

USER MANUAL

FLX Range






& ZEROS ACCESSORIES

Includes instructions for:

FLX, FLX S48 & FLX S24
and
ZerOS Wing & ZerOS Server



Correct as per ZerOS 7.9.6

-  This product must be earthed
-  Apparatets stikprop skal tilsluttes en stikkontakt med jord, som giver forbindelse til stikproppens jord.
-  Laite on liitettävä suojakoskettimilla varustettuun pistorasiaan
-  Apparatet må tilkoples jordet stikkontakt
-  Apparaten skall anslutas till jordat uttag

WARNING!

All ZerOS devices are designed for use within a dedicated, stand alone, private, local area network only, for the sole purpose of transmitting nonsensitive entertainment lighting control data. Although they utilize ethernet networking, these devices should not be connected to the internet.

This equipment is designed for professional stage lighting control and is unsuitable for any other purpose. It should be used by, or under the supervision of, an appropriately qualified or trained person.

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Introduction

Thank you!

Thank you for choosing the FLX Range by Zero 88 to fulfil your lighting control needs. We sincerely hope that your new console will bring you years of trouble free service. We make great efforts to build in reliability and serviceability at every stage of our development and production processes and include a three-year limited warranty - giving you peace of mind for your investment.

Our extensive dealer network can also provide you with technical service and sales support in your local language no matter where you are in the world. If you have any questions, comments or problems our contact details can be found at zero88.com/support

Once again, thank you for choosing Zero 88.

Hardware introduction

FLX

Designed to save you time and maximise your creativity, FLX is fully featured, portable and easy to use. FLX supports “industry standard” syntax, external triggering and advanced software & network functions. FLX can control up to 8192 DMX channels (2048 as standard) over 64 universes with no fixture limitations.



ZerOS Wing

ZerOS Wing can be added onto any ZerOS console, or Phantom ZerOS - the offline PC editor, to increase the number of channels or playback faders available.

ZerOS Wing does not increase the total number of playbacks or channels available, just the number of faders available at any one time.



FLX S48

A powerful LED and moving light controller with direct access to up to 96 fixtures in your rig and a touch monitor output to provide quick access to palettes and an overview of the show.



ZerOS Server

ZerOS Server is a 1U high DMX generator, running the ZerOS Operating System and emulating an iCAN Source Controller

Designed to be used in both entertainment and architectural situations, the ZerOS Server is able to backup FLX consoles or work stand-alone, triggering entertainment style lighting via an architectural lighting control network.



FLX S24

A powerful LED and moving light controller in a small 19” unit with direct access to up to 48 fixtures in your rig.



ZerOS Server can emulate any ZerOS console. Feature availability is based upon whichever console it's currently emulating.

Software introduction

ZerOS

ZerOS is the operating software installed on all FLX Range consoles. It 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/zeros. It is strongly recommended to always be running the latest release of ZerOS.

Phantom ZerOS

Phantom ZerOS is free software to download onto any Microsoft Windows computer, and can emulate any FLX Range console. 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” can be downloaded from zero88.com/zeros.

ZerOS Library

At the heart of ZerOS is “ZerOS Library” – our comprehensive library which includes fixture definitions and details about colour, gobo images and position information enabling ZerOS to present a unified set of controls, regardless of the fixture being controlled. ZerOS Library is automatically updated with every ZerOS operating software update, however it can also be updated independently if required.

Apps

The whole FLX Range supports our wireless apps, available for free on iOS and Android phones and tablets, along with Windows laptops and PCs. “ZerOS Remote” enables wireless control of your rig, allowing you to manipulate, control and playback your shows. “ZerOS Monitor” emulates a wireless additional external touchscreen monitor.

This manual

This manual describes the operation for each of the FLX Range lighting consoles.

For detailed information on each function, the manual has been divided into chapters - one for each major area of the console.

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

Feature availability

Heading will highlight the specific console(s) for which that section is relevant. For example:

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

Please note: ZerOS Server can emulate any ZerOS console (see “ZerOS Server” chapter for instructions). Feature availability for ZerOS Server is based upon whichever console it’s currently emulating.

Conventions

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, Record, UDK 3.

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

Next, *Picker*.

Getting started...

Turning the console on / off

The mains cable should be connected to the console 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 (FLX & FLX S48 only), plug this in prior to powering up the console. Once done, turn on the power supply (FLX also includes a power switch on the rear panel) – the console will run through its power up routine.

To turn the console off, simply turn off the power supply. There is no shut down procedure, and your current show will be saved automatically*. FLX users can choose to use the power switch on the rear panel, but this is not required.

*FLX S24 & FLX S48 users should ensure the “save icon” (top left of the internal touchscreen) is green before turning the console off. Every time an update is made to the showfile, the icon will change to red for a couple of seconds and then automatically return to green.

RigSync


Availability:  FLX  FLX S48  FLX S24

When FLX S is first plugged into a lighting rig, “RigSync” will set it up automatically and continue working in the background to ensure FLX S and your rig are always synchronised and problem free. RigSync removes the need to understand DMX (*if your fixtures support “RDM”*).

FLX can also support RigSync, but it is disabled by default. See the “Setup” chapter for more details.

Guidance (help)


Availability:  FLX  FLX S48  FLX S24

Available in multiple languages, “Guidance” steps you through the key features of FLX S at your own pace, to learn or refresh your skills. Guidance will be automatically open on the bottom 3rd of the internal screen, and will follow your progression through the console. If closed, Guidance can be reopened by pressing  and choosing “Guidance” on the internal screen.

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.

Internal Display

All three consoles include a 7” capacitive multi-touch display which is designed to follow your actions as you use the console. For example, on FLX, if you press , 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.

Navigating the touchscreen

Availability:  FLX  FLX S48  FLX S24

Along the top of the FLX S touchscreen are six square buttons. Additional buttons (e.g. colour, position and effect controls) will appear and disappear to the right of these depending on the capabilities of the fixtures you’re controlling. The currently selected button is highlighted in blue.



Save – FLX S automatically saves your work internally, indicated by a green icon. Press this icon to save to an external USB drive.



Home fixtures – this function key is only available if there are fixtures selected. See the section on “Home” for more information.



Output window – this window displays each fixture and its current intensity as a percentage.



Cue list window – this window displays the list of cues on a specific playback, ready to be progressed by pressing the GO button.



Playback window – this window displays the current functionality of the 24 or 48 faders on the left hand side of the console.



Groups window – this window is used to select fixtures that are often used together. Groups can be automatically or manually created.

Using FLX Range without an External Display

FLX Range consoles can be used without the need of an external display (FLX will automatically detect that an external monitor is not present and display the command line on the internal display instead of the external display).

When there is no external display, pressing **View** will switch between displaying the Playback window and the Multi-Function Faders window. When **Shift** and **View** are pressed together, the Output Window will be displayed.

See “External Display Settings” for more info.

Output Window view options

Availability: FLX FLX S48 FLX S24

On FLX, the Output Window includes the following options when viewed on the external monitor:

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”.

External Display

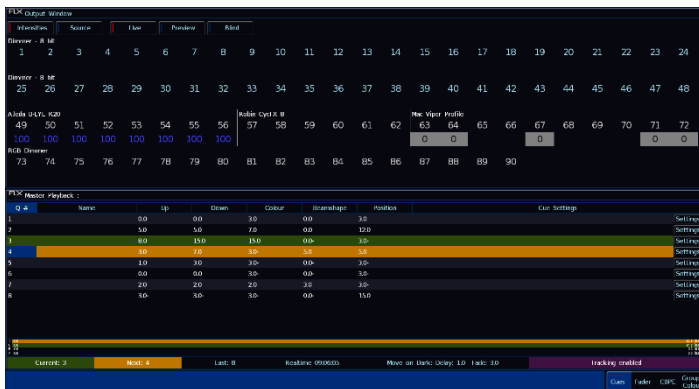
Availability: ✔ FLX ✔ FLX S48 ✘ FLX S24

The optional external DVI-D monitor can display one of four different *desktops* – “Cues”, “Fader”, “CBPE” (Colour, Beam, Position & Effect) or “Groups / Colour”. The currently viewed desktop can be changed by either

touching the relevant button in the bottom right corner of the external display, or by pressing **View** to view the next desktop, and **Shift** and **View** together to view the previous desktop.

“Cues” desktop

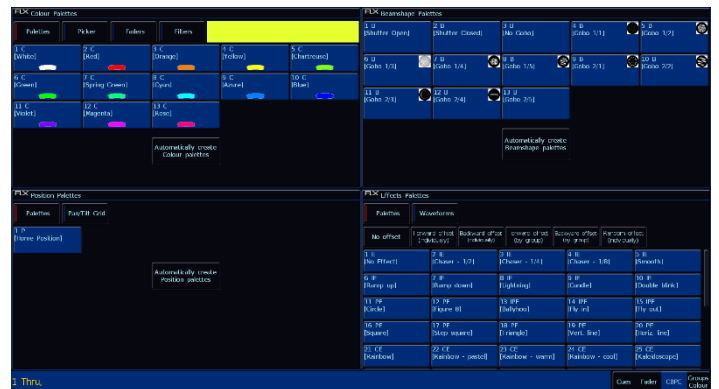
The Cues desktop shows the Output Window in the top half, and the Cues window in the bottom half.



“Cues” desktop on the external display

“CBPE” desktop

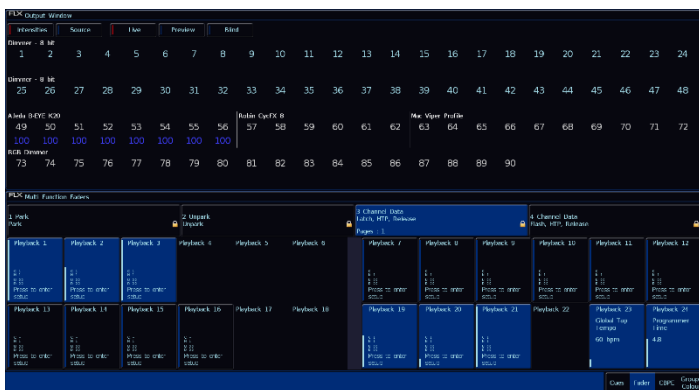
The CBPE desktop shows the four attribute windows (Colour, Beam, Position and Effects) in each corner.



“CBPE” desktop on the external display

“Fader” desktop

The Fader desktop shows the Output Window in the top half, and the Multi-Function Faders window in the bottom half.



“Fader” desktop on the external display

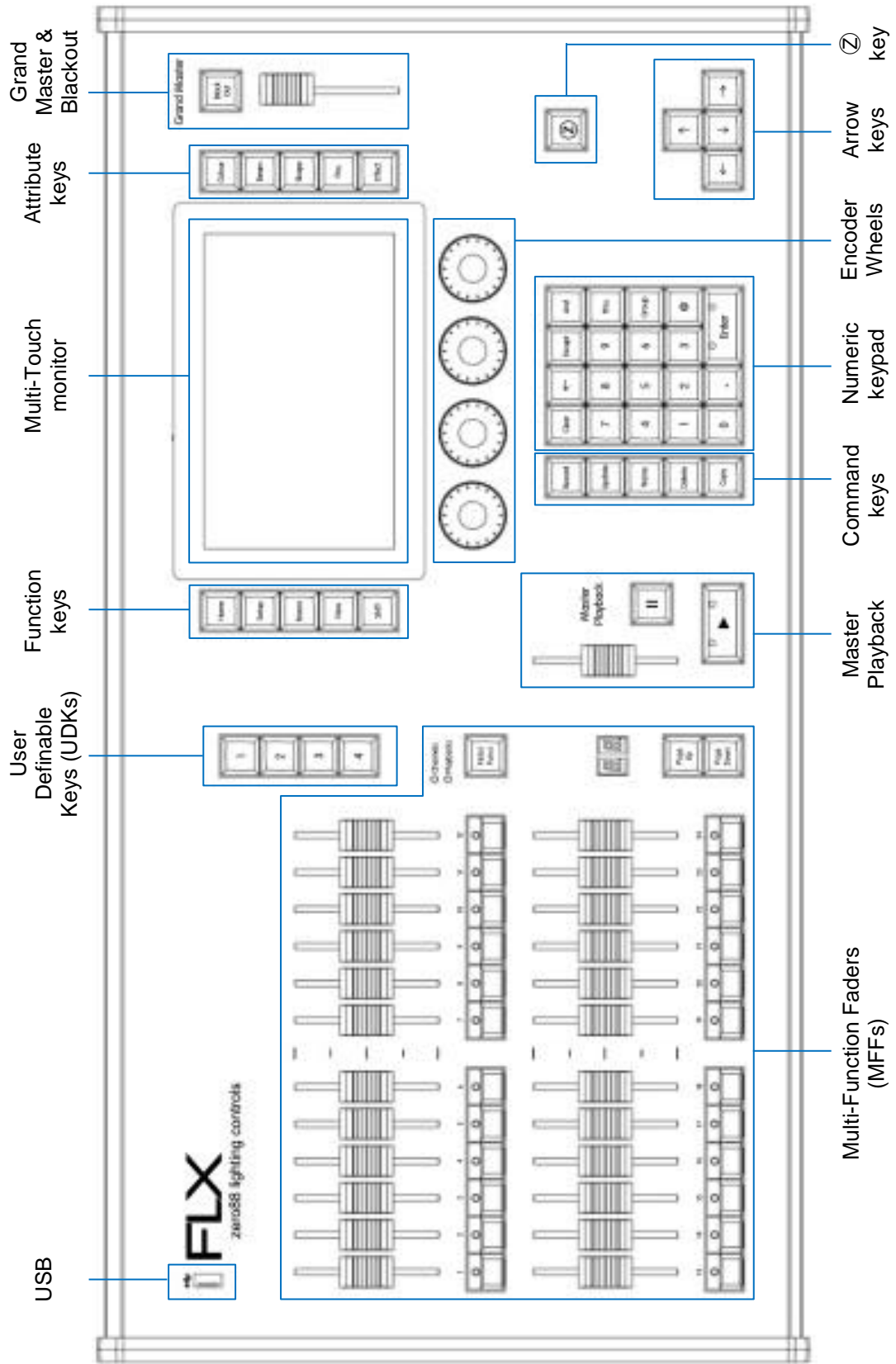
“Groups / Colour” desktop

The Groups / Colour desktop shows the Effects window in the top half, and two Colour windows in the bottom two corners. This allows two separate Colour tools to be viewed simultaneously.

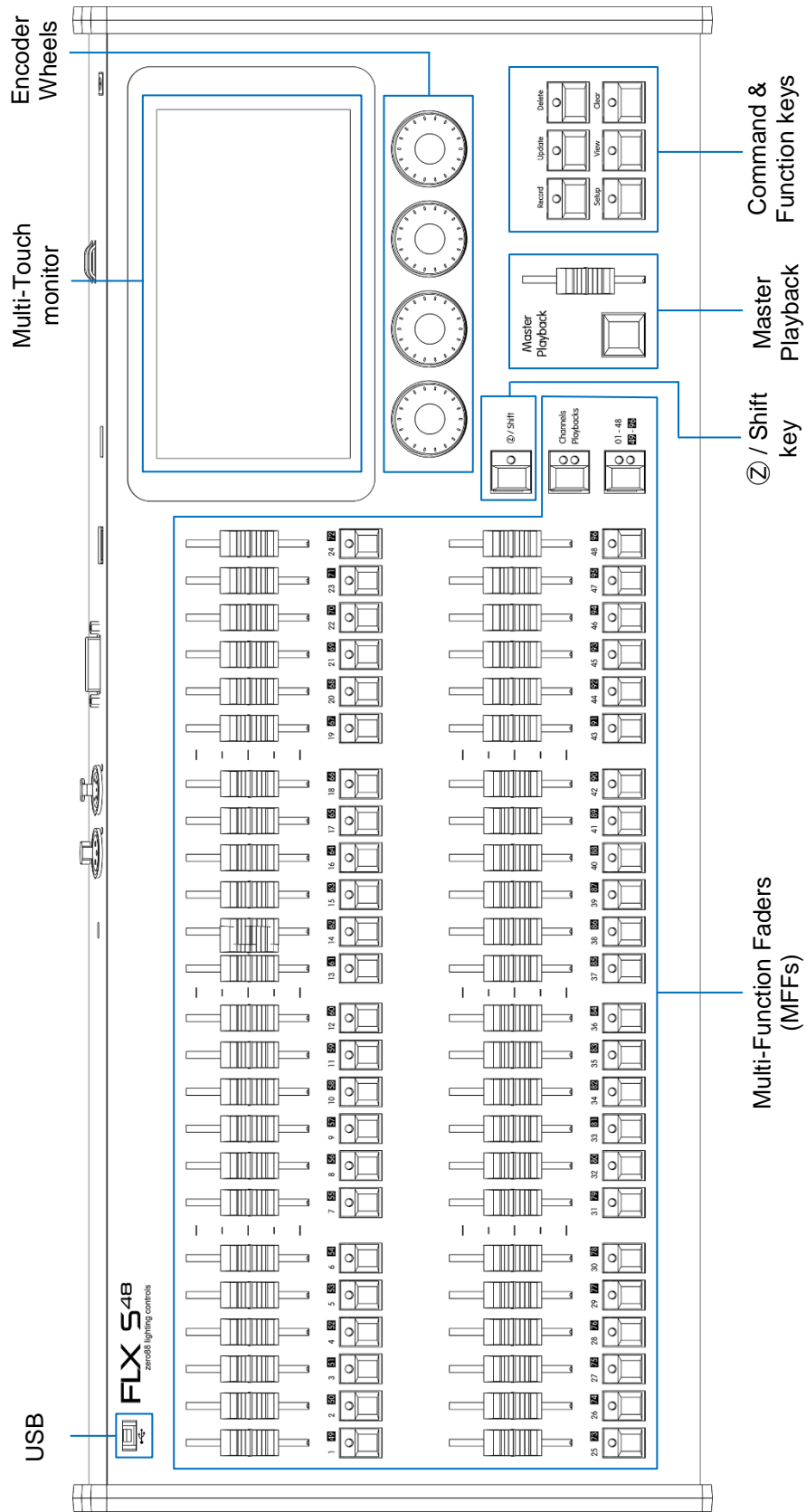


“Groups / Colour” desktop on the external display

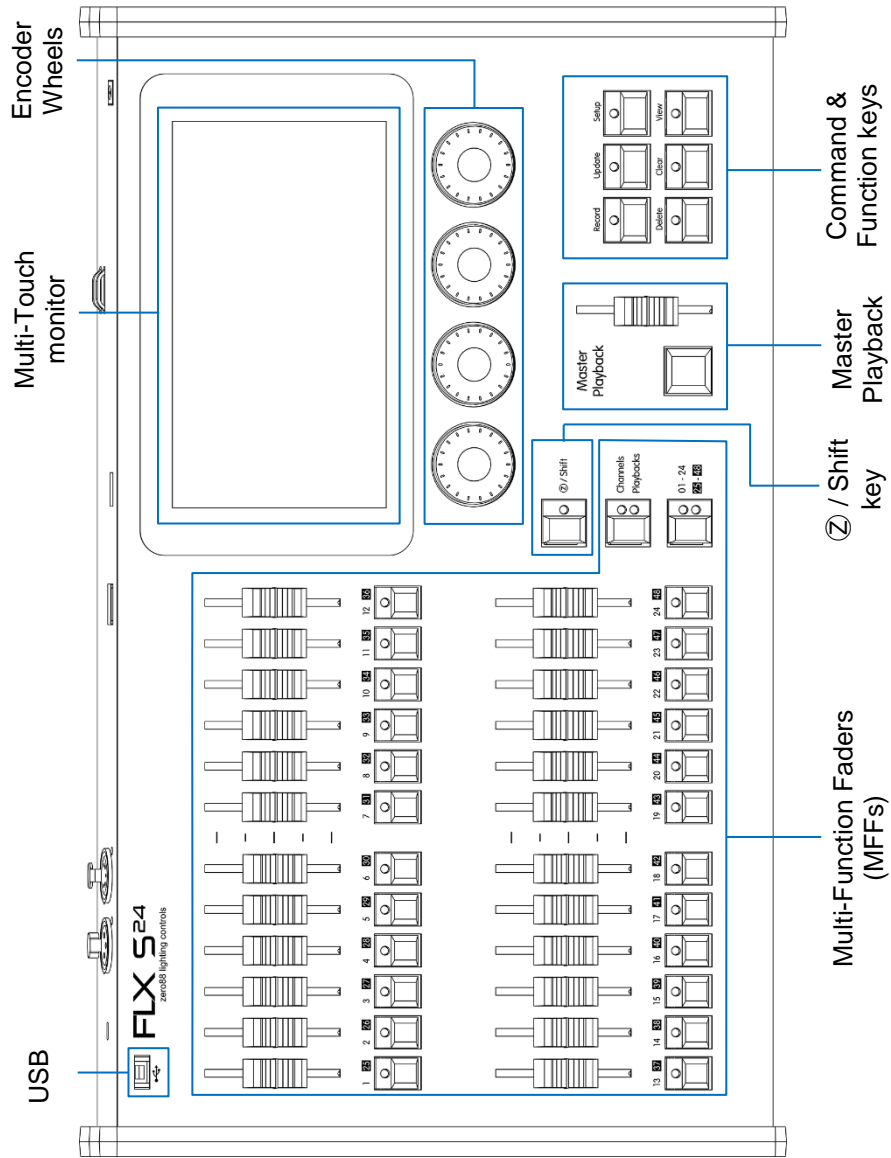
FLX front panel



FLX S48 front panel



FLX S24 front panel



Front panel definitions

Multi-Function Faders (MFFs)

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

FLX Range consoles are equipped with either 24 or 48 Multi-Function Faders. These can quickly and easily be switched between their two functions (“Channels” and “Playbacks”) by using the **Fader Funct.** button.

Channels

When set to “Channels”, the faders directly control each light (or “fixture”) in the rig. Each fixture, no matter what it is, will have a single “Channel Number”, and so will take up a single channel fader. FLX S consoles support double the number of fixtures as there are faders. FLX consoles have no fixture limitation. The Page button can be used to switch the faders between fixtures (see below).

Playbacks (or cues, stacks, submasters or chases)

Lighting “states” (or “scenes”) can be pre-recorded, ready to be recalled later. They are called “cues”, and are recorded onto “playbacks”. Each playback can store a single cue, or multiple cues. FLX consoles support 240 playbacks, plus the “Master Playback”. FLX S consoles support double the number of playbacks as there are faders, plus the “Master Playback”. 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”. We simply call them all playbacks.

Page

On FLX, the page buttons allow you to Page Up or Page Down through all the available Channels or Playbacks (dependant on the current selection of the Fader Function button).

On FLX S, the page button allows you to switch between faders 1 – 24 and faders 25 – 48 (on FLX S24) or faders 1 – 48 and faders 49 – 96 (on FLX S48).

Switching between “Channels” and “Playbacks” will automatically change the page to the page you had previously selected when in that function.

Master Playback

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

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.

On FLX, a double-width Play / GO button and a dedicated pause button is included.

On FLX S, a Play / GO button is included.

User Definable Keys (UDKs)

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

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

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

Function keys 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**).

Command Keys

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

Command keys are used during programming to access commands such as **Record**, **Update** and **Delete**.

Attribute keys

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

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”, “Lightning” and “Rainbow”. These five attribute buttons can be found along the right hand side of the internal touchscreen.

(FLX S has “soft buttons” which appear on the internal touchscreen monitor, instead of physical Attribute keys).

Encoder wheels

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

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. The button in the middle of each encoder is occasionally used to perform an additional, but related, task.

Numeric keypad

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

The main keypad area is made up of a standard numeric keypad. Channels can be controlled using either the keypad or via the faders.

Grand Master & Blackout

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

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 LED within the **Black Out** button flashes slowly when the Grand Master is at any value other than 100%.

The **Black Out** button takes all intensities to 0%. The LED within the button flashes quickly when active. The function of this button can be switched between “Flash” and “Latch” by holding **Setup** and pressing **Black Out**. When set to “Flash”, the button will only be active whilst being held whereas, when set to “Latch”, the button will toggle between being active and turned off each time it’s pressed.

Each time FLX is turned on, the Grand Master is reset to 100% and Black Out is turned off, no matter the position of the physical fader.

(Any Playback can be turned into a Grand Master and Blackout button, making this feature also optionally available on FLX S consoles. See “Advanced Playbacks” for more information).

⌘ / Shift key

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

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

On FLX S, holding ⌘ acts as “Shift”, changing the functionality of other buttons when pressed simultaneously. FLX includes a dedicated **Shift** key.

USB port

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

All consoles include a USB 2.0 port on the front panel. FLX also includes four other USB ports around the console, and FLX S includes one other USB port on the rear of the console. USB ports can be used for:


- Keyboard & Mouse (mouse on external monitor only)
- Touchscreen (DVI-D required, FLX & FLX S48 only)
- External Storage Devices (such as Memory Sticks)
- ZerOS Wings
- Enttec USB to DMX devices (FLX only)

On FLX, the USB ports 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.

FLX S consoles do not include this feature, and therefore it is **not** recommended to use the USB ports for devices such as lights or fans on FLX S consoles.

ZerOS Wing

Minimum Software Requirements

The minimum software requirements are dependent on which console is being used with ZerOS Wing, as shown in the table below. To find out which software your console is running, on the console press the  key and select “System information” on the touchscreen.

	Minimum Software Requirement
FLX range	ZerOS 7.8.3
(Phantom ZerOS for FLX range)	ZerOS 7.8.5
x86 Consoles*	ZerOS 7.9
(Phantom ZerOS for x86)	ZerOS 7.9

*Consoles running x86 architecture are: ORB Series, Solution Series, SCD Server (& Pro), FROG2 and Leapfrog 48 & 96

Setup

ZerOS Wing has been designed to be simple and quick to setup and use. There are no settings, no configuration and no difficult connections. Just plug in via USB and any ZerOS console is instantly upgraded.

Operation

A single button switches quickly between ‘Channels’ and ‘Playbacks’ at any time, and the ‘Page Up’ and ‘Page Down’ buttons are used to either switch between all patched channels on the console, or each page of playbacks. When multiple wings are used, simply setup each Wing onto a different page.

Using ZerOS Wing with FLX

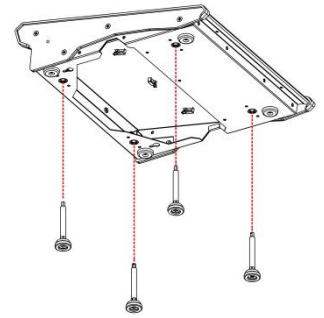
ZerOS Wing has been designed to complement the aesthetic and physical design of the FLX lighting console. Accessories are available to raise ZerOS Wing behind FLX and mechanically connect ZerOS Wing to the side of a FLX console, or to another ZerOS Wing. Up to six ZerOS Wings can be used simultaneously with FLX.

A maximum of one ZerOS Wing can be mechanically connected to either side of the FLX lighting console, and up to four ZerOS Wings can be mechanically connected together and placed behind FLX, as shown below.



Adding feet to raise ZerOS Wing behind FLX

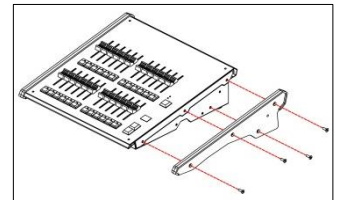
When using ZerOS Wings behind FLX, feet are available which raise ZerOS Wing to match the rear of the console. These are available in packs of four (order code 0021-000006-00). These feet simply screw into the bottom of ZerOS Wing, as shown.



Wing Fig 1

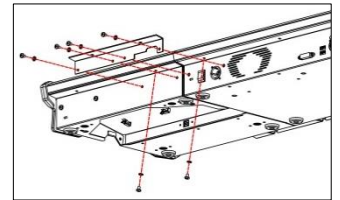
Mechanically connecting ZerOS Wing to FLX

To mechanically connect two ZerOS Wings, or a ZerOS Wing to a FLX, coupling brackets are required (order code 0021-000005-00).



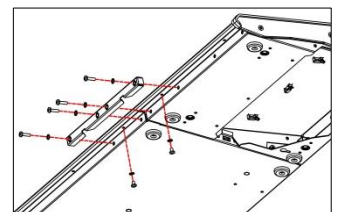
Wing Fig 2

First, remove the two mating sides by removing the four screws, as shown in Wing Fig 2.



Wing Fig 3

Choose the rear coupling bracket (the right angular piece) and place it up against the console and wing, as per Wing Fig 3. The screws required are already in the console, so you'll need to remove these, place the bracket in place, and then screw them back in. There are two in the rear of the console, and four into the top lip.



Wing Fig 4

Now choose the front coupling bracket and place it along the front of the console, as per Wing Fig 4. The open edge should go against the vertical edge of the console. Two screws under the lip will need to be removed, and then replaced with the bracket in place. The other four screws are included within the bracket pack.

ZerOS Server

Operation Modes

ZerOS Server provides three operation modes:

1. FLX Tracking Backup
2. Source Controller emulation
3. iCAN Desk Interface

‘Source Controller Emulation’ and ‘iCAN Desk Interface’ are only available on ZerOS Servers which include CAN support (an out-of-the-factory option). The two modes can be used simultaneously, using the ‘Highest Takes Precedence’ rule per DMX channel.

These three modes are described in greater detail below.




Mounting ZerOS Server

ZerOS Server is designed to be rack mounted into a standard 19” cabinet using 4 x M6 Cage Nuts and 4 x M6 x 16mm screws.

Ventilation must be provided in the rack such that ZerOS Server can freely draw air from its rear ventilation slots.

FLX Tracking Backup

ZerOS Server can operate as a tracking backup unit to FLX. Changes made on FLX are automatically sent over a network and duplicated on the SCD Server, which will take over if communication from the master console is lost.

Console	Tracking Backup support
 FLX	✓
 FLX S48	✗
 FLX S24	✗

Device Settings

The first step of using ZerOS Server as a Tracking Backup unit is to set the ‘desk type’ to emulate FLX. This setting is within:

SETUP > Settings > General > Desk Type

WARNING!
Changing the Desk Type will run a full reset of ZerOS Server – losing any data saved on the console, and requiring you to restart the device.

In this screen you can also give your device a name – helpful when there are multiple consoles on the same network.

Tracking Backup Settings

Tracking Backup can then be enabled within:

SETUP > Devices > Tracking backup

Change ‘Mode’ to ‘Backup’. ZerOS Server will search the network to find FLX consoles waiting to be backed up. If there are more than one console on the network, choose which console to backup by selecting it from the list within ‘Master consoles’. If no consoles are found, choose ‘Manual Entry’ and then enter the IP address of the Master console.

Ensure your ZerOS Server is licenced for the same number of DMX Channels as the FLX you are backing up if you wish ZerOS Server to fully takeover in the event that FLX goes offline.

Source Controller Emulation

'Source Controller Emulation' allows DMX from ZerOS Server to be controlled as 'physical channels' of one or more virtual source controllers. This is only available on ZerOS Servers which include CAN support (an out-of-the-factory option). Normal source controller operations of programming and outputting scenes are supported.

Device Settings

To do this, CAN must first be enabled within setup:

SETUP > Triggers > CAN

In this panel, virtual Source Controllers can be created by pressing "Add". Each virtual Source Controller requires a DMX Start Address and a number of Channels. Only create Source Controllers you intend to use, as large channel counts can take long periods of time to be read into iCAN Soft.

Behaviour from this point forward is as per any physical Source Controller on an iCAN network– scenes can be programmed via iCANsoft and can be triggered via iCAN messages.

Intensity Mixing

ZerOS fixtures, patch, and other fixture settings are not applied to the Source Controller Emulation. Source Controller Emulation only has access to direct DMX addresses.

When both the Source Controller Emulation and ZerOS Desk Interface are being used together, operation is completely separate until the DMX is generated. At this point, ZerOS performs a Highest Takes Precedence (HTP) mix on the outputs. This means that a DMX channel will be outputted at whichever value is highest between ZerOS Desk Interface and CAN Source Controller Emulation.

iCAN Desk Interface

The 'iCAN Desk Interface' maps virtual Areas and Scenes to features within the ZerOS Operating System, such as cues, playbacks and macros. This allows Architectural Lighting Control systems to trigger Entertainment Lighting Control style functions. This is only available on ZerOS Servers which include CAN support (an out-of-the-factory option). CAN must be enabled (see instructions under 'Source Controller Emulation').

Programming

When working as a Desk Interface, ZerOS Server is designed to be programmed on a full console, and then have the showfile transferred onto the device either by USB or via Tracking Backup. However, direct programming and editing can be done via Mouse and Keyboard, or via a Touch Screen.

The first step of using ZerOS Server like this is to set the 'desk type' so the SCD Server can emulate the console you are using. Feature availability for ZerOS Server is based upon whichever console it's currently emulating. This setting is within:

SETUP > Settings > General > Desk Type

WARNING!

Changing the Desk Type will run a full reset of ZerOS Server – losing any data saved on the console, and requiring you to restart the device.

Grand Master

The Grand Master can also be assigned a virtual Area Number. This setting is within:

SETUP > Triggers > CAN

Scene Modify messages can be used to alter the current Grandmaster level (Latest Takes Precedence with the physical fader).

Cues & Playback

Each Playback has the option of adding a CAN Virtual Area. This can be added once at least one cue has been recorded into a Playback. Choose 'Stack Setup' (or use the syntax STACK x SETUP) and enter a number into 'CAN Virtual Area'. Scene messages will trigger the relative cue within that stack (Scene 1 = Cue 1 etc.).

Select Next Scene and Get Current Scene commands are also supported.

If an Alarm Set is received, Cue 132 will be triggered. If an Alarm Clear is received, Cue 1 will be triggered.

Macros

Macros can be assigned a virtual Area Number. Macros will be triggered when receiving the relative Scene Number from within the defined Area (Scene 1 = Macro 1 etc.). The Macro Virtual Area can be set within:

SETUP > Triggers > CAN

Controlling Intensities

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)

Availability: FLX FLX S48 FLX S24

Ensure that the MFFs are in channel mode by pressing the **Fader Funct.** button.

When set to “Channels”, the 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. The **Page** button(s) can be used to switch between channels (99 pages of 24 channels on FLX, two pages of 48 channels on FLX S48, and two pages of 24 channels on the FLX S24). Grey outline boxes in the Output Window show which set of 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 being played back from a cue, 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

Availability: FLX FLX S48 FLX S24

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** **@** **100** **Enter** ...

This sets the intensity of channel 1 to 100%.

... **2** **And** **3** **@** **75** **Enter** ...

This sets the intensity of channels 2 and 3 to 75%.

... **5** **Thru** **10** **@** **50** **Enter** ...

This sets the intensity of channels 5 through to 10 to 50%.

... **5** **Thru** **10** **Except** **7** **@** **65** **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** **@** **25** **Enter** ...

This sets the intensity of channels 1, 2, 3, 7, 8, and 9 to 25%.

... **1** **And** **7** **Thru** **12** **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).

(On FLX S, pressing the **Z** button displays a number pad which can be used to type commands, making this feature also optionally available on FLX S consoles).

Encoder wheels

Availability: FLX FLX S48 FLX S24

To change the intensity of a fixture via an encoder wheel, first select the fixture(s) required. Channels are automatically selected when channel faders are moved, but can be changed using the buttons under the faders (MFFs must be in “channel” mode) or, on FLX, by using similar commands described above (just press **Enter** after the selection, in place of **@** ...). For example:

... **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 store up to 240 groups, FLX S48 can store up to 96 groups and FLX S24 can store up to 48 groups. Groups can also store and recall intensities of all the fixtures stored within that group.

Groups window

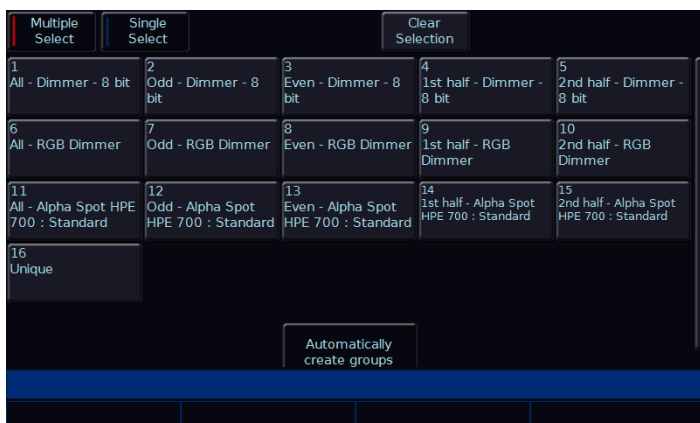
The Group window is automatically displayed on the internal display when the **Group** button is pressed. Groups can be selected and deselected directly within this window.

 (On FLX S, **Group** is a soft button along the top of the internal touchscreen as shown to the left).

Automatic groups

FLX Range 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".



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

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.

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

Recording groups

You can create your own groups of fixtures, eg Blinders, FOH movers, PARs on LX3 etc. Simply select the fixtures which you wish to be in the group (using either the channel buttons or syntax), ensure you are viewing the groups window and then press **Record** followed by **touching an empty group**. This records whichever group you touch on the touch screen.

On FLX, groups can also be recorded using syntax, along with opening the Groups window during the command, rather than before. Select the fixtures which you wish to be in the group 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. You do not need to press the "group" button if the groups window is already displayed.

If the selected fixtures have a tagged intensity value (red value in the Output Window), this will also get stored within the group – this is called an "Intensity 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 offsetting effects across selections of fixtures or, on FLX, when using the next / previous keys within Highlight.

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 (see "naming groups").

Using groups via touch

Availability: FLX FLX S48 FLX S24

Using the built-in touch screen, you can select and deselect groups directly just by touching them.

Touching multiple groups will select all of those groups. ZerOS 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. On FLX, the previous channels being deselected can be avoided by typing **And** first, and then selecting another group(s).

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

“Single Select” vs “Multiple Select”

Availability: FLX FLX S48 FLX S24

On FLX and FLX S48, there are two Group Selection modes available - “Single Select” and “Multiple Select”, selectable via the buttons along the top of the Groups window when viewed on the external monitor

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 act as described above, under “Using groups via touch”.

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

Referencing Intensity Groups

Availability: FLX FLX S48 FLX S24

When a fixture is taken to its **full** level within an Intensity Group (using any method) and then recorded into a cue, ZerOS references the value back to the group’s intensity, so if the group is updated, that cue will automatically be updated to the new intensity too.

Using groups via syntax

Availability: FLX FLX S48 FLX S24

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.



Groups window (on FLX) with various fixtures current selected highlighted in blue

Naming groups

Groups can be named by holding **Setup** and pressing the **Group** on the touchscreen. An onscreen keyboard will then be displayed to type the group's name. Press **OK** to confirm.

On FLX, Groups can also be named using syntax by typing one of the following commands:

... **Group** **2** **0** **7** **Name** ...

This displays an onscreen keyboard to name Group 207

... **Name** **Group** **5** **Enter** ...

This displays an onscreen keyboard to name Group 5

... **Name** **Group** *touch group* ...

This displays an onscreen keyboard to name whichever group you touch on the touch screen. You do not need to press the "group" button if the groups window is already displayed.

An onscreen keyboard will then be displayed to type the group's name. Press **Enter** or **OK** 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 **Name** button to name that group.

Updating groups

To update a group, make a new selection of fixtures and press **Update** followed by *touching the specific group*. This updates whichever group you touch on the touch screen.

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

On FLX, Groups can also be updated using syntax. Make a new selection of fixtures and then type one of the following commands:

... **Group** **4** **Update** ...

This updates Group 4

... **Update** **Group** **1** **4** **Enter** ...

This updates Group 14

... **Update** **Group** *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.

Deleting Groups

To delete a group, press **Delete** followed by *touching the specific 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.

On FLX, Groups can also be deleted using syntax by typing one of the following commands:

... **Group** **4** **2** **Delete** ...

This deletes Group 42

... **Delete** **Group** **7** **Enter** ...

This deletes Group 7

... **Delete** **Group** *touch group* ...

This deletes whichever group you touch on the touch screen. You do not need to press the "group" button if the groups window is already displayed.

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 are automatically selected when the channel faders are moved. The selection can be changed by using the buttons under the faders (MFFs must be in “channel” mode for this to work) or, on FLX, by using the commands described in this manual under Controlling Intensities > Commands (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.

Default

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 these settings are taken from ZerOS Library. They are set to values that will produce an open white beam (no colour, gobos or effects) at a central position (Pan and Tilt at 50%) but with an intensity of 0%.

The Default values can be edited on an individual fixture or group basis as required, by changing the fixture parameters to the desired values (instructions below), pressing **Record**, pressing the **Home** button (see below) and then selecting **Default**. Standard Record rules apply, including such features as “Tagging”, “Smart Tag”, “Snap Shot” and “Referencing” (see each of the relevant sections within this manual).

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 the fixture’s colour, beam and position parameters to the same values as “Default”, but with an intensity of 100%.

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



(On FLX S, **Home** is a soft button along the top of the internal touchscreen as shown to the left).

The Home values can be edited on an individual fixture or group basis as required, by changing the fixture parameters to the desired values (instructions below), pressing **Record**, pressing the **Home** button (see below) and then selecting **Home**. Standard Record rules apply, including such features as “Tagging”, “Smart Tag”, “Snap Shot” and “Referencing” (see each of the relevant sections within this manual).

Max Level

The Max Level (or, “topset”) 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%.

The Max Levels can be edited on an individual fixture or group basis as required, by changing the fixture parameters to the desired values (instructions below), pressing **Record**, pressing the **Home** button (see below) and then selecting **Max Levels**. Standard Record rules apply, including such features as “Tagging”, “Smart Tag”, “Snap Shot” and “Referencing” (see each of the relevant sections within this manual).

Choosing an attribute

Each fixture has its own set of parameters (eg Intensity, Colour, Gobo, Pan, Tilt etc.), which are grouped together into three attributes (Position, Colour and Beamshape).

Once a fixture, or group of fixtures, have been selected, choose an attribute. On FLX, this is done by pressing one of the attribute buttons to the right of the internal display. On FLX S, the relevant attributes will appear along the top of the touchscreen, to the right of the six icons.

Selecting an attribute 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 button again selects the next group of parameters.

The sensitivity, mode and behaviour of the encoder wheels can be changed in Setup. (See "

Attribute specific settings" on page 68 for more information).

Central encoder button

On parameters with discrete values (such as colour, gobo, shutter, macro, control etc – indicated by two lines of text above the encoder, rather than one line of text and a number), 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 (Colour, Beamshape, Position and Effect) has 240 palettes on FLX, 96 palettes on FLX S48 and 48 palettes on FLX S24.

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.

ZerOS can automatically create palettes if required (see “Automatic Palettes” below).

Palette Windows

Each attribute has its own palette window. This is opened automatically when you press the appropriate attribute button - **Colour**, **Beam**, **Position** or **Effect**. (These are physical button on FLX, but soft button on FLX S. On FLX S, these soft buttons will only be visible if the *currently* selected fixtures support that specific attribute).

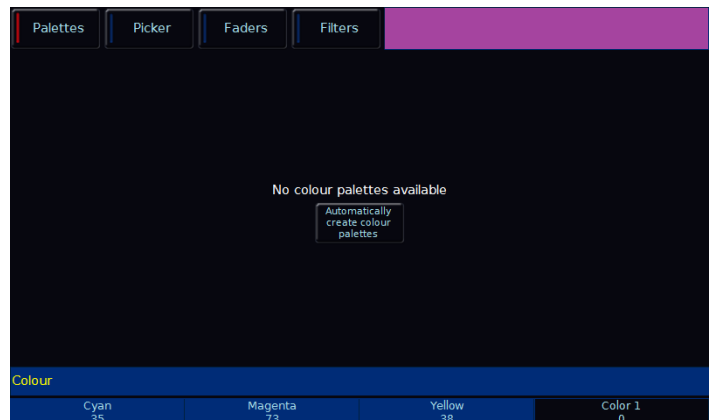
The palette window contains a soft button for each of the palettes, containing a palette number and a name.

On FLX and FLX S48, palettes can also be displayed on the external monitor by pressing “CBPE” in the bottom right corner of the external monitor.

Automatic palettes

ZerOS can automatically create palettes for all four 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 palette (for example, a colour palette), set up the fixtures as required (for example, all red) and whilst viewing the colour window, press **Record** followed by **touching an empty palette**.

This process is the same for other palettes, just view the correct attribute before pressing **Record**.

On FLX, palettes can also be recorded using syntax, along with opening the Palettes window during the command, rather than before. Set up the fixtures as required and then type one of the following commands:

```
... Record Colour 2 0 Enter ...
```

This records Colour palette 20.

```
... Record Colour touch palette ...
```

This records whichever colour palette you touch on the touch screen. You do not need to press the “colour” button if the colour window is already displayed.

To record the data as a different kind of palette, simply replace **Colour** with **Beam**, **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, simply choose a palette on the internal touchscreen. 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.

FLX users can type the following command:

... **Colour** **2** **0** **Enter** ...

This applies Colour Palette 20 to the currently selected fixtures.

... **1** **8** **Thru** **2** **3** **Colour** **2** **9** **Enter** ...

This applies Colour Palette 29 to fixtures 18, 19, 20, 21, 22 and 23.

Referencing palettes

If you use palettes, and then record a cue or UDK, the console will record a reference to the palette rather than the actual parameter values. 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 remove the need of updating each cue individually when you move venue.

Naming Palettes

Palettes can be named by holding **Setup** and pressing the **Palette** on the touchscreen. An onscreen keyboard will then be displayed to type the palette's name. Press **OK** to confirm.

On FLX, Palettes can also be named using syntax by typing one of the following commands:

... **Colour** **2** **0** **Name** ...

This displays an onscreen keyboard to name Colour Palette 20

... **Name** **Colour** **3** **Enter** ...

This displays an onscreen keyboard to name Colour Palette 3

... **Name** **Colour** **touch palette** ...

This displays an onscreen keyboard to name whichever Colour Palette you touch on the touch screen. You do not need to press the "colour" button if the Colour window is already displayed.

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 press **Update** followed by **touching the relevant palette**. This updates whichever palette you touched on the touch screen.

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

On FLX, Palettes can also be updated using syntax. Make the changes you want and then type 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.

Deleting Palettes

To delete a palette, press **Delete** followed by **touching the relevant 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.

On FLX, Palettes can also be deleted using syntax by typing one of the following commands:

... **Colour** **4** **2** **Delete** ...

This deletes Colour Palette 42

... **Delete** **Beam** **7** **Enter** ...

This deletes Beamshape Palette 7

... **Delete** **Colour** **touch colour palette** ...

This deletes whichever palette you touch on the touch screen. You do not need to press the "colour" button if the colour window is already displayed.

Colour

Palettes

Availability: FLX FLX S48 FLX S24

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.

(For more information on palettes, see “Palette Windows” on page 27)



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

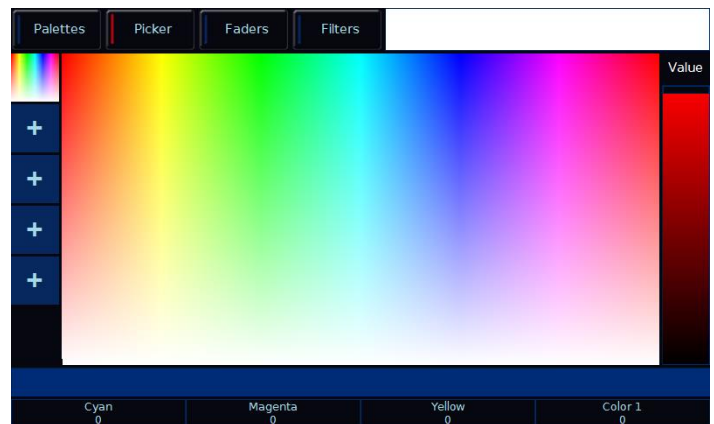
Colour Picker

Availability: FLX FLX S48 FLX S24

The “Colour Picker” tab (shown top right), allows you to select a colour for use in colour mixing (CMY/RGB) fixtures. Just touch the picker using the built in touch screen, and the colour of the selected fixture will be set to the colour pressed.

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

You can select multiple fixtures and “fan” them across the picker by using two fingers and multi-touch. The first selected fixture (defined by the order of selection) will be at your first finger, the last selected fixture will be at your second finger, and all the ones in-between will spread between these two points.

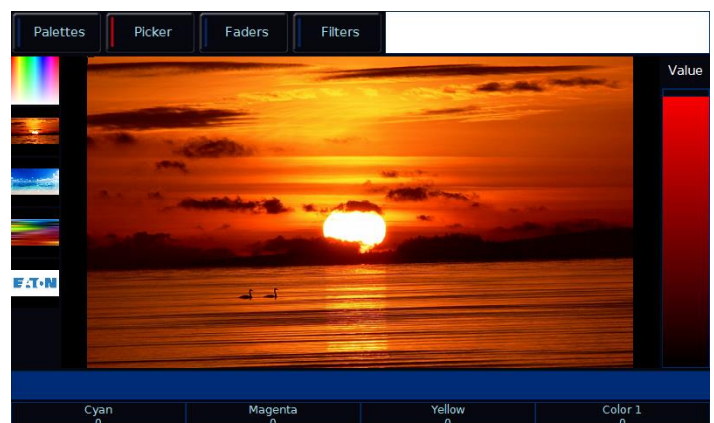


“Colour Picker” screen

Image Picker

Availability: FLX FLX S48 FLX S24

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 company’s 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.

The Image Picker is also multi-touch.

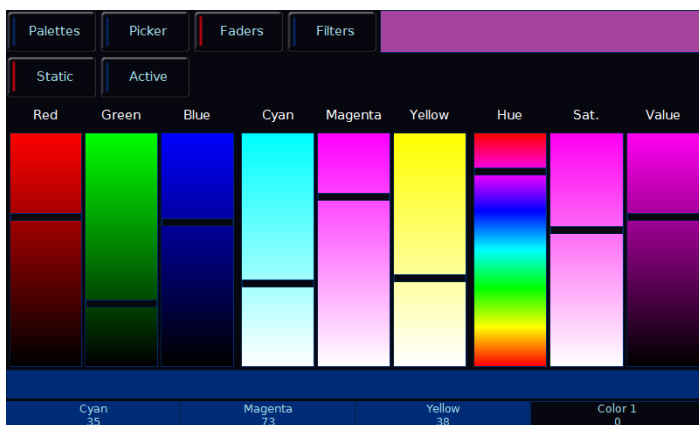
Faders (Static & Active)

Availability: FLX FLX S48 FLX S24

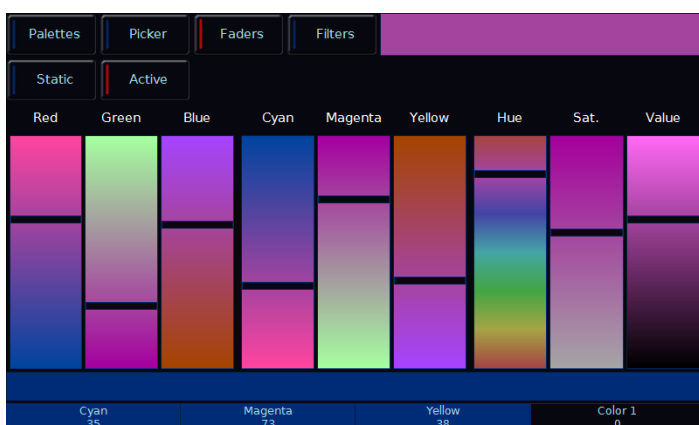
Clicking “faders” along the top of the Colour Window opens the Colour Faders view. There are two options available for this view – “Static” and “Active”, as shown below.

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

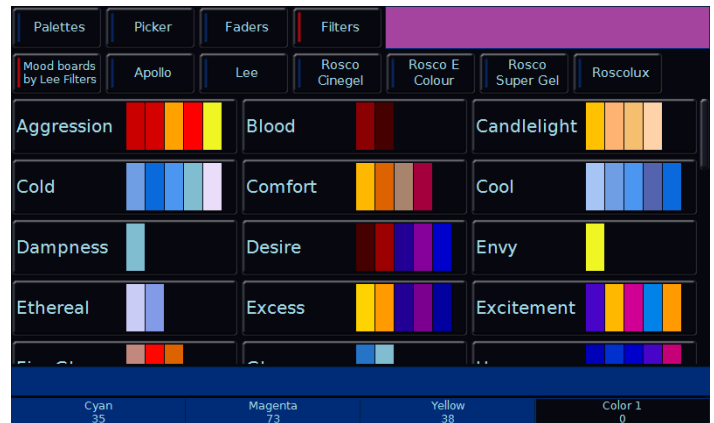


“Colour Faders” screen with exactly the same settings as above, but in “Active” mode

Mood boards by Lee Filters

Availability: FLX FLX S48 FLX S24

Clicking the “Mood boards by Lee Filters” tab (on FLX, this is within “Filters”) displays a window 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 well together for that mood. Some moods have more than one selection of colours, such as “Moonlight” which has “Realistic” & “Romantic” selections.



“Mood boards by Lee Filters”

Filters

Availability: FLX FLX S48 FLX S24

Clicking “Filters” along the top will take you to the full colour filter libraries from Apollo, Lee and Rosco.



Rosco Super Gel filter library

Colour Edit Mode (RGB / CMY)

Availability: FLX FLX S48 FLX S24

“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 “

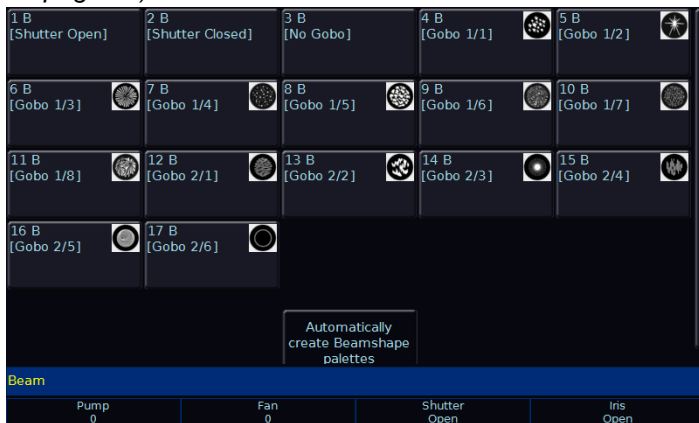
Attribute specific settings” on page 68).

Beamshape

Palettes

An auto palette is generated for each Gobo present on each gobo wheel. “No Gobo” is an auto palette that sends all the “Gobo” parameters to their default values. Shutter will be given two auto palettes (Shutter Open and Shutter Closed).

(For more information on palettes, see “Palette Windows” on page 27)



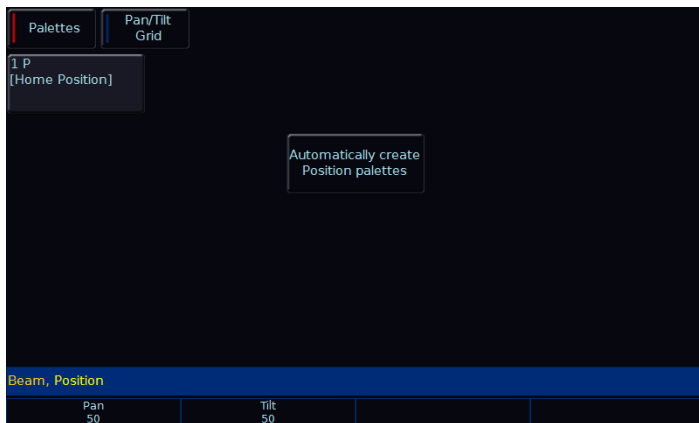
“Beam Palettes” window after “Automatically create beam palettes” has been selected.

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 27)



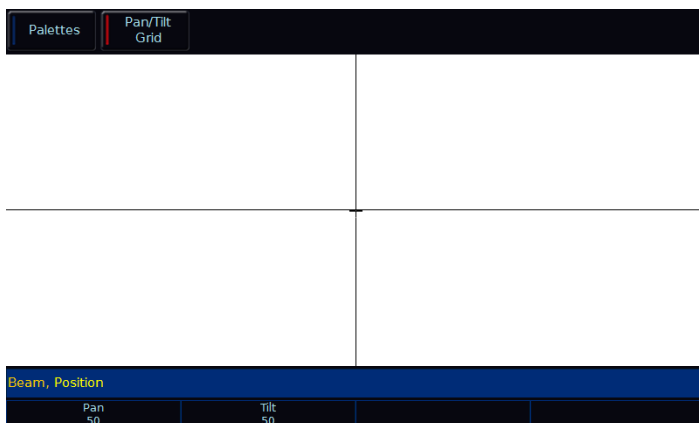
“Position Palettes” window after “Automatically create position palettes” has been selected.

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.

You can select multiple fixtures and “fan” them across the Pan / Tilt Grid by using two fingers and multi-touch. The first selected fixture (defined by the *order* of selection) will be at your first finger, the last selected fixture will be at your second finger, and all the ones in-between will spread between these two points.



“Pan / Tilt Grid” in the position window

Effects

Unlike the other three attributes, Effects do not directly control parameters of the selected fixtures. 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

Availability: FLX FLX S48 FLX S24

The desk can generate a number of standard effects, as shown on the following page, by clicking the “Automatically create effect palettes” button.

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 27)

No offset	Forward offset (individually)	Backward offset (individually)	Forward offset (by group)	Backward offset (by group)	Random offset (individually)
1 E [No Effect]	2 E [Chaser - 1/2]	3 E [Chaser - 1/4]	4 E [Chaser - 1/8]	5 E [Smooth]	
6 IE [Ramp up]	7 E [Ramp down]	8 E [Lightning]	9 E [Candle]	10 E [Double blink]	
11 PE [Circle]	12 PE [Figure 8]	13 PE [Ballyhoo]	14 PE [Fly in]	15 PE [Fly out]	
16 PE [Square]	17 IE [Step square]	18 PE [Triangle]	19 PE [Vert. line]	20 PE [Horiz. line]	
21 CE [Rainbow]	22 CE [Rainbow - pastel]	23 CE [Rainbow - warm]	24 CE [Rainbow - cool]	25 CE [Kaleidoscope]	

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

Intensity auto effect palettes:

Chaser – 1/2 (includes offset)



Chaser - 1/4 (includes offset)



Chaser - 1/8 (includes offset)



Smooth (includes offset)



Ramp up (includes random offset)



Ramp down (includes random offset)



Lightning



Candle (includes random offset)



Double blink



Position & beamshape auto effect palettes:

Circle (includes offset)

Figure 8 (includes random offset)

Ballyhoo (includes random offset)

Fly In (includes random offset)

Fly Out (includes random offset)

Square (includes offset)

Step Square (includes offset)

Triangle (includes offset)

Vert. Line (includes offset)

Horiz. Line (includes offset)

Iris Fade (includes random offset)

Iris Step (includes random offset)

Zoom Fade (includes random offset)

Zoom Step (includes random offset)

Focus Fade (includes random offset)

Colour auto effect palettes:

Rainbow (includes offset)



Rainbow – pastel



Rainbow – warm (includes random offset)



Rainbow – cool (includes random offset)



Kolidoscope (includes random offset)



Sparkle – red (includes random offset)



Sparkle – green (includes random offset)



Sparkle – blue (includes random offset)



Sparkle – yellow (includes random offset)



Sparkle – magenta (includes random offset)



Fade – red/white (includes offset)



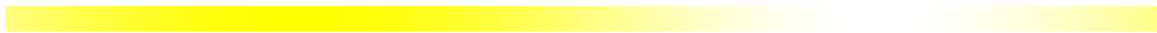
Fade – green/white (includes offset)



Fade – blue/white (includes offset)



Fade – yellow/white (includes offset)



Fade – blue/orange (includes offset)



Emergency – blue



Emergency – red/blue



Warning



Fire



Fireworks



Speed, Size, Offset and Rotation Encoders

Availability: FLX FLX S48 FLX S24

Attribute specific settings"on page 68 for more information).

When you select an 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 and Rainbow), 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.

When applying some of the standard effects, base values of parameters maybe automatically changed to allow the effect to work correctly. For example, applying a "rainbow" effect will change the base values of the Red, Green and Blue parameters to 50%. Choosing "No Effect" will **not** return the base values back to their previous values.

Some effects are automatically fanned across fixtures. Should you require changing this fan either use the Offset buttons along the top of the Effect window or 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 "

Waveforms

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

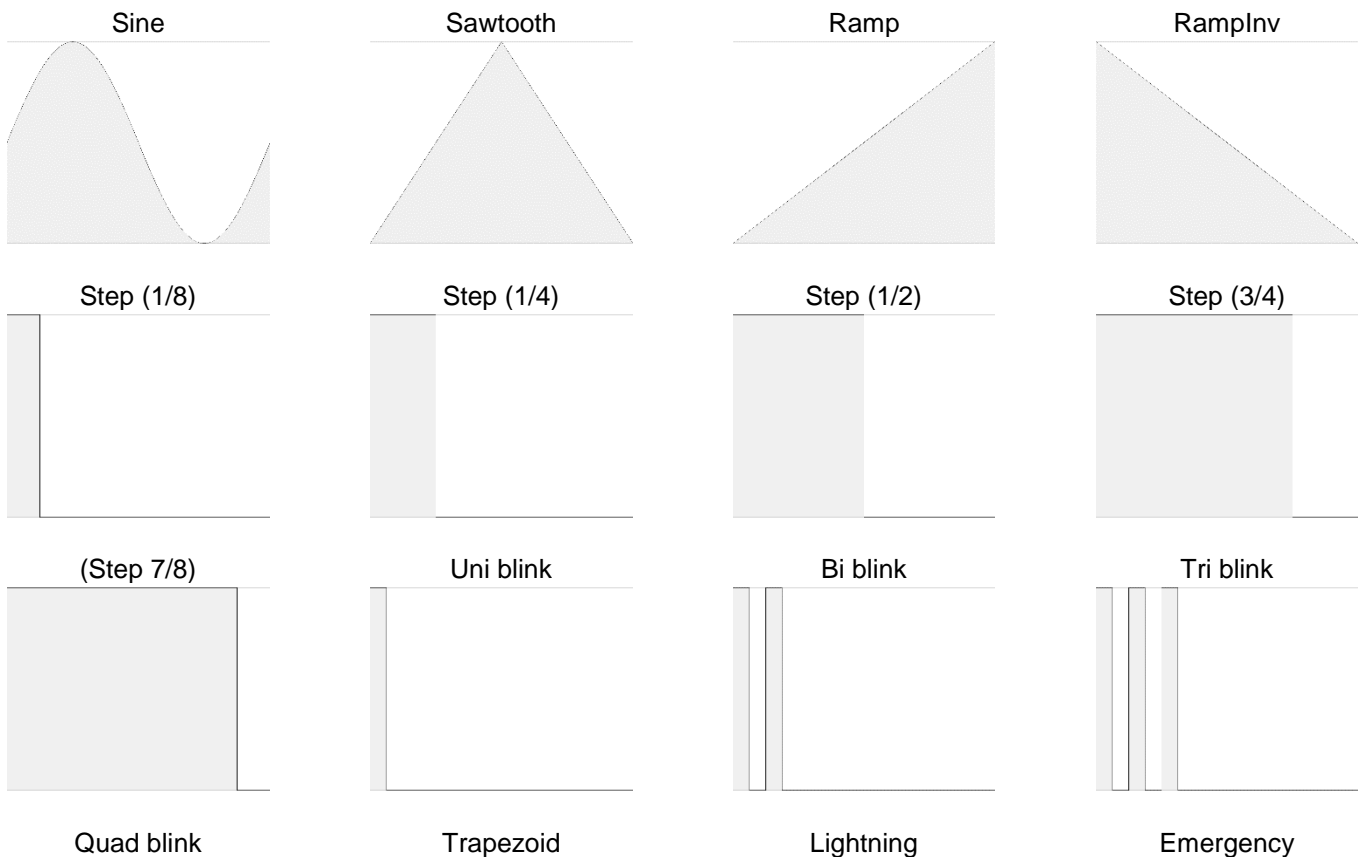
“Waveforms” along the top of the Effects Window displays the Effect Parameters for each parameter of the selected fixture(s). Adjusting any of the effect parameters using the control wheels is reflected in the Effects Window.

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 are listed down the left hand side of the table and the effect parameters across the top of the table.

Waveform functions:



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.

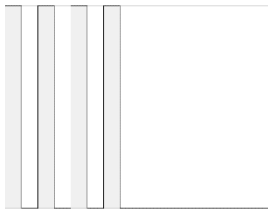
Speed determines the speed of the effect and also the “direction” of movement effects, where -100 is fast anticlockwise, 0 is stop, and +100 is fast clockwise.

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

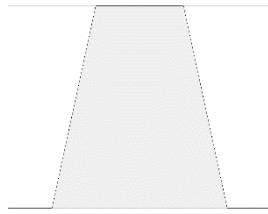
Offset determines the fixture’s offset into the effect.

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.

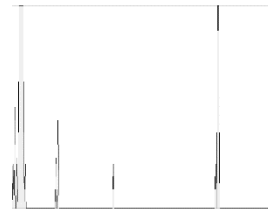
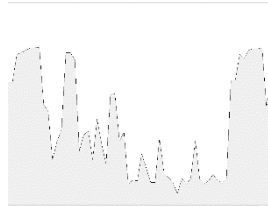
Rotation cannot be performed on a per parameter basis and can only be applied to the Pan and Tilt parameters together. Therefore, the Rotation parameter can be adjusted via the control wheel, but is not displayed in the Effects Window.



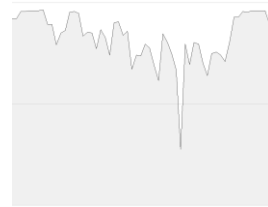
Emergency 2



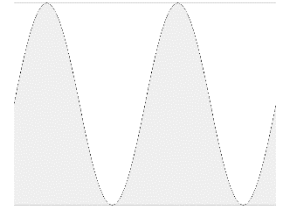
Flicker 1



Flicker 2



Sine*2



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. FLX supports 241 playbacks, FLX S48 supports 97 playbacks and FLX S24 supports 49 playbacks. All consoles 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 buttons below the faders are “Go” buttons when several cues are recorded onto the Playbacks. If a single cue is recorded on a Playback, the button acts as a “Flash” function. This can be configured in the Playback Setup window (see chapter entitled “Playback Settings”).

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 playbacks, or the “Master Playback”.

On FLX & FLX S48, if you are using an external monitor when dealing with cues, we suggest viewing the “Cues” desktop. If you do not have an external monitor, or are using the FLX S24, the two windows discussed below (“MFF Window” and “Playback Window”) will appear on the internal monitor when you press **View**. Pressing **View** again will switch between the two windows. Alternatively, you can use the two icons on the top left of the screen:



“Cue List” window and “Playback Window” icons on FLX S.

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. The Master Playback is described as “Playback 0” within the ZerOS software and is always available - it doesn’t change function when “Channels/Playbacks” or “Page” is pressed.

There’s nothing special or different about the Master Playback compared to the other playbacks, apart from on FLX there’s a double-width (play/go) button and a dedicated (pause) button and on FLX S there’s a quieter (play/go) button.

Multi-Function fader window

The Multi-Function Fader window shows the current status of the 24 (or 48) 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** > **Settings** > **Operational** > **MFF Window Playback action** 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 button of the playback you wish to view – this could be any of the MFFs, or the Master Go button (make sure the faders are in “Playback” mode). This will now display the cues in 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, hold the **Setup** button and then press the playback you wish to name using the buttons under the faders. This will open the Playback Settings window which, under the **Advanced** tab, includes an option to name the playback.

FLX users can alternatively press the **Name** button and then press the button of the playback they wish to name, providing a quicker method of naming playbacks.

Copying playbacks

To copy one playback to another playback, press the **Copy** button (FLX S users will need to press the **Z** key to open the “Z Window” which includes a **Copy** button). Now 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. 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.

On FLX, pressing either **Down** or **Enter** will move to 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. (To delete a cue, view the “Cues” chapter),

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 **Grand Master**, **Global BPM**, **Programmer Time** and **Speed Override**.

Playback settings

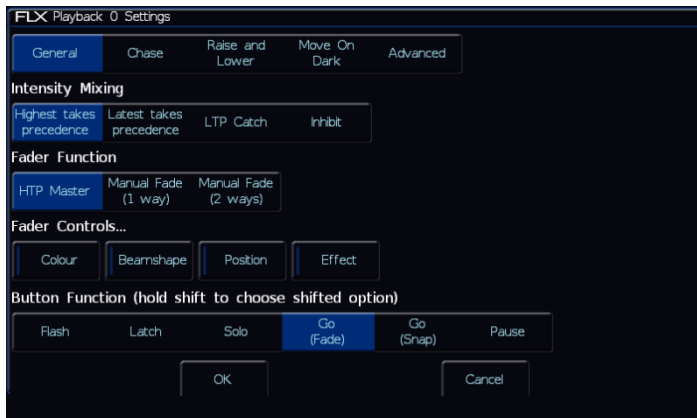
The settings for an individual Playback are adjusted within the Playback Setup window. To display this window, hold down **Setup** and press the button below the playback fader. Alternatively, in the Multi-Function Faders window, press the playback you wish to change the settings of (this is dependent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

The Playback Setup window is split into five sections – **General**, **Chase**, **Raise and Lower**, **Move on Dark** and **Advanced**. These are detailed on the following pages 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.



General

The “General” tab is split up into four parts, as shown and detailed below.



Playback Setup window – General tab

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.

Yet another application is to enable Fader Controls for “effects”, so the effects grow in size and speed as the Playback is moved up.

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.

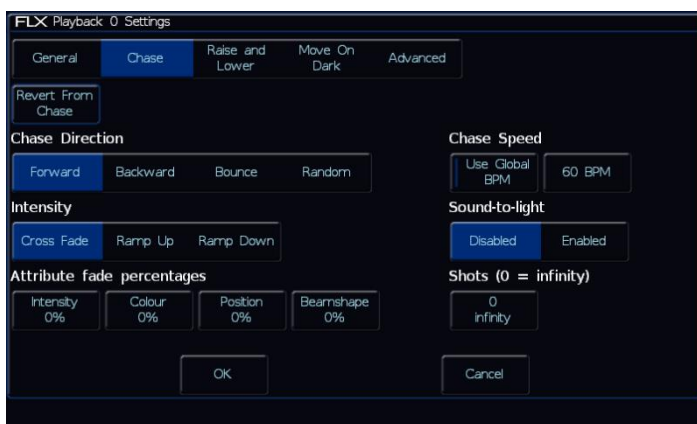
The default option changes dependant on the “status” of the playback. However, once this setting has been changed by the user it will not change again automatically, even if the playback “status” changes.

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))

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.



Playback Setup window – Chase tab

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.

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.

Alternatively, “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

Availability: FLX FLX S48 FLX S24

When enabled, each step is triggered by a bass beat on the audio input on the desk rather than the BPM 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.

Raise and Lower

The various options are described below:



Playback Setup window – Raise and Lower tab

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

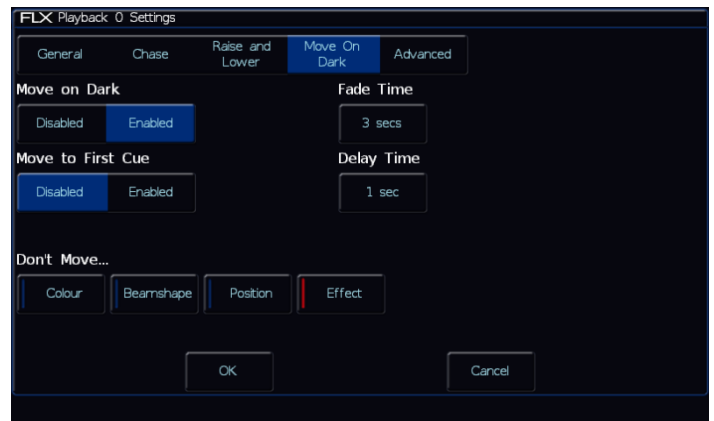
This time simulates a time the physical fader is raised over. So, setting it to 5 seconds, and pulling up the fader instantly, will instead take 5 seconds to fade up the playback.

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.

Move on Dark

The various options are described below:



Playback Setup window – Move on Dark tab

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), ZerOS 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, once the fixtures go dark for the last time in the playback, they will not move.

Fade Time

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

Delay Time

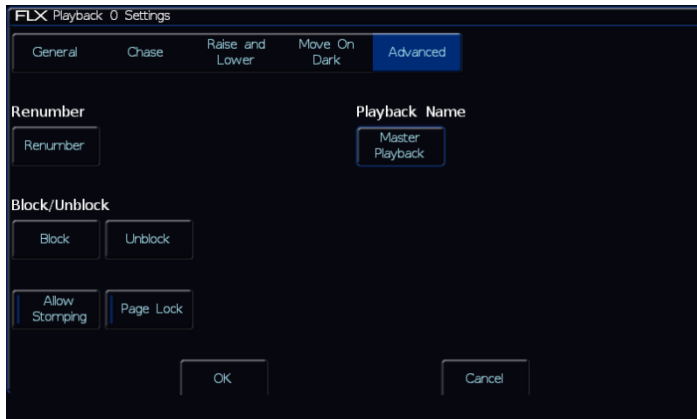
The time the ZerOS waits after a fixture reaches blackout before move on dark kicks in.

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.

Advanced

The various options are described below:



Playback Setup window – Advanced tab

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 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.

Playback Name

This allows a Playback to be named, which is displayed within the MFF window. (FLX users can also use syntax to name a playback).

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, press **Record** and then press the **Go** of the Playback you wish to record the Cue into (for example, the Master Playback Go button).

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”, ZerOS will ask you to raise the Playback fader. Once done, ZerOS 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

FLX user have the option to use syntax. 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.

“Point Cues” can be recorded in between other cues. For example, to add an extra cue between Cue 5 and Cue 6, you could record a Cue 5.5. (FLX S users will need to use the numberpad within the “Z” window, or an external keyboard or numberpad, to do this).

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

Please note: FLX Range consoles 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

When you press **Record**, the Record Window opens on the external monitor (if available). 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** > **Settings** > **Record & update** and changing the **Show Record & Update Window** setting.



Record Window

Within the Record Window are the following options:

Fade Times

Each cue can have a Fade Up, Fade Down, Colour, Beam 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 during or after being 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.

FLX users can press **Colour** to 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 accidentally 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 has Tracking enabled. More information on this is in the SETUP section of the manual.

If Tracking is enabled, 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 accidentally 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 touching it (or, on FLX, alternatively select it using the arrow keys) and adjust the fade time on the encoders (FLX users can alternatively press **Enter** and type the new fade time). Alternatively, all users can click the middle button of the encoder to type a specific fade time.

Naming cues

Naming cues can be helpful in remembering what changes, or when the cue happens. Double touch/click the “Name” cell in the Playback Window (FLX users can choose to select the “Name” cell by touch or using the arrow keys, and then press **Enter** instead). An onscreen keyboard will be displayed to name the cue. An external keyboard can also be used..

FLX users can also use the following commands to name a cue:

... **Name** **5** **Enter** ...

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

... **Name** **5** **Playback button 3** ...

This will name cue 5 within Playback 3.

Once again, an onscreen keyboard will then be displayed to type the cue’s name. Press **Enter** or **OK** to confirm.

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 store the changes to the current cue, press **Update** and then press the relevant **GO/Play** button for the cue you wish to update (such as the Master Playback button). The cue will inherit the new information and the update will be complete.

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

FLX users can choose any of the following syntax to update a cue:

... **Update** **Enter** ...

This will update the current cue within the playback you are currently viewing.

... **Update** **5** **Enter** ...

This will update Cue 5 within the playback you are currently viewing.

... **Update** **Playback button 10** ...

This will update the current cue within Playback 10

... **Update** **5** **Playback button 10** ...

This will update Cue 5 within Playback 10

Coping Cues

To copy one cue to another cue, press the **Copy** button (FLX S users will need to press the **Z** key to open the “Z Window” which includes a **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. This will copy cues from and to the currently viewed Playback.

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. For example, to Copy Cue 7 from Playback 15 to cue 25 in playback 18, type **7** in the “from” field followed by **Playback button 15**, and then type **25** in the “to” field, followed by **Playback button 18**.

For FLX users, pressing either **Down** or **Enter** will move to the next field. Therefore, FLX users can choose any of the following syntax to copy a cue:

... **Copy** **5** **Enter** **10** **Enter** ...

This will copy Cue 5 to Cue 10 within the playback you are currently viewing.

... **Copy** **5** **Down** **10** **OK** ...

This will copy Cue 5 to Cue 10 within the playback you are currently viewing.

... **Copy** **5** **Playback button 10** **20** **Enter** ...

This will copy Cue 5 from Playback 10 to Cue 20 within the playback you are currently viewing.

... **Copy** **7** **Playback button 15** **25** **Playback button 18** ...

This will copy Cue 7 from Playback 15 to Cue 25 within Playback 18.

To copy multiple cues, FLX users can use the **And** and **Thru** keys to define the multiple cues in the “from” field. There is no need to do this in the “to” field.

... **Copy** **5** **THRU** **10** **Enter** **47** **Enter** ...

This will copy Cues 5,6,7,8,9,10 to Cues 47,48,49,50,51,52 within the playback you are currently viewing..

If a cue was missing, or there was a point cue, within the “from” range, these will be reproduced within the “to” range. So, in the example above, if Cue 7 didn’t exist, Cue 49 would be left empty. If there was a cue 9.5, a cue 51.5 would be created.

Deleting Cues

To delete a cue, press the **Delete** button, type the cue number you wish to delete (FLX S users will need to press **⌘** to access the numberpad), and then press the Playback button which contains the cue you wish to delete.

To delete all cues within a playback, see “Deleting playbacks” on page 40.

Deleting a cue cannot be undone

FLX users can use the following syntax:

... **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.

... **Delete** **15** **Thru** **20** **Enter** ...

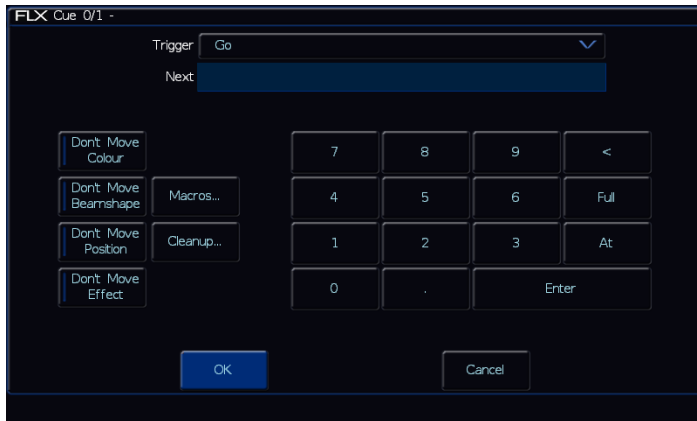
This will delete cues 15, 16, 17, 18, 19 and 20 within the playback you are currently viewing.

... **Delete** **15** **Thru** **20** **Go** ...

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

Cue Settings

Cue Setting can be changed via the “Cue Setup” window. To open this, press **Settings** button of the cue required, under the settings column of the Playback Window. 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

Availability: FLX FLX S48 FLX S24

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)

Availability: FLX FLX S48 FLX S24

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)

Availability: FLX FLX S48 FLX S24

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

Availability: FLX FLX S48 FLX S24

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. (Ensure the time is set correctly on the console by going to SETUP > Settings > Date & Time).

MIDI

Availability: FLX FLX S48 FLX S24

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 77.

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

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 ZerOS to skip the cues in that scene and jump straight to a different cue. If this field is empty, ZerOS 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.

Macros

Macros allow you to automatically trigger (or release) other playbacks during this cue (Playbacks will be triggered over the “Fade Up” time of the cue triggering them, and released over the “Fade Down” time of the cue releasing them). FLX can also be programmed to run user macros during a 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 one of the 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.

Playback 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. FLX S users can also do this, using the keypad under the **Z** key.

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 40 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 cursor 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 FLX, the Master Playback includes 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 40 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 71 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 all Playbacks excluding Playback 0, and on FLX release all the UDKs. To release Playback 0, hold **Clear** and press the **Go** button of the Master Playback.

User Definable Keys

Availability: FLX FLX S48 FLX S24

FLX 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:

... ...

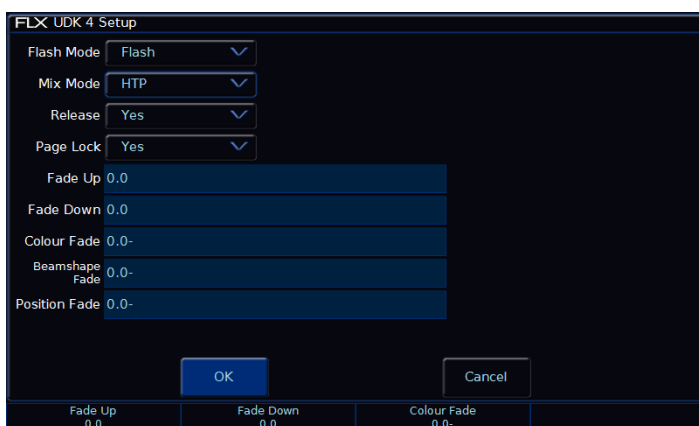
Naming a recorded UDK

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

An onscreen keyboard will appear for you to type in the required name. Press 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 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.

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 key and pressing the UDK on the front panel. Holding down and pressing 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 - “Fixture Macros” and “User Macros”.

Macro Window

Availability: FLX FLX S48 FLX S24

The Macro window is automatically displayed on the internal display when the **Macro** button is pressed. (This is a physical button on FLX, but a soft button along the top of the touch screen on FLX S. On FLX S, this soft button will only be visible if the *currently* selected fixtures support Macros).

Fixture Macros

Availability: FLX FLX S48 FLX S24

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

Automatically create macros

Availability: FLX FLX S48 FLX S24

ZerOS 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.

User Macros

Availability: FLX FLX S48 FLX S24

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. FLX can store up to 240 macros (Fixture Macros and User Macros combined).

Recording user macros

Availability: FLX FLX S48 FLX S24

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.

You will be prompted to record either “Keys” or “Commands”. In most situations this will make no difference to the macro. However, in situations such as a “advanced function” UDK (for example, UDK 1 set as “Park”) selecting “Keys” will record “UDK 1” whereas selecting “Commands” will record “Park”. This makes a difference if you choose to change the advanced function of UDK 1 after recording the User Macro.

Selecting either “Keys” or “Commands” 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

Availability: FLX FLX S48 FLX S24

Macros can be named using syntax by typing one of the following commands:

... **Macro** **4** **8** **Name** ...

This displays an onscreen keyboard to name Macro 48

... **Name** **Macro** **7** **Enter** ...

This displays an onscreen keyboard to name Macro 7

... **Name** **Macro** *touch macro* ...

This displays an onscreen keyboard to name whichever macro you touch on the touch screen. You do not need to press the “macro” button if the Macro window is already displayed.

Using macros

Availability: FLX FLX S48 FLX S24

Any macro can be triggered via the built in touch screen by just touching it.

On FLX, Macros can also be triggered using syntax. Simply type:

... **Macro** **1** **Enter** ...

This triggers Macro 1

Alternatively, Macros can be automatically triggered by cues. See “Cue Settings” on page 50 for more information.

Deleting macros

Availability: FLX FLX S48 FLX S24

To delete any macro, press **Delete** followed by *touching the relevant 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.

On FLX, Macros can also be deleted using syntax by typing one of the following commands:

... **Macro** **4** **2** **Delete** ...

This deletes Macro 42

... **Delete** **Macro** **7** **Enter** ...

This deletes Macro 7

... **Delete** **Macro** *touch macro* ...

This deletes whichever macro you touch on the touch screen. You do not need to press the “Macro” button if the macro window is already displayed.

Ⓩ Key

The Ⓩ 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.



Ⓩ button on FLX



Ⓩ button on FLX S24

Save Show

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

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

Copy

Availability: ✗ FLX ✓ FLX S48 ✓ FLX S24

This option opens the Copy Window. See "Copying Playbacks" and "Copying Cues" for more information.

Lock Console (& Change Pin)

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

This option allows you to lock the console 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.

Calibrate external monitor

Availability: ✓ FLX ✓ FLX S48 ✗ FLX S24

This is a quick access to calibration (page 67).

Error Tone

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

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

System Information

Availability: ✓ FLX ✓ FLX S48 ✓ FLX S24

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

Guidance

Availability: ✗ FLX ✓ FLX S48 ✓ FLX S24

Available in multiple languages, "Guidance" steps you through the key features of FLX S at your own pace, to learn or refresh your skills. Guidance will be automatically open on the bottom 3rd of the internal screen, and will follow your progression through the console. If closed, Guidance can be reopened here.

Command syntax

Availability: ✗ FLX ✓ FLX S48 ✓ FLX S24

Pressing the Ⓩ button displays a number pad which can be used by FLX S users to type some of the most common commands available to FLX users listed throughout this manual.

⑦ Key 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 currently viewed Playback. By default, Override 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. Fully clockwise will snap the cue, and fully anti-clockwise will pause the cue. Pressing the middle button returns the Speed Override back to 50%.

Speed Override can also be configured onto a fader. See the section on “Advanced Playbacks”.

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

When enabled, Programmer Time will apply a fade to live commands in the programmer. 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

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

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 ⌘ key. The Output Window and Command Bar turn grey, and the ⌘ key will flash, to indicate blind mode is active.

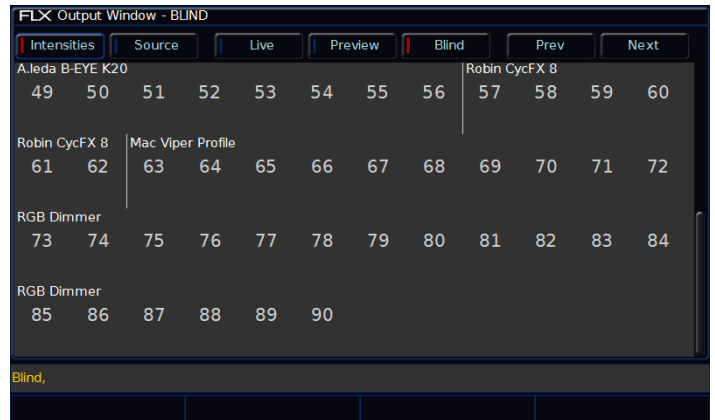
Changing intensities and fixture parameters within blind mode (and then recording or updating this into a cue) is exactly the same as normal operation, except it won't change the lighting state on stage.

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 48 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 51) when not in Blind Mode, the Goto cue functionality is not available within Blind Mode.

To exit blind mode, just press the ⌘ key 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 59). 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 59).

When FLX S is first plugged into a lighting rig, “RigSync” will set it up automatically and continue working in the background to ensure FLX S and your rig are always synchronised and problem free. RigSync removes the need to understand DMX (if your fixtures support “RDM”). This feature is also available on FLX, but must be enabled first within SETUP.

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 users 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 three attributes for easy access and control. These attributes are called “*Colour*”, “*Beam*” and “*Position*”.

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

Zero 88 Fixture library

ZerOS includes the Zero 88 Fixture Library. This is a library which contains information for over 10,000 fixtures, including how they work, what parameters they have, what their default values 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**.

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 **Load** 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”.

DMX channel limitations

ZerOS’ “flexible channel allocation” model allows fixtures to be patched across 64 universes without wasting unused channels. Any two of these universes can be sent out over the two DMX outputs.

FLX supports 2048 DMX channels as standard or can be upgraded in 512 channel blocks to control up to 8192 DMX channels

FLX S support 512 DMX channels as standard or can be upgraded to control up to 1024 DMX channels.

All 64 universes can be distributed over an Ethernet network using either “Art-Net”, “Streaming ACN” or “CITP”.

16 bit channels

Each DMX parameter (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” parameter.

These channels are paired together internally and processed as a single control parameter. 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 Channel” or the “MSB” - Most Significant Byte) is increased by 1, then the pattern continues. This process gives 65536 possible values for a parameter 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.

Fixture schedule

When you first enter Setup, you'll be in the "Fixture Schedule" screen, which displays all the fixtures currently patched on your console.

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 can be changed by simply touching the appropriate cell.

Fixture's channel number

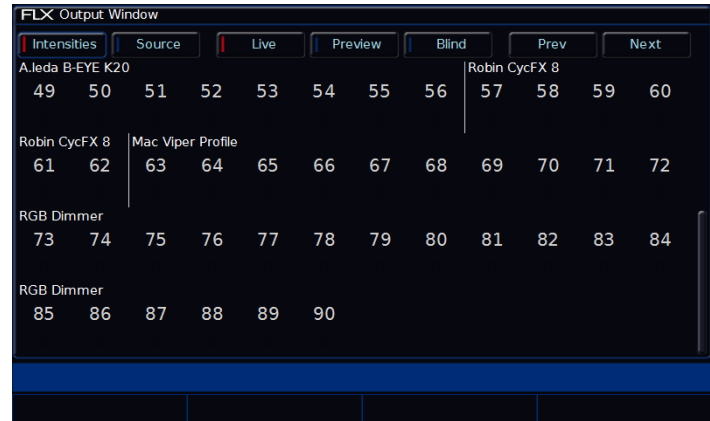
To renumber multiple fixtures at the same time, select the fixtures as detailed earlier, and then select the column header button which is labelled "Ch #". This will open an onscreen numberpad. When you edit this value, the fixtures selected will be renumbered sequentially in the order they were selected and shown – they won't all be given the same channel number. For example, display all the LED units and enter 25. The LED units will be renumbered 25, 26, 27 etc.

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.

Fixture's name

The Fixture name defaults to the fixture type (eg "LED Unit") but they can be renamed by selecting the "Name" cell in the normal way. For example, you may label them "Stage Left LED Unit", "Centre Stage LED unit" and "Stage Right LED Unit".

Fixture names are shown in the Output Window, as shown to the right, along with the MFF Window. When sequential names are identical, the name is only displayed once per row. A vertical line splits up fixtures with different names. Multiple names can be edited at the same time by selecting the fixtures and selecting the column header button which is labelled "Change all Names".



The screenshot shows the FLX Output Window interface. At the top, there are tabs for 'Intensities', 'Source', 'Live', 'Preview', 'Blind', 'Prev', and 'Next'. Below the tabs is a grid of fixture names and numbers. The grid is organized into rows and columns. The first row contains 'A.leda B-EYE K20' and 'Robin CycFX 8'. The second row contains 'Robin CycFX 8' and 'Mac Viper Profile'. The third row contains 'RGB Dimmer'. The fourth row contains 'RGB Dimmer'. The numbers range from 49 to 90. A vertical line is positioned between columns 56 and 57.

Intensities	Source	Live	Preview	Blind	Prev	Next					
A.leda B-EYE K20						Robin CycFX 8					
49	50	51	52	53	54	55	56	57	58	59	60
Robin CycFX 8						Mac Viper Profile					
61	62	63	64	65	66	67	68	69	70	71	72
RGB Dimmer											
73	74	75	76	77	78	79	80	81	82	83	84
RGB Dimmer											
85	86	87	88	89	90						

Fixture names and numbers being displayed in the Output Window

Fixture's Alignment (invert / swap pan & tilt)

If your fixtures have Pan and Tilt control, ZerOS is capable of adjusting 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).

These settings can be changed by touching the relevant cell using the touch screen. The invert column has the options "none", "invert pan", "invert tilt" and "invert both". Swap has the options "swapped" or "not swapped".

Multiple fixtures can be changed at the same time by selecting the fixtures and selecting the appropriate column header buttons which are labelled "Invert" or "Swap".

With a fixture's home position of Pan and Tilt at 50%, inverting or swapping these parameters won't make an 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.

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 and Palettes as far as possible.

Touch the appropriate cell, or select all the fixtures to be changed and touch the column header button labelled **Change all Profiles**. A popup window will open with the list of manufactures, fixture types and modes available.

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 Address 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 in this column. If a fixture does not currently have a DMX start address, the cell will be left blank.

When you touch the cell, a Patch Fixture(s) popup window is displayed on the monitor, with the current universe and start address selected (if present).

Select the required Universe by clicking on the **Universe** button and typing 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.

Using the "Add as additional address" button instead of simply "OK", 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 rows are added to the Fixture Schedule table (one row per duplicate address).

To change or remove a duplicate, select the Address cell and choose "Unpatch".

For multi-part fixtures (eg Lamp + Scroller) the different parts of the fixture are displayed on separate rows in the Fixture Schedule.

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.

FLX users can also repatch fixtures using syntax. Enter the fixture number, press the **@** key, enter the DMX start address and then press the **Enter** key:

... **1 @ 274 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 @ 2.156 Enter** ...

"Fixture 1" will be patched to DMX address 156 on Universe 2.

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. 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.

DMX In

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

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, select the fixtures using the MFF buttons or “Patch Groups” along the bottom, and then press the **Delete** button on the front panel.

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

FLX users can also delete fixtures using the following syntax:

... **5** **Delete** ...

Fixture 5 will be permanently deleted

... **10** **thru** **15** **Delete** ...

Fixtures 10 through to 15 inclusive will be permanently deleted

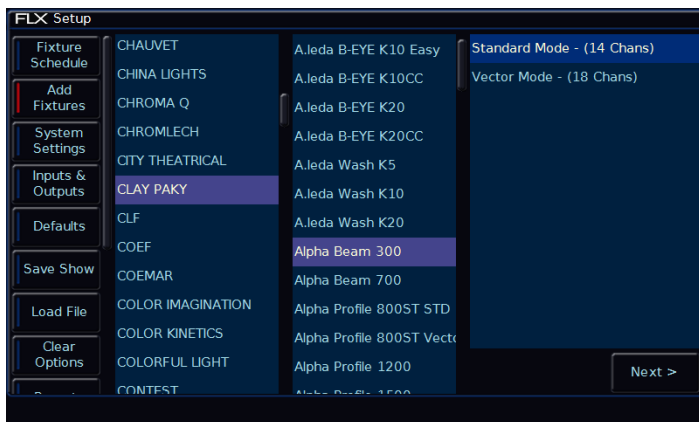
Add fixtures

To add fixtures, such as additional dimmers, LEDs, moving lights, effect machines etc, you need to use the “Add Fixtures” window, which is the second option within the Setup window. Press **Add Fixtures** on the left hand side of the display.

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.

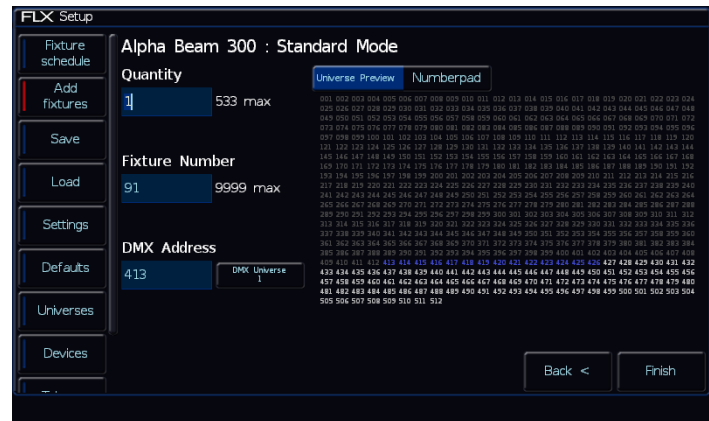
First, the window asks you to select the fixture’s manufacturer, fixture and (if applicable) mode. Scroll down through each column to select the required manufacturer (eg Clay Paky), fixture type (eg “Alpha Beam 300”) and mode. It is important that the mode set here matches the mode set on the fixture - if in doubt, consult the fixture’s operating manual for details.

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



Selecting a manufacturer, fixture and mode

Once the manufacture, fixture and mode has been selected, press the **Next** button to move on and select the quantity, fixture number and DMX address.



Selecting quantity, fixture number and DMX address

These will be automatically pre-populated, so if you have not yet set a DMX address on the fixtures themselves, the desk will have already calculated a DMX address for you based on the existing patch. It is important here to ensure that the correct DMX universe is selected.

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 Add Fixtures process is now complete and your fixtures have been assigned. The fixtures should now have moved to their “Home” positions.

You can repeat this process for every type of fixtures you have.

Multi-part fixtures

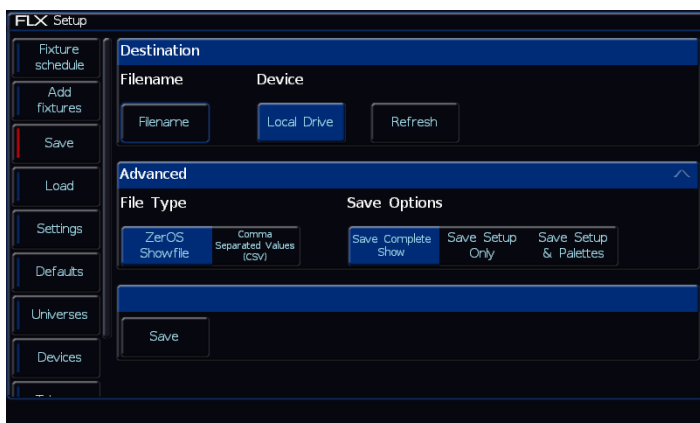
For multi-part fixtures (eg Lamp + Scroller) there are two separate DMX addresses required, one for the lamp and one for the scroller. When setting the DMX address, an additional button will be shown called “Fixture Part”. Use this to set a different address for each part of the fixture.

Save

FLX range consoles 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** on the left hand side of the display. The following will be displayed:



The “Save” tab of SETUP

If you have more than one USB Storage Device connected, first select the required device from the list under “Device”. If the device does not appear straight away, wait a few seconds and then click **Refresh**.

Tap the “Filename” button to type the show name using the onscreen keyboard and press **Enter** or **OK**. Press “save” to save the show. 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

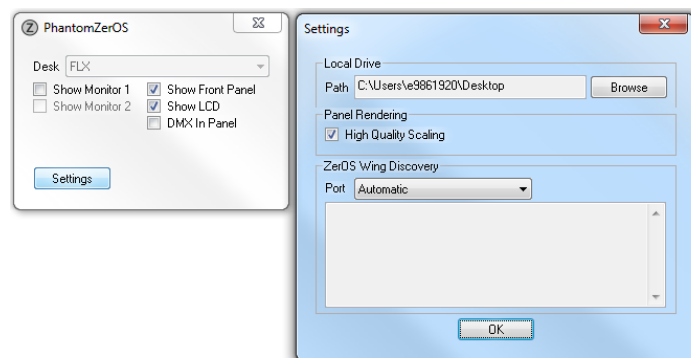
This is the default option, and should be used in most circumstances. These can be loaded back into the console or loaded onto any other console running ZerOS (for ultimate compatibility, it is suggested that both consoles are running the same software version). When selecting “ZerOS Showfile”, you are 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 cannot 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

The single “Load” tab can load several different types of files:

ZerOS Showfiles

Any ZerOS Showfile can be loaded onto the console 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** on the left hand side of the display. If you have more than one USB Storage Device connected, select the required device at the top. 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. ZerOS 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.

ZerOS supports “manufacture specific information” from within ASCII files for certain consoles. This includes ETC EOS/Ion consoles and Strand “Genius Pro” consoles. This means moving lights, palettes, multiple playbacks and various other settings are also supported via ASCII.

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 59 for more information).

Zero 88 Fixture Library

The Zero 88 Fixture Library contains a library of over 10,000 fixtures you may wish to use with your console. 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 59 for more information).

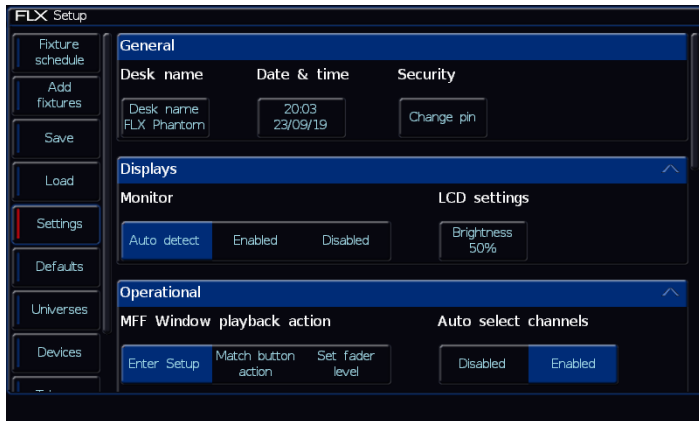
Installing new software

ZerOS, the software running on FLX and FLX S, 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.

Settings

Settings within the Setup menu allows you to change various settings that affect the ZerOS system, such as monitor settings or switch between the various modes available.



The “Settings” tab

Desk Name

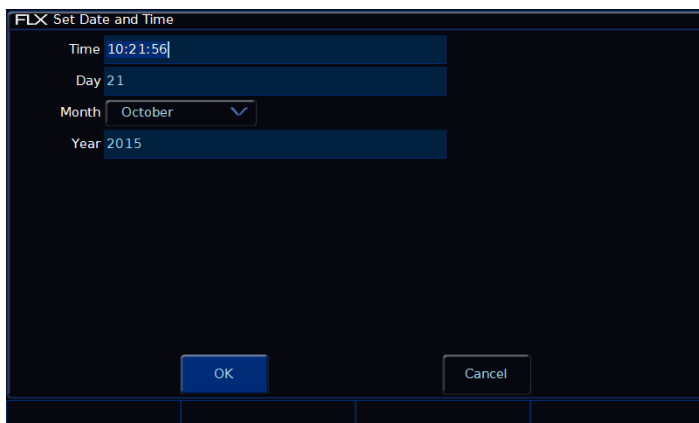
Availability: FLX FLX S48 FLX S24

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 the console type (ie “FLX” or “FLX S24”) followed by the serial number, but this can be changed by selecting the desk name, using the onscreen keyboard to type a new name, and pressing **OK**.

Set Date & Time

Availability: FLX FLX S48 FLX S24

Press the **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

Security

Availability: FLX FLX S48 FLX S24

This allows you to change the “Lock code” of the console. The default Pin is 0000. It’s highly recommended that you change this pin. The console can be locked via the **Z** Key, so you can leave the console unattended safely.

Monitor

Availability: FLX FLX S48 FLX S24

FLX & FLX S48 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. FLX S48 will not auto detect if a monitor is present, and will output at 1024 by 768 resolution.

To manually change if a monitor is present or not, change “Monitor” to “Enabled” or “Disabled” (by default, this is set to “Auto Detect”).

On FLX, to change the monitors resolution, click “Resolution” and select one of the listed resolutions (or select “Auto Detect”). 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**. 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** (or, on FLX S48, **□**) to confirm and return to System Settings.

A number of external touchscreens are supported by ZerOS. 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. Please contact Zero 88 for details.

LCD Settings

Availability: FLX FLX S48 FLX S24

This Settings allow you to change the brightness 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.

MFF Window playback action

Availability: FLX FLX S48 FLX S24

“MFF Window Playback action” defines what happens when you press a Playback Button in the MFF window. By default this opens the Playback’s Setup Window, but it can instead match the physical button action (for example Flash or Tap Tempo), or set a Fader Level.

Auto select channels

Availability: FLX FLX S48 FLX S24

This setting automatically selects a channel when a channel fader is moved. This can be disabled if you wish.

Channel Mix Mode

Availability: FLX FLX S48 FLX S24

This 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.

Page handover

Availability: FLX FLX S48 FLX S24

Page handover defines the behaviour of active Playbacks when you change page. When “Disabled”, changing page will change the page of all the faders.

When “Enabled”, changing page will only change the page of faders currently inactive. Any faders with active playbacks will remain on their previous page, until the respective Playback is released – at which point the fader will change to the current page.

Recovery mode

Availability: FLX FLX S48 FLX S24

“Recovery Mode” defines how the console should react when it’s powered off and powered back on again.

“Disabled” will release all the playbacks when it powers back on, so no lights are on.

“Enabled” 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.

RemDim & Highlight options

Availability: FLX FLX S48 FLX S24


These “High value” and “Low value” settings affect the values of RemDim & Highlight.

RemDim will take all unselected fixtures to the “Low value”. If the selected fixtures are currently at 0%, RemDim will take the selected fixtures to the “High value”.

Highlight will take the selected fixtures to the “High value”.

Always display Intensity encoder

Availability: FLX FLX S48 FLX S24

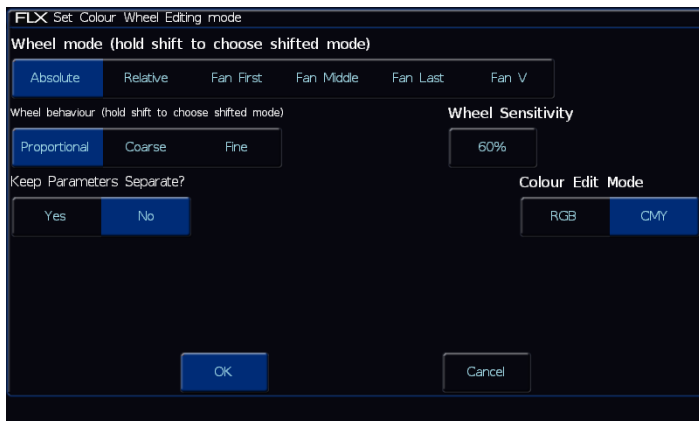
This allows you to lock the first wheel to an Intensity control. This means all other options on the encoders will be shown on wheels two to four only. Using Intensity on a wheel is advantageous when you have multiple channels all at different levels, and you want to increase or decrease their levels 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  Key.

Attribute specific settings

Availability: FLX FLX S48 FLX S24

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 **[Setup]** and the attribute button together (on FLX S, these are soft buttons along the top of the touchscreen).

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 the 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 rotate 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.

“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% (this setting is global, not per parameter).

“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.

Mouse controls Pan & Tilt

Availability: FLX FLX S48 FLX S24

This 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.

Show Record & Update Window

Availability: FLX FLX S48 FLX S24

This 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 **Record** or **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 **Record** or **Update** buttons are pressed.

“On external display” (FLX & FLX S48 only) means the windows will be shown on the external display as soon as the **Record** or **Update** buttons are pressed, but only on the internal monitor if the buttons are pressed and held.

“On both displays” (FLX & FLX S48 only) means the windows will appear on both displays as soon as the **Record** or **Update** buttons are pressed.

Tracking options

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

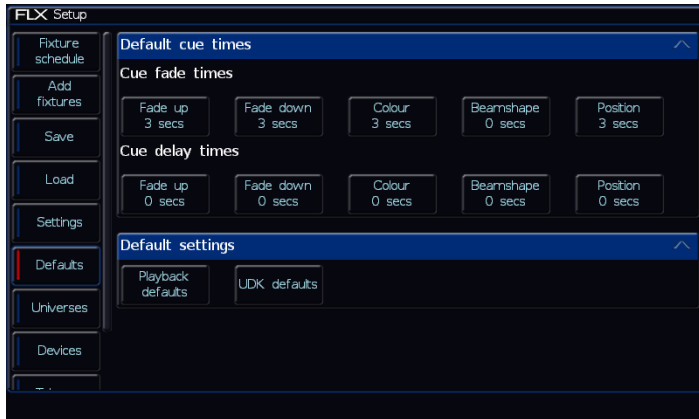
“Cue only” means that tracking options will not be available within the Record and Update windows. Cues are programmed with a full capture of the stage output to ensure what you see on stage is exactly what is programmed, and exactly what will be played back when you replay the cue.

“Enabled” means that tracking options will be available within the Record and Update windows.

Tracking options can be changed at any time without affecting cues that have already been programmed.

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 cue times

Availability: FLX FLX S48 FLX S24

These settings change the default times that are recorded with. Both the default fade and default delay of the Intensity, Colour, Beamshape and Position attributes can be change in this window.

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.

Playback Defaults

Availability: FLX FLX S48 FLX S24

Clicking [Playback 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.

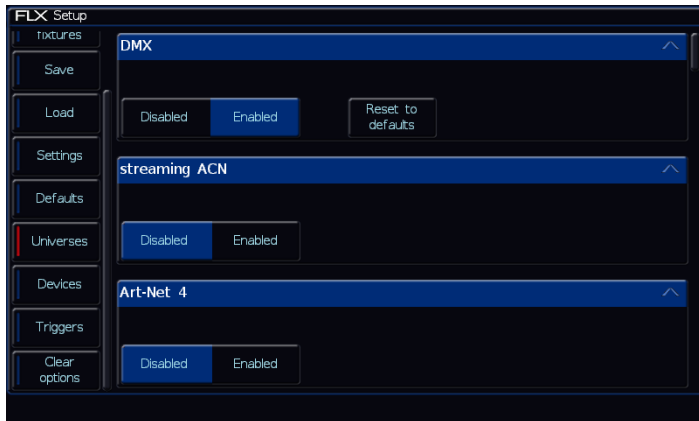
UDK defaults

Availability: FLX FLX S48 FLX S24

Clicking [UDK defaults](#) will open the UDK Settings window, allowing you to change the default settings that are applied to new UDKs.

Universes

The Universes tab of Setup is a single place for configuring each separate method (“protocol”) of sending lighting data out of the console to your lighting rig.



The “Universes” tab within SETUP

Available DMX channels can be patched across 64 “Desk Universes”. At the top of the “Universes” tab are panels for the global settings of each protocol – in most situations, these are all you will need. Below these are a panel for each of the 64 “Desk Universes”, providing a method of fine tuning your output (for example, you could send the data for fixtures patch to “Desk Universe 5” to sACN Universe 5, Art-Net Universe 4 and DMX Output 1).

DMX

All FLX range consoles have two DMX Outputs on the rear of the console. By default, these output Desk Universe 1 and Desk Universe 2 (on 1U FLX S consoles, both DMX Outputs output Desk Universe 1).

Within the DMX tab, you can choose to disable DMX Output or, if you have changed the Desk Universes (see below), reset the DMX Outputs to their default settings, as described above.

Streaming ACN (sACN)

Streaming ACN 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 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.

NOTE – ZerOS consoles should not be connected to the Internet

Within the sACN panel, you can choose to enable sACN. If you have changed the Desk Universes (see below), you can choose to “Reset to defaults” (which outputs each Desk Universe on the equivalent number sACN Universe).

sACN 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. Each sACN universe can have its own Priority or use the “Default priority” listed in the sACN panel.

sACN requires an IP address, subnet mask & default gateway, which can either be entered manually or set using DHCP. ZerOS can have separate IP addresses for each individual protocol.

sACN traffic is mostly transmitted as “Multicast” data.

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.

Art-Net 4

Art-Net 4 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.

For more information about Art-Net 4, please visit the dedicated website at art-net.org.uk

NOTE – ZerOS consoles should not be connected to the Internet

Within the Art-Net 4 panel, you can choose to enable Art-Net 4. If you have changed the Desk Universes (see below), you can choose to “Reset to defaults”. This will prompt you to start the Universe numbering from either Art-Net Universe 0 or Art-Net Universe 1. Art-Net 4 starts at “Universe 0”, but on modern devices it’s usual to ignore Universe 0, and start at Universe 1 – providing a “1-to-1” numbered universe patch, rather than an offset of 1.

Art-Net 4 requires an IP address, subnet mask & default gateway, which can either be entered manually, selected from the pre-defined “Primary” and “Secondary” addresses, or set using DHCP. ZerOS can have separate IP addresses for each individual protocol.

Art-Net 4 traffic is mostly transmitted as “Unicast” data.

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.

Light Converse integration

Within the Art-Net panel is an option to enable Light Converse integration. Light Converse is a visualisation software package which uses Art-Net to communicate with ZerOS consoles. The rules of Art-Net apply when configuring a Light Converse setup.

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

CITP (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. As long as the two devices can see each other on the network, the system should function correctly.

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

For more information on CITP, please visit the dedicated website at citp-protocol.org

NOTE – ZerOS consoles should not be connected to the Internet

Within the CITP panel, you can choose to enable CITP. If you have changed the Desk Universes (see below), you can choose to “Reset to defaults”. This will prompt you to start the Universe numbering from either CITP Universe 0 or CITP Universe 1.

CITP requires an IP address, subnet mask & default gateway, which can either be entered manually or set using DHCP. ZerOS can have separate IP addresses for each individual protocol.

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.

Remote Device Management (RDM)

Remote Device Management is a protocol that expands the capabilities of DMX, providing a method for two-way communication between the console and the other devices in your rig, such as fixtures.

ZerOS' implementation of RDM is called "RigSync" which allows ZerOS to manage the rig – ensuring the console and lighting rig are synchronised, not just at the point of "patching" but continuously through the performance. New fixtures are automatically added, problems such as collisions in DMX addresses are automatically fixed, and settings such as modes and alignments are automatically kept in sync between the console and the rig. If a new fixture is added, ZerOS automatically assigns it settings, adjusting other fixtures if necessary to ensure the rig works. Patched fixtures which don't support remote management are avoided rather than ignored.

RigSync can be enabled or disabled within the RDM panel of the "Universes" tab within SETUP. On FLX, RigSync is disabled by default. On FLX S, RigSync is enabled by default.

The "Discover all fixtures" button discovers and patches all possible fixtures at the point it's pressed. Although this usually happens automatically when RigSync is enabled, there are situations when it won't. For example, if you delete a fixture that was discovered by RigSync, that fixture won't be rediscovered and repatched unless you press "Discover all fixtures".

The "Revert rig back" button reverts all fixtures to the settings they had when they were first discovered by RigSync. For example, if the whole rig was DMX Address 1, RigSync will remember those settings (and store them in the showfile) before automatically changing the DMX addresses so they don't clash. Selecting "Revert rig back" will put all the fixtures back to DMX Address 1, and not automatically change them again.

"Lock rig" instructs RigSync to continuously and automatically revert any changes which are made to settings on fixtures that could affect the show – such as DMX Address, P/T Settings or Personality/Mode. When changes such as these are made on a fixture, RigSync will detect them and revert them back. These changes can continue to be made from the console without disabling "Lock Rig".

Desk universes

The 64 "Desk Universes" panels provide a method of fine tuning your outputs (for example, you could send the data for fixtures patch to "Desk Universe 5" to sACN Universe 5, Art-Net Universe 4 and DMX Output 1).

Each panel is split into four sections – DMX, streaming ACN, Art-Net 4 and C1TP (Capture). On each of the sections, an "Add" button allows you to add an additional universe of that protocol for that Desk Universe. For example, you could have Desk Universe 1 being output to both Art-Net Universe 1 and 2 (or more). This might be useful when visiting a venue as you can have the same data from both Art-Net ports without having to reconfigure the venue's device.

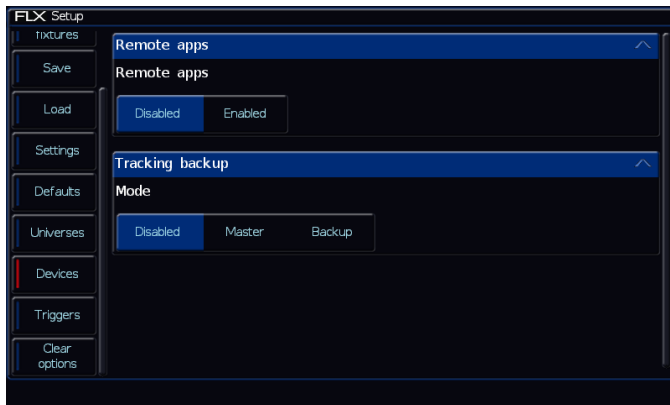
To renumber or remove a universe from one of these four sections, simply press the universe and either enter the new number, or click "Remove".

DMX outputs are limited to two (the two physical outputs on the back of the console). Each one has the option in enable or disable RigSync on that output. This allows the same Desk Universe to be outputted from both DMX Outputs, but one with and one without RDM.

sACN Universes has the option to set a custom Priority. To change this priority, or change it back to follow the default, simply press the priority and either enter the new number, or click "Default".

Devices

The “Devices” tab displays settings for any devices connected to the console which can be remotely configured, such as Mobile Apps, backup consoles and Art-Net devices. The options available depend on the devices present on the network.



The “Devices” tab within SETUP

NOTE – ZerOS consoles should not be connected to the Internet

Remote apps

Availability: FLX FLX S48 FLX S24

This panel 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 FLX & FLX S48. 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”.

NOTE – ZerOS consoles should not be connected to the Internet

Your wireless network should already include security measures to ensure unauthorised access isn't possible, however the password on the console adds an additional layer of security (this security is simply a password the remote will prompt you for before connecting - ensure you change the password from the default one). To disable this level of security, leave the Password option blank – this will disable the password.

Remote apps require an IP address, subnet mask & default gateway, which can either be entered manually or set using DHCP. ZerOS can have separate IP addresses for each individual protocol.

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.

You can now start the app on the mobile device and the desk should be detected. Press on the Desk name and click the connect button.

Tracking Backup

Availability: FLX FLX S48 FLX S24

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 ZerOS Server, 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.

NOTE – ZerOS consoles should not be connected to the Internet

The two consoles are connected together via an Ethernet network. Each console is assigned 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.

Tracking backup requires an IP address, subnet mask & default gateway, which can either be entered manually or set using DHCP. ZerOS can have separate IP addresses for each individual protocol.

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.

Art-Net devices

Availability: FLX FLX S48 FLX S24

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

NOTE – ZerOS consoles should not be connected to the Internet

Enttec DMX USB devices

Availability: FLX FLX S48 FLX S24

USB to DMX devices which use Enttec’s DMX USB Pro Widget API will be displayed within this panel. The options available depend on the devices present.

Enttec Wings

Availability: FLX FLX S48 FLX S24

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.

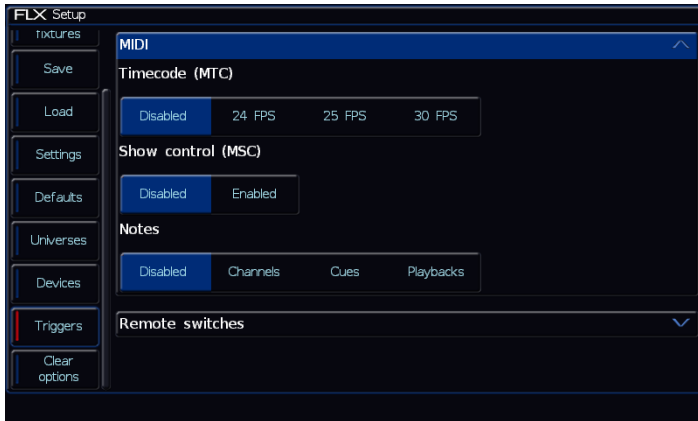
NOTE – ZerOS consoles should not be connected to the Internet

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.

Triggers

Availability: ✓ FLX ✗ FLX S48 ✗ FLX S24

The “Triggers” tab within the Setup menu allows you to manage any triggers entering the console. This screen does not cover networking, which is covered in other areas within Setup.



The “Triggers” tab of SETUP

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 50 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.

MIDI Notes

MIDI Notes can be used to trigger Channels, Cues (within the currently viewed playback) or a Playback.

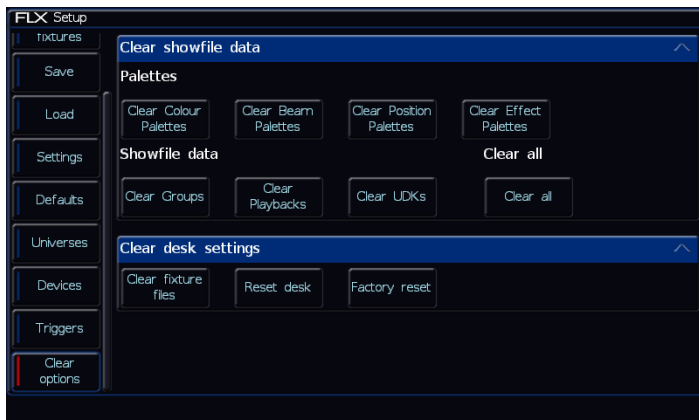
Remote Switches

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 81.

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

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 of 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 59 for more information).

Reset Desk / Factory Reset

“Reset desk” will reset all settings and data on the console, excluding Networking and Calibration. 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.

Networking Basics

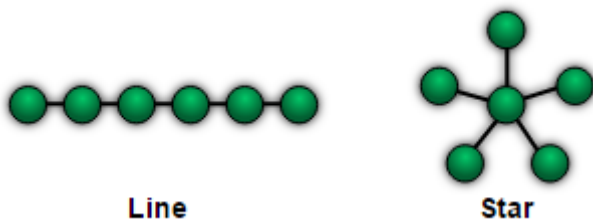
Ethernet basics

ZerOS 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.

FLX S includes a standard RJ45 connector. EtherCON connectors cannot be plugged into FLX S.

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 device’s 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.

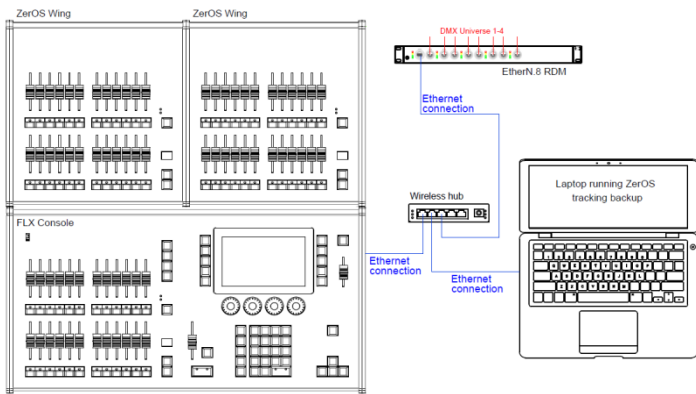
Via a standard Ethernet Switch – the desk is connected to one connector on the switch, and other devices are connected to another port

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. Most Laptops / PCs will support “Auto MDI-X” meaning either a standard or crossover cable will work when directly connected.

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.

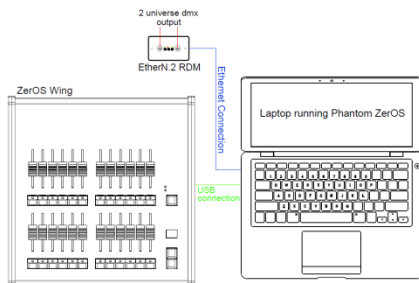
Example system layouts



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.

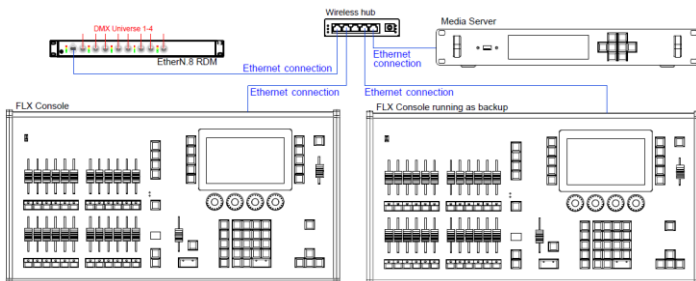
A hub or router connects the console to a laptop running Phantom ZerOS with an Unlock Dongle. This backs up every key press and can automatically take over so you can continue exactly where you were. Using a wireless router would allow mobile devices to be connected too.

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.



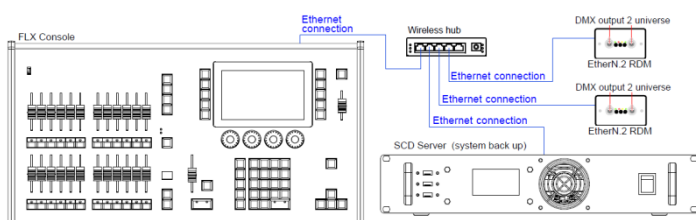
This system shows a laptop running Phantom ZerOS with an Unlock Dongle. The console is connected to an EtherN.2 RDM to output two universes of DMX. This could be directly, using a “crossover” cable, or via a hub / router using “straight” Ethernet cables. EtherN.2 RDM can be powered via “Power-over-Ethernet”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

FLX & ZerOS Server Technical Information

Mains inlet

FLX & ZerOS Server are 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. Three external USB ports are fitted to ZerOS Server. Two located on the rear of the server and one on the front. These support the USB 2.0 standard, and are "overload protected" in pairs. If a USB device tries drawing too much power, ZerOS 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

FLX & ZerOS Server 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 & ZerOS Server for securing the console to an operating location, using a standard laptop lock cable.



Sound to Light

A stereo 1/4" jack socket provides basic Sound to Light functionality. Left and right channels are mixed internally.

Audio Connector	Area	Desc.
	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 support included.

DMX Input Connector	Pin	Desc.
	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
	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	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

FLX S Technical Information

Power supply

FLX S is supplied with an external power supply, which is connected to FLX S via a 2.1mm DC barrel connector (center positive).

12V DC; MAX 1.25A, 15W

The approved Zero 88 power supply included with FLX S should always be used. This power supply should be earthed. Spares / replacements can be ordered, listed under “accessories” on the first page of this guide.

USB ports

Two USB 2.0 ports are provided - one on the rear, one on the front panel. USB ports can be used for:

- Keyboard & Mouse (mouse on external monitor only)
- Touchscreen (DVI-D also required, FLX S48 only)
- External Storage Devices (such as Memory Sticks)

Ethernet

An Ethernet port (RJ45) is provided for connecting Apps to FLX S over WiFi, or connecting FLX S to Ethernet based lighting rigs. The Ethernet connection is designed to be used within a dedicated, local lighting network, and not part of a larger, building wide network.

NOTE – FLX S should not be connected to the Internet

Kensington Lock

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



DMX output

Two female Neutrik XLR are provided. 1 x 5 pin connector, and 1 x 3pin connector. These both output Universe 1, unless the FLX S console has been upgraded to 2 universes.

Video output

1 x DVI-D connector, on FLX S48 only

Trouble Shooting

Fixtures not responding?

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

- Have you plugged the DMX cable into the back of the console?
- The DMX cabling for cable faults, and ensure that a DMX terminator is present at the end of the chain
- If the fixtures do not support RDM, they must be added (or “patched”) manually – see the manual for full details – and check these are patched correctly.
- Setup > Universes has been correctly configured
- For FLX users, the green DMX1 and DMX2 LEDs are flickering
- For FLX S users, if you have upgraded your console, ensure the DMX cable is plugged into the correct output
- Some fixtures require the lamp to be “lamped on”. If this is required, a “Macros” tab will be displayed along to top of the screen when the fixture is selected. Selecting macros will display a “Lamp On” command.

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.

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?

On FLX & FLX S48, if the external touchscreen is not responding, remember these points:

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

MIDI Show Control not working?

(FLX only) 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 > Devices?
- Is there a password set in Setup > Devices?
- 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.

Console does not start correctly?

- 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 F1 on a USB keyboard then “clear show data”
- If all else fails, reinstall the software as a last resort

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 & FLX S are 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 (FLX only)

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 console.

Transportation & storage

Care should be taken when transporting your console. 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 console.

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

FLX

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

ZerOS Wing

Dimensions

90mm (H) x 339mm (W) x 342mm (D)

Weight

3.8 kg

Operating temperature range

+5 to +40 °C

Humidity

5% to 95% non-condensing

FLX S48

Dimensions

68mm (H) x 669mm (W) x 284mm (D)

Weight

5.5 kg

Operating temperature range

+5 to +40 °C

Humidity

5% to 95% non-condensing

FLX S24

Dimensions

68mm (H) x 461mm (W) x 284mm (D)

Weight

4 kg

Operating temperature range

+5 to +40 °C

Humidity

5% to 95% non-condensing