as “Compound Fixtures”.

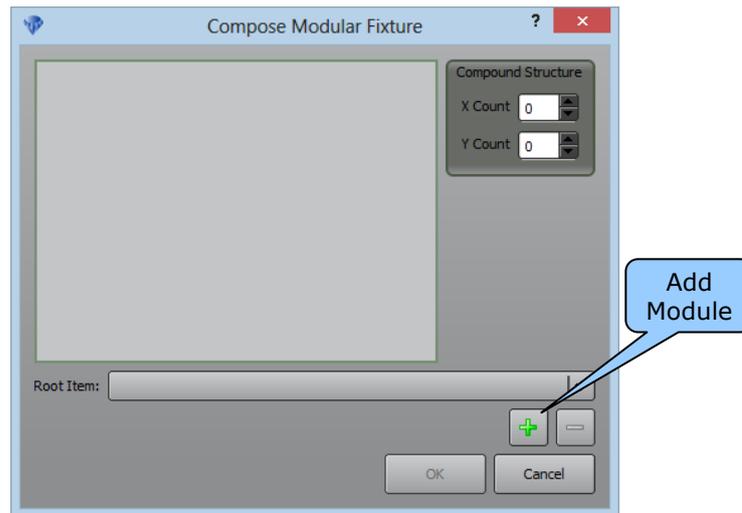
For example:

- A simple modular fixture might be a 4 x 4 RGB LED array.
- A complex modular fixture might be moving head containing multiple pan/tilt RGB arrays. For example, a High End Systems “Shape Shifter”© has a pan and tilt yoke that contains a central static RGB LED array that is surrounded by 6 RGB LED arrays with individual pan and tilt.

To compose a modular fixture, from the main menu bar select **Compose Modular Fixture...**



The “Compose Modular Fixture” dialogue box opens.....

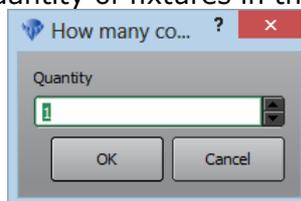


A modular fixture consists of one or more “modules”. Each module can be a single fixture or multiple fixtures.

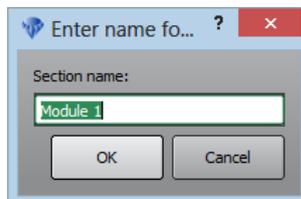
Click on the + symbol to add a module then select the fixture type to be added.

Most modular fixtures consist of an array of LED fixtures but the array could consist of any type of fixture. Most types of LED fixtures used in arrays can be found under the “Generic” listing. If the type of fixture that you need to add is not already listed then you will need to create that fixture (using the Fixture editor) and then use that new fixture to compose the new compound fixture. For example, if your new compound fixture has a pan and tilt mechanism and an array of RGB LEDs you will need to create a new fixture that contains only pan and tilt then use this as a module of your new compound fixture.

You will be prompted to enter the quantity of fixtures in the module.



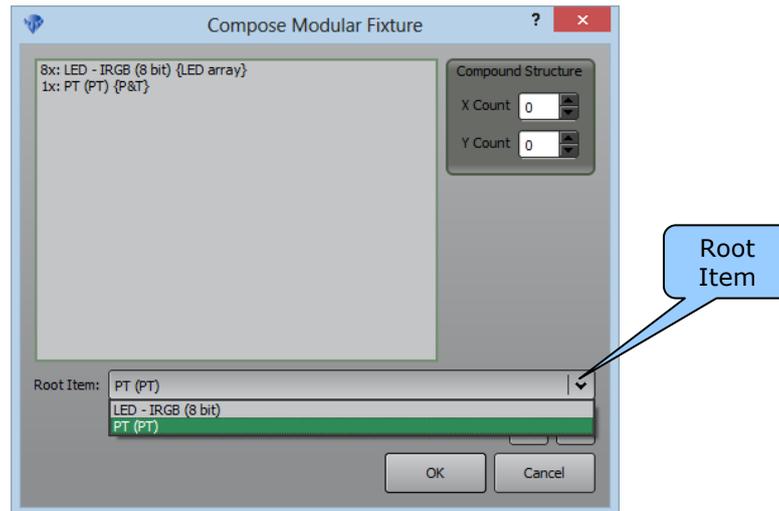
Next, enter a name for the module.



Enter your name and click **OK**. The default name is “Module #”.

If the module has more than one fixture and the fixtures are arranged in an array you need to specify the arrangement of those fixtures in the array by entering X and Y values in the “Compound Structure” box. For example, if your module contains 12 fixtures that are arranged in a matrix that is 4 fixtures wide by 3 fixtures high you would enter “X Count = 4” and “Y Count = 3”. When you patch this modular fixture in Clarity it will be displayed in the correct shape on the “Rig View” screen and also in the Programmer’s “Matrix” view.

If the modular fixture that you create has 2 or more modules you need to select which module is to be the “Root Item”.

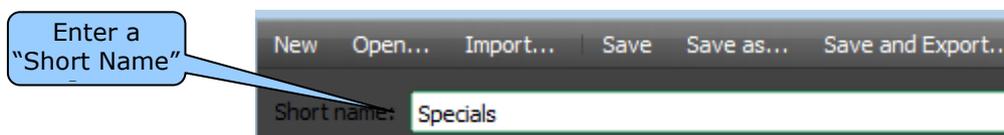


Select the module that is to be the "Root Item" by clicking on the drop down arrow. The root item is the module that affects all of the other modules in the compound fixture. For example, if your new compound fixture has a pan and tilt module with an array of RGB LEDs attached to it then the pan and tilt module is selected as the root item because when you pan or tilt this module it moves the LED module.

To save the new compound fixture click OK then give the fixture a name. Next give the fixture a short name and click OK. The compound fixture channels now appear in the channels pane. To save this compound fixture in the library click **Save** as described in the next section.

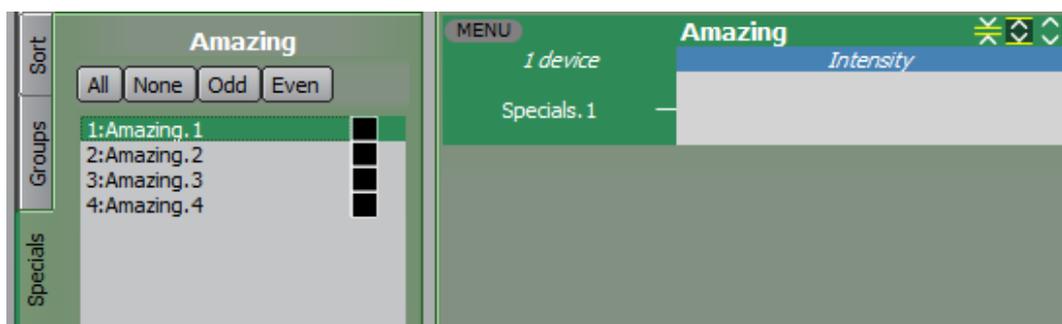
41.4.9 Short Name, Save and Export Fixture

You can give your new fixture a "Short Name". This name will be used by Clarity in the "Group" tab for this type of fixture.



To save the new fixture select **Save**. Fixtures are organised by manufacturer and model. In the Manufacturer list you can select an existing manufacturer or choose "Generic" or "Custom". In the model pane enter the model name for the new fixture and select **Save**.

When you switch back to Clarity and patch your new fixture, you select it by the manufacturer and model that you used to save it. For example, if we gave the new fixture a "short name" of "Specials" and a model name of "Amazing", then those names would appear in the Programmer as shown below.....



If you want to also use your new template on another Clarity platform choose **Save and Export**.

All fixture templates that you create will appear in **BOLD** font in the fixture editor to distinguish them from original "Library" templates.

Note: If you edit a "library" fixture template you must save it with a different name. If your edited version had the same name it would be overwritten whenever the library is updated. For example, if you edit a "Mac700" you might save the edited version as "Mac700 (Mine)".

42 Operating Concepts and Terminology

42.1 OVERVIEW

The operation of Clarity is easily understood when you know the meaning of certain key terms that are frequently used by Clarity. These terms have been adopted by LSC as the best descriptions for functions and operations performed on Clarity and may not be terms adopted on similar equipment. These key terms are printed in underlined text below.

42.2 PROGRAMMER / PLAYBACK

Clarity uses a programmer and playback method of controlling fixtures.

- In a programmer, you create lighting looks and record them as cues in a cue-list.
- In a playback, you playback the cue-list.

There are many options available for you to choose what is recorded in each cue as well as how each cue-list is played back.

Clarity is, by default, a tracking controller which means that Clarity usually only records and plays back the *changes* that you make between each cue that you record.

You can also choose to record everything that is grabbed in the programmer (not just the changes since the last recording) and to playback cues that include the entire look. This is known as cue only playback mode.

The various options are described below.

See also the Record and Control Booth sections for more details on tracking and cue only.

42.3 PRIORITY CONTROL

Fixtures have attributes (intensity, pan, tilt, colour etc) and Clarity controls those attributes by outputting values on the DMX slot associated with each attribute.

Attributes can be controlled by many different sources from within Clarity. The source of control could be a programmer, a playback (of which there are many), or possibly no source is currently controlling an attribute. When multiple sources are attempting to control an attribute, Clarity uses a priority system to determine which source has control. A higher priority source will override a lower priority on the output.

The priority order is:

- Grand Master and DBO (Dead Black Out) control intensity only.
- Highlight function.
- Programmers.
- Playbacks.

In addition to this priority order, individual playbacks operate on the LTP (Latest Take Precedence) principle. The latest cue to be played back will output its attribute values and will override any previous playback that contained the same attributes. (The priority of each cue-list can also be manually altered if required).

42.4 ATTRIBUTE DEFAULT VALUES

When an attribute is not under control of a programmer or playback, Clarity's DMX output for that attribute will be its *default* values contained in Clarity's fixture library. These values differ for each type of fixture but typically will have the intensity attribute set to zero, pan and tilt set to mid range and other attributes set to obtain an open clear beam.

You can set your own (user) default values for a fixture type. Select the fixture(s) in programmer and set desired values. Click **Menu** and select **Set defaults**. The default values are stored against the fixture type, not per individual fixture. Only altered parameters will have their default values changed. If a parameter is not selected, its value will be reset to its default value.

Any changes that you make can be restored to the default values held in the fixture library. Select the fixture(s) in programmer then click **Menu** and select **Reset defaults**.

42.5 PROGRAMMER CONTROL

When a fixture attribute is controlled by a programmer, the attribute is said to have been grabbed by the programmer (indicated by an * beside its name in the selection side bar). If the

programmer is used to vary the value of the attribute, the attribute is said to have been touched by the programmer. If the touched value is recorded into a cue-list, then that the attribute is no longer touched. If it is varied after being recorded it is again touched. When an attribute is no longer controlled by a programmer it is said to be cleared from the programmer.

42.6 PLAYBACK CONTROL

When a cue is played back, any fixture attribute values in that cue appear on the output (subject to priority rules above). When a playback no longer controls any attributes, the playback is said to be released.

42.7 RECORDING AND PLAYBACK CONCEPTS

When you record a cue, there are several options that control exactly which attribute values will be recorded. The options that you choose determine the suitability of the cue for the style of playback that you choose to use. Each cue-list can be individually set for its own mode of playback. In its simplest form there are two modes of playback, Tracking and Cue Only. These playback modes determine how the output of a playback will change when a cue is played back. The default settings in Clarity will record cues that are suitable for playback in tracking mode and play them back in tracking mode.

Let's firstly look at how the different modes of playback work and then see how to record cues that are best suited to the selected playback mode.

42.7.1 Tracking Playback

When a cue-list is set to Tracking mode and the first cue is played back, the fixture attribute values in the first cue appear on the output of the playback. When the next cue is played back, its recorded values appear and any values from previous cues that were not changed by this latest cue will remain on the output of the playback. The unchanged values from previous cues are said to track through to the current state. The values in the current cue are known as hard values and any values from previous cues are known as tracked values.

- Therefore, in tracking mode, when a cue is played back, the current state on the output of the playback will be the hard values in the current cue plus any tracked values from previous cues.

For example:

Here are 3 cues played back in tracking mode. Cue 1 sets the look on stage and then cues 2 and 3 only contain hard values for the changes that need to occur on stage.

	attribute 1	attribute 2	attribute 3
<i>Cue 1</i>	100	50	25
Output	100	50	25
<i>Cue 2</i>	80		
Output	80	50	25
<i>Cue 3</i>		25	
Output	80	25	25

Cue 1 contains hard values for attributes 1, 2 and 3 so when it is played back, the attributes go to 100%, 50% and 25% respectively.

Cue 2 only contains a hard value for channel 1 so when it is played back attribute 1 changes to 80% and attributes 2 and 3 track through and remain at 50% and 25%.

Cue 3 only contains a hard value for attribute 2 so when it is played back attribute 2 changes to 25% and attributes 1 and 3 track through and remain at 80% and 25%.

42.7.2 Typical Tracking Operations

Typical operations using the default record and playback settings (tracking) will be:

- Select fixtures and grab them in a programmer by adjusting their attributes for the desired look. All of these attributes have now been touched.
- Record the look as a cue in a new cue-list. The first cue in the cue-list will contain the values of all attributes that have been touched by the programmer. After the cue is recorded, no attributes have been touched.
- Adjust attributes in the programmer for the next look. Now only these varied attributes have been touched.
- Record the look as the next cue in the cue-list. With the default record settings, this cue will only contain the touched values.
- Repeat until all cues are recorded.
- Clear the programmer.
- Playback the cue-list.
- Release playback when finished.

42.7.3 Advantages of Tracking

The major advantage of tracking is that if a change (edit) has to be made, only the initial cue that contained the hard values has to be changed and the change will then track through to all subsequent cues.

For example:

A cue-list containing 50 cues is recorded. The first cue sets the colour of the cyclorama (cyc) to red and it remains unchanged for the entire cue-list. Cues 2 to 50 make other changes but never affect the colour of the cyc. You now want to change the cyc colour to blue. This is quickly achieved by editing cue 1 and changing the colour. There is no need to edit the other 49 cues because the values in cue 1 will track through to cue 50. You then decide that half way through the cue-list you want to change the cyclorama to green. You edit cue 25 and change the colour. When the cue-list is played back, cue 1 sets the cyc to red and it remains unchanged until cue 25 where it changes to green. It then remains green right through to cue 50.

Tracking also saves memory space because only changes are saved.

42.7.4 Disadvantages of Tracking

Tracking can be confusing and frustrating unless it is fully understood. Remember that tracking does not necessarily give you a "what you see is what you get" result. The cues that you record only contain changes and not the entire look.

For example, the look on stage when you record a cue might not be coming entirely from the programmer. It might be that certain fixtures are getting their colour values from a playback. When the cue-list is played back, the colour that you saw on stage when the cue was recorded might not be reproduced when the cue is played back.

A common mistake is to create a look, record it as a cue and then clear the programmer. The next look is then created in the programmer and recorded as the next cue in the cue-list. The programmer is cleared again and the process repeated. The problem with this method is that the sequence of events that you observed on stage as you recorded the cue-list will not necessarily be reproduced when the cue-list is played back in tracking mode. This is because every time you cleared the programmer, you set all selected fixtures to their default values (or to a playback value if they were previously controlled by a playback). Typically you will see the fixtures blackout when the programmer is cleared.

When you create and record the next cue, you are not recording new values for the previously cleared fixtures unless you specifically grab them in the programmer and set a value. They go off on stage but this off state is not in the programmer so it will not be recorded in the next cue. When the cue-list is played back in tracking mode, each cue does not replace the attribute values from the previous cues unless there are specific values for those attributes in the new cue. Therefore, a fixture that has intensity in a cue will stay on when the next cue is played back unless it has been told to turn off (or go to a different level) in that cue.

For example:

Record a simple cue-list of 3 cues with a single dimmer turned on in each cue.

- Select dimmer 1 and set to 100%.
- Record cue 1.
- Clear programmer, dimmer 1 fades off.

- Select dimmer 2 and set to 100%.
- Record cue 2.
- Clear programmer, dimmer 2 fades off.
- Select dimmer 3 and set to 100%.
- Record cue 3.
- Clear programmer, dimmer 3 fades off.
- Playback cue-list in tracking mode.
- Playback cue 1, dimmer 1 fades on.
- Playback cue 2, dimmer 2 fades on, dimmer 1 stays on because of tracking.
- Playback cue 3, dimmer 3 fades on, dimmers 1 and 2 stay on because of tracking.

This is not the same as seen on stage when the cues were recorded.

However, if the same cue-list was changed to Cue Only playback mode (below), the playback will be the same as seen on stage when the cues were recorded:

- Playback cue 1, dimmer 1 fades on.
- Playback cue 2, dimmer 2 fades on, dimmer 1 fades off.
- Playback cue 3, dimmer 3 fades on, dimmer 2 fades off

42.7.5 Cue Only Playback

When a cue-list is set to playback in "Cue only" mode and the first cue is played back, the fixture attribute values in the first cue appear on the output of the playback. When the next cue is played back, its values replace all values from the previous cue and any attributes that do not have values in the new cue are released. The output of the playback is the latest cue only.

- Therefore, in Cue only mode, when a cue is played back, the current state on the output of the playback is only the hard values in that cue.

Note: Cue Only playback should not be confused with "Cue Only" recording. A cue that is recorded as "Cue only" is intended to be used as a "one off" cue in a cue-list set for tracking playback. See section 42.8.2 below.

For example:

Here are the same 3 cues used in the previous example but this time they are played back in cue only mode. Cue 1 sets the look on stage and then cues 2 replaces cue 1 and cue 3 replaces cue 2. Attributes that do not have a value in a cue are released and go to their default values.

	Channel 1	Channel 2	Channel 3
<i>Cue 1</i>	100	50	25
Output	100	50	25
<i>Cue 2</i>	80		
Output	80	0	0
<i>Cue 3</i>		25	
Output	0	25	0

Cue 1 contains hard values for attributes 1, 2 and 3 so when it is played back, the attributes go to 100%, 50% and 25% respectively.

Cue 2 only contains a hard value for attribute 1 so when it is played back attribute 1 changes to 80% and channels 2 and 3 are released.

Cue 3 only contains a hard value for attribute 2 so when it is played back attribute 2 changes to 25% and channels 1 and 3 are released.

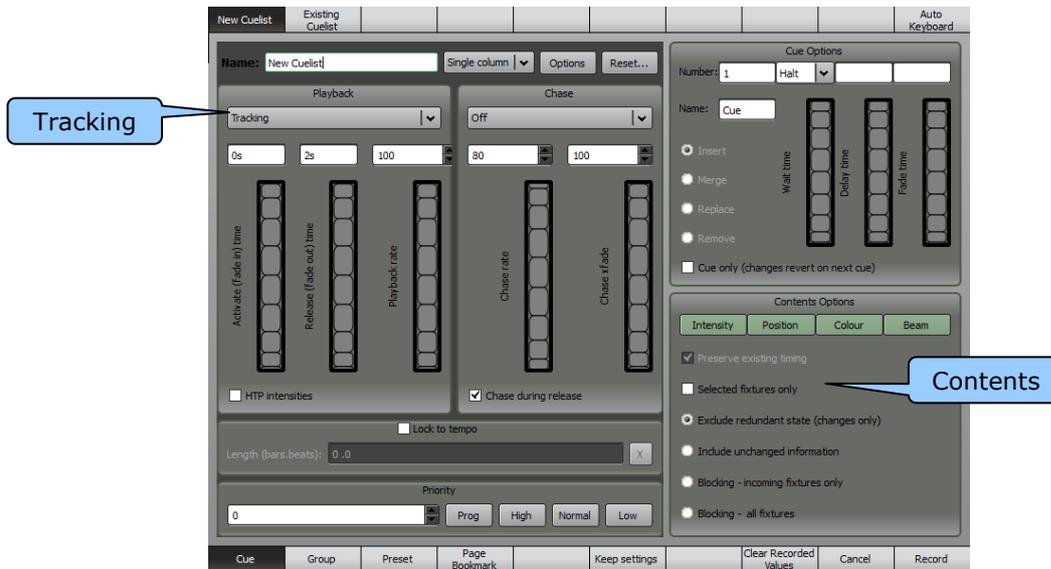
42.8 RECORDING CUES

When you record a cue, you need to take into account the playback mode of the cue-list that will be used when the cue is played back. The default setting of Clarity are for tracking playback and therefore Clarity will, by default, record only touched values. That is, it records

changes that have been made in the programmer since the previous cue in the cue-list was recorded. These cues are suitable for playback in tracking mode.

If you intend to playback the cue-list in Cue only mode, then you should include any unchanged information in the cue and not just the changes. In other word, you should record all grabbed values, not just the touched values.

When you click the Record button, the Record Cue dialog box allows you to choose what will be included in the cue. Setting "Playback" to either "Tracking" or "Cue Only" will automatically select the appropriate option in the "Contents Options" pane.



42.8.1 Content Options

Exclude redundant state (changes only/tracking).

This option records cues that are suitable for tracking playback. The recorded cue excludes any redundant values from the previous state. The cue only contains the touched (altered since last recording) attribute values. When this cue is played back in a cue-list set for tracking playback, the output will be the hard values of this new cue plus the redundant values tracked through from previous cues.

Include unchanged information (non-tracking).

This option records cues that are suitable for cue only playback. The recorded cue includes all grabbed values in the current programmer session, the entire look in the programmer. When this cue is played back in a cue-list set for cue only playback, the values in this cue will totally replace the output from the previous cue.

Blocking Cues

There are times when you are using tracking playback that you might want to prevent changes from tracking through to the next cue. Typically this might be a change of scene in a theatrical production or the next song in a musical performance. This is achieved by using a Block Cue in the cue-list. Just like a cue recorded using the "Include unchanged information (non-tracking)" option, it contains hard values for all attributes that have been touched (changed) since the previous cue in the cue-list was recorded, but it also takes all of the tracked values that would exist on the output of the playback (as if the cue-list had been played back) and converts them into hard values then automatically adds them to the cue.

When a Block Cue exists in a cue list, subsequent edits that are made to previous steps in the cue list will not track through and affect the Block Cue or the cues following it.

For example:

Here is a cue-list played back in Tracking mode. Cue 3 is a Block cue that contains hard values for all attributes so it blocks any tracked values.

	Channel 1	Channel 2	Channel 3
<i>Cue 1</i>	100	50	25
Output	100	50	25
<i>Cue 2</i>	80		
Output	50	50	25
<i>Cue 3 BLOCK</i>	50	75	25
Output	50	75	25
<i>Cue 4</i>	25		
Output	25	75	25

Cue 1 contains hard values for attributes 1, 2 and 3 so when it is played back, the attributes go to 100%, 50% and 25% respectively.

Cue 2 only contains a hard value for attribute 1 so when it is played back attribute 1 changes to 80% and attributes 2 and 3 track through and remain at 50% and 25%.

Cue 3 is a **block** cue so it contains hard values for all attributes.

Cue 4 only contains a hard value for attribute 1 so when it is played back attribute 1 changes to 25% and attributes 2 and 3 track through and remain at 75% and 25%.

Clarity can record two types of Block cue.

- **Blocking – incoming fixtures only.**

This only records the attributes that are currently grabbed in the programmer.

- **Blocking – all fixtures.**

This records hard values for all attributes of all patched fixtures. It effectively takes a snapshot of Clarity's output.

If this cue is played back in a tracking cue-list, it will Block any tracked values from affecting any fixtures.

Any cue in an existing cue-list can be changed into Block cue by editing the cue-list, selecting the cue then right clicking and selecting **Block cue**.

42.8.2 Cue Only (recording)

When you are operating in tracking mode, there might be occasions where you want to playback a "one off" cue and you do not want the values in that cue to track into later cues in the cue-list. This is achieved by recording a cue as "cue only". The channels in the cue are tagged by Clarity as "q only". When a cue containing "q only" channels is played back in tracking mode, the current state on the output of the playback is the hard values of the "q only" channels plus any tracked values from the previous cues. When the next cue is played back, the state from the most recent (non q only) values is restored automatically plus any new values in the incoming cue are used. In other words, when the next cue is played back, the output tracks the values as if the "cue only" values did not exist.

You can also edit existing cues or channels within a cue to be "cue only".

42.8.3 Mark Cues (Move in Black)

A Mark cue is a special type of cue that you can insert in a cue-list. Mark cues are also known as "move in black" and are used to pre-position fixture attributes without their movements or changes being seen on stage.

When you insert a Mark cue, Clarity looks at the previous cue and selects any fixtures that have a recorded intensity of 0% or no intensity recorded. (Note that a recorded intensity of 0% is not the same as not having intensity recorded in the cue and that the recorded intensity of 0% might be in an earlier cue if tracking playback applies.) Then, using that fixture selection, it

looks at the following cue and copies all the attributes of those fixtures, except intensity, from the following cue and inserts them into the new Mark cue which is placed between the two cues.

When the cue-list is played back and the cue prior to the mark cue finishes its fade, the Mark cue is automatically executed. It will move all of the attributes (except intensity) to their settings in the following cue. They therefore move in black. When the next cue is executed, the fixtures fade up, but nothing else changes because all other attributes were pre-set by the Mark cue. Mark cues have a default fade time of 0.5 seconds.

Mark cues are inserted by right clicking on a cue in the Control Booth window and selecting "Insert mark cue".

42.9 DMX 512

DMX512 is the industry standard for the transmission of digital control signals between lighting equipment. It utilizes just a single pair of wires on which is transmitted the level information for the control of up to 512 DMX slots. As the DMX512 signal contains the level information for all slots, each piece of equipment needs to be able to read the level(s) of the slots(s) that apply only to that piece of equipment. To enable this, each piece of DMX512 receiving equipment has an address that you can set. This address is set to the first slot number to which the equipment is to respond.

The end of the DMX line is terminated (120 Ω) to prevent the signal reflecting back up the line and causing possible errors.

42.10 DMX UNIVERSES

If more than 512 DMX slots are required, then more DMX outputs are used. The slot numbers on each DMX output are always 1 to 512. To differentiate between each DMX output they are called Universe1, Universe 2 etc. Clarity's internal DMX universes are designated as Universe A, B etc.

42.10.1 DMX Slot

A moving light, colour scroller, dimmer or any other DMX controlled device is known as a fixture. Every Fixture has a selectable DMX starting slot and this is patched to that same DMX SLOT number on Clarity. Clarity will then automatically patch all of the remaining DMX slots for that Fixture according to the information in the library for that particular Fixture.

42.10.2 Attribute.

Each brand and model of Fixture has a specified number and order of control channels. An attribute is one or two DMX control channels (two channels used for higher resolution) that uniquely controls one of the physical motions of the Fixture. The manufacturer's specification of a Fixture lists each attribute and its control channel number(s).

42.11 HTP (HIGHEST TAKES PRECEDENCE)

If the value for an attribute is emanating from several places at the same time then the highest of all those values will be the value at the output. HTP is typically used for intensity control.

42.12 LTP (LATEST TAKES PRECEDENCE)

The value on the output will always be the value from the place where the latest action took place. LTP is typically used for movement control.

42.13 RDM

RDM stands for Remote Device Management. It is an "extension" to DMX.

Since the inception of DMX it has always been a 'one way' control system. Data only ever flows in one direction, from the lighting controller outwards to whatever it may be connected to. The controller has no idea what it is connected to, or even if what it's connected to is working, switched on, or even there at all!

RDM changes all that allowing the equipment to answer back!

An RDM enabled moving light, for example, can tell you many useful things about its operation - the DMX address it is set to, the operating mode it is in, whether its pan or tilt is inverted and how many hours since the lamp was last changed.

But RDM can do more than that. It isn't limited to just reporting back, it can change things as well. As its name suggests, it can remotely manage your device.

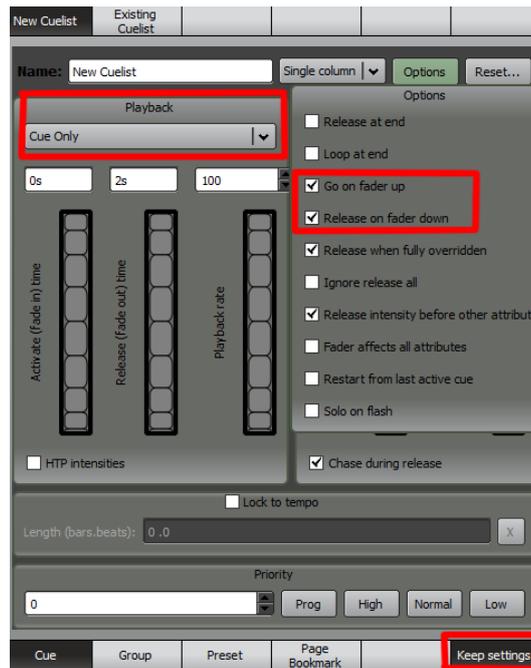
RDM has been designed to work with existing DMX systems. It does this by interleaving its messages with the regular DMX signal over the same wires. There is no need to change any of your cables but because RDM messages now go in two directions, any in-line DMX processing you have needs to be changed for new RDM hardware. This will most commonly mean that DMX splitters and buffers will need to be upgraded to RDM capable devices.

43 Hints and Tips

43.1 SIMPLE CUE PLAYBACK

If you are a novice and are having trouble understanding tracking the following settings will make Clarity operate in Cue Only mode with the cues automatically playing and releasing when a fader is raised or lowered.

- 1) Set the Playback mode to "Cue Only".
- 2) Open **Options** and select the 2 options highlighted in red.
- 3) Select the "Keep Settings" option at the bottom so that Clarity will use the new settings each time you record a new cue.



43.2 PARKED CHANNELS

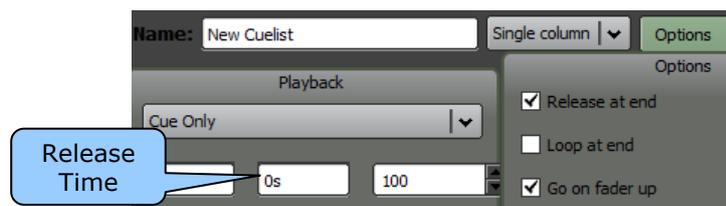
If you want some channels to always be on whenever you start your show (such as those that control DMX power racks for moving lights) then you can do this by:

- Recording a Cue-list with the channels you want set at 100% intensity.
- Set the Priority of the Cue-list to be higher than the programmer (use 150).
- Set the "Ignore Release All" box (found under the **Options** button).
- Set the Preferences in the Show Menu to "Restore Playback State".
- Activate the cue and save the show.

Whenever you load the show this cue will automatically run and stay on for the duration of the show.

43.3 ONE SHOT CHASE

You can do a one-shot chase by setting the "Release at end" option and setting the release time to 0 seconds. Setting "Go on fader up" will make the chase run automatically when the fader is raised.



43.4 PERFORMANCE WINDOW TIPS

Allocate the Performance Window to an external touch screen monitor (if supported) and set the monitor resolution really low in order to get make the executor buttons large and easy to press.

In the Performance Window create rows that just contain "looks". You can fire an entire row with just one button push which might contain for example a media clip and also a colour cue for your movers.

You can just fire a blank row to effectively release all columns. If there are some columns you don't want to release, then on the blank row, right-click the relevant cells and choose "replace with blank cell".

43.5 FLASHING A CUE

You can achieve toggle on/off very easily by recording a cue-list containing a single "halt" cue and then setting the cue-list to "release at end". Set the fade time and release times to 0 seconds. Pressing the Go button will turn on the cue on the first press and release it on the second press.

43.6 QUICK RECORD

When you press record, you can press the flash button of a playback to record the cue on that playback.

43.7 SNAPPING FORWARDS OR BACKWARDS

Press **Function+** ► to snap to the next cue.

Press **Function+** II ◀ to snap to the previous cue.

43.8 OPERATE CLARITY LIKE A MANUAL DESK

If you want to work in the same fashion as an LSC maXim console or other similar manual console then you can simply record each of your looks to a separate playback.

Now use the faders to playback your looks and set the level of each one live on stage for a combined look.

To record the current on stage look, press **Record** and select the "Blocking All Fixtures" option at the bottom right of the pop-up box. This records a snapshot of the lights on stage, just like a maXim does, complete with the proportional levels.

43.9 PROGRAMMER OVERRIDE

If you are not familiar with a "Programmer" type of lighting controller you might often get caught out when a playback does not do what you expect it to do because you have some (or all) of its channels still being controlled by the programmer. This is because the programmer has a higher priority than a playback so it prevents the playback from controlling the channels.

You can overcome this problem by setting the programmer to the same priority as a playback. Select "Show/Preferences" and tick the "Programmer operates at normal priority" check box. Now the programmer can be overridden by a playback on a Latest Take Precedence basis.

43.10 MEDIA SERVER THUMBNAILS

The most common tech support issue we get with Clarity is how to make Media Server thumbnails work.

The great part is that with Clarity it is all automatic, so there is nothing to set up in the Clarity software. However there are a few tricks with the computer and/or the Media Server itself.

Firstly check that you can control the Media Server via Art-Net. If not then you have a major network issue that needs to be resolved first. This is outside the scope of this article. If you have Art-Net control but no thumbnails then read on.

1) IP addresses. For thumbnail exchange to work both the Clarity computer and the Media Server must be on the same IP address ranges. We suggest using the 2.xxx.xxx.xxx range. If you are not familiar with how to define IP addresses here are some settings to try.

Clarity Computer
IP Addr: 2.0.0.101
Subnet : 255.0.0.0

Gateway 2.0.0.201

Media Server
IP Addr: 2.0.0.201
Subnet : 255.0.0.0
Gateway:2.0.0.101

2) Do you have Sun VirtualBox installed on your computer? If so, then by default it re-routes all the network traffic and stops thumbnail exchange from working. In this scenario please disable the VirtualBox Host-Only Ethernet Adapter from within the device manager to resolve the problem.

3) If you are using Pandora's Box then you need to go into the preferences and Tick the 'Enable Thumbnails' and 'CITP' checkboxes.

43.11 AUDIO PLAYBACK

Clarity allows Audio playback to be programmed as part of a lighting show. MP3 files can be loaded into the console and then patched as an Audio 'fixture' for inclusion in a show. This fixture has two attributes, "Volume" and "Play/Pause/Stop". To play audio is a simple matter of selecting the audio fixture, adjusting the volume and selecting Play. It can be saved as part of a cue in a cuelist or operated live and because Clarity treats it as a fixture it can be given fade, wait and delay times and the volume can be controlled via a fader if desired.

This feature can be used in many different ways. One common method is to play a song, and have the lighting cues automatically synchronise to the track making Clarity ideal for Christmas light displays and themed environments. In theatrical shows it can be used to trigger sound effects at the same time as lighting cues (so the lightning flash occurs in sync with the sound).

43.12 AUTOMATED FOLLOW SPOT AUDIO CUES

You can use the audio output of Clarity to accurately cue you follow spot operators. Record your voice with the cue as an audio file then load it onto Clarity. Then, for each upcoming follow spot cue, place a script command in the cue list and Clarity plays back the audio file containing the follow spot instructions. Because these instructions are in the cue list, delay times can be used to ensure that upcoming instructions are issued at an appropriate time.

Audio out from Clarity is fed into the follow spot's communications system and this set-up saves saying the same thing over again for each show for those spot operators who somehow fail to take their own notes, nor can remember their cues.

Total flexibility and it takes only seconds to implement with Clarity.

Thanks Andrei.

This technique can also be used when touring in foreign countries where they don't speak the same language as you. Get an interpreter to record all the commands in several different languages then load up whichever language is needed based on the country in which you are operating.

43.13 SIMPLE RGB MIXING

Sometimes you may want to assign 3 faders to give live control of the Red, Green and Blue colours in the fixtures. If the LED fixture does not have a real dimmer channel, then Clarity uses a Virtual Dimmer, which works as a type of Grand master over the RGB channels. This is OK, but makes the above task a little tricky.

Here is what to do.....

1) Record a cue with the Intensity at 100% and all the colours at 0%. Set the priority to Low (-50) and set the Options to "Ignore Release All". Play this cue and leave it on.

2) Record a Blue cue with the Blue at 100%, and then right click on the Red and Green attributes and select the 'Clear' option. Set the Options to "Go on fader up" and "Fader affects all attributes". Set the Fade Time to 0.

3) Do the same for the Red and Green cues.

Now you can use the Red, Green and Blue cues to have live colour mixing of the RGB fixtures.

43.14 RECORDING ONLY PAN (OR TILT)

When you only adjust Pan, Clarity automatically selects Tilt as well (as usually a position needs both). The same applies when you only adjust Tilt, Clarity automatically selects Pan as well.

- To record a Pan only cue or palette, on the encoder wheel touch screen select the Tilt attribute, Hold KO (Knock Out) and move the Tilt encoder wheel or, in the Programmer window, right click on Tilt and select the 'Clear Tilt' item. Now you can record just the Pan information into a cue or Palette.

43.15 TIME PRESETS

Every console provides the ability to create Presets and Palettes for Colours, Gobos, Positions, etc. Clarity extends this functionality to include Time Presets.

Any timing information, no matter how simple or complex, can be saved to a Time Preset for instant recall when programming or busking live. Time Presets can include Fanned times, allowing the action to be delayed across multiple fixtures. In addition, using the unique Freetime ability of Clarity a fanned delay can be recorded once and later recalled across 2, 5, 7, 21 or any number of fixtures.

43.16 SORTING, BUDDYING & SUBGROUPS

The Sort, Buddying and SubGroup controls allow you to quickly alter the way fixtures are controlled in the programmer. Sorting can be ordered by Selection, Numeric, Mirrored or Random. Buddying and Subgroups can be adjusted as required, allowing Effects, Fans and Freetimes, Positions and Colours to be patterned across a range of fixtures. The Buddying control allows you to apply the same value or effect across pairs, triples or any number of fixtures. The Subgroup control repeats the pattern every 2,3,4 or more fixtures. Even more creativity can be quickly achieved with the combinations of these controls, as well as the Odd/Even selection buttons.

43.17 UNIVERSAL CONTROL.

One of the most powerful features of Clarity is the Universal Control function. This presents every lighting fixture in a uniform manner. So no matter what weird and wonderful things the manufacturer does (such as share the dimmer and strobe on a single channel, or put the Reset commands at the end of the strobe channel) the LX console makes it easy to use the fixture. The dimmer encoder will only ever control the dimmer, and the strobe encoder will never accidentally reset the fixture.

You can also grab a multiple different fixture types (e.g. mirrors with 90 degree pan and yokes with 540 degree pan) and then adjust the Pan and Tilt in degrees rather than DMX values so they will actually move together as if they were the same fixture.

Clarity is even smart enough to switch the gobo between indexing and rotating modes as soon as you alter the rotation or indexing controls, just to make your life easier and save you precious minutes when under pressure.

Of course there is also the ability to switch to direct IFCB mode, if you want to have full manual control, so Clarity offers you the best of both worlds.

43.18 COPY AND PASTE

Clarity allows Copy and Paste between completely different fixture types.

For example, if you create a nice color fan and ballyhoo across a dozen LED moving wash lights and then paste it to a group of CMY moving mirror profile spots, Clarity will use real word values (Pan and Tilt in degrees) and do automatic RGB to CMY colour conversion so that the same look is reproduced in the different fixtures. The whole process takes a few seconds and 2 to 3 button presses to complete.

You can even copy between fixtures with different feature sets and Clarity will simply ignore the missing functions. For example, you can also paste the above look into 200 RGB LED pars

and Clarity will look after the color conversion whilst ignoring the Pan/Tilt parameters that don't exist on the par cans.

43.19 FANS BUTTONS

The LX consoles provide dedicated Fan End and Fan Centre buttons, located right next to the encoders, to allow quick one handed fanning of any parameter. So Pan/Tilt fans take mere seconds to create and adjust to perfection. You can even use the fan buttons in the graphical colour picker to enable almost instant colour fans. When used in conjunction with the quick sort controls it is easy to do Mirrored, Selected Order, Random and other fan orders without taking your eyes off the stage. The Buddying and Subgroup controls allow the fans to be repeated across specific numbers of fixtures or in pairs, triplets, or whatever combination you require.

43.20 MULTIPLE PROGRAMMERS

Clarity has the ability to have an unlimited number of programmers in operation. This allows you to quickly jump between different tasks without needing to save things to temporary cuelists.

It is ideal for parking some work lights. Just switch to the next programmer, adjust the Pan/Tilt and intensity then switch back to the default programmer. The lights will stay where they are and any cues recorded whilst working in the default programmer will ignore the lights in the other programmer sessions.

Another common scenario is where you are busy working on a complex cue and you need to put this aside and work on a different part of the show. By putting the current Programmer into Blind mode and selecting a different programmer you can work on the other part of the show, saving and editing cues, then when you are finished it takes just 3 button presses to return to the original programmer, un-blind it and you are back exactly where you left off. Even the Undo information is unaffected, as each programmer has its own Undo/Redo history.

43.21 CUELIST FOLDER ORDER

Folders are a great way to organise your cue lists into a more logical layout. Folders are automatically arranged in alphabetical order, so a folder called ABBA will be before a folder called X-Ray. To change the order just change the name. If you want to keep the name X-Ray, but still have it appear before ABBA, then use numbers at the start. "100 X-Ray" will appear before "200 Abba".

44 Appendix. Proglet Scripting

44.1 INTRODUCTION

Clarity’s scripting feature (Proglets) is a very powerful and very advanced feature of Clarity and is thus intended as a power-user feature. The scripts allow the creation of very easy to use Proglet functions with dedicated simple Graphical User Interfaces, but writing proglets is not an easy task.

Clarity’s scripting feature uses Qt Script which is based on the ECMAScript standard defined in <http://www.ecma-international.org/publications/standards/Ecma-262.htm>. ECMAScript is the basis of the well-known JavaScript language. Many tutorials exist online such as <http://www.w3schools.com/js/DEFAULT.asp>. The parts of ECMAScript that are supported by Clarity’s scripting feature are detailed at the end of this appendix.

When you have installed and run Clarity 2.2, all the built-in scripts will be unpacked into the Clarity/programmerscripts directory and they serve as good examples upon which to base your scripts.

44.2 API (APPLICATION PROGRAMMING INTERFACE) PROPERTIES

These properties operate like values in a script, they can be read from and in some cases written to. For example:

```
blocking = 2
for (int i=0; i<numSelected; ++i)
    ...
```

44.2.1 Buddying/Subgroup properties

One of the design goals was to allow Proglets to operate independently of the programmer and not change the programmer’s state in any way. To this end there are separate buddinging and subgroup functions that affect how the Proglet applies values as well as functions that directly control the programmer’s sort window buddinging and grouping. If the local properties are explicitly assigned then they are used, otherwise the sort control’s values are used instead. These are the relevant properties (first one refers to the sort controls, second to the API’s local value):

- buddinging / blocking (read/write)
- subgroups / repeat (read/write)
- groupBy / repeatSize (read/write)

44.2.2 Other properties

- numSelected
Returns the number of currently selected fixtures, respective prev/next, buddinging and subgroups.
- atStart
Returns TRUE if stepping and on the first fixture.
- atEnd
Returns TRUE if stepping and on the last fixture.

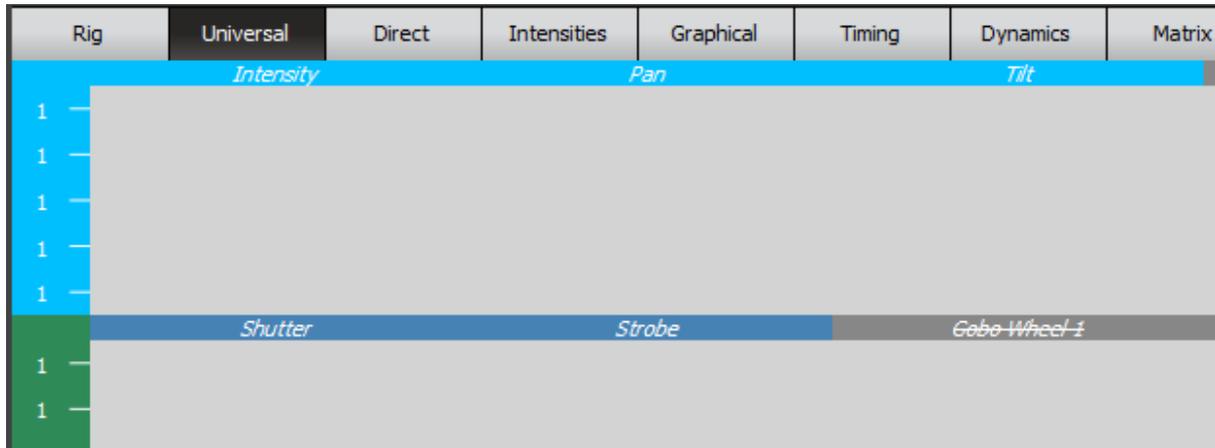
44.2.3 Channel IDs

Some functions require one or more Channel Ids. These are typically the name you see above a fixture’s channel in the main programmer window. For example:

Mac Quantum Wash (16-DIC Ext)		
Shutter Strobe	Intensity	Colour Temperature
Pan	Tilt	Fixture Global Reset
Null #4	Null #5	

44.2.4 Feature IDs

Many other functions instead accept Feature IDs, which are similar to Channel IDs, but are the names you would see on the LX's universal windows. For example:



In many cases these will be the same, but that is not always the case. An example would be for a colour wheel. The Channel ID would be "Colour Wheel" but the relevant Feature ID to select a slot would be "Colour Wheel Select". Typically, functions that accept a Channel ID identify a whole channel, and the value applied will be a raw percentage. Functions that accept a Feature ID are generic, and will adapt the value for the underlying type of the fixtures being controlled (in the same way the LX Universal controls do).

44.2.5 Permutations

When more than one channel/feature of a given ID exists, then by default the ChannelID/FeatureID refers to the first instance. You can specify other instances by appending the permutation index. For example "Intensity#2".

44.3 CHANNEL/FEATURE VALUES

A basic value can be specified as a number or a percentage. You can also specify them as a range or as a comma separated list of values. For example.

```
setFeatureStaticValue("Intensity", 50) // sets to 50%
setFeatureStaticValue("Intensity", "50%") // same (need quotes if using % symbol)
setFeatureStaticValue("Intensity", "25/75") // fans intensity from 25% to 75%
setFeatureStaticValue("Intensity", "25,50,75") // results in 25,50,75,25,50,75 etc.
```

The value depends on what is being controlled. If a channel is being controlled (for example, the setChannelValue() function) then a basic value will be taken verbatim. If a percentage value is given, then it will respect the hi-res/low-res size of the channel (for example, 50% would be 127 for an 8-bit channel and 32767 for a 16-bit channel). When a feature is being controlled (for example, the setFeatureStaticValue() function) then values are nearly always taken to be percentage. Slots will be indices (for example, setFeatureStaticValue("Colour Wheel Select", 2) will dial up the second slot on the colour wheel).

44.4 PROGRAMMER API FUNCTIONS

setChannelValue(channelId, channelValue)

Sets the relevant *channel* in each fixture to the value specified. The channelValue should be specified as a percentage so that it adapts to the size of the channel being controlled (hi-res/low-res) otherwise the value is taken as a verbatim raw decimal value.

clearChannel(channelIdList)

Clears the channel(s) in each fixture. Eg. clearChannel("Pan,Tilt").

setFeatureStaticValue(featureId, featureValue)

Sets the relevant *feature* in each fixture.

setFeatureDynamicValueCentre(featureId, featureValue, bool resetDynamicParams = false)

Sets the channel that contains the given feature to be dynamic, and sets the centre value to the given feature value. The optional boolean parameter can be set to TRUE to reset all other dynamic values. You would typically set this TRUE on the first dynamic function call so that you know you are starting from a clean slate, for example:

```
setFeatureDynamicValueCentre("Pan", "0%", true)
setFeatureDynamicWaveshape("Pan", "Triangle,Random med")
setFeatureDynamicRate("Pan", "15,2")
setFeatureDynamicAmplitude("Pan", 0.5)
setFeatureDynamicOffset("Pan", "fullfan")
```

setFeatureDynamicValueTop(featureId, featureValue, bool resetDynamicParams = false)

Ditto, for the top dynamic value.

setFeatureDynamicValueBottom(featureId, featureValue, bool resetDynamicParams = false)

Ditto, for the bottom dynamic value.

setFeatureTime(ipcb_or_featureId, delayValue, durationValueString, path)

Sets timing on either a specific feature, or a group of channels. The ipc_b_or_channelId parameter can be either IPCB mnemonics (e.g. "CB" for colour and beam) or one or more Feature IDs.

next(bool wholeFixtures = true)

Equivalent to the 'Next' button which operates on whole fixtures by default. If you supply FALSE then it will step through segments of segmented fixtures.

prev(bool wholeFixtures = true)

Ditto for 'Prev'.

odd(bool wholeFixtures = true)

Equivalent to the Odd button on the Sort tab. By default will operate on whole fixtures, unless FALSE is supplied, where it will operate on each segment of segmented fixtures (NB this currently appears to be broken).

even(bool wholeFixtures = true)

Ditto for 'Even'.

all()

Equivalent to the All button on the programmer toolbar.

resetGrouping()

Resets the buddying/subgroups in the Sort controls pane.
Same as {setSubgroups(1); setBuddying(1);}

setFeatureDynamicWaveshape(featureId, waveshape)

Sets the waveshape. Valid waveshapes are as displayed in the Waveshape dropdown on the Dynamics page.

setFeatureDynamicRate(featureId, valueString)

Value is bpm.

setFeatureDynamicPhaseShift(featureId, valueString)

setFeatureDynamicMirror(featureId, valueString)

Values should be 0 or 1 or true or false. No sense in a range but permutations allowed; percentage disallowed.

setFeatureDynamicMetroSync(featureId, valueString)

Ditto.

setFeatureDynamicDutyFactor(featureId, valueString)

Values should be raw values only (percentage disallowed)

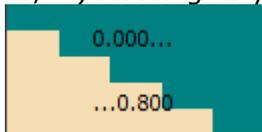
setFeatureDynamicAmplitude(featureId, valueString)

setFeatureDynamicInvert(featureId, valueString)

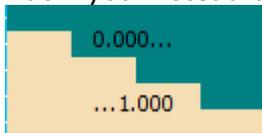
Values should be 0 or 1 or true or false. No sense in a range but permutations allowed; percentage disallowed.

setFeatureDynamicOffset(featureId, valueString, bool strict = false)

By default, if you supply a range this will fan the offset values sensibly, so that the last fixture's offset is not the same as the first fixture's offset, for example, setFeatureDynamicOffset("Pan", "0/1") would give you:



But if you instead did this: setFeatureDynamicOffset("Pan", "0/1", true) you'd get:



44.4.1 The include() function

The include() function is a special function that allows you to re-use script code from another file. It effectively inserts the contents of the included file at the location of the include file. For example.

```
include("altfunc.js")
setAlternate("Intensity")
```

This will replace the include("altfunc.js") statement with the contents of altfunc.js. If altfunc.js not present in the Clarity/programmerscripts directory it will try the files embedded within the Clarity application (currently altfunc.js, wavefunc.js and chasefunc.js). In the example above, the setAlternate() function is defined in the altfunc.js file.

The include system attempts to prevent circular references and multiple inclusions of the same file.

44.5 USER INPUT FUNCTIONS

By default, Progllets are non-interactive. You can make them interactive by using the getUserInput() pseudo-function:

getUserInput(prompt, inputMethod, min, max, init = 0)

When a script contains one or more calls to this function, it displays a window containing controls for each of these functions. The prompt parameter is displayed as a label against the control, and the inputMethod parameter specifies the type of control to use, one of:

- slider
- spinner
- checkbox

The min and max params give the range of values to use or the values that correspond to the unchecked and checked states of a checkbox.

The optional init param specified the value that should be set for the control each time the script is invoked. If this is omitted then the control keeps the value it last had.

Slider and spinner controls are assigned to LX wheels by default.

You can append some options to the inputMethod parameter:

- nowheel
Do not assign an LX encoder wheel to this control.

- wheel
Normally checkboxes don't get assigned to encoders, but this can override that.
- int
Uses a whole number spin box instead of a decimal number spinbox.
- log
Causes the value range to be interpreted along a logarithmic scale.

Controls are displayed in the order that they are used in the script.

44.6 MODIFYING AND CREATING NEW PROGLETS

When Clarity 2.2 is first run, it checks the Clarity/programmerscripts directory. If it is empty, then it copies its internal programmer script files into this directory. The files that are written are added to the manifest.txt file. If you delete any files from this directory then Clarity won't replace them next time since the file will be recorded in the manifest. If you want to restore any default files that may have been deleted, then simply remove them from manifest.txt or delete manifest.txt entirely. Note that Clarity won't overwrite any files that already exist in that directory (for example if you modified a default file then deleted the manifest, your modified file would be preserved).

When you edit any .cps files in this directory, Clarity will automatically reload the relevant proglet. Also, if you add or delete files in this directory, then the proglet window will be immediately updated to reflect the contents.

44.7 ECMASCRIPT FEATURES SUPPORTED BY CLARITY (QT SCRIPT)

This reference contains a list of built-in objects, functions and properties supported by Qt Script. For a detailed description, see the [ECMA-262](#) specification.

44.7.1 The Global Object

Value Properties

- NaN
- Infinity
- Undefined

Function Properties

- eval(x)
- parseInt(string, radix)
- parseFloat(string)
- isNaN(number)
- isFinite(number)
- decodeURI(encodedURI)
- decodeURIComponent(encodedURIComponent)
- encodeURI(uri)
- encodeURIComponent(uriComponent)

Constructor Properties

- Object
- Function
- Array
- String
- Boolean
- Number
- Date
- RegExp
- Error
- EvalError
- RangeError
- ReferenceError
- SyntaxError
- TypeError
- URIError

Other Properties

- Math
- JSON

44.7.2 Object Objects

Object Constructor

Function Properties

- `getPrototypeOf(O)`
- `getOwnPropertyDescriptor(O, P)`
- `getOwnPropertyNames(O)`
- `create(O [, Properties])`
- `defineProperty(O, P, Attributes)`
- `defineProperties(O, Properties)`
- `keys(O)`

Object Prototype Object

Function Properties

- `toString()`
- `toLocaleString()`
- `valueOf()`

- hasOwnProperty(V)
- isPrototypeOf(V)
- propertyIsEnumerable(V)

44.7.3 Function Objects

Function Prototype Object Function Properties

- toString()
- apply(thisArg, argArray)
- call(thisArg [, arg1 [, arg2, ...]])

44.7.4 Array Objects

Array Constructor Function Properties

- isArray(arg)

Array Prototype Object Function Properties

- toString()
- toLocaleString()
- concat([item1 [, item2 [, ...]])
- join(separator)
- pop()
- push([item1 [, item2 [, ...]])
- reverse()
- shift()
- slice(start, end)
- sort(comparefn)
- splice(start, deleteCount[, item1 [, item2 [, ...]])
- unshift([item1 [, item2 [, ...]])
- indexOf(searchElement [, fromIndex])
- lastIndexOf(searchElement [, fromIndex])
- every(callbackfn [, thisArg])
- some(callbackfn [, thisArg])
- forEach(callbackfn [, thisArg])
- map(callbackfn [, thisArg])

- `filter(callbackfn [, thisArg])`
- `reduce(callbackfn [, initialValue])`
- `reduceRight(callbackfn [, initialValue])`

44.7.5 String Objects

String Constructor

Function Properties

- `fromCharCode([char0 [, char1 [,...]]])`

String Prototype Object

Function Properties

- `toString()`
- `valueOf()`
- `charAt(pos)`
- `charCodeAt(pos)`
- `concat([string1 [, string2 [, ...]])`
- `indexOf(searchString ,position)`
- `lastIndexOf(searchString, position)`
- `localeCompare(that)`
- `match(regex)`
- `replace(searchValue, replaceValue)`
- `search(regex)`
- `slice(start, end)`
- `split(separator, limit)`
- `substring(start, end)`
- `toLowerCase()`
- `toLocaleLowerCase()`
- `toUpperCase()`
- `toLocaleUpperCase()`
- `trim()`

44.7.6 Boolean Objects

Boolean Prototype Object

Function Properties

- `toString()`
- `valueOf()`

44.7.7 Number Objects

Number Prototype Object

Function Properties

- `toString(radix)`
- `toLocaleString()`
- `toFixed(fractionDigits)`
- `toExponential(fractionDigits)`
- `toPrecision(precision)`

44.7.8 The Math Object

Value Properties

- `E`
- `LN10`
- `LN2`
- `LOG2E`
- `LOG10E`
- `PI`
- `SQRT1_2`
- `SQRT2`

Function Properties

- `abs(x)`
- `acos(x)`
- `asin(x)`
- `atan(x)`
- `atan2(y, x)`
- `ceil(x)`
- `cos(x)`
- `exp(x)`
- `floor(x)`
- `log(x)`
- `max([value1 [, value2 [, ...]])]`
- `min([value1 [, value2 [, ...]])]`
- `pow(x, y)`
- `random()`
- `round(x)`

- `sin(x)`
- `sqrt(x)`
- `tan(x)`

44.7.9 Date Objects

Date Constructor

Function Properties

- `now()`
- `parse(string)`
- `UTC(year, month [, date [, hours [, minutes [, seconds [, ms]]]])`

Date Prototype Object

Function Properties

- `toString()`
- `toDateString()`
- `toTimeString()`
- `toLocaleString()`
- `toLocaleDateString()`
- `toLocaleTimeString()`
- `valueOf()`
- `getTime()`
- `getFullYear()`
- `getUTCFullYear()`
- `getMonth()`
- `getUTCMonth()`
- `getDate()`
- `getUTCDate()`
- `getDay()`
- `getUTCDay()`
- `getHours()`
- `getUTCHours()`
- `getMinutes()`
- `getUTCMinutes()`
- `getSeconds()`
- `getUTCSeconds()`
- `getMilliseconds()`

- `getUTCMilliseconds()`
- `getTimeZoneOffset()`
- `setTime(time)`
- `setMilliseconds(ms)`
- `setUTCMilliseconds(ms)`
- `setSeconds(sec [, ms])`
- `setUTCSeconds(sec [, ms])`
- `setMinutes(min [, sec [, ms]])`
- `setUTCMinutes(min [, sec [, ms]])`
- `setHours(hour [, min [, sec [, ms]])`
- `setUTCHours(hour [, min [, sec [, ms]])`
- `setDate(date)`
- `setUTCDate(date)`
- `setMonth(month [, date])`
- `setUTCMonth(month [, date])`
- `setFullYear(year [, month [, date]])`
- `setUTCFullYear(year [, month [, date]])`
- `toUTCString()`
- `toISOString()`
- `toJSON()`

44.7.10 RegExp Objects

RegExp Prototype Object

Function Properties

- `exec(string)`
- `test(string)`
- `toString()`

44.7.11 Error Objects

Error Prototype Object

Value Properties

- `name`
- `message`

Function Properties

- `toString()`

44.7.12 The JSON Object

Function Properties

- `parse(text [, reviver])`
- `stringify(value [, replacer [, space]])`

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46 COMPLIANCE STATEMENTS

Declaration of Conformity

This is to certify that the LX, QX and VX products are approved for use in Europe and Australia/New Zealand and conform to the following standards:

European Norms
EN55103-1
EN55103-2
EN60950

Australian / New Zealand Standards
AS/NZS 4251.1
AS/NZS 4252.1
AS/NZS60950

To ensure compliance with EMC Directive 89/336 and the Australian Radio communications Act 1992, the following conditions (outside of LSC's control) must be met.

- The computer on which Clarity and the QX or VX peripherals are connected to must itself be compliant to the above standards.
- High quality data cables with continuous shield must be used;
- Connectors with conductive back shells must be used.



Federal Communications Commission (FCC) Declaration of Conformity

LSC Lighting Systems (Aust) declares that the LX, QX and VX products comply with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment can radiate radio frequency energy and, if not properly installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient or relocate the receiving antenna;
- increase the separation between the equipment and receiver;
- connect the equipment into an outlet on a different circuit from that to which the receiver is connected;
- consult your local LSC dealer or an experienced radio/television technician for help

- END -