FLX Lighting Console

User Manual

Version 1

Correct as per ZerOS Version 7.9.1

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Apparatet må tilkoples jordet stikkontakt
Apparaten skall anslutas till jordat uttag

Contents

Introduction

FLX Lighting Console

The FLX lighting console is a portable control system, running the ZerOS Operating System to control up to 4096 channels (2048 as standard).

From design to manufacture, the FLX lighting console has been developed to work in a wide range of demanding situations, with specific considerations for live events & hire, touring productions, multipurpose venues, theatres and educational applications.

ZerOS (Operating Software)

ZerOS is regularly updated to bring new features and to keep your console stable and secure. Software updates are free of charge and can be downloaded from zero88.com/software. It is strongly recommended to always be running the latest release of software.

Phantom ZerOS (offline editor)

Phantom ZerOS is free to download, and can emulate any console which runs our ZerOS software, including FLX. Show files can be loaded, saved and transferred to "real" consoles, useful to setup your show, or make slight changes while you're not at the console.

Phantom ZerOS can also be unlocked to output Art-Net or sACN with the addition of the "Phantom ZerOS Unlock Dongle". This allows it to run as a console itself, or to back up another console.

Phantom ZerOS can be downloaded from the Zero 88 website.

This manual

This manual describes the operation of the FLX lighting Console. For detailed information on each function, the manual has been divided into chapters - one for each major area of the console

Throughout this manual the following conventions are used:

References to physical front panel controls and buttons appear within a solid border, for example:

Grand Master , Colour , UDK 3 .

References to "soft buttons", which appear on the monitor, are displayed in italics, within a dotted border, as follows:

Next , *Picker* .

Experience is the best way of fully learning the console. Through time you will develop your own operating style.

Getting started…

Turning the console on

The mains cable should be connected to the FLX before any other cables are connected. A safety earth is provided through this connection to help protect both the user and the product if there's a fault with anything plugged into the console.

If you are using an external monitor, plug this in prior to powering up the console. Once done, power on the console using the switch on the rear panel. When you power on the console, FLX will run through its power up routine.

Adding dimmers

Before you can control any fixtures, you need to "patch" them into the console. When you first turn on your console, FLX will offer to patch any number of basic dimmers for you automatically. These will be patched as a "1-to-1 patch", meaning if you choose 48 dimmers, they will be patched as Channels 1 - 48, on DMX addresses 1 - 48, on Universe 1. (See "Patching – introduction" on page 37 for more info).

Internal Display

FLX includes a 7" capacitive multi-touch display which is designed to follow your actions as you use the console. For example, if you press [Colour], colour options automatically appear on this internal display. There is no "home" screen for the display – as you're working, it just updates to the next window you may require.

External Display

An optional external DVI-D monitor displays the graphical interface for the FLX lighting console.

The optional external display can view one of two different desktops – "Programming" or "Palettes". Which one is currently being viewed can be switched using the two buttons in the bottom right corner of the external display (or by pressing [Shift] and [View] together).

"Programming" desktop

The Programming desktop shows the Output Window in the top half of the screen, and either the Playback window or the Multi-Function Faders window in the bottom half. Which one is being viewed can be switched by tapping the [View] button.
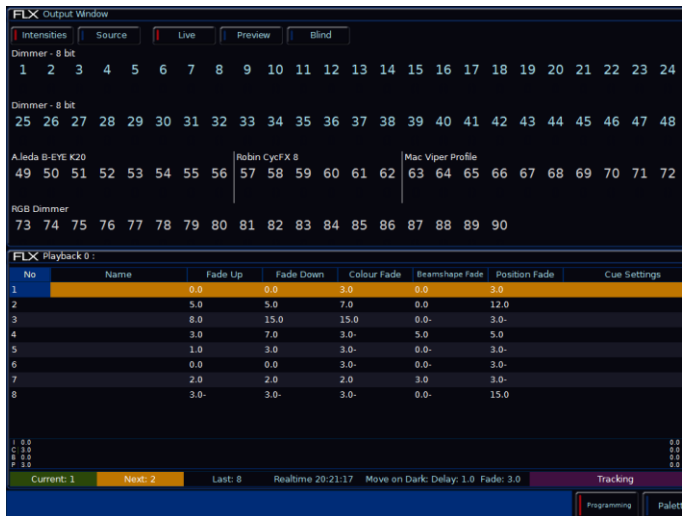
"Programming" desktop on the external display

The Output Window includes the following options:

[Intensities] / [Source] - the "source" button displays what's in control of each fixture. The following descriptions are used:

C 1/1	Playback 1, Cue 1
C 22/5	Playback 22, Cue 5
UDK 1/1	UDK Page 1, UDK 1
P	Programmer
D	Default value

Pressing "Intensities" reverts back to the usual display, showing the current intensity of every fixture.

[Live] / [Preview] / [Blind] - "Live" displays the usual current output of the console. "Preview" displays the intensities within the next cue (yellow bar) of the currently viewed playback. Using the up/down arrows to navigate the playback allows quick preview of upcoming cues. "Blind" is both a visual indicator and a quicker way to enter and leave "Blind Mode".

"Palettes" desktop

The Palettes desktop shows the four attribute windows
(Colour, Beam, Position and Effects) in each corner.

"Palettes" desktop on the external display

Using FLX without an External Display

FLX can be used without the need of an external display.
The console will automatically detect that an external
monitor is not present and display the command line and
playback windows on the internal display instead, when
Shift is pressed. When Shift and View are pressed
together, the Output Window will be shown on the internal
display. See "External Display Settings" for more info.

Touch Scrolling

All windows can be scrolled through using either touch or a
mouse by simply dragging over a window or list, rather
than having to use the scroll bars.

Front panel
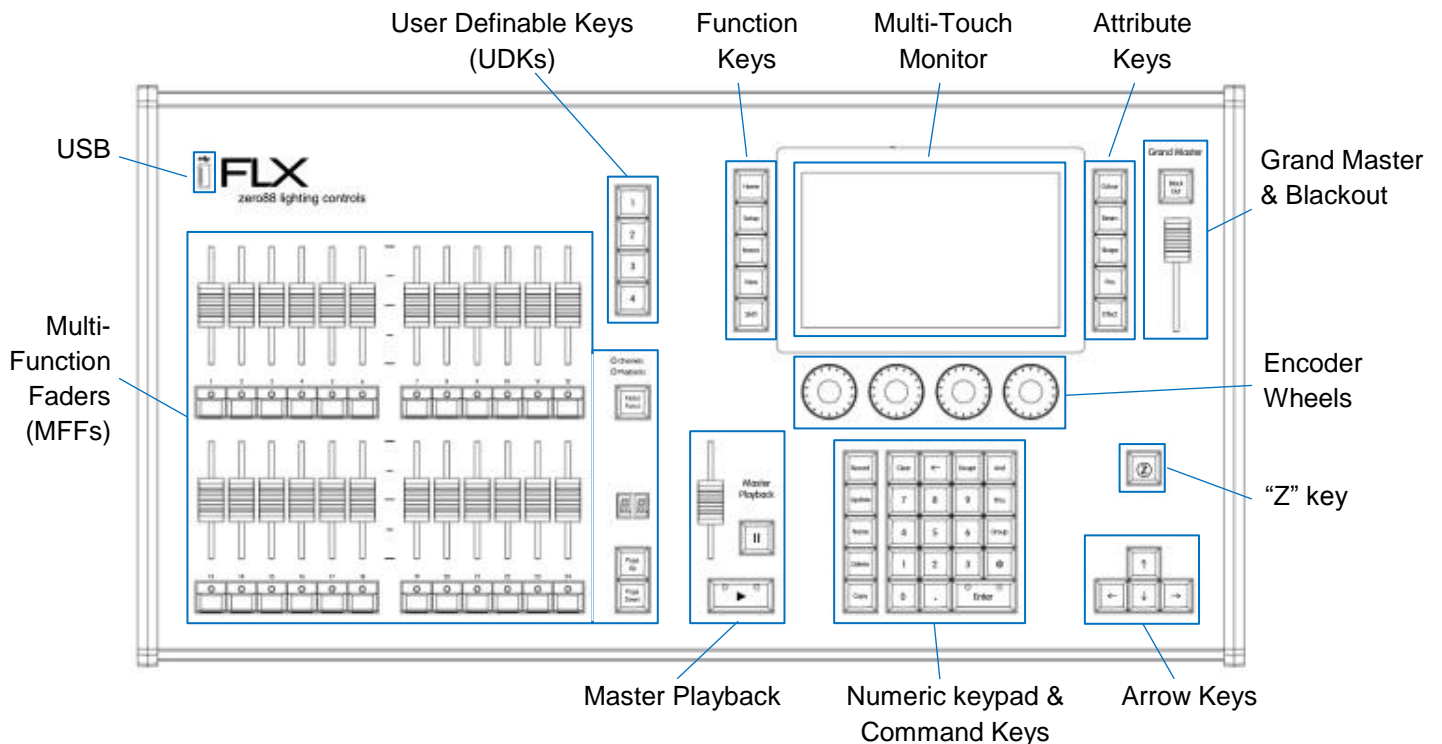
Multi-Function Faders (MFFs)
The FLX lighting console is equipped with 24 Multi-Function Faders. These can quickly and easily be switched between their two functions ("Channels" and "Playbacks") by using the Fader Funct. button.

Master Playback
For many shows, especially theatrical, a single playback is often used with a long list of pre-recorded cues. For these situations, an additional "Master Playback" is provided with double-width play button and a dedicated pause button.

User Definable Keys (UDKs)
Four UDKs are provided, and can be assigned to a range of functionality including recalling lighting states, Groups, Palettes, and Effects, or accessing advanced functionality such as RemDim or Highlight.

Function keys
The five function keys to the left of the touchscreen either perform functions themselves (like Home and View), or change the functionality of other buttons when pressed at the same time (like Setup and Shift).

Attribute keys
Fixture's parameters are grouped together into four attributes for easy access and control. A fifth attribute, called "Effect", manipulates parameters to create effects such as "Circle", "Ballyhoo" and "Rainbow". These five attribute buttons can be found along the right hand side of the internal touchscreen.

Encoder wheels
Four encoder wheels are provided, and used for accurate control of various settings. The settings currently being controlled by the four encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders.

Numeric keypad & command keys
The main keypad area is made up of a standard numeric keypad and a range of "command keys", such as Record , Update and Delete . Channels can be controlled using either the keypad or via the faders.

Grand Master & Blackout
The Grand Master fader allows you to temporarily decrease the overall intensity of all fixtures. In normal operation, the Grand Master should be at 100%. The Black Out button takes all intensities to 0%, and the LED within the button flashes when enabled.

"Z" key
The Z Key places a range of quick access settings & functions on the internal display and encoder wheels.

Controlling Intensities

On FLX, all intensities can be controlled in exactly the same way – no matter if the fixture is a basic dimmer, an LED, a moving light or any other type of fixture. There are three possible ways to control an intensity:

Multi-Functional Faders (MFFs)
Ensure that the MFFs are in channel mode by pressing the `Fader Funct.` button.

When set to "Channels", the 24 MFFs directly control each light (or "fixture") in the rig (this is often referred to as "Channel per Fader"). Each fixture, no matter what it is, will have a single "Channel Number", and so will take up a single channel fader. When more than 24 channels are present, the `Page Up` and `Page Down` buttons can be used to navigate through all the channels in multiples of 24. Grey outline boxes in the Output Window show which set of 24 channels are currently being controlled on the MFFs.

Channels can be adjusted by moving the appropriate fader. If a channel already has a level, for example set through commands, then you must 'grab' the level by moving the fader up to the present value. Once that value is grabbed, the fader gains control.

Commands
To control the intensity of a fixture(s) via the numeric keypad, commands must be typed like this:

… `Channel No(s).` `@` `Intensity %` `Enter` …

Examples of valid commands are below:

… `1` `@` `1` `0` `0` `Enter` …
This sets the intensity of channel 1 to 100%.

… `2` `And` `3` `@` `7` `5` `Enter` …
This sets the intensity of channels 2 and 3 to 75%.

… `5` `Thru` `1` `0` `@` `5` `0` `Enter` …
This sets the intensity of channels 5 through to 10 to 50%.

… `5` `Thru` `1` `0` `Except` `7` `@` `6` `5` `Enter` …
This sets the intensity of channels 5, 6, 8, 9 and 10 to 65%

… `3` `Thru` `9` `Except` `5` `Except` `6` `@` `0` `Enter` …
This sets the intensity of channels 3, 4, 7, 8 and 9 to 0%. Note how Except is used twice to exclude two different channels from the range.

… `1` `Thru` `3` `And` `7` `Thru` `9` `@` `2` `5` `Enter` …
This sets the intensity of channels 1, 2, 3, 7, 8, and 9 to 25%.

… `1` `And` `7` `Thru` `1` `2` `Except` `9` `@` `5` `Enter` …
This sets the intensity of channels 1, 7, 8, 10, 11 and 12 to 5%.

There are also some shortcuts available:

… `1` `@` `@` …
@@ is a shortcut which quickly sets the intensity to 100%.

… `1` `@` `.` …
@. (at dot) is a shortcut which quickly sets the intensity to 0%.

… `Enter` `Enter` `@` `.` …
Enter Enter is a shortcut which quickly selects all the channels that are currently on (above 0%). In this example, it then takes them to 0% using the @. shortcut (resulting in a blackout).

Encoder wheels
To change the intensity of a fixture via an encoder wheel, first select the fixture(s) required. This can be done using the buttons under the faders (MFFs must be in "channel" mode) or by using similar commands described above (just press `Enter` after the selection, in place of `@` …).

… `1` `Thru` `6` `And` `9` `Enter` …

When the channel is selected, the LED in the button under the fader will turn on, and an orange box will be drawn around the channel number in the Output Window. You can select multiple channels on the faders at the same time by pressing and holding the first button, and then tapping the last button.

Once selected, press the `Z` key and then use the encoder wheel marked on the internal monitor as "intensity" to adjust the level. The output value is shown above the corresponding encoder wheel and in the Output Window.

Groups

Groups are selections of fixtures that are used together regularly (such as a colour wash, or all the moving lights on a specific truss). A group can hold any number of fixtures, and a fixture can be in many different groups. FLX can hold up to 240 groups of fixtures. Groups can also store and recall intensities of all the fixtures stored within that group.

Groups window
The Group window is automatically displayed on the internal display when the `Group` button is pressed. Groups can be selected and deselected directly within this window.

When groups are selected, they will be highlighted in the Groups window. Selecting "All – Dimmers" will also highlight "Odd – Dimmers", "Even – Dimmers" etc, as by selecting "All – Dimmers" you are also selecting these.

Automatic groups

The FLX lighting console can automatically generate a group for each type of fixture you have, plus 'odd', 'even', "1st half" and "2nd half" groups for each different fixture type.

To create the automatic groups, view the Groups window (by pressing Group) and choose "Automatically create groups".

All automatic groups automatically store the intensities of those fixtures at 100%.

Groups window after "Automatically create groups" has been selected.

Recording groups

You can create your own groups of fixtures, eg Blinders, FOH movers, PARs on LX3 etc. Simply select the fixtures that you wish to be in the group using either the channel buttons or syntax, and then type either:

… Record Group 1 5 Enter …
This records Group 15

… Record Group *touch group* …
This records whichever group you touch on the touch screen.

Notice how Enter doesn't *need* to be pressed after the last number, as the Record command can take its place.

If the Group window is already displayed on the internal monitor, instead of typing a number, just press an empty group on the display.

If the selected fixtures have a tagged intensity value, this will also get stored within the group. If there is no tagged intensity value, those channels will get stored at 100%.

Only fixtures that are currently selected will be recorded into the group, even if other fixtures have intensity values.

As well as the selection and the intensities, groups record the order the fixtures were selected in. This is useful when using the next / previous keys within Highlight, or when offsetting effects across selections of fixtures.

For example, the following three commands would record three slightly different groups:

… 1 thru 4 Record Group 1 Enter …

… 4 thru 1 Record Group 2 Enter …

… 2 thru 4 and 1 Record Group 3 Enter …

When groups are recorded, they will be automatically given a name, based on what's been recorded into them. This name can be easily changed.

Using groups

Groups can be used via syntax, or via the built in touch screen. Using syntax, all the commands explained within the "controlling intensities" section can also be used with groups. Here are two examples:

… Group 1 @ 4 5 Enter …
This sets all the intensities of the channels within group 1 to 45%

… Group 1 And Group 3 @ 8 0 Enter …
This sets all the intensities of channels within group 1 and group 3 to 80%

If you wish to recall a group with all the recorded intensities, use the same syntax as above, but press the Group button twice, which will display "Intensity Group" in the command line. When doing this, the "@ 50" will no longer take the selection of fixtures to 50%, but instead to 50% of their recorded values.

… Group Group 1 @ @ …
This sets all the intensities of the channels within group 1 to their recorded values within that group.

… Group Group 1 @ 2 5 Enter …
This sets all the intensities of the channels within group 1 to 25% of their recorded values (so if the intensity of a fixture is recorded at 40% within Group 1, this syntax would recall them at 10%).

Alternatively, Intensity Groups can also be used like any other referencing palette, affecting only the selected fixtures rather than all the fixtures recorded within the Group.

… Group Group 5 Enter …
This recalls the fixture intensities from Group 5 to only the currently selected fixtures. The fixture selection does not change by using this syntax.

Using the built in touch screen, you can select and deselect groups directly just by touching them. There are two modes available - "Single Select" and "Multiple Select", selectable via the buttons along the top of the window.

In *Single Select*, only one group can be selected at a time. Selecting a group will deselect any other channels, unless syntax commands are used. *And* and *Except* keys are shown on the touchscreen for convenience and work identically to their equivalent front panel keys.

When *Multiple Select* is active, touching multiple groups will select all of those groups. FLX will keep adding to the selection until another command is entered (like changing the intensity, or selecting a palette). After that, those channels will remain selected until you press on another group, which will start the selection again. The previous

channels being deselected can be avoided by typing "and" first, and then selecting another group.

Intensity Groups can be recalled by simply double-tapping a group on the touch screen. This also selects the fixtures within that group (in line with the single select / multiple select setting). If *all* fixtures are already at the Intensity Group levels, double-tapping the group will turn the intensities off (0%).

Groups window with various fixtures current selected highlighted in blue

The *Clear Selection* button is highlighted blue when there are channels selected. Pressing it will deselect them all.

Referencing intensities

When a fixture is taken to its **full** intensity stored within a group (using any of the previous methods), ZerOS references the recorded value back to the group's intensity, so if the group is updated, the cues will automatically be updated to the new intensity too.

Naming groups

Groups can be named by typing:

… ⃞Name⃞ ⃞Group⃞ ⃞2⃞ ⃞0⃞ ⃞Enter⃞ …

An onscreen keyboard will then be displayed to type the group's name. Press ⃞Enter⃞ or ⃞OK⃞ to confirm.

In the same way as when recording, if the Groups window is already displayed on the internal monitor, just tap a group after pressing the ⃞Name⃞ button to name that group.

Updating groups
To update a group, make the new select of fixtures, and then enter one of the following commands:

… ⃞Group⃞ ⃞4⃞ ⃞Update⃞ …
This updates Group 4

… ⃞Update⃞ ⃞Group⃞ ⃞1⃞ ⃞4⃞ ⃞Enter⃞ …
This updates Group 14

… ⃞Update⃞ ⃞Group⃞ *touch group* …
This updates whichever group you touch on the touch screen. You do not need to press the "group" button if the groups window is already displayed.

Updating a group will update the contents of that group, but will not alter the name of the group.

Deleting Groups
To delete a group, enter one of the following commands:

… ⃞Group⃞ ⃞4⃞ ⃞2⃞ ⃞Delete⃞ …

… ⃞Delete⃞ ⃞Group⃞ ⃞7⃞ ⃞Enter⃞ …

… ⃞Delete⃞ ⃞Group⃞ *touch group* …

The desk will ask you to confirm this action before the command is executed. Once deleted, a group cannot be recovered but can be recreated manually if required.

Controlling Attributes

The intensity of all fixtures, no matter what they are, is controlled in the same way – as described on the previous page. Controlling all other parameters is described below.

Select a fixture(s)

Fixtures can be selected using the buttons under the faders (MFFs must be in "channel" mode for this to work) or by using the commands described on the previous page (just press Enter after typing the last channel, in place of typing @ …).

When the channel is selected, the LED in the button under the fader will turn on, and an orange box will be drawn around the channel number in the Output Window. You can select multiple channels on the faders at the same time by pressing and holding the first button, and then tapping the last button).

Home

If you are unsure which fixture is which, the easiest way to see which fixtures you are controlling is to "home" them.

This will set their position (Pan and Tilt) to 50%, the intensity to 100%, and the beam to open white (no colour, gobos or effects). The home values can be customised by going into Setup and choosing *Edit Fixtures* (see "Home values" on page 43 for more information).

After selecting a fixture(s), press the Home key. This will send the fixture(s) to its 'home' values.

Choosing an attribute

Each fixture has its own set of parameters (eg Intensity, Colour, Gobo, Pan, Tilt etc.), which are grouped together into four attributes (Position, Colour, Beam and Shape). See the "Terminology & Key Features" section for more information, including examples (page 4 & 5).

Once a fixture, or group of fixtures, have been selected, choose an attribute by pressing one of the attribute buttons to the right of the internal display. This will open that attribute's window on the internal display, and put the attribute's parameters onto the four encoder wheels ready to be controlled.

Encoder wheels

Parameters can be controlled directly by the four encoder wheels. The parameters currently being controlled by the encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders.

Remember that each fixture will have a different range of parameters available, depending on its feature set. Consult the fixture's operating manual for details. If the fixture has more than four parameters in the attribute, pressing the attribute key again selects the next group of parameters.

The sensitivity, mode and behaviour of the encoder wheels can be changed in Setup. (See "Peripheral Settings (encoder wheel settings etc)" on page 47 and "Attribute Settings (Colour, Beamshape, Position)" on page 47 for more information).

Central encoder button

On parameters with discrete values (such as colour, gobo, shutter, macro, control etc), these values can be displayed on the internal touch screen by pressing the central encoder button. For parameters involved in colour mixing (Red, Green, Blue etc) the central button opens the colour picker page. For parameters involved in position (Pan and Tilt) the central button opens the position grid page.

Example of the display after the central encoder button has been pressed on a "shutter" parameter. The highlighted value (in blue) shows the currently active value.

Palettes

Each attribute on the FLX lighting console has 240 palettes (Colour, Beam, Shape, Position and Effect).

A palette stores all the values of a fixture (or group of fixtures) required to create a particular effect on stage. For example, a palette can be stored for the colour Red which details the values required for each fixture to create a red colour. Likewise a palette can be stored for a position on the stage, with the relevant Pan & Tilt information for each fixture in the rig.

Palettes can quickly recall parameter settings that are used regularly, such as a range of colours for LED fixtures, or a range of positions for moving lights. 240 palettes are available for each of the five attributes (Colour, Beam, Shape, Position and Effects). FLX can automatically create palettes if required.

Palette Windows

Each set of palettes has its own palette window. This is opened automatically when you press the appropriate attribute key (POSITION, COLOUR, BEAM or EFFECTS).

The palette window contains a soft button for each of the 240 palettes. Each soft button contains the following information:

Palette Number, content flags that indicate the attributes that are programmed in the palette and a name.

Palettes can also be displayed on the external monitor by pressing "Palettes" in the bottom right corner of the external monitor, or pressing Shift and VIEW together.

Automatic palettes

FLX can automatically create palettes for all five of the attributes, which can be a quicker method of controlling parameters than via the encoders. If palettes are available for your fixtures, an "Automatically create palettes" button will be displayed.

Automatic palettes are created based on the fixtures you have patched, so it's recommended to fully patch your console before choosing "Automatically create palettes".
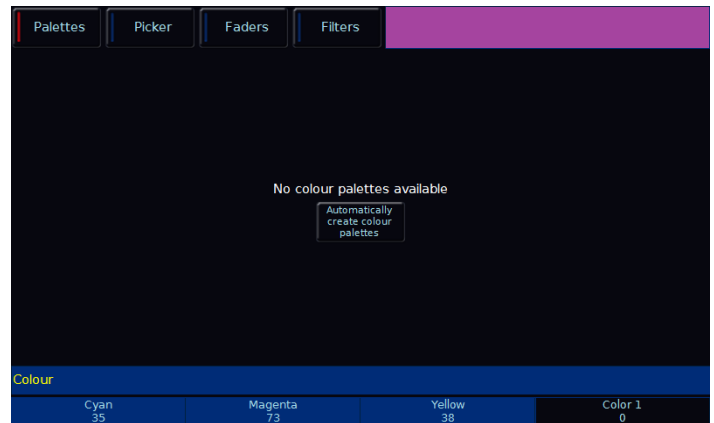
Palettes window without any palettes, offering to automatically create some.

Recording Palettes

To record a colour palette, set up the fixtures as required (all red for example) and enter the following command:

… Record Colour 2 0 Enter …

If the Colour Palettes are already displayed on the internal monitor, instead of typing a number (such as 20 in the example above), just press one of the empty palettes on the display.

To record the data as a different kind of palette, simply replace Colour with Beam , Shape , Position or Effect .

Using palettes

When using palettes, only the selected fixtures will move to the values stored within that palette. This means you can have a single palette of everything red, but then only select a small number of fixtures to actually go red.

To use a palette, first select a fixture or group of fixtures. Then, either choose a palette on the internal touchscreen, or enter the command:

… | Colour | | 2 | | 0 | | Enter | …

The fixture(s) will change to the colour they were in when the palette was stored.

If any of the selected fixtures are not actually programmed in the applied palette, but there are one or more fixtures of the same type that are programmed, the fixture will use the values programmed for the first fixture of the same type.

Referencing palettes

If you use palettes, and then record a cue or UDK, the console will record the palette reference rather than the actual parameter data. This means if you update the palette, all the cues which used that palette will automatically be updated. This is especially useful for touring shows when using positions, to save updating each cue individually when you move venue.

Naming Palettes

Palettes can be named by typing:

… | Name | | Colour | | 2 | | 0 | | Enter | …

An onscreen keyboard will then be displayed to type the cue's name. Press | Enter | or | OK | to confirm.

In the same way as when recording, if the Colour Palettes are displayed on the internal monitor, just tap a palette after pressing the | Name | button to name that palette.

Updating Palettes

To update a palette it is often easiest to activate the palette first by selecting your fixtures and touching the palette. Now, make the changes you want, and then enter one of the following commands:

… | Colour | | 4 | | Update | …
This updates Colour 4

… | Update | | Beam | | 1 | | 4 | | Enter | …
This updates Beam 14

… | Update | | Position | *touch position palette* …
This updates whichever position palette you touch on the touch screen. You do not need to press the "position" button if the position window is already displayed.

Updating a palette will update the contents of that palette, but will not alter the name of the palette.

Deleting Palettes

To delete a palette, enter one of the following commands:

… | Colour | | 4 | | 2 | | Delete | …

… | Delete | | Beam | | 7 | | Enter | …

… | Delete | | Colour | *touch colour palette* …

The desk will ask you to confirm this action before the command is executed. Once deleted, a palette cannot be recovered but can be recreated manually if required.

When deleting a palette, ZerOS will go through all the programmed cues and UDKs and replace any references to the palette with the hard values from the palette before deleting it. This ensures cues and UDKs are not changed.

Colour

Palettes

The desk provides the following standard colour palettes for fixtures with CMY or RGB colour mixing: White, Red, Orange, Yellow, Chartreuse, Green, Spring Green, Cyan, Azure, Blue, Violet, Magenta and Rose.

In addition to the above, the desk generates an auto palette for each colour available on every colour wheel in the fixture. These palettes are labelled with the stock colour names as supplied by the manufacturer. The desk compares the RGB values specified for each colour on the colour wheel of the fixture with the RGB values of the standard colours listed above. The desk combines the auto palette of the standard colours and the auto palette of the colour wheel for those which are within a certain tolerance of the standard colour.

"Colour Palettes" window after "Automatically create colour palettes" has been selected with colour mixing fixtures patched.

Note: the following features of the colour window will only work with Colour Mixing fixtures (RGB or CMY).

Picker (Colour Picker & Image Picker)

The colour window can be switched to "Picker" which displays a colour picker (show to the right), allowing you to select a colour for use in colour mixing (CMY/RGB) fixtures by just touching the built in touch screen, which sets the colour of the selected fixture to the value pressed.

The cross ("+") symbol indicates the current colour values for the selected fixture. If multiple fixtures are selected, multiple +s will be displayed.

"Colour Picker" screen

It's possible to replace the colour picker with a photograph or image, allowing you to select colours from that. This is useful when wanting to use the colours of a companies' logo, or wanting to recreate the colours from a particular image you've photographed. Press one of the "+" symbols along the left hand side of the picker to open the "Load file" window which will display all the images on the external USB drive.
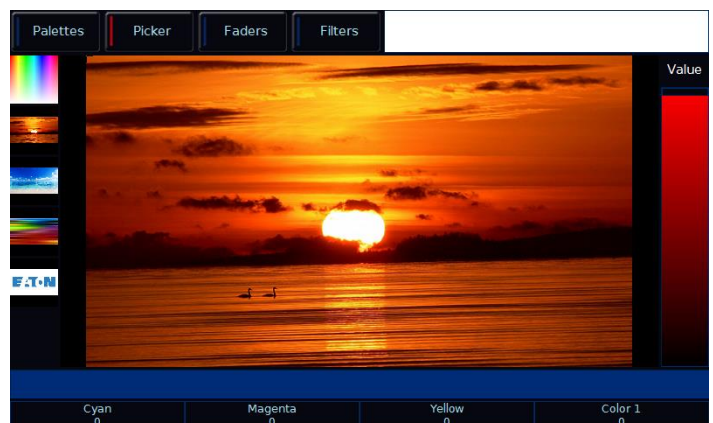
"Image Picker" screen with four images already loaded in

To remove an image from the Picker, just press the Delete button and then press the image from the left hand side. This creates space for a new image to be loaded.

Multi-Touch on the picker

Both the colour picker and the image picker are multi-touch. This means you can select multiple fixtures and "fan" them across the image by using two fingers. The first selected fixture will be at your first finger, the last selected fixture will be at your last finger, and all the ones in-between will spread between these two points.

Faders (Static & Active)

Clicking "faders" along the top of the Colour Window opens the Colour Faders view. There are two options available for this view – "Static" and "Active", as shown below.

In "static" mode, the faders control RGB (Red, Green and Blue), CMY (Cyan, Magenta and Yellow) and HSV (Hue, Saturation and Value). Moving one fader automatically updates the others, meaning it doesn't matter how your physical fixture works, as long as it has colour mixing you can use any of these methods to control its colour.

"Active" mode works in exactly the same way, but the background colour automatically updates to show you the colour you'll end up at by moving that fader, rather than just the colour you're adding in or removing.
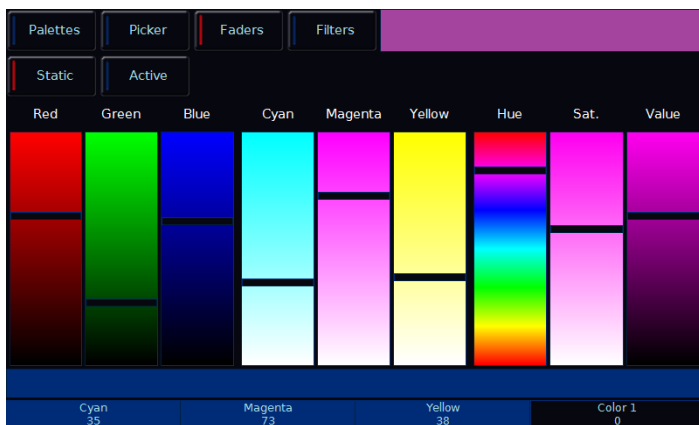
"Colour Faders" screen in "Static" mode
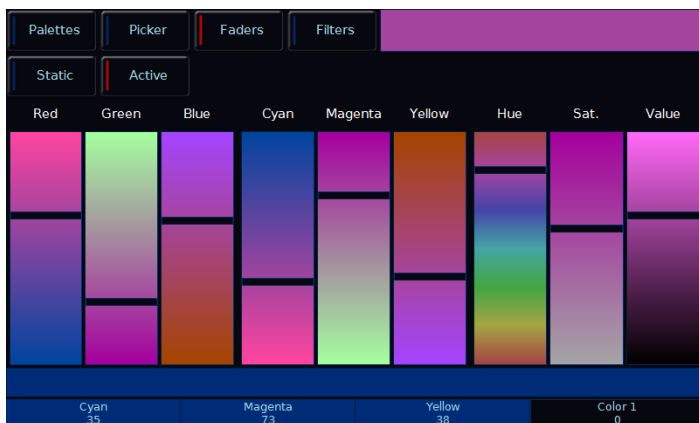
"Colour Faders" screen with exactly the same settings as above, but in "Active" mode

Filters (incl. Mood boards by Lee Filters)

Clicking "Filers" along the top will take you to the Colour Filter library. The first option shown is "Mood Boards by Lee Filters" which collates colours together in "moods". Selecting a mood will give a brief description of where the colours might be used, and gives a selection of several colours that work really well together for that mood. Some moods will have more than one selection of colours, such as "Moonlight" which has "Realistic" and "Romantic" selections.
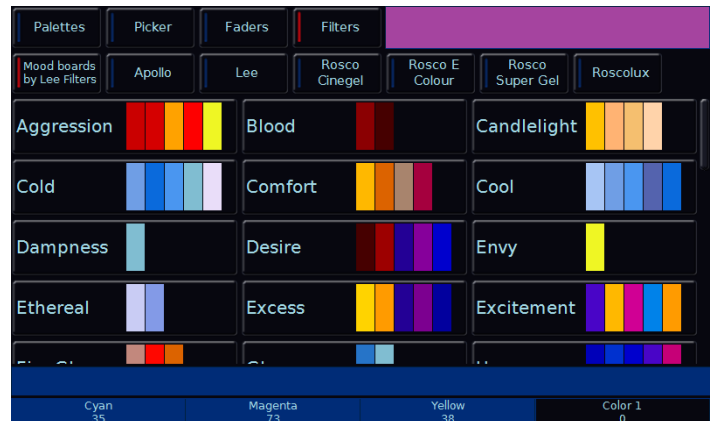
"Mood boards by Lee Filters"

Also available are full filter libraries from Apollo, Lee and Rosco (Cinegel, E Colour, Super Gel and Roscolux).

Rosco Super Gel filter library

Colour Edit Mode (RGB / CMY)

"Colour Edit Mode" allows you to switch between controlling fixtures using RGB (Red, Green, Blue) or CMY (Cyan, Magenta, Yellow). ZerOS will convert all fixtures to this colour mixing mode. (For more information, see "Attribute Settings (Colour, Beamshape, Position)" on page 47).

Beam & Shape

The "Shape" attribute has been included to support a future free software update, when Zero 88 move over to a new 3rd Party fixture library. Until then, "Shape" and "Beam" will be combined together under "Beam".

Palettes

The beamshape auto palettes generated by the desk are based on the gobo wheel and shutter parameters of the fixture in the schedule as follows:

An auto palette for each Gobo present on each gobo wheel in the fixture. Naming syntax is Gobo 1/1 … Gobo 1/N (first gobo wheel), Gobo 2/1 .. Gobo 2/N (second gobo wheel etc.

"No Gobo" is an auto palette sends all the "Gobo" parameters to their default values.

Shutter will be given two auto palettes (Shutter Open and Shutter Closed).

"Beam Palettes" window after "Automatically create beam palettes" has been selected.

(For more information on palettes, see "Palette Windows" on page 14)

Position

Palettes

The desk generates a single Home Position palette which sets the Pan and Tilt parameters to a value of 50%.

(For more information on palettes, see "Palette Windows" on page 14)

"Position Palettes" window after "Automatically create position palettes" has been selected.

Pan/Tilt Grid

The Pan/Tilt grid gives you a touch based input method of controlling Pan and Tilt. The horizontal axis is "pan" and the vertical axis is "tilt".

The + symbol indicates the current position values for the selected fixture. If multiple fixtures are selected, multiple +s will be displayed.
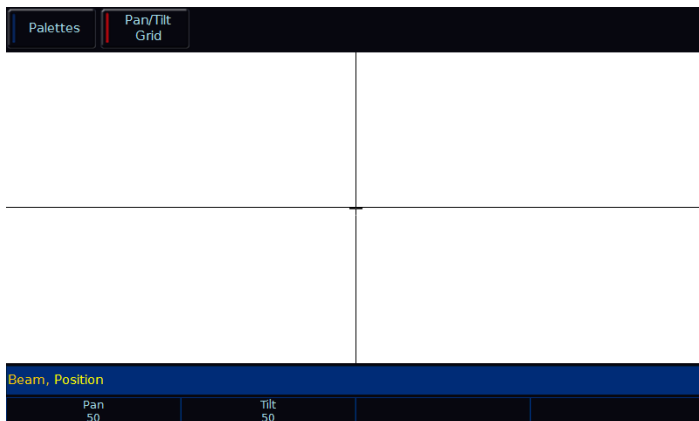
"Pan / Tilt Grid" in the position window

Multi-Touch on the P/T Grid

The Pan / Tilt Grid multi-touch. This means you select multiple fixtures, and "fan" them across the grid by using two fingers. The first selected fixture will be at your first finger, the last selected fixture will be at your last finger, and all the ones in-between will spread between these two points.

Effects

Effects are different than the other four attributes, in that they do not directly control features and parameters of the fixtures patched. Instead, effects are used to manipulate parameters to create effects such as "*Circle*", "*Ballyhoo*" and "*Rainbow*". This is achieved by applying various mathematical functions (sine, cosine, ramp etc) to the outputs of different fixture parameters and adjusting the size, speed and offset values. Using this, a wide range of movement and other effects can be generated quickly and easily. Effects can affect any parameter, from any attribute, and can also control multiple parameters from multiple attributes.

Palettes

The desk can generate a number of standard effects, as shown below, by clicking the "Automatically create effect palettes" button.

"Effect Palettes" window after "Automatically create effect palettes" has been selected.

Each palette displays the effect Number, a set of content flags indicating which attributes are programmed in the effect palette (I = Intensity, C = Colour, B = Beamshape, P = Position, E = Effects) and name, if defined.

(For more information on palettes, see "Palette Windows" on page 14)

Speed, Size, Offset and Rotation Encoders

When you press effect, the effect parameters are assigned to the control wheels.

If you apply different effects to different parameters of the fixtures (e.g. Rainbow and Circle) you can use the Speed wheel to control the speed of all the effects in one go.

When multiple effect palettes are being used together (for example, Circle, Chaser, Rainbow and a user's custom Iris effect), each palette can be adjusted separately by pressing Effect to cycle through the displays on the encoders. The first press displays the global Speed, Size, Offset and Rotation of the overall effect. Pressing Effect again will then display Speed, Size, Offset and Rotation for just the first effect. Pressing "Effect" again will page to the second effect, and so on. Once the last effect has been reached, pressing "Effect" again will return to the global settings.

Rotation cannot be performed on a per parameter basis, and can only be applied to the Pan and Tilt parameters together. Therefore the Rotation parameter can be adjusted via the control wheel, but is not displayed in the Effects Window.

When applying one of the standard Intensity, Colour, Iris or Focus effects, the base value of the parameter is automatically changed to 50% to allow the effect to work correctly. For these effects the size parameter is set to 100% as the default.

Apart from the effects specified above the default values of the effect parameters for the standard effects are Speed = 25, Size = 20, Offset = 0, Rotation = 0.

Automatic fanning of offset or any other effect parameter across fixtures is not done. Should fanning of an effect parameter be required, hold down the Shift key and use the control wheel to apply the selected fan function onto the wheels in the same manner as fanning any other parameter value. (See "Attribute Settings (Colour, Beamshape, Position)"on page 47 for more information).

Waveforms

"Wavefroms" along the top of the Effects Window displays the Effect Parameters for each parameter of the selected fixture(s). Adjusting any of the effect parameters using the control wheels is reflected in the Effects Window.

	Palettes	Waveforms				
		Tag	Function	Speed	Size	Offset
Intensity		☐	None	0	0	0
Pan		☐	None	0	0	0
Tilt		☐	None	0	0	0
Cyan		☐	None	0	0	0
Magenta		☐	None	0	0	0
Yellow		☐	None	0	0	0
Color 1		☐	None	0	0	0
Shutter		☐	None	0	0	0
Iris		☐	None	0	0	0
Gobo1		☐	None	0	0	0
Gobo2<>		☐	None	0	0	0
G2 <<>>		☐	None	0	0	0

Beam, Position, Effect

"Effect Waveforms" in the effect window

The Effects Window also allows you to edit the effect parameters of individual fixture parameters directly. The fixture parameters (eg Pan, Tilt, Cyan, Magenta, Yellow etc) are listed down the left hand side of the table and the effect parameters (Function, Speed, Size and Offset) across the top of the table.

To adjust an effect parameter, select the required field using the touchscreen, mouse or cursor keys and press the ⎡Enter⎤ key. Use the cursor keys to select the required Function, or enter the required numerical value for Speed, Size or Offset, then press the ⎡Enter⎤ key.

Function determines the mathematical function that is applied to the output value of the fixture parameter.

Speed determines the speed of the effect and also the "direction" of movement effects (eg Circle), where -100 is the fastest speed anticlockwise, 0 is stop, and +100 is the fastest speed clockwise.

Size defines the magnitude of the effect (range 0 – 100).

Offset determines the offset into the effect when it is triggered.

Manually created effects can be recorded as a new palette in the same way as other attributes – manually create the effect, press the ⎡Record⎤ button which will display the Effect Palettes on the display, and select an empty palette.

Cues & Playbacks

Lighting "states" (or "scenes") can be pre-recorded, ready to be recalled later. They are called "cues", and are recorded onto "playbacks".

Playbacks

Each playback can store a single cue, or multiple cues. The FLX Lighting Console has 241 playbacks, and can store a total of 10,000 cues.

Traditionally, playbacks with a single cue have often been referred to as "submasters" whereas playbacks with multiple cues have often been referred to as "cue stacks". This manual will simply call them playbacks.

The button below the fades are "Go" buttons when in playback mode.

Once you have set up a scene that you like, you can then record that onto a cue. Cues can be recorded into any of the 240 playbacks, or the "Master Playback". When dealing with cues, we suggest viewing the "Programmers" desktop. If you do not have an external monitor, the two windows discussed below will appear on the internal monitor when you press View .

Pressing View again will switch between the two windows.

Master Playback

For many shows, especially theatrical, a single playback is often used with a long list of pre-recorded cues. For these situations, an additional "Master Playback" is provided. There's nothing special or different about the Master Playback compared to the other playbacks, apart from the double-width ▶ (play/go) button, and a dedicated ▐▐ (pause) button for convenience. The Master is described as "Playback 0" within the ZerOS software.

Multi-Function fader window

The Multi-Function Fader window shows the current status of the 24 built-in faders.

When the MFF faders are set to channels, this window displays the Channel's number, name and current intensity. Pressing one of the buttons selects / deselects that channel.

When the MFF faders are set to Playbacks, this window displays the Playback's number, name, current intensity, current & next cue and the playback raise (u) & lower (d)

time. By default, pressing one of the buttons will open the Playback's Settings window for quick access. However this functionality can be changed in Setup > System Settings to match the physical button of the playback (Flash, Solo, Go, Tap Tempo etc), or alternatively to act as an on-screen fader. This allows playbacks to be controlled on a touch screen or tablet when viewing this window.

Playback window

The Playback window shows all the cues within a single playback, with each cue being a different row. The columns show the various fade times and settings for each of those cues.

To change which playback you're viewing, hold View and tap the Go button of the playback you wish to view – this could be any of the 24 MFFs, or the Master Go button. This will now display this playback in the Playback Window.

Naming playbacks

Playbacks that have cues recorded into them can be named. Empty playbacks cannot be named. These names appear in the Multi-Function Faders window. To name a playback, press the Name button and then select the playback you wish to name using the buttons under the faders.

Copying playbacks

To copy one playback to another playback, press the Copy button, press Playback and then type the number of the playback you wish to copy in the "from" field, and the number of the playback you wish to copy it to in the "to" field. Pressing either Down or Enter will move to the next field (or alternatively, just touch the field you wish to type in). Instead of pressing Playback and typing the playback number, you can also select the playback using the Playback button. This will automatically move onto the next field. So, any of the following syntax will work:

… Copy Playback 5 Enter 10 Enter …

… Copy Playback button 5 Playback button 10 …

… Copy Playback 5 Down 10 OK …

Deleting playbacks

To delete a playback (and all the cues within that playback), press the Delete button, and then select the playback you wish to delete using the buttons under the faders. A popup will appear to confirm this action. Deleting Playbacks cannot be undone.

Advanced Playbacks

Empty Playbacks can have advanced functions. Hold Setup and press the button of a playback which is currently empty. The options available are Global BPM , Programmer Time and Speed Override .

Playback settings

The settings for an individual Playback are adjusted within the Playback Setup window. To display this window, hold down Setup and press the button below the playback fader. Alternatively, in the Multi-Function Faders window, press the playback you wish to change the settings of (this is dependent on the selection option in Setup > System Settings > MFF Window Playback button action .

The Playback Setup window is split into five sections - General, Chase, Raise and Lower, Move on Dark and Advanced. These are detailed below, and are accessed via the five buttons along the top of the window (as shown below). When you first enter the window, the "General" tab will be selected unless the Playback is set as a chase, in which case the "Chase" tab will be selected automatically.

Playback Setup window – General tab

General

The "General" tab is split up into five parts, as shown above and detailed below.

Intensity Mixing

This option determines how the programmed *intensity* parameters are mixed. The following options are available:

Highest takes precedence (HTP) – This default option will output the highest value of all the playbacks – so if an intensity is at 50% on one active playback, and at 75% on another active playback, it will output at 75%. As that playback is pulled down, the intensity will

reduce to 50%, but stay at 50% as that becomes the highest value for that fixture.

Latest takes precedence (or "Soft LTP") –the intensity of fixtures will match the latest command, rather than the highest. If one active playback has a fixture at 100%, and another playback is at 50%, set to LTP, as this fader is raised, the fixture will fade down to 50%, as this is the "latest" command.

LTP Catch – This is an alternative version of LTP, where control of a value will only happen when the fader goes past the current value. This is useful to "catch" values that are currently high, to bring them back down to a lower intensity.

Inhibit – Inhibitive playbacks do not output the programmed intensities of the current cue, but instead act as a "proportional scale" for those channels. When changing cues, these values change, allowing multiple Inhibitor states to be stored onto a single playback.

Fader Function

The operation of the playback fader may be one of the following options:

HTP Master – Simply controls the maximum level of the programmed HTP channels. Cues are triggered via the GO key. This is the default option.

Manual Fader (2 Way) – Press the GO button to activate the playback. The next cue in the playback is automatically loaded when the fader reaches either end of it's travel (0% or 100%). Moving the fader creates a dipless cross-fade between the two cues. The fader controls the HTP levels; the LTP channels are triggered when the fader is moved from the end stop and then fade according to the times in the incoming cue.

Manual Fader (1 Way) - Press the GO button to activate the playback. The next cue in the cue stack is automatically loaded when the fader reaches zero. The fader controls the HTP levels; the LTP channels are triggered when the fader is moved from zero and then fade according to the times defined in the incoming cue.

This option is not available if the playback is a chase.

Fader Controls…

This allows you to force a parameter to follow the movement of the fader for its crossfade, rather than triggering at specified level and fading automatically. This is great for building playbacks which move fixtures

out into the audience – as the fader moves up, the fixtures move up. Another application commonly used is to create three playbacks – one for Red, one for Green and one for Blue. To use this feature, simply select the attributes required using the on-screen buttons.

Button Function
This offers *Flash* , *Latch* , *Solo* , *Go (Fade)* , *Go (Snap)* , *Pause* and *Tap Tempo* functionality to each of the playback buttons ("Tap Tempo" is only available if the playback is set as a chase).

A secondary "shifted" option can be chosen whilst holding down the Shift key on the console.

The default option changes dependant on the "status" of the playback. However, once this setting has been changed by the user it will not change again automatically, even if the playback "status" changes.

For a playback with a single cue, the default is Flash (shifted default: Solo). For a playback with multiple cues, the default is GO (Fade) (shifted default: GO (Snap)). For a playback which is set to a chase, the default is Tap Tempo (shifted default: GO (Snap))

Playback Setup window – Chase tab

Chase
It is possible to convert a whole playback into a chase, which makes the playback run automatically in sequence. This is done by choosing *Turn into Chase* within the "chase" tab of Playback Setup. Once converted to a chase, the button changes to *Revert from Chase* , and additional options appear in the chase tab, split into six parts as detailed below.

Chase Direction
This option determines which order the steps (cues) are output when the chase is run:

Forward – The steps are output in increasing numerical order (eg 1,2,3,4,5).

Backward – The steps are output in reverse order (eg 5,4,3,2,1).

Bounce – Alternates between forwards and backwards (eg 1,2,3,4,5,4,3,2,1).

Random – The steps are output in a random order.

Intensity
Intensities in a chase can be set to "Cross Fade", "Ramp Up" or "Ramp Down". "Ramp Up" will fade up the intensity, and then snap it off, whereas "Ramp Down" will snap on the intensity, and then fade it down.

Attribute fade percentages
Individual fade percentages can be set for each attribute.

Assuming the chase speed is set to 12 Beats Per Minute (meaning 1 step every 5 seconds), a fade percentage of 20% means that attribute will fade for 1 seconds (20% of 5 seconds), and then remain on for the other 4 seconds (80% of 5 seconds).

A fade percentage of 0% is equivalent of a snap, and a fade percentage of 100% is the equivalent of a cross fade.

Chase Speed
The Speed option determines how fast the chase runs.

When the Speed is set to zero, the chase runs according to the delay and fade times that are programmed into each step (cue) in the chase.

When the Speed is set to any other value, the chase runs at the corresponding number of beats per minute (bpm). All the fade and delay times that are programmed in the steps (cues) are ignored and the transition between each step (cue) is determined by the "Intensity" and "Attribute fade percentages" options above.

Please note: "Tap Tempo" functionality is available under "Button Function" in the General Tap on any playback which is a chase.

Alternately, "Use Global BPM" can be selected. This allows multiple chases to all use the same BPM. The Global BPM speed can be controlled by pressing the Z button and changing the "Global BPM" wheel, or by holding Setup and pressing the Playback Button of an

empty playback, and selecting *Global Tap Tempo* .
The central encoder button or playback button will now work as a Tap Tempo, and the encoder / fader will speed up / slow down the Global BPM.

Sound-to-light
When enabled, each step is triggered by a bass beat on the audio input on the desk rather than the BMP set above.

Shots
This options determines how many times the chase will run after being triggered.

When Shots is set to zero, the chase runs continuously.

When Shots is set to a value between 1 and 255, the chase runs the specified number of times and then stops on the last step.

Note – If the Direction modifier is set to Random, then one "shot" is defined as outputting N steps, where N is the total number of steps (cues) in the cue stack.

Playback Setup window – Raise and Lower tab

Raise and Lower
The various options are described below:

Trigger on Raise
When the playback fader is raised, the first cue is activated.

Release on Lower
When the playback fader is lowered, the stack is released.

Trigger / Release Level
The level at which the playback is triggered or released, in %. If set to 10%, the playback will not be triggered until the physical fader is at 10%.

Raise Time
This time simulates a time the physical fader is raised over. So setting it to 5 seconds, and pulling up the fader instantly, will instead take 5 seconds to fade up the playback.

Lower Time
This time simulates a time the physical fader is lowered over. So setting it to 5 seconds, and pulling down the fader instantly, will instead take 5 seconds to fade down the playback.
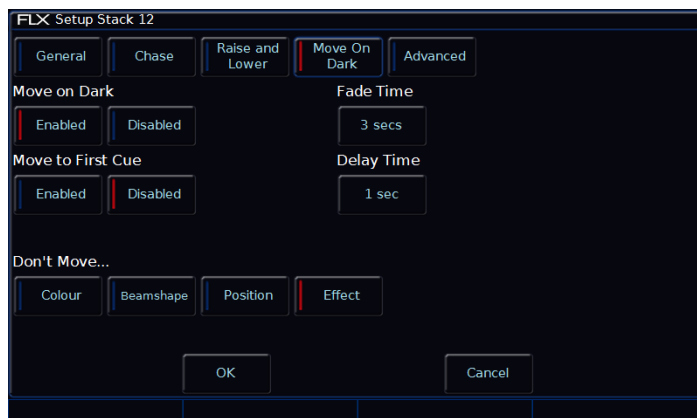
Playback Setup window – Move on Dark tab

Move on Dark
The various options are described below:

Move on Dark
When this function is enabled for the playback, whenever a fixture goes black (ie it's intensity falls to zero, or the shutter is closed), the desk software will look ahead in the playback to see what values the colour, beamshape and position parameters are next programmed at for that fixture.

It will then output those values shortly after the fixture has gone black (according to the delay and fade times set in the window). When the fixture comes back on again in a later cue, the colour, gobo, position etc. will already be at their correct values and just the intensity will fade up or the shutter open.

Move to First Cue
This option is used when there are no more cues later in the playback for the fixture to Move on Dark to. If enabled, when fixtures go dark for the last time in the playback, they will move to the first cue they are used in. When disabled, they the fixtures go dark for the last time in the playback, they will not move.

Fade Time

The time with which FLX fades the attributes that move on dark.

Delay Time

The time the FLX waits after a fixture reaches blackout before move on dark kicks in.

Don't Move Colour / Beamshape / Position / Effect

This option allows you to disable a specific attribute from moving in dark across the whole playback. By default, only "Don't Move Effect" should be enabled.

the channels from another playback, and so releases that playback.

Page Lock

Page Lock means this playback will not change when the Playback Page is changed, so it is always available. This means you can no longer access the playbacks on other pages which would normally be accessed via this physical fader, until Page Lock is disabled.

Stack Name

This is an alternative method of naming a Playback, rather than using syntax.
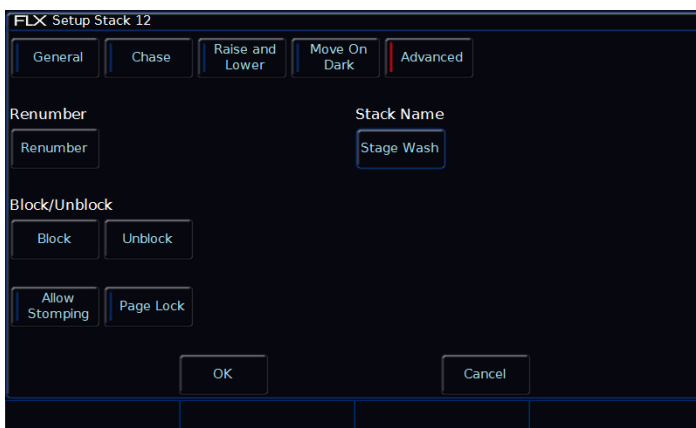
Playback Setup window – Advanced tab

Advanced

The various options are described below:

Renumber

This option allows you to renumber all the programmed cues in the playback. Press the *Renumber* soft key. This brings up the Renumber Cues dialogue box. Enter the required Start Number and Increment in the fields provided and then select the *OK* button in the window.

Block

When this option is selected, all the cues in the cue stack are changed into block cues, ie this programs and tags all the parameters at the values they would normally be output at when the cue is played back.

Unblock

When this option is selected, any parameters that are recorded at the same value as in the previous cue are untagged, ie turns block cues into tracked cues.

Allow Stomping

"Stomping" occurs when a playback takes control of all

Cues

Recording cues

Once you have set up a look that you like, by selecting fixtures and adjusting their parameters as described in the previous chapters, you can then record that state into a cue. To see the cues being recorded, it is recommended that the Playback Window is displayed. To record a cue, there are four possible methods:

… Record Enter …

This will record the next available cue, within the playback you are currently viewing.

… Record 5 Enter …

This will record cue 5 within the playback you are currently viewing.

… Record Go …

This will record the next available cue, within the playback of the Go button you press (this could be one of the MFFs, or the Master Go button)

… Record 5 Go …

This will record cue 5 within the playback of the Go button you press. "Point Cues" can be defined up to two decimal places, and will be automatically placed into the cue stack in numerical order.

Subsequent cues can then be set up and recorded using the same method.

After recording a cue, one of three things will happen:

1) If in tracking mode (and "Smart tag" is disabled) and the playback fader is above the "trigger level", the cue will be played back, the command line is cleared, the fixture parameters are automatically untagged, but the fixtures remain selected.
2) If in tracking mode (and "Smart tag" is disabled) and the playback fader is below the "trigger level", FLX will ask you to raise the Playback fader. Once done, FLX will act as per Option 1 above.
3) If in non-tracking mode (or in tracking mode with "Smart tag" enabled) the cue is not played back, the command line is cleared but the fixture parameters remain tagged and the fixtures remain selected

Subsequent cues can then be set up and recorded in a similar way.

As you become more experienced with the desk, you will find the most efficient way of programming cues into cue playbacks.

Please note: FLX can be operated as a tracking console. This means that if a parameter is programmed in one cue, it will track through all subsequent cues until it is programmed to do something else. If you

program playbacks sequentially, you shouldn't have to worry too much about tracking, as long as you ensure that you tag any parameters you wish to be recorded in the cue you are working on.

Record Window

Record Window

When you press Record , the Record Window opens on the external monitor. To open the Record Window on the internal monitor, press *and hold* the Record button, rather than just tapping it. You can change where and when the Record Window opens by going into Setup , *System Settings* and changing the *Show Record & Update Window* setting.

Within the Record Window are the following options:

Fade Times
Each cue can have a Fade Up, Fade Down, Colour, Beam, Shape and Position fade time.

Within Setup > *Defaults* the default fade times are defined, and can be adjusted if required prior to programming cues. Cue 1 will always have a *default* of 0 seconds, but can be altered once recorded if desired.

Fade times can be added when recording a cue, or adjusted after the cue is recorded or when updating a cue.

To add fade times when recording a cue, use the encoder wheels. When you press Record during the record process, "Up Fade", "Up Delay", "Down Fade" and "Down Delay" will be shown on the encoder wheels. Use the encoder wheels to change these fade times, or press the middle button on the encoder wheel to type in a fade time. Pressing Colour will put "Colour Up" and "Colour Delay" on the encoders. Beam and Position will do similar for these attributes.

Snapshot
Snap Shot will store a value for every single parameter of every single fixture in the cue, ensuring that the lighting state you see is exactly what is recorded, and that the cue can't be altered accidently in the future when other cues are updated / deleted / inserted (this is sometimes called a "Block Cue" or "Blocked Cue"). Alternatively, pressing Shift & Record together will automatically record the cue as a Snap Shot.

Smart Tag
Smart Tag ensures the lighting state you see is exactly what is recorded, but doesn't "block" the cue. Instead, only the values for the parameters and fixtures which are different to the previous lighting state are stored. Fixtures with intensity at 0% are not recorded when Smart Tag is active.

Tracking options & Cue Only
These options are only available if the console is in Tracking mode (basic or advanced). More information on this is in the SETUP section of the manual.

In Tracking Mode, every cue programmed behaves in a Tracking methodology. This means that each cue only programs the changes between two states – channels are told to fade up, fade down, or if no instructions are programmed, the channel will stay the same. This is a powerful programming method as it allows advanced manipulation of the cue stack and updates can be filtered through entire sequences without having to update each cue individually.

When updating a cue, there are four tracking options available – Track Forward, Track Backward, Track Both or Cue Only.

Cue Only forces the update only to affect the cue you are
updating. This is useful when recording a cue out of sequence, or when updating a cue, to ensure the update you make doesn't affect any subsequent cues in the cue list.

Choosing Track Forwards allows the update to follow through into the following cues. If you choose to update with Track Forwards enabled, remember to „undo" the change you made in one scene when you move to the next – particularly if the next cue is a blackout.

Non Tracking mode eliminates these choices making programming simpler but restricts the flexibility of your programming capabilities.

Fixture, Attribute & Parameter Filters
These options filter which values are and aren't stored into cue. First, "Fixtures" define which fixtures are to be recorded. Tagged Fixtures will store information for all fixtures with a value "tagged" (value in the programmer) whereas Select Fixtures will only store values for the currently selected fixtures.

Secondly, "Parameters" define which parameters of the above fixtures are recorded. Tagged Parameters will store all the values which are tagged, whereas All Parameters will store every value for the chosen fixtures.

If Tagged Parameters is selected, this can be filtered further using "Attributes". Each attribute is listed, and can be switched between Blue (no parameters within this attribute will be recorded), Red (only tagged parameters within this attribute will be recorded) and Green (all parameters within this attribute will be recorded).

These filters are only available if both Smart Tag and Snapshot are disabled.

Remove
Selecting Remove will take the values out of the defined cue, rather than adding them in. This is useful if a parameter or fixture is accidently recorded into a cue.

Adjusting fade times
Once a cue has been programmed, its times can be adjusted in a similar format to a spreadsheet on a computer, with each time being in a separate "cell". Choose the time you wish to change by either touching it or selecting it using the arrow keys, press Enter and then type the new fade time. Press Enter to confirm.

Naming cues
Naming cues can be helpful in remembering what changes, or when the cue happens. Use the following command to name a cue:

… Name 5 Enter …

An onscreen keyboard will then be displayed to type the cue's name. Press Enter or *OK* to confirm. Alternatively, select the "Name" cell in the Playback Window, press Enter (or double touch / click) and use an external keyboard to type a cue name.

Updating cues

In order to update a cue, the first thing to do is to ensure that the cue is outputting (with a green bar) and you are viewing the playback.

Once the cue is outputting, make the changes required (using the MFFs, encoder wheels, touchscreen or number pad). To record the changes to the current cue, type:

… Update Enter …

The cue will inherit the new information and the update will be complete.

To update a specific cue (ie cue 5), type:

… Update 5 Enter …

To update a specific cue on a specific playback (ie Cue 5 on Playback 10) type:

… Update 5 Playback button 10 …

When you press Update , fade times appear on the encoders in the same way as when pressing Record , allows you to make changes to the fade times during the update process.

Coping Cues

To copy one cue to another cue, press the Copy button, ensure *Cue* is selected in the window (should be by default) and then type the number of the cue you wish to copy in the "from" field, and the number of the cue you wish to copy it to in the "to" field. Pressing either Down or Enter will move to the next field (or alternatively, just touch the field you wish to type in). So, either of the following syntax will work:

… Copy 5 Enter 10 Enter …

… Copy 5 Down 10 *OK* …

To copy multiple cues, the *And* and *Thru* keys can be used to define the multiple cues.

To copy a cue to or from an alternative playback, press the playback after typing the cue number. Doing this moves

onto the next field automatically, so doesn't require you to press Enter or the Down key to do this. For example, to copy Cue 5 from Playback 10, to Cue 20 of the currently selected playback, type:

… Copy 5 Playback button 10 20 Enter …

Or to Copy Cue 7 from Playback 15 to cue 25 in playback 18, type:

… Copy 7 Playback button 15 25 Playback button 18 …

Deleting Cues

To delete a cue, use one of the following options:

… Delete 15 Enter …
This will delete cue 15 within the playback you are currently viewing.

… Delete 15 Go …
This will delete cue 15 within the playback of the Go button you press.

To delete multiple cues, type the following:

… Delete 15 Thru 20 Enter …
This will delete cues 15, 16, 17, 18, 19and 20 within the playback you are currently viewing.

… Delete 15 Thru 20 Go …
This will delete cues 15, 16, 17, 18, 19and 20 within the playback of the Go button you press.

To delete all cues within a playback, see "Deleting playbacks" on page 22.

Deleting a cue cannot be undone.

Cue Settings

Cue Setting can be changed via the "Cue Setup" window. To open this, navigate to the settings column of the Playback Window, select the cue required, then press ⎡Enter⎤ (or double touch/click the field). The Cue Setup window appears:
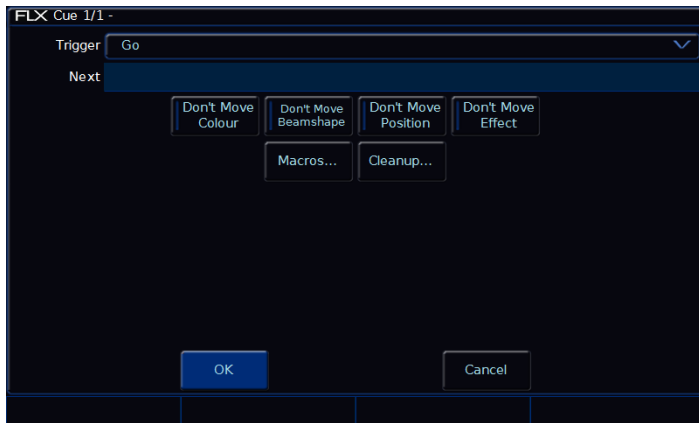
Cue Setup window

Trigger (Go, Auto, Timecode etc)

This option allows you to change what's going to trigger each individual cue. By default, this is "Go", but the following options are available:

GO

This option will only trigger the selected cue when the ⎡Go⎤ button is pressed. This is the standard way a cue is triggered, and is chosen by default.

Auto (with previous cue)

This will trigger the selected cue at the same time as the previous cue. For example, when you press ⎡Go⎤ on the previous cue, this cue will also be triggered and run at the same time. When this option is selected, a "Wait Time" field will appear just below the drop down. This allows you to enter a wait time, for example 5 seconds. This means the selected cue will be triggered 5 seconds after the previous cue is triggered, even if the previous cue is still running as it's fade time is longer than 5 seconds.

Auto (after previous cue)

This option is similar to above, but it will trigger the selected cue only once the previous cue's fade time has been completed. Again, when this option is selected, a "Wait Time" option will appear under the drop down.

Real Time

This option allows you to trigger the cue at a specific time in the day (a "real time"). For example, at 8am, or 7.30pm.

MIDI

This option allows you to trigger the cue at a specific time during a MIDI Time Code (MTC) signal. For more information on MTC, please see "MIDI Timecode" on page 50.

Please note: to change the timecode displayed in the cue list window, just tap the time displayed along the bottom of the window to cycle through the available options (on FLX there's "Real time" and "MIDI Time Code").

Next cue

"Next cue" is the cue number which automatically gets selected after this cue is executed. This functionality is very useful if a scene is "cut" from the show – you can tell the FLX to skip the cues in that scene and jump straight to a different cue. If this field is empty, FLX will automatically select cues sequentially.

Don't Move on Dark settings

This option allows you to disable a specific attribute from moving in dark during this specific cue. For example, you may not want colour scrollers changing during a very quiet scene, so during that scene "Don't Move Colour" can be selected. For more information about this, see "Move on Dark" on page "25".

Macros

Macros allow you to automatically run user macros or trigger (and release) other playbacks automatically during this cue. For example, if you want a chase on cue 20, you could create that chase on a separate playback, and then trigger it from Cue 20 in your Master Playback.

To do this, press the "Add" button next to either of the three options. This will open a new window which displays all the Macros or Playbacks (depending which you selected). Select the Macro / Playback you wish to trigger. This will add it into the previous window. You can repeat this to trigger multiple macros / playbacks at the same time. To remove a macro / playback you've added, simply select it in this window. Once finished, select the ⎡OK⎤ button.

Playing back cues

Before playing back the programmed cues, it's suggested to remove any unrecorded commands from the command line by pressing the ⎡Clear⎤ button twice.

Raising the playback's fader to full will automatically trigger the first cue within the playback.

To output the next memory in the playback, simply press the ⎡Go⎤ button. Each time you press it, the console will continue down the list one cue at a time.

Within the Playback window, the green bar shows you the currently active cue, while the yellow bar highlights the next cue (which will become active if you press Go).

You can change which cue is next by simply selecting it (using either the touch screen or the arrow keys). The cue will go yellow, and become active when Go is pressed.

Once the end of the playback is reached, the first cue will be selected as the next cue, resulting in a loop.

Cues that are currently running live can be sped up or slowed down live by using "Speed Override", accessible under the "Z" key.

Jumping to a cue (Go To cue)
Goto cue allows you to jump to a specific cue. On FLX, simply hold down the playback's Go button, type the cue number to jump to, and then release the playback's GO button.

Snapping to a cue (Ignoring fade times)
To snap to a cue (for example, during a programming session when you want to alter a cue without having to wait for the cue fade to complete), hold Shift whilst pressing the Go button. This will snap to the cue, rather than using the fade times. Doing this also won't allow Auto Triggers to work (useful to jump to a cue without automatically moving onto the next cue). (If this doesn't work, settings within the Playback Setup window must have changed – see page 23 for more information).

Cue 0 (Blank Cue)
A Blank Cue is the same as the first programmed cue in the cue stack, but with all the fixture intensity parameters set to zero. A blank cue is referred to as Cue 0 (zero). You can either jump to Cue 0 (as above, by holding down the playback's Go button and typing 0), or by using the curser keys to move up from Cue 1, which will display Cue 0.

Using the pause key
If at any time you wish to pause a cue while it is running, you can use the pause function. On the Master Playback, there is a dedicated pause button above the Go button and next to the master fader. On all other playbacks, Pause is an option that can be chosen within the Playback Setup window (see page 23 or more info). Often, users will set Pause to be the "shifted" function of the playback button, which can be set as a default option so you don't need to change every playback – see page 51 for more info.

After the initial press of the Pause button, subsequent presses will step backwards through the playback using the current cue fade times.

To continue running the playback, press the Go key.

Holding down Shift and pressing the Pause key will snap to the previous cue (on the Master Playback only, due to the dedicated Pause key).

Releasing playbacks
Once you have finished playing back cues it is important to release the playback. This stops the playback having any further control over the channels. When you lower a fader, the playback is automatically released, but you can also manually do this by holding Clear and pressing the Go button of the playback.

To release all the playbacks, hold Clear and press the Fader Funct. button. This will release Playbacks 1 – 240 (not Playback 0) and all the UDKs. To release Playback 0, hold Clear and press the Go button of the Master Playback.

User Definable Keys

The console provides four physical User Definable Keys (UDKs), located to the left of the touchscreen. These can be paged along with the Playback faders, giving a total of 40 UDKs. There are three things you can do with a UDK:

- Record a lighting state onto them
- Create a shortcut to Groups, Palettes or Macros
- Assign the UDK to an advanced function

Recording onto a UDK

This allows you to record fixtures, with associated fade times, directly onto a UDK. First, set up the fixtures as required, in the same way as programming a cue. To then record this onto a User Defined Key, enter the following command:

… Record UDK1 …

Naming a recorded UDK

UDK's which have been recorded can also be named by pressing Name and then pressing the UDK button.

An onscreen keyboard will appear for you to type in the required name. Press Enter to complete. (Please note: only recorded UDKs can be named – all the other UDKs obtain their names directly from the item assigned to them).

The UDK Setup Window

The UDK Setup Window can be opened by pressing the Setup button and the UDK together, as shown below.
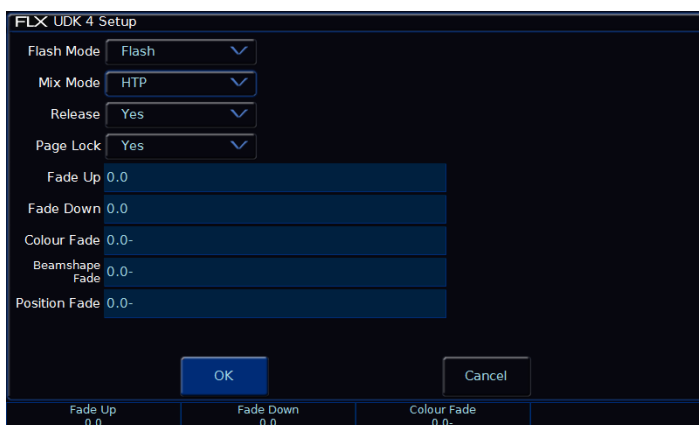
UDK Setup window

Flash Mode

The flash mode can be switched between "Flash" and "Latch".

When set to "Flash", the recorded lighting state is output by pressing the UDK and released when the UDK is released (fade times, below, are ignored).

When set to "Latch", the recorded lighting state will fade according to the fade times programmed (below). When the UDK is pressed the first time the lighting state will fade up and stay on, until the UDK is pressed for a second time, when the UDK will fade down and release.

The light in the UDK indicates if the UDK is active. When the UDK is fading, the LED in the UDK flashes.

Mix Mode

The intensity channels in the data are mixed either HTP or LTP.

Release

If the Release option is set to Yes then the fixtures will be released when the UDK is released and the intensity (brightness) has faded to zero. If the Release option is set to No then the fixtures will NOT be released when the UDK is released.

The fixtures being controlled by the UDK can be released by manually changing them, by triggering another LTP command from elsewhere on the console or by holding down the Clear key and pressing the UDK on the front panel. Holding down Clear and pressing Fader Funct. will release all playbacks 1 – 240 and all UDKs.

Page Lock

Page lock is used to lock a specific UDK to the button, no matter which page you are on. This is enabled by default, so should be disabled to access UDKs on additional pages.

Fade Times

Fade times can be given to each attribute, and are used if the UDK is set to "Latch".

Using a UDK as a shortcut

A UDK can work as a shortcut to a Group, Palette or Macro. To do this, make sure the Group / Palette / Macro is recorded first (see elsewhere in the manual) and then type one of the following:

… | Group | | 1 | | Record | | UDK2 | …

This records a shortcut to Group 1 onto the second UDK.

… | Colour | | 2 | | 0 | | Record | | UDK3 | …

This records a shortcut to Colour 20 onto the third UDK.

Group UDK

Group UDKs are used for selecting a group. When the UDK is pressed, the group assigned to the UDK is selected – this is equivalent of selecting the Group within the Group Window. Selecting a group should not be confused with changing the intensity of those fixtures.

Palette UDK

The Palette UDK can be used as an alternative method of outputting a palette for the currently selected fixtures. The palette assigned to the UDK is applied to the selected fixtures when the UDK is pressed.

Macro UDK

The Macro UDK is used to run the user defined macro assigned to the UDK. The macro is run by pressing the UDK.

Assigning advanced functions to a UDK

A UDK can be assign an advanced function to a UDK. These functions include Park, Highlight, Rem Dim, etc. These functions are detailed elsewhere in the manual.

To assign one of these functions to a UDK, first make sure the UDK is blank (using the delete command listed below) and then hold down | Setup | and press one of the UDKs.

This will open a window on the internal display where the function you wish to use can be selected. The "normal" option is how the UDK will function when pressed normally, and the "Shifted" option has the same options, but is how the UDK will function when pressed whilst holding the Shift button.

Deleting User Definable Keys

You can delete any UDK by pressing the | Delete | key and then pressing the UDK button For example:

… | Delete | | UDK1 | …

This action cannot be undone.

Macros

There are two types of Macros available on FLX – "Fixture Macros" and "User Macros". FLX can store up to 240 macros.

Fixture Macros are used for fixture settings such as "Lamp On" or "Reset". Which Macros are available depend on the fixtures patched.

User Macros are created by the user, and are a recorded series of button presses. These can then be assigned to a UDK, or triggered automatically by a cue.

Macro Window
The Macro window is automatically displayed on the internal display when the Macro button is pressed. Macros can be selected directly within this window.

Automatic fixture macros
The FLX can generate a number of Fixture Macros based upon the fixture types patched. To create the automatic macros, view the Macros window (by pressing Macro) and choose Automatically create macros .

Macros window after "Automatically create macros" has been selected.

Recording macros
You can create your own macros, which will contain a series of button presses that can then be replayed when convenient. To record a macro, enter either command:

… Record Macro 1 5 Enter …
This records Macro 15

… Record Macro touch macro …
This records whichever macro you touch on the touch screen.

If the Macro window is already displayed on the internal monitor, instead of typing a number, just press an empty macro on the display.

This will now start recording your macro. Type in the series of key commands from the front panel. Once finished, press the Macro key to complete the recording. (Please note - the Macro key cannot be recorded as part of the macro).

Naming macros
Macros can be named by typing:

… Name Macro 2 0 Enter …

An onscreen keyboard will then be displayed to type the macro's name. Press Enter or OK to confirm.

In the same way as when recording, if the Macro window is already displayed on the internal monitor, just tap a macro after pressing the Name button to name that macro.

Using macros
Macros can be trigger via syntax, or via the built in touch screen. Using the built in touch screen, you can trigger a macro by just touching it. Using syntax, simply type:

… Macro 1 Enter …
This triggers Macro 1

Alternatively, Macros can be automatically triggered by cues. See "Cue Settings" on page 30 for more information.

Deleting macros
To delete a macro, enter one of the following commands:

… Macro 4 2 Delete …

… Delete Macro 7 Enter …

… Delete Macro touch macro …

The desk will ask you to confirm this action before the command is executed. Once deleted, a macro cannot be recovered but can be recreated manually if required.

"Z" Key

The Z Key places a range of quick access settings & functions on the internal display and encoder wheels. It can be pressed at any time unless you are in Setup.
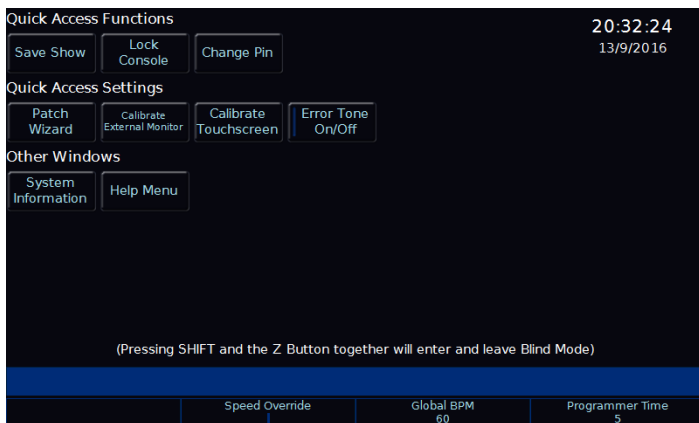
"Z" button

Save Show

This option quickly saves your show to USB. If the show hasn't yet been named, FLX will ask for a name before saving the showfile. If the show has a name, FLX will save a new copy of the showfile with the next sequential number on the end automatically.

Lock Console

This option allows you to lock FLX with a pin number, so you can leave the console unattended safely. The default Pin is 0000. It's highly recommended that you change this pin.

Patch Wizard

This is a quick access to the Patch Wizard (page 41).

Calibrate

This is a quick access to calibration (page 46).

Error Tone

This turns on/off the built in error tone every time there is a popup, warning or error.

System Information

This opens the System Information window, which contains information, debugging options, licence details and a DMX Outputs view.

Encoder Wheels

On the encoder wheels are four additional options:

Intensity

This encoder is available when fixtures are selected, and can be used to alter the intensities of all the selected fixtures. This intensity adjustment is relative, which means that if a range of fixtures are selected with different original values, the movement of the encoder will be applied to each fixture individually (eg each fixture will increase or decrease by a percentage from its original value).

Speed Override

The Speed Override encoder is used to override the current crossfades occurring on the Master Playback. By default, the override fader is set to 50% to give "normal" crossfades. Deviating the level above 50% will increase the crossfade speed proportionally, and reducing the level below 50% will slow down the fade proportionally. 100% will snap the cue, and 0% will pause the cue. Once the cue is complete, the encoder will go back to 50%.

Global BPM

The Global BPM fader is used to adjust the Global BPM speed. The central button acts as a Tap Tempo, and the encoder and speed up / slow down the current Tap Tempo. Any chase can be set to use the "Global BPM" opposed to its own individual BPM.

Programmer Time

The Programmer Time encoder is used to set the internal fade time on FLX. This fade time can then be applied to anything in the programmer, ideal for "busking" shows.

The encoder will allow you to set any value between 0.0 (snap) and 11:30.0. This time is displayed just above the encoder on the touch screen.

To enable the time crossfade function, press the middle button of the encoder. Now, activating palettes, changing intensities via syntax, clearing the programmer, releasing playbacks etc will all take the time set on the encoder, rather than happening instantly.

Blind Mode

A blind mode is available on FLX, allowing values to be updated and recorded without affecting the live output of the console. To enter blind mode, hold Shift and press the 'Z' button. The Output Window and Command Bar turn grey, and the "Z" button will flash, to indicate blind mode is active.

Changing intensities and fixture parameters within blind mode (and then recording or updating this into a cue) is exactly the same as normal operation, except it won't change the lighting state on stage.

When in Blind Mode, you can "load" a cue by holding down the playback's Go button and typing the cue number. This will load that cue into the Blind Programmer so you can view it, and make changes to it, without changing the output on stage. After loading a cue and making changes, pressing Update will update the loaded cue automatically. To update a different cue, that cue must be specified. See "Updating cues" on page 29 for more information.

Pressing GO on a playback will continue to work like normal, even though blind mode is active. However, because the "load cue" method is the same method as jumping to a cue (page 31) when not in Blind Mode, the Goto cue functionality is not available within Blind Mode.

To exit blind mode, just press the 'Z' button again (no need to hold shift). Any programmer data which hasn't been saved or cleared will be recalled when you next enter Blind Mode.
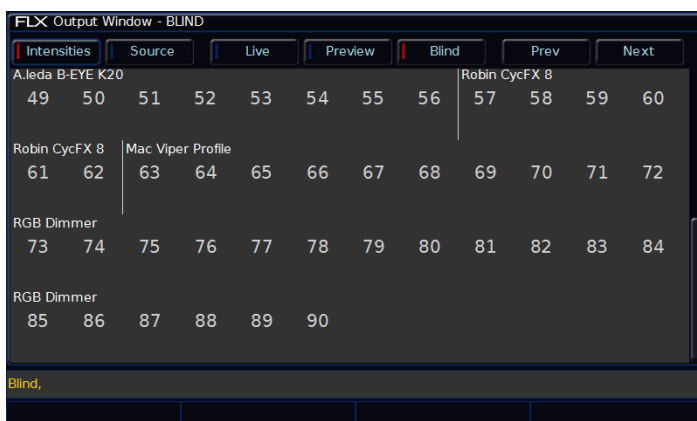
Output Window whilst in Blind

Patching – introduction

The DMX Patch (or "patching") is a required process where ZerOS is told all about the devices, known as "fixtures", being used in your lighting rig (see "Fixtures" on page 37). From this information, ZerOS will be able to provide you the controls required on-screen (and on the fixture wheels) to control all the functions, known as "parameters", of these fixtures (see "Parameters" on page 37).

Fixtures

Every device controlled by ZerOS is known as a "*Fixture*", and will be assigned a "*Fixture Number*". Fixtures can be a simple generic dimmer channel or a more complex device such as a colour scroller, LED fixture, moving head, strobe light, smoke machine or media server.

Parameters

A parameter is a function of a fixture. A fixture with ten different functions has 10 different "*parameters*". Dimmer channels are simple fixtures with only one parameter - the "*intensity*". More complex devices (such as moving lights, LEDs etc) are fixtures with multiple parameters (for example "*pan*", "*tilt*", "*red*", "*green*", "*blue*", "*strobe*" and/or "*focus*").

Some fixtures may contain multiple operating "modes", which can vary the amount of parameters that are available. For example, some customers may want less control than others, so they can choose a mode that has less parameters. For more information on this, please consult the fixture's operating manual.

Attributes

Parameters are grouped together into four attributes for easy access and control. These attributes are called "*Colour*", "*Beam*", "*Shape*" and "*Position*".

A fifth attribute, called "*Effect*", manipulates parameters to create effects such as "*Circle*", "*Ballyhoo*" and "*Rainbow*".

On FLX, these five attribute buttons can be found along the right hand side of the internal touchscreen.

Zero 88 Fixture library

ZerOS includes the Zero 88 Fixture Library. This is a library which contains information for over 4500 fixtures, including how they work, what parameters they have, what their default vales are etc. During the patching process, you tell ZerOS the Make and Model of the fixtures being used, and ZerOS finds those fixtures in the Zero 88 Fixture Library to learn all about them. The Zero 88 fixture library is regularly updated, and can be downloaded from zero88.com/software/library.

User fixture types

If the fixture type you require is not in the library, you can import it - see zero88.com/software/library for more info. Here you can either request a "User Fixture Type", or create one yourself using the Fixture Tools utility which is available on the above link, along with a guide to creating User Fixture Types.

Once a User Fixture Type has been obtained or created, to load it into console you save it onto USB, plug it into the console, press Setup and then choose *Load File*.

A list of files found on the drive will then be displayed and you can select the required file using the cursor keys or touch screen. Once the file you want is highlighted, press the OK button to load it into the desk.

All the fixture types contained in the selected fixture type file will be loaded and added to the fixture library on the desk. These now work in the same way as any of the normal fixture types already present in the fixture library on the desk, displayed in the correct place based on the alphabetical sorting of manufacturer and fixture type.

DMX – introduction

DMX is the primary method we use to control lighting fixtures such as dimmers, moving lights, LEDs and smoke machines etc. In fact, any device controllable via a DMX signal can be assigned as a fixture within ZerOS.

The name "DMX" covers the cabling ("DMX cable"), which connects your console to your lighting rig, and the data signal running through those cables ("DMX signal"), which lets your console and your lighting rig talk.

To understand DMX, you must understand "DMX addresses" and "DMX universes":

DMX channels (and DMX start address)

DMX can control up to 512 channels down a single cable. Each parameter of each fixture requires one channel, so a simple fixture may take up a single channel (for example, a dimmer) and a more complex fixture may take up a large range of channels (for example an LED or moving light).

So ZerOS knows which device to control, each fixture on the cable must have a unique "DMX start address" between "1" and "512".

For example, if a fixture has 14 parameters, it will take up 14 DMX channels. If that fixture has a "DMX start address" of 101, it will therefor take up channels 101 – 114. No other fixture in the rig should be set to use these channels, meaning the next fixture must be addressed 115 or above.

Depending on the fixture you are using, the DMX address may be configured using DIP switches, on-screen menus or remotely using various configuration tools. For information on addressing your fixtures, please consult the user manual of the fixtures.

A typical DMX addressing system may look like this:

    001 – 096 – Dimmers 1 to 96
    097 – 100 – Empty
    101 – 114 – Fixture 1 (14 channels)
    115 – 128 – Fixture 2 (14 channels)
    129 – 142 – Fixture 3 (14 channels)
    143 – 156 – Fixture 4 (14 channels)

DMX universes

The 512 DMX channels down a single cable is known as a "DMX Universe". Therefore, when more than 512 channels are needed, a second DMX Universe is required to be plugged into the console. The fixtures on this universe are also addressed between channels 1 – 512, but on "Universe 2" rather than "Universe 1".

The FLX lighting console can control up to eight "universes" (or up to 4096 DMX channels). Any two of these universes can be sent out over the two 5 pin DMX outputs (see "DMX Outputs" on page 50).

All eight universes can be distributed over an Ethernet network using either "Art-Net" (page 54) or "Streaming ACN" (page 56).

16 bit channels

Each DMX channel (512 per universe) can be a value between 0 and 255 (known as "8-bit"). This is sufficient for the majority of parameters (for example, a gobo wheel may only have 7 or 8 different gobos to select from, so 256 possible values is plenty) however in more advanced control equipment, 256 values is not enough. In these situations, two channels are linked together to create a "16-bit" channel.

These channels are paired together internally and processed as a single control channel. When output, the second channel (sometimes called the "Fine Channel" or the "LSB" – Least Significant Byte) is faded between 0 and 255, then returned to 0 as the first channel (sometimes called the "Course Cannel" or the "MSB" - Most Significant Byte) is increased by 1, then the pattern continues. This process gives 65536 possible values for a channel instead of the 256 possible using 8-bit control.

Composite fixtures

Certain fixture types are "composite fixtures" and have to be patched twice, once for the intensity parameter, and once for the remaining parameters. An example of this would be the Varilite VL5, which has an external dimmer channel in addition to the main control channels. Another example would be a Lamp + 1 Channel Scroller fixture which is used for patching colour scrollers. For these fixtures, there are two DMX addresses displayed.

Setup

To enter Setup, press the ⌞Setup⌟ key on the front panel. Whilst within Setup, the LED in the ⌞Setup⌟ key will be lit. Navigate through Setup using the column of options on the

left hand side of the screen. Each item in this list has a section of the chapter below. To exit Setup, press the Setup key again.

Patch Overview

When you first enter Setup, you'll be in the "Patch Overview" screen, which displays all the fixtures currently patched on your console (to add additional fixtures, see "Patch Wizard" on page 41).

Views

The Patch Overview window can display the patch data in three different views on the monitor (Outputs, Fixtures and Channels). The default view is the Outputs view, but this can be changed by pressing Outputs, Fixtures or Channels along the top of the Patch Overview screen.

Outputs view

This is the default patch view and displays the DMX start address for each fixture for each DMX universe. Two universes are displayed vertically with each fixture listed according to its outputs. Additional Universes can be viewed by selecting them at the top of the window.

Fixtures view

This patch view lists all the fixtures in the schedule together with their alignment data and DMX patch address(es). The fixtures are listed in group order. Alignment data is only displayed if it has been changed from the defaults. Patch addresses are displayed in the format universe/address.
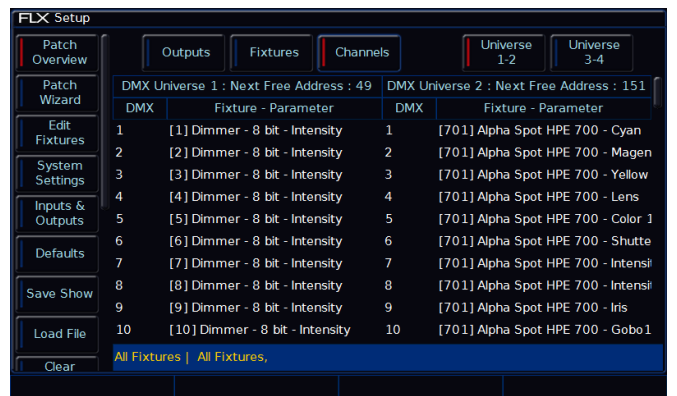
Channels view

This patch view shows the fixture type, fixture number and parameter (eg Gobo1<>) patched to each DMX address in each of the DMX universes.

Patch Overview screen in "Outputs" view.

Patch Overview screen in "Fixtures" view.

Patch Overview screen in "Outputs" view.

Repatching and deleting fixtures via syntax
Along with viewing the patch data in the above three ways, "Patch Overview" includes a command line along the bottom of the window, allowing quick access to the following patching tools (see "Edit Fixtures" on page 42 for the full patch options available within ZerOS)

Repatching fixtures
To patch fixtures at a specified DMX start address, enter the fixture number, press the ⌑@⌑ key, enter the DMX start address and then press the ⌑Enter⌑ key:

… ⌑1⌑ ⌑@⌑ ⌑2⌑⌑7⌑⌑4⌑ ⌑Enter⌑ …
"Fixture 1" will be patched to DMX address 274 on Universe 1.

A specified universe can be defined by adding the universe number before the start address, separated by a point:

… ⌑1⌑ ⌑@⌑ ⌑2⌑⌑.⌑⌑1⌑⌑5⌑⌑6⌑ ⌑Enter⌑ …
"Fixture 1" will be patched to DMX address 156 on Universe 2.

If you are carrying out a lot of patching onto a specified DMX universe, you can select it using the buttons above the patch data in the Patch Screen – the currently selected universe is indicated with a red indicator. Once a universe has been selected, all patch commands which do not specify a universe will be direct to the selected universe. By default, Universe 1 is selected.

If you have more than one fixture with a number of 1, this patch will patch all of these fixtures together starting with the first alphabetically by manufacturer (eg Dimmer #1 at 274, then AlphaSpot 300 HPE #1 at 275, then Mac 700 #1 at 307, etc). To prevent this confusion, it is recommended to first edit the fixture number using the Edit Fixtures screen before commencing patching using this method.

Repatching a group of fixtures
Once programming has begun, it is possible to patch whole groups of fixtures to DMX outputs as well. This is great for touring productions which may have to repatch an entire part of their rig to fit into a house rig. Group Patching is performed sequentially from a given start address. This results in all of the fixtures of this type being assigned one after another starting at the address you define.

Press the ⌑Group⌑ key, then select the group numerically. Press the ⌑@⌑ key, enter the DMX start address and then press the ⌑Enter⌑ key. For example:

… ⌑Group⌑ ⌑1⌑ ⌑@⌑ ⌑3⌑⌑.⌑⌑1⌑ ⌑Enter⌑ …
The first fixture in Group 1 will be patched at DMX address 1 on Universe 3. All other fixture start addresses will increase sequentially until the whole group has been patched or the universe is full.

When pressing the "Group" button, the screen will also display all the fixture types currently patched on the console. Selecting one of these will allow you to repatch all fixtures of a particular type – to move them to a different universe for example.

Deleting fixtures
Deleting fixtures is a permanent change to the show file and should not be carried out without intention. There is no undo function, so exercise caution when using this function. To delete a fixture, use the following syntax:

… ⌑5⌑ ⌑Delete⌑ …
Fixture 5 will be permanently deleted

… ⌑1⌑⌑0⌑ ⌑thru⌑ ⌑1⌑⌑5⌑ ⌑Delete⌑ …
Fixtures 10 through to 15 inclusive will be permanently deleted

The desk will ask you to confirm the deletion and then remove the fixtures from the show file. This includes modifying all cues, groups, UDKs and palettes to remove all references to this fixture. This action cannot be undone.

Patch Wizard (adding fixtures)

To add fixtures, such as additional dimmers, LEDs, moving lights, effect machines etc, you need to use the Patch Wizard, which is the second option within the Setup window. Press Patch Wizard on the left hand side of the display and the Patch Wizard window will appear and guide you through the process.

It may be useful to first collate all the information you need into a spreadsheet (or more likely, scribbled onto the lighting plan) before commencing the patch on ZerOS, as incorrectly entered data can result in the rig being unusable.

First, the wizard asks you to select the fixture's manufacturer. Scroll down (or use the curser keys) to select the required manufacturer (eg Clay Paky). If you have a keyboard connected, you can press the C key to jump straight to manufacturers beginning with C.

The first option in the list of Manufactures is <Standard Fixtures>. This contains generic profiles for fixtures such as "RGB", "RGBWA", "Video 1ch" and "Dimmer + Scroller".

Press the Next button to be shown a list of fixtures from your chosen manufacturer. Select the fixture type required (eg "A.leda Wash K5") and press the Next button.
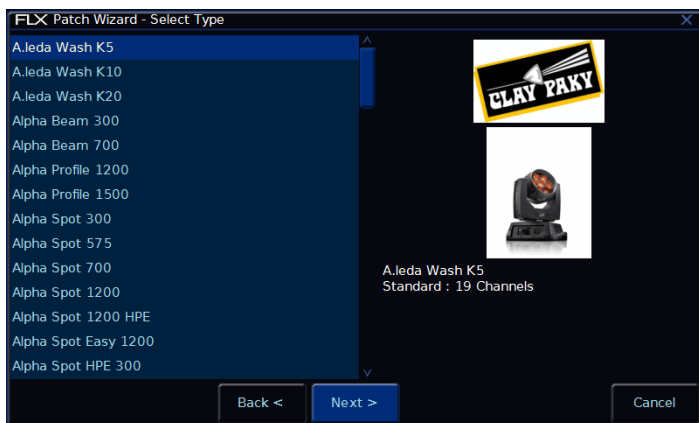

Selecting a fixture to add

If the fixture has multiple "modes", the next screen will allow you to select the fixture's mode. It is important that the mode set here matches the mode set on the fixture - if in doubt, consult the fixture's operating manual for details.

Once the mode has been selected, press the Next button to move on and enter the DMX address for the fixture. If you have not yet set this on the fixtures themselves, press the Next Address button and the desk will calculate a DMX address for you based on the existing patch. It is important here to ensure that the correct DMX universe is selected.
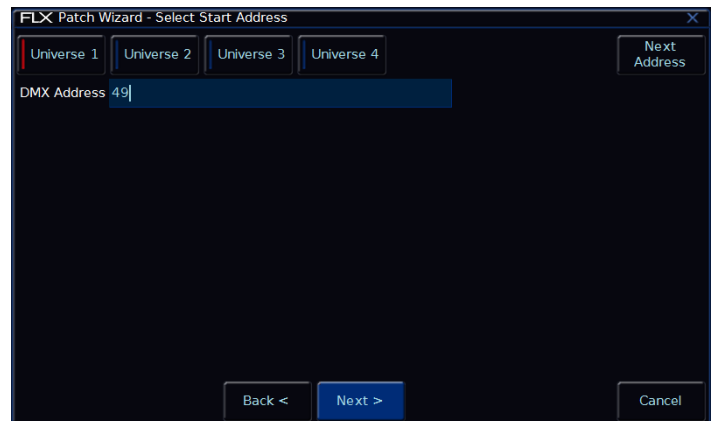
Setting the DMX address

Once the address is configured, press the Next button and enter the quantity of the fixture required. The monitor screen will tell you the number of fixtures and DMX channels remaining to ensure you do not exceed these limits.

The final step in the Patch Wizard is to assign a fixture number to the fixtures. The fixture number is the number you will refer to the fixture as within the desk software, and defines where that fixture will be located on the faders. Enter the number and press Finish .

The Patch Wizard is now complete and your fixtures have been assigned. The fixtures should now have moved to their "Home" positions (see "Home values" on page 43 for info).

You can repeat the Patch Wizard for every group of fixtures you have.

Multi-part fixtures

For multi-part fixtures (eg Lamp + Scroller) there are two separate DMX addresses required, one for the lamp and one for the scroller. When setting the DMX address, an additional button will be shown called "Fixture Part". Use this to set a different address for each part of the fixture.

Edit Fixtures

Edit Fixtures is the third option in the Setup menu, and allows you to carry out various functions relating to the fixtures already assigned to the desk. Per fixture, you can adjust each of the following :

- Name and fixture number
- Default, Home and Topset parameter values
- Pan and Tilt alignments
- Various Patch functionality

The behaviour of each of these functions is described below.

To make changes to a particular type of fixtures, select that type by pressing the GROUP button repeatedly until the required type is displayed. All the fixtures of this type are now ready to be edited. Once GROUP has cycled through all the available fixture types, it will return to "all fixtures".

Press the *Default*, *Home*, *Topset* etc buttons to display the required data. Use the touch screen, the arrow keys or a curser to move to the individual field to edit, or use the ALL row to select the value for all fixtures currently being displayed. Press Enter (or double click / tap) to enter the field, adjust the value as required, then press Enter again to confirm.

If you make a mistake in Edit Fixtures, or simply wish to revert to the original values from the fixture library then press the *Reset All* key.

Fixture names and number

Each fixture on the desk has its own fixture name and number. The number is how it will be referred to during programming and on-screen, and the name is used as a description to ease identification. These two fields are always shown within "Edit Fixtures", and can be edited as described above.

It is recommended that you take some time thinking about numbering your fixtures. It is useful to renumber your fixtures to something logical and unique, as this will be how each fixture will then be referenced during programming and playback. A fairly common numbering system is to prefix each fixture type with a unique number, so for example:
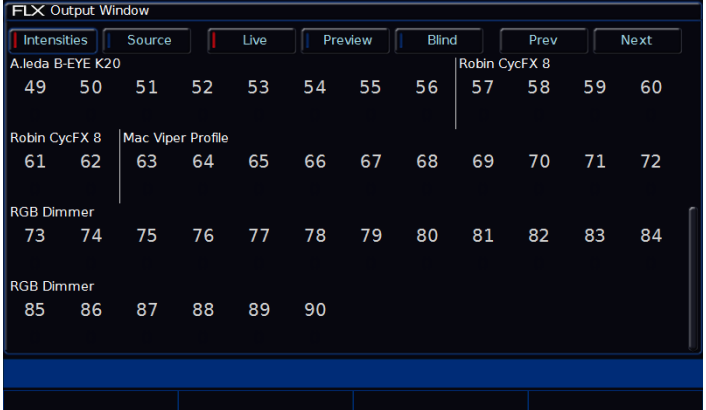
48 Dimmers as fixture numbers 1 – 48
18 Mac 700s as fixture numbers 701 – 718
24 Mac 2000s as fixture numbers 201 – 224

To renumber all fixtures of a particular type, display only that type of fixture using GROUP, as detailed earlier, and then select the "ALL" row and "No." column. When you edit this value, the fixtures displayed will be renumbered sequentially – they won't all be given the same channel number. For example, display the Mac 700 fixtures and enter 701 in the ALL row and No. column. The MAC 700 fixtures will be renumbered 701, 702, 703 etc.

If a fixture number is not completely unique, ie another fixture exists with the same fixture number, then a '' is displayed after the fixture number.*

The Fixture name defaults to the fixture type (eg "Mac 700") but they can be renamed by editing the "Name" column in the normal way. For example, you may label them "Stage Left Mac 700", "Centre Stage Mac 700" and "Stage Right Mac 700". The name must be entered using the external keyboard.

Fixture names are shown in the Output Window, as shown below. When sequential names are identical, the name is only displayed once per row. A vertical line splits up fixtures with different names.

Fixture names and numbers being displayed in the Output Window

Default values

The Default values for fixture parameters are the values that are output when the fixture is "released" (ie, not currently being used / controlled).

The initial values for all of these settings are taken from the Zero 88 fixture library. They are set to values that will produce an open white beam (no gobos or effects) at a central position (Pan and Tilt at 50%) but with an intensity of 0%.

These values can be edited on an individual fixture or group basis as required (as described on page 42 under "Edit Fixtures").

FLX Setup						
Patch Overview	Default	Home	Topset	Alignment	Patch	Reset All
Patch Wizard	Name	No	Intensity	Pan	Tilt	Red	Green
Edit Fixtures	RGB Dimmer	32	0			100	100
	RGB Dimmer	33	0			100	100
System Settings	RGB Dimmer	34	0			100	100
	RGB Dimmer	35	0			100	100
Inputs & Outputs	RGB Dimmer	36	0			100	100
	Alpha Spot HPE 700	701	0	50	50	100	100
Defaults	Alpha Spot HPE 700	702	0	50	50	100	100
	Alpha Spot HPE 700	703	0	50	50	100	100
Save Show	Alpha Spot HPE 700	704	0	50	50	100	100
	Alpha Spot HPE 700	705	0	50	50	100	100
Load File	Alpha Spot HPE 700	706	0	50	50	100	100
Clear	Unique	100					

"Default" values within "Edit Fixtures"

Home values

The Home values for fixture parameters are the values that are output when the fixture is "homed" or "highlighted".

The initial values for all of these settings are the same as "Default", but with an intensity of 100%.

These values can be edited on an individual fixture or group basis as required (as described on page 42 under "Edit Fixtures").

Topset values

The Topset value for each parameter is the maximum value which can be reached when adjusting the fixture using the wheels, command line, etc. This is set to a default value of 100%.

These values can be edited on an individual fixture or group basis as required (as described on page 42 under "Edit Fixtures").

Alignment (inverting and swapping pan & tilt)

ZerOS is capable of making adjustments to your fixtures to take into account their rigging position.

Inverting Tilt can be particularly useful if you've rigged Front of House fixtures the opposite way around to those onstage, or you have some fixtures sat on the floor.

Inverting Pan can be particularly useful if you wish your rig to be symmetrical, so the beams move into and away from Centre Stage rather than all in the same direction.

Swapping Pan and Tilt can be particularly useful if a fixture is rigged on its side. In this function, any values defined for Pan will be output on the Tilt channel(s), and any values defined for Tilt will be output on the Pan channel(s).

Use the touch screen, the arrow keys or a curser to move to the individual field to edit, or use the ALL row to select the value for all fixtures currently being displayed. Press Enter (or double click / tap) to enter the field and choose between *Yes* or *No*.

With a fixture's home position of Pan and Tilt at 50%, inverting or swapping these parameters won't make a instant visible change. Therefore, it's recommended that before editing these values, you select all the fixtures and move them all to a different position. Now, as you change the values within "Alignment", you'll see the beams updating live.

Patch

This window allows you to patch, unpatch, and change various other settings. This functionality is provided in addition to the command line patching detailed on page 40.

DMX In

Some ZerOS consoles support linking fixtures to the DMX In, to control them remotely. The option is shown on FLX for showfile compatibility with other ZerOS consoles.

Changing fixture type (fixture swapout)

This function allows you to change with fixture type from the Zero 88 library you are using. It is useful if a mistake has been made (wrong model or mode, for example) but also allows for a complete swap-out of the physical fixtures from one type to another, for example if there's a fault and you can't get an identical replacement fixture. ZerOS will attempt to clone the programmed data for the swapped fixture(s) in Cues, UDKs, and Palettes as far as possible.

Select the fixture(s) to be changed (as described in "Edit Fixtures" on page 42) and go to the Type column in the patch window. Select the Change button for the required fixture, or the Change button in the ALL row to change the type of all the selected fixtures.

A popup window will open with the list of Modes available for the current fixture type (if applicable), otherwise all the models available from the same manufacture. Use the Back and Next buttons to select the new Manufacturer, Fixture Type and Mode (if applicable) and confirm the change by clicking Finish .
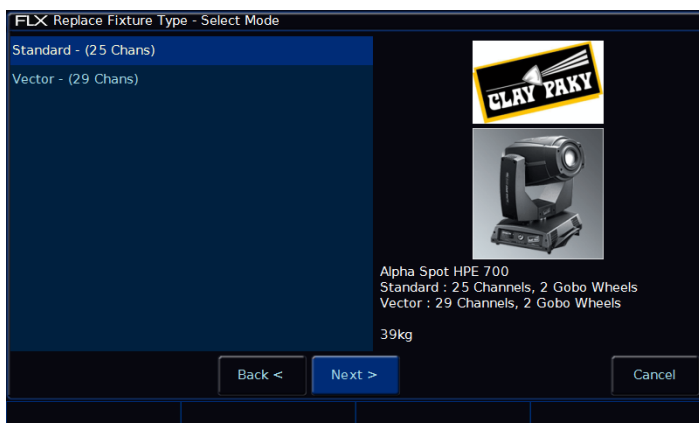

Replace fixture type popup window

If the new fixtures require more DMX channels per unit than the previous fixture type, you will be required to add in the new DMX start addresses. Parameters in the new fixture type that were not present in the original fixture type are left unprogrammed

DMX address (patch, repatch and unpatch)

The DMX column allows you to add, change or remove the DMX start address of each fixture. The DMX start address of each fixture will be displayed as a button in this column. If a fixture does not currently have a DMX start address, the button will simply say Add .

Move the cursor to the DMX column for the required fixture and press the Enter key. A Patch Fixture(s) popup window is displayed on the monitor, with the current universe and start address selected (if present), as shown below.
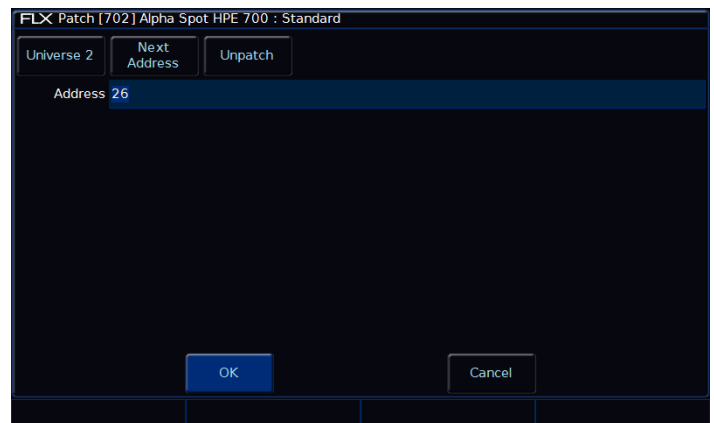
Patch window

Select the required Universe by clicking on the Universe button and selecting the universe from the drop down menu. Enter the required DMX address in the Address field provided or press the Next Address button to automatically pick up the next available address in the selected universe.

Press the OK button to complete the patching operation or the Cancel button to cancel.

Alternatively, in this window you can press the Unpatch button. A confirmation popup window will be displayed. Select the Yes button to confirm the operation.

Unpatching a fixture removes that fixture's information from the DMX output, effectively disabling that fixture. However, the information is not removed from the showfile, and the fixture may still be manipulated, programmed and adjusted on the desk, but no data will be output to it. Going back into Edit Fixtures and adding back in the DMX start address for that fixture will get it back up and running. This is useful when touring, where one venue may have more fixtures than another venue. (See "Repatching and deleting fixtures via syntax" on page 40 for information regarding permanently deleting a fixture).

Multi-part fixtures

For multi-part fixtures (eg Lamp + Scroller) the different parts of the fixture are displayed on separate rows in the Edit Fixtures patch table.

There is an additional column ("Part") which shows the part name of the multi-part fixture. Each row has its own DMX start address button.

The *Fixture Part* drop down at the top selects which parts of the fixture are displayed on the screen (eg All Parts, Lamp, Scroll). This is useful when wanting to use the ALL row, eg to change all the DMX start addresses of only the scrollers.

Patch screen within Edit Fixtures displaying multi-part fixtures

Adding duplicate addresses

Using this feature, it is possible to patch a fixture to more than one DMX address in one or more universes. These additional patch addresses are known as duplicates.

When duplicates are patched, additional columns are added to the Edit Fixtures table (one column per duplicate address) as shown in the following example.

Fixture 4 has an address of 4, but also has two duplicates – ch 15 and 24

To add duplicated, select the *Add* button under the Duplicate 1 column for the required fixture. The Patch Fixture popup window is displayed on the monitor screen.

Select the required Universe by clicking on the *Universe* button and selecting the universe from the drop down menu. Enter the required DMX address in the Address field provided or press the *Next Address* button to automatically pick up the next available address in the selected universe.

Press the *OK* button to complete the patching operation or the *Cancel* button to cancel.

To patch further duplicates for the selected fixture, select the *Add* button under the Duplicate 2 column, Duplicate 3 column etc and repeat the above procedure.

To change or remove a duplicate, select the DMX address under the duplicate column to open the Patch Fixture popup window. In this window you can change the DMX universe and the DMX start address, or you can choose to "Unpatch" the duplicate completely.

System Settings

System Settings within the Setup menu allows you to change various settings that affect the ZerOS system, such as the date and time and monitor settings, or switch between the various modes available.
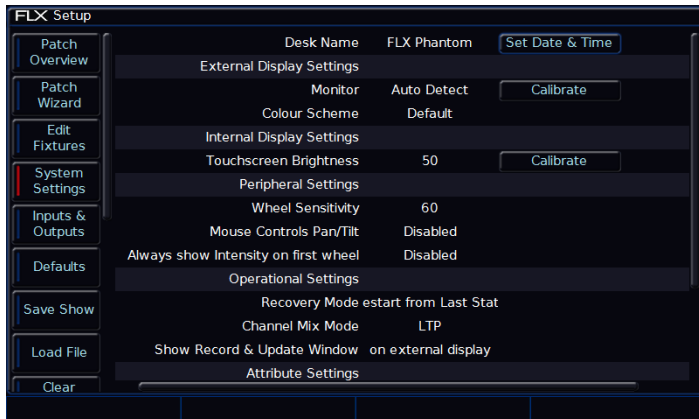
The "System Settings" window

Desk Name

The desk name is used to identify itself. For example, when using the mobile apps, the name of every console on the network will be displayed. By default, the desk name will be "FLX" followed by the serial number, but this can be changed by selecting the cell, pressing Enter and using an external keyboard to type a new name.

Set Date & Time

Press the Set Date & Time key on the monitor to open the below window. Enter the correct time, day, month and year in the fields provided and then confirm by selecting the OK button.
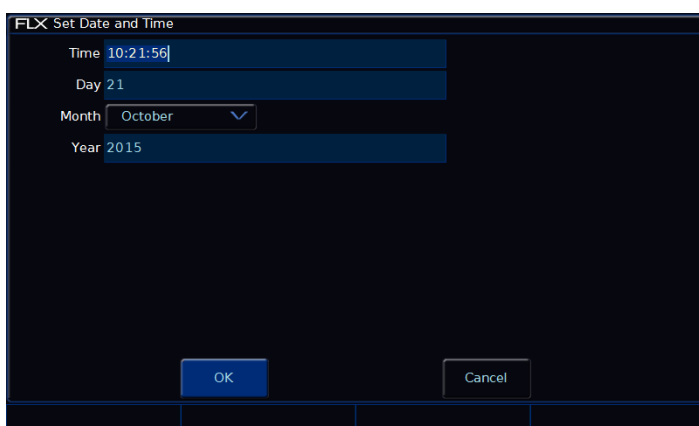
Changing the time and date on the console

External Display Settings

FLX supports one external monitor, plugged into the "DVI-D" connector on the rear of the console. This monitor can also be touchscreen if desired, which also plug into one of the USB connectors with a second cable.

FLX will automatically detect if the external monitor is present, and the best resolution to use for that monitor.

To manually change if a monitor is present or not, change "Monitor" to "Enabled" or "Disabled" (by default, this is set to "Auto Detect"). This will change what's displayed on the internal monitor – see "Using FLX without an External Display" on page 7 for more information.

To change the monitors resolution, change "Resolution" from "Auto Detect" to one of the listed resolutions. FLX will change the resolution for 15 seconds, and then automatically revert it to the previous setting unless you click *Keep* on the internal monitor within those 15 seconds.

If using a touchscreen, this monitor will need to be calibrated before the touch functionality will work. Click *Calibrate* under the External Display Settings. The external monitor will now guide you through the calibration process – press the orange cross in the upper left corner, then the lower right corner, then the upper right corner. This completes the calibration and ZerOS will ask you to draw on the screen to check the calibration has worked correctly. You should ensure that the line drawn is displayed in the same place you touch the monitor. Press Enter to confirm and return to System Settings.

A number of external touchscreens are supported by FLX. Although we will endeavour to add support for other screens where possible, we make no guarantees about this since the drivers may not be available in the correct format for the desk operating system. If you want us to add support for a different screen, then we may ask you to loan us the screen (including the drivers CD that came with it) for a short time for testing. Please contact Zero 88 for details.

Internal Display Settings

The Internal Display Settings allow you to change the touch screen brightness and the calibration of the internal display.

The touchscreen brightness is a value between 0% and 100%. Recommended use is at 50% brightness. 0% will not allow the backlight to go out completely, but instead to a very dim level that can still be seen in most situations.

To recalibrate the internal display, click $\boxed{\textit{Calibrate}}$ under the Internal Display Settings. The internal touchscreen will now guide you through the calibration process – press the orange cross in the upper left corner, then the lower right corner, then the upper right corner. This completes the calibration and ZerOS will ask you to draw on the screen to check the calibration has worked correctly. You should ensure that the line drawn is displayed in the same place you touch the monitor. Press $\boxed{\text{Enter}}$ to confirm and return to System Settings.

Peripheral Settings (encoder wheel settings etc)

"Wheel Sensitivity" allows you to change the sensitivity of the four encoder wheels. The setting is a value between 0% and 100%, with 100% being the most sensitive. Recommended use is between 50% and 60%.

"Mouse Controls Pan/Tilt" allows you to control the Pan and Tilt of a moving light by using an external USB device, such as a mouse or trackball. When enabled, this device will control the Pan and Tilt of any selected device when the "Position" attribute button is selected on the front panel.

"Always show Intensity on the first wheel" allows you to lock the first wheel to an Intensity control. This means all other options on the encoders will be shown on wheels two to four only. Using Intensity on a wheel is advantageous when you have multiple channels all at different levels, and you want to increase or decrease their levels all together. If you only plan to use this feature occasionally, leave this option disabled, and use the Intensity Wheel that becomes available when you press the "Z" button.

Operational Settings

"Recovery Mode" defines how the console should react when it's powered off and powered back on again.

"Blackout" will release all the playbacks when it powers back on, so no lights are on.

"Restart from Last State" will replay the same cues that were active when the console lost power. This option is useful if you expect to lose power at any point, for example when running with temporary power.

"Channel Mix Mode" can be switched between "HTP" (highest takes precedence) and "LTP" (latest takes precedence).

"HTP" means the channel faders will only affect a channel if they are higher than anything else affecting that channel (so, if a channel is programmed at 50% in a cue, the channel fader will only affect that channel when it's above 50%).

"LTP" means the channel faders can "catch" the intensity (by taking the fader above 50% in the above example) and then pull it back down to 0% and keep control of the channel.

"Show Record & Update Window" can be changed to decide when these two windows should be shown during programming.

"When held" means the windows will only be displayed when the $\boxed{\text{Record}}$ or $\boxed{\text{Update}}$ buttons are held for around half a second.

"On internal display" means the windows will be shown on the internal display as soon as the $\boxed{\text{Record}}$ or $\boxed{\text{Update}}$ buttons are pressed.

"On external display" means the windows will be shown on the external display as soon as the $\boxed{\text{Record}}$ or $\boxed{\text{Update}}$ buttons are pressed, but only on the internal monitor if the buttons and pressed and held.

"On both displays" means the windows will appear on both displays as soon as the $\boxed{\text{Record}}$ or $\boxed{\text{Update}}$ buttons are pressed.

Attribute Settings (Colour, Beamshape, Position)

These options allow you to change various settings for each attribute. The same windows can also be opened outside of the Setup Window, by pressing $\boxed{\text{Setup}}$ and the attribute button together.

For example, Setup + COLOUR together will open the Attribute Settings for colour, as shown below.
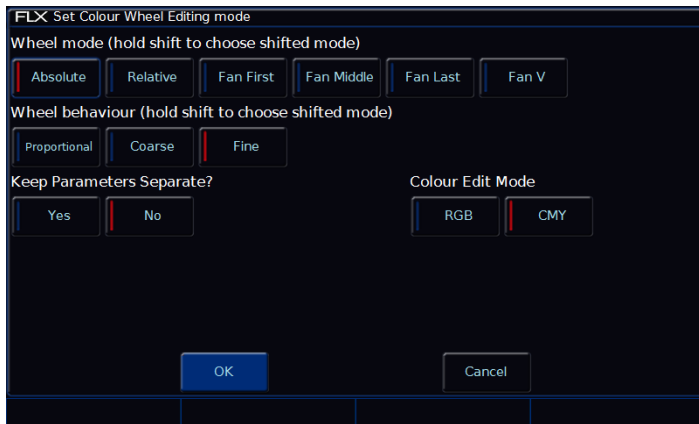
The "Attribute Settings" window for the Colour attribute

The options in each Attribute's window are the same (apart from colour, which has one extra option), but the setting for each option can be changed per attribute independently.

"Wheel mode" allows you to change how to encoder wheel will affect the selected fixtures. The options are explained below. A secondary "shifted" option can be chosen whilst holding down the Shift key on the console, which allows you to select how the encoder will work when you roate it whilst holding Shift.

- "Absolute" will change all the selected fixtures to be exactly the same value for that wheel's parameter. For example, if all the moving lights have different gobos, changing the gobo wheel in absolute mode will switch them all to the same gobo, and then alter them all together
- "Relative" will change all the selected fixtures relative to the values they currently have. For example, if lots of moving lights are all pointing centre stage, they are all at different angles. Moving them "relative" will move all their Pans and Tilts together rather than snapping them all to the same angle (which is what "absolute" would do).
- "Fan first" fans the change you make across all the selected fixtures, so the first fixture's parameter doesn't change, the last fixture's parameter changes as expected, and all the fixtures in-between will scale between these two values.
- "Fan Middle" will fan from the middle fixture, so the middle fixture's parameter doesn't change, the first half of the fixtures will change in one direction (again, scaling as you move away from the middle fixture), and the second half of the fixtures will change in the other direction.

- "Fan Last" fans the change you make across all the selected fixtures, so the last fixture's parameter doesn't change, the first fixture's parameter changes as expected, and all the fixtures in-between will scale between these two values.
- "Fan V" is similar to "Fan Middle", but the second half of the fixtures change in the same direction as the first half, rather than the opposite direction.

"Wheel Behaviour" changes how responsive rotating the encoder is.

- "Proportional" uses an exponential algorithm to control attributes based on the speed of the encoder wheel movement
- "Course" uses a linear algorithm to control attributes, with a low sensitivity to make large changes quickly.
- "Fine" using a linear algorithm to control attributes, with a high sensitivity to make very accurate changes easily. Every "click" of the encoder wheel will change the parameter by one DMX value.

"Keep Parameters Separate" allows you to decide if moving one parameter within an attribute should automatically tag all the other parameters within that attribute too. By default, this is set to "No" for Colour and Position, as all the values within those attributes come together to create a single colour and single position, whereas the default is "Yes" for Beamshape, as often the parameters within Beamshape are completely independent from each other.

"Colour Edit Mode" (within colour only) allows you to switch between controlling fixtures using RGB (Red, Green, Blue) or CMY (Cyan, Magenta, Yellow). ZerOS will convert all fixtures to this colour mixing mode.

Tracking Options
This option defines the behaviour of the desk when recording cues. There are three options available:

"Disabled" means that cues are programmed with a full captures of the stage output to ensure what you see on stage is exactly what is programmed, and exactly what will be played back when you replay the cue.

"Basic" (default) means that cues are programmed with exactly the lighting state seen on stage. The cue will only contain the changes required from the previous cue to make this lighting state, and uses the "Smart Tag" rules.

"Advanced" means that cues are programmed to contain only the changes you've programmed. This means that if a parameter is programmed in one cue, it will track through all subsequent cues until it is programmed to do something else. If you program cue stacks sequentially, you shouldn't have to worry too much about tracking.

Inputs & Outputs

Inputs and Outputs within the Setup menu allows you to manage any information or triggers entering or leaving the console. This screen does not cover networking, which is covered in other areas within Setup.
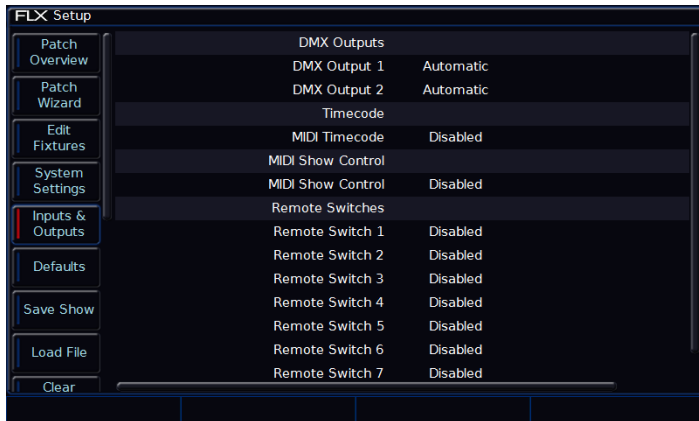
The "Inputs & Outputs" window

DMX Outputs

FLX has two DMX Outputs on the rear of the console, but supports up to 8 Universes of DMX. Each of the outputs can be mapped to any of the DMX Universes. For example, on smaller rigs you may choose both outputs to be the same Universe 1 so it doesn't matter which output you plug your rig into. The default setting is "Automatic", which means if something is patched on Universe 1 it will be outputted on DMX Output 1, and if something is patched on Universe 2, it would be outputted on DMX Output 2.

MIDI Timecode

MIDI Timecode (MTC) can be linked with a video or music track and be used to automatically trigger lighting cues at precise moments during that media. You can disable MIDI Timecode altogether, or select the frame rate of the MIDI timecode being fed to the desk, in fps. (See "Trigger (Go, Auto, Timecode etc)" on page 30 for more information).

MIDI Show Control

MIDI Show Control (MSC) are messages received by FLX to remotely trigger lighting cues. Often, this is to trigger the lighting in sync with other media (such as sound & video). MIDI Show Control will only trigger cues on Playback 0 ("Master Playback"). When enabled, you will be asked to choose a "Device ID". This allows the MSC messages to be sent to a specific device rather than all devices.

Remote Switches

There are 8 close-contact remote switches available. These can be wired into the FLX and set to trigger either a specific cue or a macro when the circuit is made. Wiring diagrams can be found in the "Remote input" section on page 61.

If the action field is set to "Go to Cue" or "Macro", then an additional field is displayed allowing you to enter the stack/cue or macro number as appropriate.

Defaults

Defaults within the Setup menu allows you to change the default times and settings given when you program Cues and UDKs. Changing the default settings will never change Cues or UDKs which have already been programmed. Only future Cues and UDKs will be affected by a change in defaults.
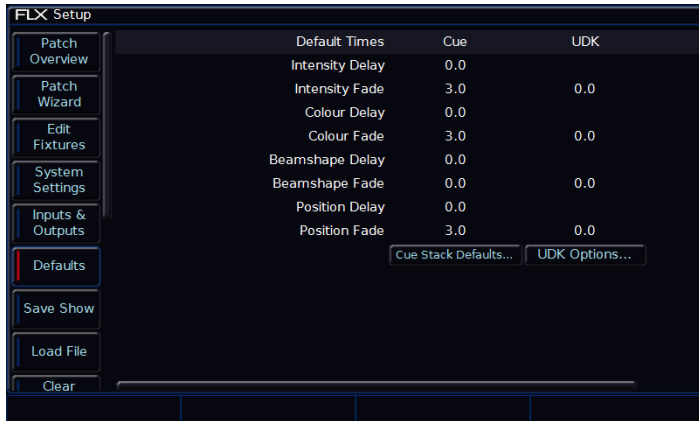
The "Defaults" screen within Setup

Default Times

These settings change the default times that cues and UDKs are recorded with. Both the default fade and default delay of the Intensity, Colour, Beamshape and Position attributes can be change in this window (delay options are not available for UDKs).

Cue 1 of each playback is always recorded with a 0s fade time by default. This can be changed during the recording process on the encoders, or after the cue is recorded in the Playback Window.

Cue Stack Defaults

Clicking Cue Stack Defaults… will open the Playback Settings window, allowing you to change the default settings that are applied to any new playbacks. Playbacks are created when a cue is first recorded into that playback. For more information about the options available, see "

Playback settings" on page 23.

UDK Options

Clicking UDK Options… will open the UDK Settings window, allowing you to change the default settings that are applied to new UDKs.

Save Show

The FLX Lighting Console will save the show automatically to its internal memory at regular intervals. External copies of the show data can be saved to a USB Storage Device.

It is highly recommended to save external backups regularly – especially when leaving the console unattended for any amount of time.

To save the show, press ☐Setup☐ and then choose ☐Save Show☐ on the left hand side of the display. The following popup window will be displayed:
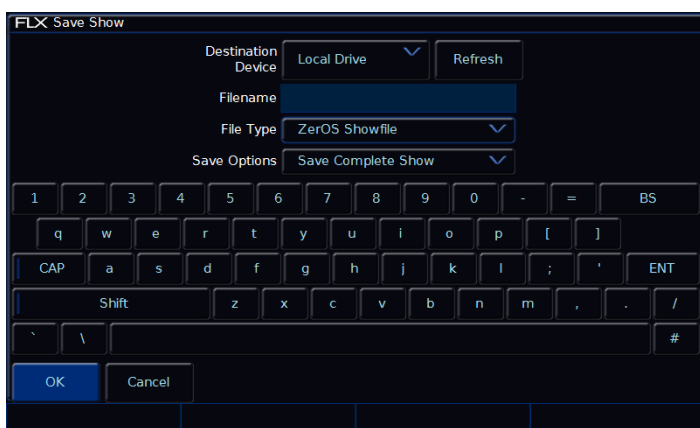
The "Save Show" popup window

If you have more than one USB Storage Device connected, first select the required device on the top dropdown. If the device does not appear straight away, wait a few seconds and then click ☐Refresh☐.

Type the show name in the Filename box using the onscreen keyboard and press ☐Enter☐ or ☐OK☐. After a few seconds the show will be saved. Press ☐Setup☐ to exit Setup mode.

File Types

ZerOS is able to save shows in different file formats. Which file type you choose depends on what you plan to do with the showfile. Choosing the correct file type is crucial. Each type is detailed to the right.
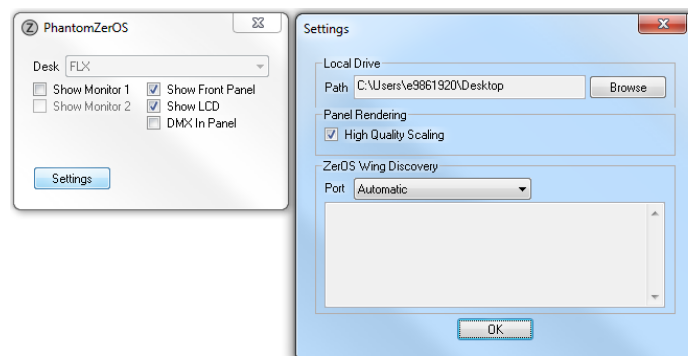
ZerOS Showfile

This is the default option, and should be used in most circumstances. These can be loaded back into the console or loaded onto any other console running ZerOS (for ultimate compatibility, it is suggested that both consoles are running the same software version). When selecting "ZerOS Showfile", you are given the option to "Save Complete Show", "Save Setup Only" or "Save Setup & Palettes". It is recommended that you choose "Save Complete Show", which takes all of the available information in the console, including setup options, patch, cue and palette data and stores it into a single file. This file can then be reloaded at a later date to return the console to the same state as it was in when you saved it.

Comma Separated Values (.csv)

This saves the information into a text file that can be imported into most spreadsheet applications to get a print out of all the cues and the values of each fixture in each cue. These values <u>cannot</u> be loaded back onto FLX or any other ZerOS console. When selecting "Comma Separated Values (.csv) you are given the option to select with Playback stack you wish to export (only one can be chosen at a time), if you want the data displayed as "Percentage", "DMX Values "or "Details" (if present). You can also choose if Palette References are included or not (palette references will display the palette used to change that value, rather than the value itself).

Phantom ZerOS

Phantom ZerOS requires a "Local Drive" to be defined which emulates a USB storage device. This could be the computer's Desktop, "My Documents", or an actual USB device. To select a folder, choose "Settings" and then choose "Browse". Now, when you select "Save Show" in Phantom ZerOS, this folder will be displayed.

Load File

The single "Load File" window can load several different types of files:

ZerOS Showfiles

Any ZerOS Showfile can be loaded onto the FLX from a USB Storage Device. For *ultimate* compatibility, it is suggested that both consoles are running the same software version.

When loading a showfile, all information on the console will be lost. Therefore, ensure you save your current show first before loading another file.

To load a show, press Setup and then choose Load File on the left hand side of the display. If you have more than one USB Storage Device connected, select the required device on the top dropdown. If the device does not appear straight away, wait a few seconds and then click Refresh.

A list of show files on the currently selected storage device appears on the touch screen. Select the show file you wish and press OK to load the show. The console will load the show into its memory and you will automatically leave Setup.

When loading a ZerOS Showfile, you are given three options – "Load Complete Show", "Load Setup Only" and "Load Setup & Palettes". Loading a complete show brings the console back to the same settings that were defined when the show was stored - Patch information, Cue Information, UDKs, Palettes, Groups, Macros, Desk Setup and Network settings will all be restored.

ASCII Showfiles

ASCII showfiles are a generic file format that can be shared between a range of consoles from a range of manufactures. FLX can load ASCII showfiles using the same method as detailed above for ZerOS Showfiles.

The ASCII showfile specification has several limitations, such as only supporting dimmer channels (not moving lights etc) and a basic cue stack. However it is very useful, especially when touring.

User Fixture Types

User Fixture Types are files created when a required fixture is not included within the Zero 88 Fixture Library. These files are loaded into the console using the same method as detailed within "ZerOS Showfiles". Once loaded, a confirmation will appear saying "x Fixture Types loaded" (x being the number of fixtures included within the single file). These will be loaded into the main library, ready to be patched in the usual way. (See "User fixture types" on page 37 for more information).

Zero 88 Fixture Library

The Zero 88 Fixture Library contains a library of many thousand fixtures you may wish to use with FLX. This library is regularly updated, and can be downloaded free of charge from the Zero 88 website. These files are loaded into the console using the same method as detailed within "ZerOS Showfiles". Once loaded, the new library will not take effect until the console has been restarted (which can be done straight away, or at a more convenient time later). (See "Zero 88 Fixture library" on page 37 for more information).

Installing new software

ZerOS, the software running on FLX, is regularly updated as a free update from the Zero 88 website. This software is loaded into the console using the same method as detailed within "ZerOS Showfiles". Once loaded, you will be required to restart the console before you can continue.

The software installation process completely removes all data on the console, including any current show files. If the current show file is still required, please ensure that backups are taken before proceeding with the update. After completing the update you may re-load your show if required.

Clear Options

Clear options allows you to clear certain areas of the console, or reset the console back to factory settings.

The "Clear Options" section of Setup

Clearing specific areas of the console

Data stored on the console is separated into eight areas, each of which can be cleared independently to each other. Alternatively, "Clear All" will clear all eight sections in one go. Selecting any of these options will offer confirmation before clearing. Once confirmed, this action cannot be undone. These eight areas are:

- Colour Palettes
- Beamshape Palettes
- Position Palettes
- Effect Palettes
- Macros
- Groups
- Playbacks
- User Definable Keys

Clear User Fixture Types

A separate option, that is not included within "Clear All", is "Clear User Files". This removes all User Fixture Types from the internal library. Although this removes user fixture types from the console, any fixtures being used within a specific showfile are stored within that showfile itself. (See "User fixture types" on page 37 for more information).

Reset Desk / Factory Reset

"Reset desk" will reset all settings and data on the console. This cannot be undone. "Factory Reset" completely wipes the console back to a fresh installation of ZerOS, requiring the console to be restarted before you can continue.

Remote (mobile apps)

This section of Setup enables access to the console from the "Windows Remote Monitor" application (available as a free download from the Zero 88 website) and the "ZerOS Remote" and "ZerOS Monitor" mobile apps. These are available free of charge from the iOS App Store and Google Play respectively.

"ZerOS Remote" is designed to work as a "rigger's remote" to wirelessly control fixtures etc, especially during a focus session.

"ZerOS Monitor" is designed to work as a "remote monitor", just like the physical touch screen monitor you can plug into the back of the console. Whatever you can do on that monitor, you can do with this app. Whatever you can't do on that monitor, you can't do on this app! Although this app can work on any screen, it's not really designed for a smartphone sized screen.

To use these features, the console must be plugged into a wireless network. To enable access to the console from these apps, change "Remote" to "Enabled".

You're wireless network should already include security measures to ensure unauthorised access isn't possible, however you can also add a password on the console as an additional layer of security by enabling "Security" (this security is simply a password the remote will prompt you for before connecting - ensure you change the password from the default one).

If you enable "Use DHCP Address", the console will request an available IP address from the router. This will only work if your router supports DHCP. Alternatively, disable DHCP to display two more options – IP Address and Subnet Mask.

At the bottom of the remote setup screen, a message should appear - "Remote Active". If "Remote Not Active - No DHCP Address" is displayed, ensure that DHCP is enabled on the router and reboot the desk. Assuming "Remote Active" is displayed and the mobile device is connected to the wireless network, you should be able to start the app on the device and the desk should be detected. Press on the Desk name and click the connect button.
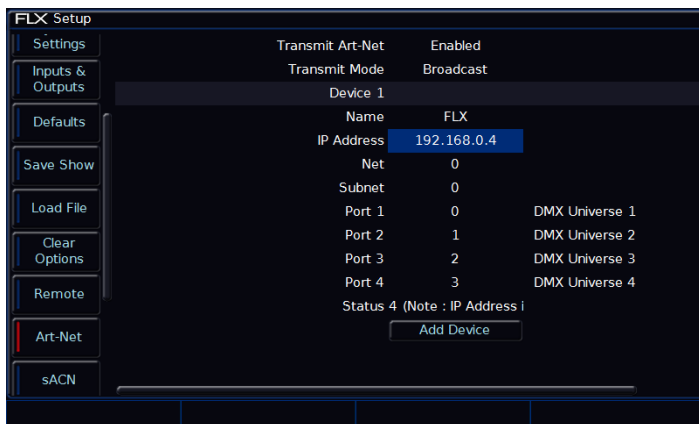
Art-Net

Art-Net is a lighting protocol which sends DMX data over Ethernet. The protocol allows for multiple DMX universes to be sent over a single Ethernet cable. The FLX console can output up to 8 universes of DMX data via Art-Net.

For more in-depth information about Art-Net, please visit the dedicated website at art-net.org.uk

Each Art-Net device needs an IP address starting with a 2.x.y.z or a 10.x.y.z. The same start number must match on the desk itself. Each DMX universe must then be allocated to a Port – Art-Net Ports numerate from 0-15, so it is generally accepted that desk universe 1 will become Art-Net universe 0, however this is user definable.

Art-Net enabled devices include Media Servers, Moving Lights and also dedicated DMX output boxes such as the, "EtherN.8", "EtherN.2" and "1 Universe Ethernet Box" by Cooper Controls.

The Art-Net options within Setup (when using Phantom ZerOS)

Transmit Art-Net
This option enables or disables Art-Net transmission.

Transmit Mode
This allows you to switch between "Broadcast" and "Unicast". Visit the Art-Net website for more information about this.

"Devices"
Art-Net is outputted in blocks of four Art-Net "ports" (equivalent of DMX Universes). These blocks are called "Devices". To output all eight universes, click Add Device at the bottom. A Remove button will appear next to each device if you wish to remove them.

Within each Device, there are the following options:

Name
This allows you to give each device an independent name

Network Switch
This can be switched between 2 or 10 (this is the first digit of the IP address being used). Art-Net allows two separate network IP ranges.

Please note – on Phantom ZerOS, this option will change to "IP Address" and will allow you to select any of the IP addresses on your computer. To change these IP address settings, use your computers settings within Control Panel.

Net
This is used for multiple Art-Net networks on a single network. If you're not sure, leave this as "0".

Subnet
This is used for multiple Art-Net networks on a single network. If you're not sure, leave this as "0".

Port 1 – 4
This allows each of the four device ports to be allocated a separate Art-Net port, or be disabled. This port must be matched with the Art-Net receiving device. Any one of the up to 8 DMX Universes can be linked to the Art-Net ports.

Streaming ACN (sACN)

Streaming ACN is another lighting protocol which sends DMX data over Ethernet. The protocol allows for multiple DMX universes to be sent over a single Ethernet cable. The FLX console can output up to 8 universes of DMX data via sACN. The protocol is approved by ANSI and ESTA as the standard for DMX over Ethernet and allows ZerOS to communicate with a multitude of sACN enabled devices already available from a range of manufactures.

The Streaming ACN options within Setup (when using Phantom ZerOS)

Transmit sACN

This option enables or disables sACN transmission.

"Use DHCP Address"

This can be switched between 2 or 10 (this is the first digit of the IP address being used). Art-Net allows two separate network IP ranges.

Please note – on Phantom ZerOS, this option will change to "IP Address" and will allow you to select any of the IP addresses on your computer. To change these IP address settings, use your computers settings within Control Panel.

IP Address & Subnet Mask

These options are only displayed if "Use DHCP" is set to "Disabled", and allows you to define an IP Address and Subnet Mask for streaming CAN.

UUID

The Universally Unique IDentifier is not user configurable, and is included for information purposes only.

Each DMX universe is offered as a line item with configuration options for each universe. By default all universes are disabled, so enable only the universes you require in order to reduce the network overhead.

Choose *Configure* to make changes to the sACN universes. This will open the following window.
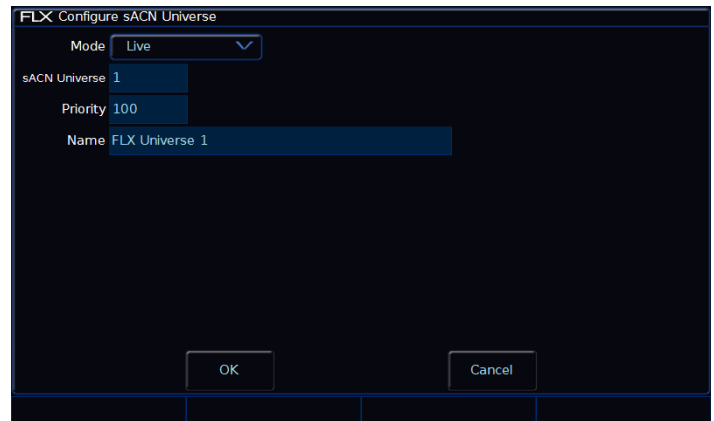
The "Configure sACN Universe" options window

Mode

Each sACN universe can be either "Live" or "Preview" output – the Preview output option although configurable is not currently implemented in ZerOS.

sACN Universe

sACN allocates a universe number to each DMX universe, which must be the same on the FLX and the receiving device (the DMX output node or fixture, etc).

Priority

Each universe can be defined a Priority level (0-200) – sACN receptive devices will automatically listen for the highest priority number received and respond to that signal. In this way, multiple consoles can be running on a network at the same time and can automatically take over from one another – a function used in our tracking backup software.

Name

Each sACN universe can also have a unique name associated with it, which can be entered from a USB keyboard. This functionality allows you to identify which universe is coming from which console on a larger networked system.
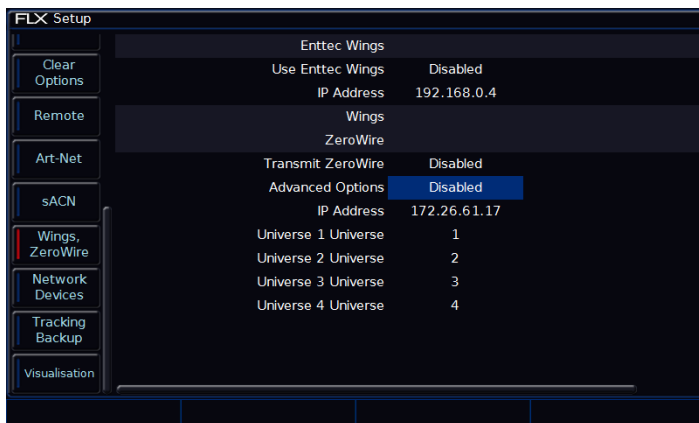
Wings and ZeroWire

It is possible to use the Enttec Playback Wing as an additional fader/playback wing for the ZerOS consoles. Each key and fader can be assigned individually to allow a truly configurable accessory, and multiple wings can be supported simultaneously.

In the settings window, select and assign IP addresses as required. Once the desk is at the correct IP address, you should see the wing appear in a list below it. Press the Configure key and a popup window will appear allowing you to assign each of the keys and faders on the wing as required. These settings will be stored as part of your show file, so you can reuse the wing.

Zero Wire DMX is a legacy wireless DMX transmission system from Zero 88. The system can be output directly from the console and can then be routed via a Wireless Access Point to Zero Wire DMX boxes which decode the signal to DMX for linking to fixtures and dimmers, etc.

In the Zero Wire setup page there are a host of options, which enable each DMX Universe on the desk to be routed to an IP address with a unique Universe number (see below). For more information, see the Zero Wire DMX user manual, which can be found on the Zero 88 website.

The Wings and ZeroWire section of Setup
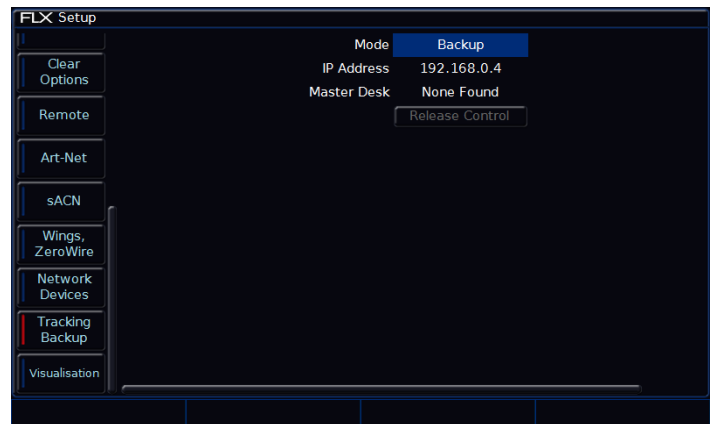
Network devices

Network devices allow you to configure the functionality of external Art-Net devices on the network. The options available depend on the devices present on the network.

For more in-depth information about Art-Net and Art-Net devices, please visit the dedicated website at art-net.org.uk

Tracking Backup

Tracking backup allows a continuous and full back up of FLX to another device, which will automatically take over if anything happens to your main console. Backups can be done to a second FLX, to a "SCD Server Pro", or to a laptop running Phantom ZerOS with an Unlock Dongle. This tracking backup option is ideal for show-critical scenarios where a backup solution must be provided.

The tracking backup screen (when using Phantom ZerOS)

The two consoles are connected together via an Ethernet network. Each console is assigned an IP address and a master or backup status. If the console is set to be the backup device, it will go into a suspended status where you will not be able to operate the controls on the front panel, until such a time as the master console disconnects or fails in any way. At this time, the show file will have automatically transferred to the backup console and the backup console will take over control of the show.

Visualisation

3rd Party visualisation packages allow you to preview your lighting through a 3D emulator when you don't have access to the venue. Most accept Art-Net or streaming ACN directly (see pages 55 and 56 respectively), but FLX also includes specific support for Capture, WYSIWYG and Light Converse, detailed below.

Capture

Capture visualising software communicates with the desk via a protocol known as CITP. This protocol allows for any standard PC network between the desk and the visualising PC. The console allows you to configure either a fixed IP address or one allocated via DHCP. As long as the two devices can see each other, the system should function correctly.

For more information on Capture, please visit their website at capturesweden.com

Light Converse

The Light Converse visualiser uses Art-Net to communicate with the desk software. The rules of Art-Net apply when configuring a Light Converse setup.

"Light Converse integration" requires a Zero 88 Light Converse USB dongle. Once active, the system allows bidirectional control of fixtures, selection and patching via the Ethernet connection.

For more information on Light Converse, please visit their website at lightconverse.net

WYSIWYG

Recent versions of WYSIWYG support Art-Net directly. For older versions of WYSIWYG (Release 21 or greater) follow these instructions:

WYSIWYG Installation

1. First install WYSIWYG Release 22 or greater, following the standard procedure (if you're using Release 21, you'll need the Zero 88 Consoles CFB file)
2. Run the Zero 88 WYSIWYG Driver installation tool
3. Once the driver is installed, run the tool
4. Select the network interface you wish to connect WYSIWYG with (the IP address is shown)
5. Choose OK

WYSIWYG Usage

1. Start WYSIWYG & load your show file
2. Patch your fixtures to Universes in WYSIWYG
3. In the LIVE tab, select LIVE, Device Manager
4. In Device Manager, select New and locate the Zero 88 console you are connecting to
5. Select the console and click Properties, then enter the IP address of the desk in the Address. Select each Port on the desk and Bind these to a Universe on WYSIWYG.
6. In the Device Manager, click CONNECT and the console should connect. You can now use WYSIWYG to visualise your show.
7. When you have finished using it, click DISCONNECT in the Device Manager.

For more information on WYSIWYG, please visit their website at castlighting.com

Networking Basics

Ethernet basics

The FLX supports various Ethernet communication protocols for sending DMX over a network, connecting to visualisation tools / remote apps etc. and for creating a full tracking backup system. Details of these options are found on previous pages, and example system layouts are shown on the following pages.

FLX includes an "EtherCON" connector – this accepts a "normal" RJ45 connector (the standard connector on an "Ethernet cable"), or the more robust EtherCON connector designed especially for tough touring conditions.

Unlike DMX, Ethernet operates in a different topology. DMX is daisy chained ("line topology") from fixture to fixture, whereas Ethernet data is connected using a Star topology.
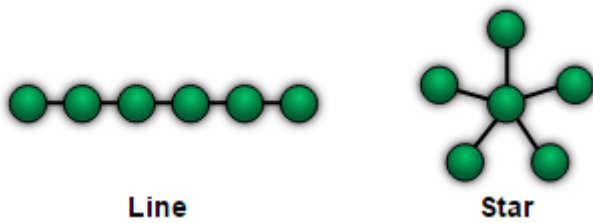
IP Addresses

IP Addresses are a devices identity on an Ethernet network. The address indicates where the device is located and in combination with the Subnet Mask, indicates what the desk can see, and vice-versa. The number is made up from 4 blocks of data, between 0 and 255 – eg 192.168.0.1

Subnet Masks

The Subnet Mask indicates what a network device can see on the network – the standard subnet mask for an Ethernet network is 255.255.255.0, indicating that a device with an IP address of 192.168.0.1 can see any device whose IP starts with 192.168.0.x, but cannot see anything starting 192.168.1.x

Switch vs Crossover

There are two ways of making an Ethernet connection with a ZerOS console.

Via a standard Ethernet Switch – the desk is connected to one connector on the switch, and other devices are connected to another port

Via a crossover cable – the desk and connected device are connected together directly via a crossed network cable. This system is ideal for visualisation PCs as it negates the need for an additional box in the middle, however this system has its drawbacks – it is not possible to use DHCP configuration, and it is not possible to connect more than one device in this manner.

DHCP

DHCP is a protocol used by Ethernet enabled devices to dynamically allocate an IP address to devices on the network. In order to use this system, a DHCP host must exist on the network. Some Ethernet Switches offer DHCP capabilities, as do Wireless Routers. It is important that you ensure that there is only ONE DHCP host on a network – multiple DHCP hosts can cause malfunctioning of the system.

Example system layouts
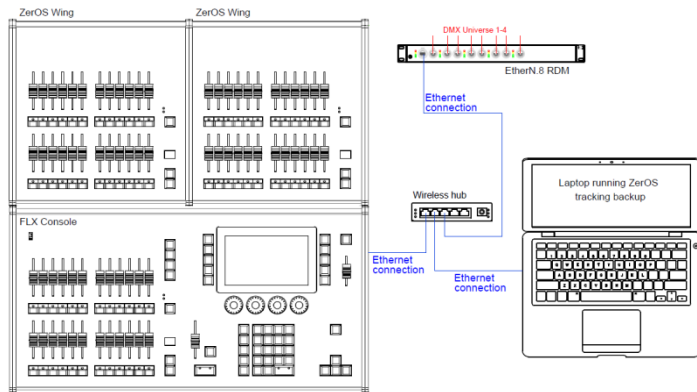
This system shows the FLX console with two ZerOS Wings connected via USB. Legs are available to ensure the Wings are the correct height when used behind the FLX.

A hub or router connects the console to a laptop running Phantom ZerOS with an Unlock Dongle. This backs up every key press and can automatically take over so you can continue exactly where you were. Using a wireless router would allow mobile devices to be connected too.

An EtherN.8 RDM is connected to this system to convert Art-Net or sACN to DMX. The eight outputs can be individually configured to output any of the four universes.

This system shows a laptop running Phantom ZerOS with an Unlock Dongle. The console is connected to an EtherN.2 RDM to output two universes of DMX. This could be directly, using a "crossover" cable, or via a hub / router using "straight" Ethernet cables. EtherN.2 RDM can be powered via "Power-over-Ethernet" (PoE) if required.

A USB Wing is also used in this system, giving physical controls to the software package. The button below each of the 24 faders can be used as individual GO buttons.

This system shows another tracking back up system, this time with two consoles staying in-sync. These could be physically next to each other, or in different areas of a venue. An EtherN.8 RDM is being used to convert to DMX, but any other Art-Net or sACN "nodes" could be used too.

This system also includes a Media Server connected to the network. There are many servers available, some with dedicated hardware, others software based.

This system shows another tracking backup system, this time with an SCD Server Pro for the backup. This can be rack mounted, and could have a ZerOS Wing connected to it if faders were required. The space bar on a USB keyboard acts as the Master Go button.

This system also includes two EtherN.2 RDMs, which could be wall mounted in two different locations within the venue – two universes at each.
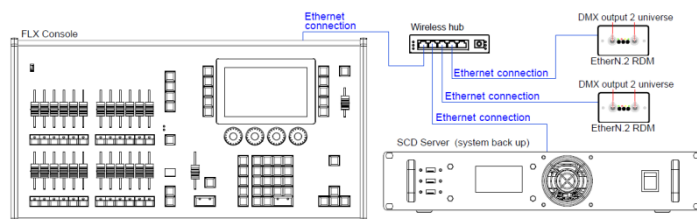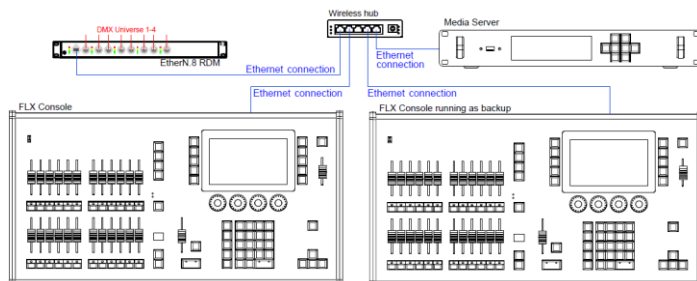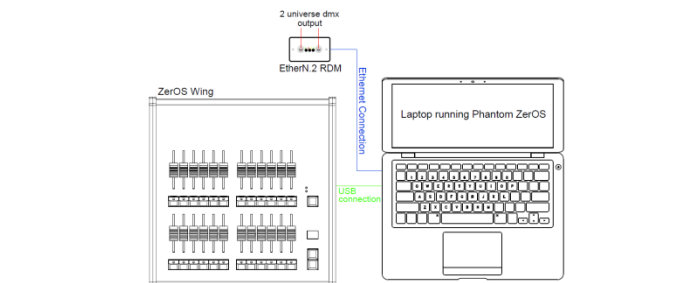
Technical Information

Mains inlet

FLX is fitted with a Neutrik powerCON TRUE1 (NAC3MPX) mains inlet on the back panel, and power on/off switch.

100 - 240V AC; MAX 1A   50 - 60Hz, 60W
INTERNALLY FUSED.
A GOOD EARTH CONNECTION IS ESSENTIAL.

The internal fuse is not user replaceable, contact an authorized service agent if the desk does not power up and you suspect that the fuse has failed. When using a UK style plug (BS 1363), a 5A fuse should be fitted.

USB ports

Five external USB ports are fitted on the FLX. Two located on the rear of the console, one on the front panel, and one on either side. These support the USB 2.0 standard, and are "overload protected" in pairs. If a USB device tries drawing too much power, FLX will disable that pair or ports until the device is unplugged. USB ports can be used for:

- **Wings**
- **Keyboard & Mouse**
- **External Touchscreen (**DVI-D also required)
- **External Storage Devices** (such as Memory Sticks)

Ethernet

The FLX Lighting Console is fitted with a Neutrik etherCON RJ45 Ethernet port and is capable of supporting various Ethernet protocols.

Kensington Lock

A Kensington-style lock slot is provided on FLX for securing the console to an operating location, using a standard laptop lock cable.

Sound to Light

A stereo ¼" jack socket provides basic Sound to Light functionality. Left and right channels are mixed internally.

Audio Connector	Area	Desc.
SLEEVE RING TIP	Tip	Left Channel
	Ring	Right Channel
	Sleeve	0V Signal Ground

DMX output

Two female Neutrik 5 pin XLR, isolated, with voltage protection and data output indicator. Data on channels 1 – 512 only. RDM Ready.

DMX Input Connector	Pin	Desc.
PIN 5 PIN 1 PIN 4 PIN 2 PIN 3	1	Signal Ground (0V)
	2	DMX Drive Complement (1-)
	3	DMX Drive True (1+)
	4	Not Connected
	5	Not Connected

Video output

1 x DVI-I connector, but DVI-D output only.

MIDI

2 x 5 pin DIN connectors providing MIDI input and MIDI thru.

MIDI Connector	Pin	In	Output/Thru
PIN 3 PIN 1 PIN 5 PIN 4 PIN 2	1	Not Used	Not Used
	2	Not Used	Signal Ground
	3	Not Used	Not Used
	4	Opto Isolated Input	Output
	5	Opto Isolated Input	Output

Remote input

A 9 pin D-sub connector providing 8 remote switches (common ground). Short pin 1-8 to pin 9 (common) to simulate a button push.

Remote Input Connector	Pin	Remote Switch
1 2 3 4 5 6 7 8 9	1	Switch 1
	2	Switch 2
	3	Switch 3
	4	Switch 4
	5	Switch 5
	6	Switch 6
	7	Switch 7
	8	Switch 8
	9	Common

Trouble Shooting

No DMX output?

If your fixtures and dimmers indicate that there is no DMX output, check the following:

- The green DMX1 and DMX2 LEDs are flickering
- The dimmers and fixtures have been patched correctly on the console and that the DMX address and mode on the fixture itself match the settings on the console
- Setup > Inputs & Outputs has been correctly configured
- The DMX cabling for cable faults, and ensure that a DMX terminator is present at the end of the chain

Fixtures not responding?

If your fixtures and dimmers are not responding to the desk, check:

- The dimmers and fixtures are patched correctly on the desk
- The green DMX1 and DMX2 LEDs are flickering
- Setup > Inputs & Outputs and/or Art-Net / sACN has been correctly configured

No intensity output?

If the intensity output levels do not change when you adjust it (via a playback, UDK or the programmer), check:

- Is the Grand Master fader is at full
- The Black Out button is off
- If the selected fixture(s) have a Shutter parameter, check that the shutter is open.
- Some fixtures also have control of the lamp remotely – try sending the Lamp On Macro command to the fixture, if supported.

Console does not boot?

- Remove all USB storage devices from the console
- Check internal monitor for any error messages or warning information
- Hold Shift on a USB keyboard to get to diagnostic mode. Perform a Backup Desk State and email this to Zero 88
- Hold Shift on a USB keyboard then "clear show data"
- If all else fails, reinstall the software as a last resort

Forgotten passcode?

If you forget the passcode you've set, please send the serial number of your console to support@zero88.com

Front panel not responding?

- Is the console fully booted (check internal monitor for any errors which may have halted the boot)?
- Are the LEDs in the buttons responding correctly?
- Power on the console with Setup held down to enter panel test mode. Hold F9 on an external USB keyboard if holding Setup on the panel does not work.

External Touch Screen not responding?

- External Touch Screens require *both* the USB and DVI-D cables to be connected.
- Have you calibrated the external touchscreen in Setup > System Settings ?

MIDI Show Control not working?

We've found that cheaper USB – MIDI devices (often sold as a single cable with USB on one side, two MIDI ports on the other, and a plastic box in the middle) are not designed to the MIDI specification. Although these sometimes work with MIDI Timecode, they do not work with Show Control.

Remote App not connecting?

If the remote app is not connecting to the console, check one of the following things:

- Is the Remote enabled in Setup > Remote?
- Is there a password set in Setup > Remote?
- Are you using a dedicated network, or plugging into a much larger network? On larger networks, firewalls can sometimes block the communications.
- Is the IP address of the console in the same range as the IP address of your remote device? For simple setups where nothing else is using the network apart from the remote, we suggest either enabling DHCP on both devices (which will set the IP address automatically) or use the IP addresses 192.168.1.10 and 192.168.1.20 on your console and remote.

Want more training?

Flexible product training opportunities are available around the world. In the UK, these are held at the Zero 88 offices, and internationally these courses are usually held at specific venues in conjunction with one of our international dealers. For information about training in your area please contact your local Sales Representative or visit **zero88.com/training**

Basic Maintenance

FLX is designed to be relatively maintenance free, however a few simple steps can prolong the life of your hardware.

> **WARNING! -** NO USER SERVICEABLE PARTS INSIDE

Internal battery
The internal battery keeps the console's time & date correct, and requires replacing every 3 - 5 years. The console should give you a warning at startup if the battery is running low, however it is good practice to replace it after this length of time anyway. Please contact a Zero 88 support agent for details on servicing the console.

Cleaning the surface
Every month or so, gently wipe down the front panel with a nonabrasive, non-corrosive surface cleaner applied with a soft cloth.

Cleaning the faders
A can of compressed air can be used to clear our dust from the fader tracks. Do NOT use an oil based lubricant (such as WD-40) on faders as this will cause irreparable damage to your FLX.

Transportation & storage
Care should be taken when transporting FLX. Zero 88 are able to supply flight cases for the transportation of their consoles – the cardboard box which FLX is supplied in is intended only for one or two journeys, and should not be relied upon to keep the console safe for prolonged use.

Operating environments
Always observe the operating environment information in the Technical Specification. If this environment is exceeded, it is likely that damage will occur to your FLX.

Reporting a problem

Before reporting a problem to Zero 88, please obtain as many of the following pieces of information as possible:

- The console's current software version
- A copy of the current showfile
- Details of what you were doing at the time, or which playback / palette etc is affected.
- If the system has crashed, the console will offer you a debug file the next time you turn it on.

Support requests can be submitted through our support forum at **zero88.com/forum** or via email to support@zero88.com

For more urgent requests, please contact Zero 88 by telephone on +44 (0)1633 838088 – 24 hour answer service available.

If you have reported a problem by email or on the forum, please bear with us as our response may take a few days if your problem is complex. It is also worth checking other posts on the forum to see if the fault is already reported / fixed before contacting Zero 88.

If you suspect that your problem is software related, please always check that you are running the latest software version. This can be found at **zero88.com/software**

Mechanical information

Dimensions

90mm (H) x 660mm (W) x 340mm (D)

Weight

7.5 kg

Operating temperature range

+5 to +40 °C

Humidity

5% to 95% non-condensing