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This manual is for ZerOS, the operating system for FLX, FLX S and ZerOS Server.

This manual is correct as per ZerOS 7.14.3 software.

[Please read this manual before use, especially the Warnings & Safety section.](#)

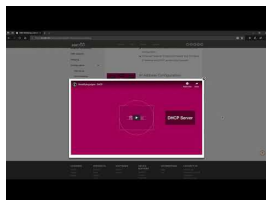
[Your console's current software version can be found by tapping the Z key, and choosing System Information from the touchscreen. Click here for more information](#)

E&OE. Vari-Lite reserve the right to make changes to the equipment and specification described in this manual without prior notice.

Introduction

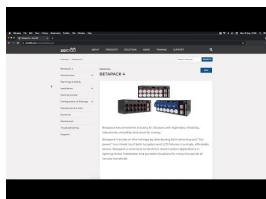
This manual

This online manual describes the operation of each of the FLX range lighting control consoles and accessories running the ZerOS operating software. It will also include tips for other consoles running ZerOS, such as Solution consoles.



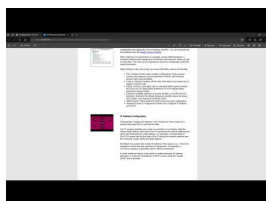
<https://youtu.be/gvNuwCChcrg>

For an overview of the Zero 88 Online Manuals, take a look at this video.



https://youtu.be/Turfy1Ar_Kg

For detailed information on each function, the manual has been divided into chapters - one for each major area, which can be navigated using the menu on the left-hand side. You can also search the manual using the search bar top right.



<https://youtu.be/7BZsxnBjcno>

Each section or whole chapters can be exported to PDF by tapping "PDF", found just below the search bar. The whole manual can be exported as a PDF, by tapping "PDF" at the top page of the manual.

As each FLX range console is different, you can use the filter top right of the manual, so you only see the information relevant to your console.

Zero 88 online manuals are updated regularly to ensure you have all the relevant information and useful tips. [Check out the Revisions section to see what has been added](#). If you see something that doesn't look right, or have suggestions, please send us an email to support@zero88.com.

Conventions

Throughout this manual the following conventions are used:

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

1 **THRU** **6** **@** **@** **RECORD** **ENTER**

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

Defaults -> *Playback Defaults* -> *Move On Dark* -> *Disabled*

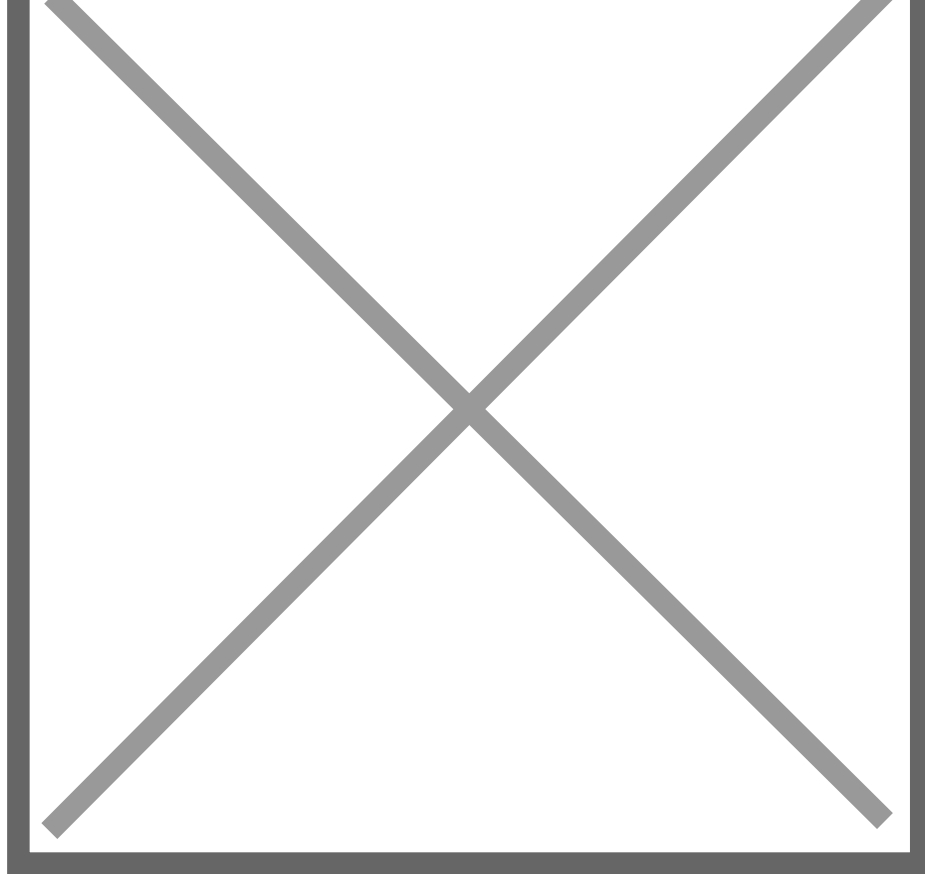
Thank You

Thank you for choosing the FLX Range by Zero 88 to fulfil your lighting control needs. We sincerely hope that your 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.

Revisions

Watch the video below, to learn about the latest ZerOS features...



<https://youtu.be/l18TmAN9lQI?si=Ef1wK1ONsy9hypep>

Manual Revisions

- [Mar 2024 - Detail added to ZerOS Software Update instructions - ES - ZerOS 7.14.2](#)
- [Mar 2024 - Capture Project updated to Capture 2024 - ES - ZerOS 7.14.2](#)
- [Dec 2023 - Version number updated - ES - ZerOS 7.14.2](#)
- [Dec 2023 - Identify removed from Edit DMX Address - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Identify has been moved to Channel Number - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Loading GDTF fixtures containing parameters greater than 16bit - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Master & Backup can have independent network settings for the Remote - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Playback buttons can be disabled - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Right-clicking in Phantom ZerOS allows for multitouch to fan in the Colour Picker - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Cue Macros observe the cue's delay times - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Start Number & Increment buttons added to Renumber Cues - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Enhancements to Blind Mode - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Enhancements to Recovery Mode - ES - ZerOS 7.14.1](#)
- [Dec 2023 - SHIFT-attribute key pages back through parameters on encoders - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Clear Fixture functionality added - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Loop Playback option added to Playback Defaults - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Loop Playback option added to Cue Settings - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Loop Playback option added to Playback Settings - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Grand Master & Blackout are now an additional playback - ES - ZerOS 7.14.1](#)
- [Dec 2023 - Move On Dark now follows "Next Cue" jumps - ES - ZerOS 7.14.1](#)
- [Oct 2023 - DMX In will only receive DMX from controllers that send a whole universe - ES - ZerOS 7.14](#)
- [Jul 2023 - Version number updated - ES - ZerOS 7.14](#)
- [Jul 2023 - RDM devices section added - ES - ZerOS 7.14](#)
- [Jul 2023 - ZerOS fixture names of RDM fixtures are linked to their RDM Device Labels - ES - ZerOS 7.14](#)
- [Jul 2023 - RDM & Multicell information added to Output window, plus formatting - ES - ZerOS 7.14](#)
- [Jul 2023 - Various Vision.Net enhancements, including "Channel Toggle" support - ES - ZerOS 7.14](#)
- [Jul 2023 - "Delete Fixture" moved from DMX Address to Channel Number in Fixture Schedule - ES - ZerOS 7.14](#)
- [Jul 2023 - Upon loading a fixture file, you are automatically taken to Add Fixtures - ES - ZerOS 7.14](#)
- [Jul 2023 - Information on "Auto Correct" in Add Fixtures added - ES - ZerOS 7.14](#)
- [Jul 2023 - Fixture intensity control with DMX In section added - ES - ZerOS 7.14](#)
- [Jul 2023 - Playback Control with DMX In section added - ES - ZerOS 7.14](#)
- [Jul 2023 - OSC section added - ES - ZerOS 7.14](#)
- [Jul 2023 - OSC Examples section added - ES - ZerOS 7.14](#)
- [Jul 2023 - Information on configuring an Art-Net device's Port Label added - ES - ZerOS 7.14](#)
- [Jul 2023 - Information on automatic colour palettes added - ES - ZerOS 7.14](#)
- [Jul 2023 - Formatting improvements to Add Fixtures - ES - ZerOS 7.14](#)
- [Jul 2023 - More Patch Groups added - ES - ZerOS 7.14](#)
- [Jul 2023 - DMX In & MIDI Notes Output window colour coding added - ES - ZerOS 7.14](#)
- [Jul 2023 - Detailed information on configuring Desk Universes added - ES - ZerOS 7.14](#)
- [Jul 2023 - ZerOS Server Desk Types updated - ES - ZerOS 7.14](#)
- [Jul 2023 - Information on MIDI Notes Octaves added - ES - ZerOS 7.14](#)
- [Jul 2023 - Information added on removing USB to DMX devices - ES - ZerOS 7.14](#)
- [Jul 2023 - Discover All Fixtures forces Art-Net gateways to discover fixtures - ES - ZerOS 7.14](#)
- [Jul 2023 - Desk Name is used as the console's DHCP label - ES - ZerOS 7.14](#)
- [Jul 2023 - MAC Address is displayed in Network Overview - ES - ZerOS 7.14](#)
- [Jul 2023 - Fixture names revert to default if removed - ES - ZerOS 7.14](#)
- [Jul 2023 - Information added on pressing ENTER in Add Fixtures - ES - ZerOS 7.14](#)
- [Jul 2023 - Z window automatically closes after saving the show - ES - ZerOS 7.14](#)
- [Jul 2023 - CMY parameter name enhancements - ES - ZerOS 7.14](#)
- [Jul 2023 - Colour Edit Mode removed - ES - ZerOS 7.14](#)
- [Jul 2023 - Light Converse Integration removed - ES - ZerOS 7.14](#)
- [Jul 2023 - Edit DMX Address enhancements - ES - ZerOS 7.14](#)
- [Jul 2023 - Enhancements to loading files - ES - ZerOS 7.14](#)
- [Jul 2023 - DMX Port configuration changes to support DMX In & Vision.Net - ES - ZerOS 7.14](#)

- [Jul 2023 - Chase LEDs flash in time with chases - ES - ZerOS 7.14](#)
- [Jul 2023 - User Macros can now include Macros and press & hold commands - ES - ZerOS 7.14](#)
- [Jul 2023 - Information on Fixture Macros updated - ES - ZerOS 7.14](#)
- [Jul 2023 - "Hide Unused Fader Pages" added - ES - ZerOS 7.14](#)
- [Jul 2023 - MSC can now trigger multiple playbacks - ES - ZerOS 7.14](#)
- [Jun 2023 - Extra information on Cue Macros added - ES - ZerOS 7.13](#)
- [May 2023 - "Playing Back Cues" Section updated - ES - ZerOS 7.13](#)
- [Apr 2023 - Software update instructions updated for VL webpage - ES - ZerOS 7.13](#)
- [Sep 2022 - Version number updated - ES - ZerOS 7.13](#)
- [Sep 2022 - More options when fixtures are missing - ES - ZerOS 7.13](#)
- [Sep 2022 - Export is now Edit & Export - ES - ZerOS 7.13](#)
- [Sep 2022 - Unpin Add Fixtures - ES - ZerOS 7.13](#)
- [Sep 2022 - Change Profiles is now Change Fixtures - ES - ZerOS 7.13](#)
- [Sep 2022 - GDTF Fixture Files - ES - ZerOS 7.13](#)
- [Sep 2022 - Search Improvements - ES - ZerOS 7.13](#)
- [Sep 2022 - Pinned Fixtures - ES - ZerOS 7.13](#)
- [Sep 2022 - Fixture Creator added - ES - ZerOS 7.13](#)
- [Aug 2022 - Additional supported ASCII file types added - ES - ZerOS 7.12](#)
- [Aug 2022 - Information on Hue Smart Bulb & Smart Plug pairing added - ES - ZerOS 7.12](#)
- [Jul 2022 - YouTube links updated to Vari-Lite - ES - ZerOS 7.12](#)
- [Jul 2022 - Information added on ZerOS Show File Save Options - ES - ZerOS 7.12](#)
- [Jun 2022 - Version number updated - ES - ZerOS 7.12](#)
- [Jun 2022 - Fixture UDKs removed - ES - ZerOS 7.12](#)
- [Jun 2022 - Setup -> Triggers is now available for FLX S - ES - ZerOS 7.12](#)
- [Jun 2022 - Vision.Net section added - ES - ZerOS 7.12](#)
- [Jun 2022 - Philips Hue section added - ES - ZerOS 7.12](#)
- [Jun 2022 - KiNET section added - ES - ZerOS 7.12](#)
- [Apr 2022 - Version number updated - ES - ZerOS 7.11](#)
- [Apr 2022 - Colour Faders page updated to reflect UI changes - ES - ZerOS 7.11](#)
- [Apr 2022 - "Colour Picker Controls UV" information added to Fixture Settings - ES - ZerOS 7.11](#)
- [Apr 2022 - Information on Warm White and Cool White palettes added - ES - ZerOS 7.11](#)
- [Apr 2022 - Change Fixtures page updated to reflect UI changes - ES - ZerOS 7.11](#)
- [Apr 2022 - ZerOS Library data information updated - ES - ZerOS 7.11](#)
- [Apr 2022 - Parameter list information added to Add Fixtures - ES - ZerOS 7.11](#)
- [Apr 2022 - Colour Temperature information added to Colour Picker - ES - ZerOS 7.11](#)
- [Apr 2022 - ZerOS Colour Mixing information added to Colour - ES - ZerOS 7.11](#)
- [Apr 2022 - Filters page updated to reflect UI changes - ES - ZerOS 7.11](#)
- [Apr 2022 - Information on Colour Filter References added - ES - ZerOS 7.11](#)
- [Apr 2022 - Attribute & Parameter Homing information added - ES - ZerOS 7.11](#)
- [Apr 2022 - "Fixture Export" section added to Add Fixtures - ES - ZerOS 7.11](#)
- [Apr 2022 - "Searching & Filtering" section added to Add Fixtures - ES - ZerOS 7.11](#)
- [Apr 2022 - "Fixture Files" section updated to "Missing Fixtures" - ES - ZerOS 7.10](#)
- [Apr 2022 - Fixture Editor information moved to Add Fixtures - ES - ZerOS 7.10](#)
- [Mar 2022 - Capture Demo Files updated to Capture 2022 - ES - ZerOS 7.10](#)
- [Dec 2021 - Fixture swap-out rules added - ES - ZerOS 7.10](#)
- [Nov 2021 - Version number updated - ES - ZerOS 7.10](#)
- [Nov 2021 - More information added on cue delay times - ES - ZerOS 7.10](#)
- [Nov 2021 - "Multicell Fixtures" section added - ES - ZerOS 7.10](#)
- [Nov 2021 - "Choosing an Attribute" section removed, and added to "Parameters" - ES - ZerOS 7.10](#)
- [Nov 2021 - Information on fanning effects across multicell fixtures added - ES - ZerOS 7.10](#)
- [Nov 2021 - Information on fanning multicell fixtures on the colour picker added - ES - ZerOS 7.10](#)
- [Nov 2021 - Multicell information added to Parking - ES - ZerOS 7.10](#)
- [Nov 2021 - Multicell information added to Highlight & Rem Dim - ES - ZerOS 7.10](#)
- [Nov 2021 - Move On Dark Cue Settings - ES - ZerOS 7.10](#)
- [Nov 2021 - Fixture Schedule columns updated - ES - ZerOS 7.10](#)
- [Nov 2021 - DMX In hidden when manual is filtered by hardware without DMX in - ES - ZerOS 7.10](#)
- [Nov 2021 - Fixture Alignment now "Fixture Settings" - ES - ZerOS 7.10](#)
- [Nov 2021 - Phantom ZerOS UI updated - ES - ZerOS 7.10](#)
- [Nov 2021 - "Moving" section added to Cues & Playbacks - ES - ZerOS 7.10](#)
- [Nov 2021 - "Next & Previous" section added, removed from Controlling Fixtures - ES - ZerOS 7.10](#)

- [Nov 2021 - More information added to Intensity Wheel section - ES - ZerOS 7.10](#)
- [Nov 2021 - "Copying Palettes" now "Copying & Moving Palettes" - ES - ZerOS 7.10](#)
- [Nov 2021 - "Copying Groups" now "Copying & Moving Groups" - ES - ZerOS 7.10](#)
- [Nov 2021 - Multicell group information added - ES - ZerOS 7.10](#)
- [Nov 2021 - "+" and "-" fade time editing information added - ES - ZerOS 7.10](#)
- [Nov 2021 - "@ +" and "@ -" syntax information added - ES - ZerOS 7.10](#)
- [Nov 2021 - Clear button information removed from Controlling Fixtures chapter - ES - ZerOS 7.10](#)
- [Nov 2021 - Fixture selection information removed from Controlling Fixtures chapter - ES - ZerOS 7.10](#)
- [Nov 2021 - "The Clear Button" section created - ES - ZerOS 7.10](#)
- [Nov 2021 - Multicell information added to Commands section - ES - ZerOS 7.10](#)
- [Nov 2021 - Multicell information added to Channel Faders section - ES - ZerOS 7.10](#)
- [Nov 2021 - "Intensity" chapter changed to "Selection & Intensity - ES - ZerOS 7.10](#)
- [Nov 2021 - CAN wiring information added - ES - ZerOS 7.9.9](#)
- [Oct 2021 - Extra Output Window colour code information added - ES - ZerOS 7.9.9](#)
- [May 2021 - Information on changing fixture order reworded - ES - ZerOS 7.9.9](#)
- [Mar 2021 - "Available Channels" section added - ES - ZerOS 7.9.9](#)
- [Mar 2021 - Dedicated keyboard shortcut information for FLX S added - ES - ZerOS 7.9.9](#)
- [Feb 2021 - Load separated out into file types - ES - ZerOS 7.9.9](#)
- [Jan 2021 - Windows IP configuration information added - ES - ZerOS 7.9.9](#)
- [Jan 2021 - Art-Net device port configuration information added - ES - ZerOS 7.9.9](#)
- [Dec 2020 - Version number updated - ES - ZerOS 7.9.9](#)
- [Dec 2020 - Information on .zfix fixture files added - ES - ZerOS 7.9.9](#)
- [Dec 2020 - Upgrade tab is now hidden on fully upgraded consoles - ES - ZerOS 7.9.9](#)
- [Dec 2020 - Information on red fixtures in Add Fixtures added - ES - ZerOS 7.9.8](#)
- [Dec 2020 - Dedicated Master Playback section added - ES - ZerOS 7.9.8](#)
- [Nov 2020 - Information on ZerOS Server's front display added - ES - ZerOS 7.9.8](#)
- [Nov 2020 - "Patch Anyway" information added - ES - ZerOS 7.9.8](#)
- [Nov 2020 - Calibration information moved to Setup from Desktops & Windows - ES - ZerOS 7.9.8](#)
- [Nov 2020 - Manual compiled - ES - ZerOS 7.9.8](#)
- [Sep 2020 - Manual created - ES - ZerOS 7.9.8](#)

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, starting at 2048 as standard, across 64 universes with no fixture limitations.



<https://youtu.be/K6tZUhlPrDU>

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.

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.



<https://youtu.be/yMIhwYWYCKE>

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.

[Click here to find out more about ZerOS Wing.](#)

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.

ZerOS Server can emulate any ZerOS console. Feature availability is based upon whichever console it's currently emulating. This manual is written for ZerOS Server running as FLX which is the default Desk Type. [Click here to find out more about Desk Types.](#)

[Click here for mounting instructions](#)



<https://youtu.be/BBbKoCm2yOg>

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.

As well as the FLX range of consoles, other Zero 88 consoles also run ZerOS. This manual will therefore also be applicable to other consoles running ZerOS too:

Current ZerOS Consoles:

- [FLX S24](#)
- [FLX S48](#)
- [ZerOS Server](#)

Legacy ZerOS Consoles:

- [FLX](#)
- [Solution](#)
- [Solution XL](#)
- [Orb](#)
- [Orb XF](#)
- [Leapfrog 48](#)
- [Leapfrog 96](#)
- [SCD Server \(& Pro\)](#)

Phantom ZerOS

Phantom ZerOS is free software to download onto any Windows 10 PC, and can emulate any ZerOS 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.

[Click here to find out more about Phantom 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.

[Click here to find out more about ZerOS Library.](#)

Apps

Wireless apps can be used to remotely control and monitor ZerOS consoles, 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.

[Click here to find out more about the ZerOS apps](#)

Compliance

FLX, FLX S48 & FLX S24 comply with the following standards:

- EN 55032:2012: Electromagnetic compatibility of multimedia equipment - Emission Requirements
- EN 61000-3-2:2014: Electromagnetic compatibility (EMC) Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
- EN 61000-3-3:2013: Electromagnetic compatibility (EMC) - Part 3-3: Limits – Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection
- EN 55103-2:2009: Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use - Immunity
- EN 60950-1:2006/A2:2013: Information technology equipment. Safety. General requirements

Warnings & Safety

- FLX range lighting consoles are designed for professional stage lighting control and are unsuitable for any other purpose. They should be used by, or under the supervision of, an appropriately qualified or trained person.
- No naked flame sources, such as lighted candles or pyrotechnics, should be placed on or near the consoles
- FLX range consoles should not be exposed to dripping or splashing, and no objects filled with liquids, such as vases or drinks, should be placed on the console.
- No user serviceable parts inside.
- FLX range consoles must be earthed. Genuine Zero 88 PSUs must be used with FLX S consoles.

Zero 88 networking devices are designed for use within a dedicated, stand alone, private, local area network only, for the sole purpose of transmitting and/or receiving nonsensitive entertainment lighting control data. Although they utilize Ethernet networking, these devices should not be connected to the Internet.

Quick Start

This chapter will cover the basics on how to control and program fixtures on ZerOS consoles. Each subject covered here will have its own chapter available from the left hand side of the manual, which will cover everything about that subject.

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, which will take around 30 seconds.

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



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.

Let's get started...

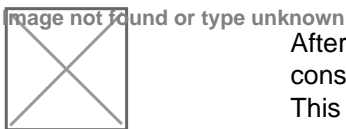
- [Patching](#)
- [Controlling Fixtures](#)
- [Recording Cues](#)

Discover the FLX range...



<https://youtu.be/KjZ0r-blwvs>

Patching



<https://youtu.be/1Rbfj0nvgYA>

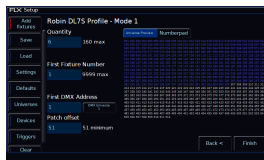
After powering your console for the first time, or after resetting the console, or after a software update, there will be no fixtures patched. This means your channel faders will not be controlling your rig, as currently the console does not know what fixtures you may have.

If you connect RDM enabled fixtures to your FLX S24 or S48, they will automatically be discovered and patched, thanks to RigSync. If you wish to automatically discover RDM fixtures on FLX, tap Setup -> Universes, and enable RigSync under Remote Device Management.

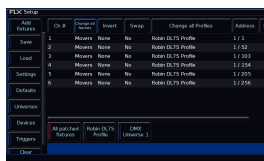
See the video for more information on RigSync.



If you don't have RDM enabled fixtures, you will need to patch your fixtures manually. This means you need to tell the console which fader you want to control which light, and how. This is done by pressing Setup -> Add Fixtures. This takes you to the screen pictured, where you will be able to find the required fixtures, and tap Next >.



After tapping Next, you can then tell the console how many of these fixtures you want, the fixture number/channel fader number you would like to control these lights with, and the DMX address of the first fixture. If you wish to patch multiple fixtures at once, and they are not addressed sequentially, use the patch offset field.



You can then tap Finish, and the console will patch your fixtures. This will show you the fixture schedule, with your new fixtures listed. This is where you can edit your fixtures, such as give them custom names.

You can then exit Setup, and you will be able to control your lights.

[Click here to go to the full Patching chapter to learn more](#)

Controlling Fixtures

The intensities of your fixtures can be controlled using the channel faders. To access the channel faders, ensure the **Fader Funct.** button on the console is toggled to Channels. On FLX, you can also use syntax commands to control the intensities of your fixtures.

Once on, you can then control your fixture's various controls, by using the attribute buttons. These will open as tabs along the top of the internal touchscreen of FLX S, and are physical attribute keys on the right hand side of the FLX touchscreen. Tapping these attribute buttons will open these attributes on the internal touchscreen. This will allow you control the fixture's parameters with the encoder wheels, or the touchscreen controls. The console will also offer to automatically create palettes, as quick shortcuts to control the different attributes.

You can store your common colours, beams, shapes and positions, by recording your own palettes. Do this by controlling your lights, tap **Record**, and you will then be able to tap an empty palette marked with an asterisk on the touchscreen.

The last tab that will be open on FLX S, and the attribute key to the bottom right of the FLX internal touchscreen, is the **Effect** button. Tap this, and automatically create effects, to allow the console to create some effects for your fixtures. Apply an effect on your lights, and use the encoders to adjust the effect, such as adjust the speed.

[Click here to go to the full Controlling Fixtures chapter to learn more](#)

Recording Cues

Once you have used the fixture controls to adjust your lights to how you need them, you can record your lighting state.

Programmed lighting states are called "Cues", and can be stored onto any playback fader. A playback fader can store one, or many cues.

To store your lighting state, tap **Record** , and you will then be able to choose a playback fader. Use the **Page** button to choose which playback page you store onto. Flashing playbacks indicate they are empty. Tap the button of the playback you wish to store to. The **Record** key will turn off, meaning your lighting state has been saved.

To playback your lighting state, lower your channel faders. You will then need to ensure your **Clear** button is not lit. If it is, it means your fixture controls are still controlling your fixtures, meaning your cue won't be able to access some of the lights. Double tap **Clear** , and the clear button will no longer be lit. Now, ensure your channel faders are in "playbacks" function using the **Fader Funct.** button. You do not need to adjust the fader function if you stored your lighting state onto the Master Playback.

You can then raise your playback fader, and your lighting state will fade in.

You can adjust the timings of your cues, by pressing and holding **View** , and tapping the playback's button, to allow you to see the cue you recorded onto that playback.

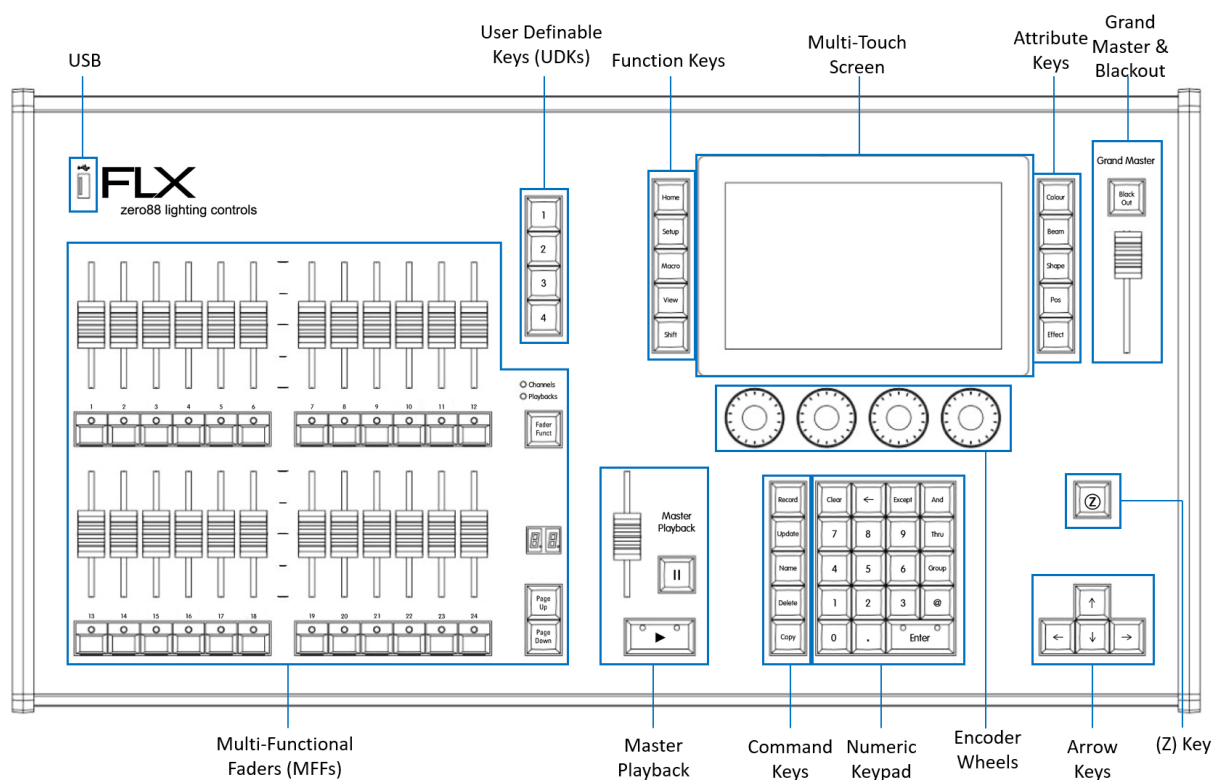
[Click here to go to the full Cues & Playbacks chapter to learn more.](#)

Front Panel

For an overview of the front panel controls, click your console below...

- [FLX](#)
- [FLX S48](#)
- [FLX S24](#)
- [Solution](#)

FLX



Front panel definitions

Multi-Function Faders (MFFs)

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

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 consoles have no fixture limitation. The Page buttons 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”. 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 (dependent on the current selection of the Fader Function button). You have a maximum of 99 pages in Channels, and 10 pages in Playbacks. Switching between “Channels” and “Playbacks” will automatically change the page to the page you had previously selected when in that function. By default, you will only be able to page through Channel pages that have fixtures patched, and Playback pages that have programmed playbacks.

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. A double-width Play / GO button and a dedicated pause button is included.

User Definable Keys (UDKs)

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

Function keys

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

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

Attribute keys

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

Encoder wheels

Four encoder wheels are provided and used for accurate control of various settings. The settings currently being controlled by the four encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders. The button in the middle of each encoder is occasionally used to perform an additional, but related, task.

Numeric keypad

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

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 Blackout key 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.

To disable the Grand Master & Blackout, tap **Delete** followed by **Black Out**

The Grand Master & Blackout is actually a playback. This means, if you don't wish to use it as a Grand Master, you could instead record cues onto it. The Grand Master then becomes this playback's fader, and Black Out becomes this playback's button.

One use case for this would be to program a cue onto the Grand Master with some fixtures at full and then set the Playback to "Inhibit" - resulting in "Grand Master" behaviour of only the fixtures programmed into that cue.

An alternative use case would be to control specific fixtures that require quick access, such as Houselights, Blinders or Haze, without the need to worry about Fader Function or Page Number. This could be a single cue or multiple cues - as per any other Playback.

In ZerOS, the Grand Master playback is known as Playback 10000.

Z Key

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

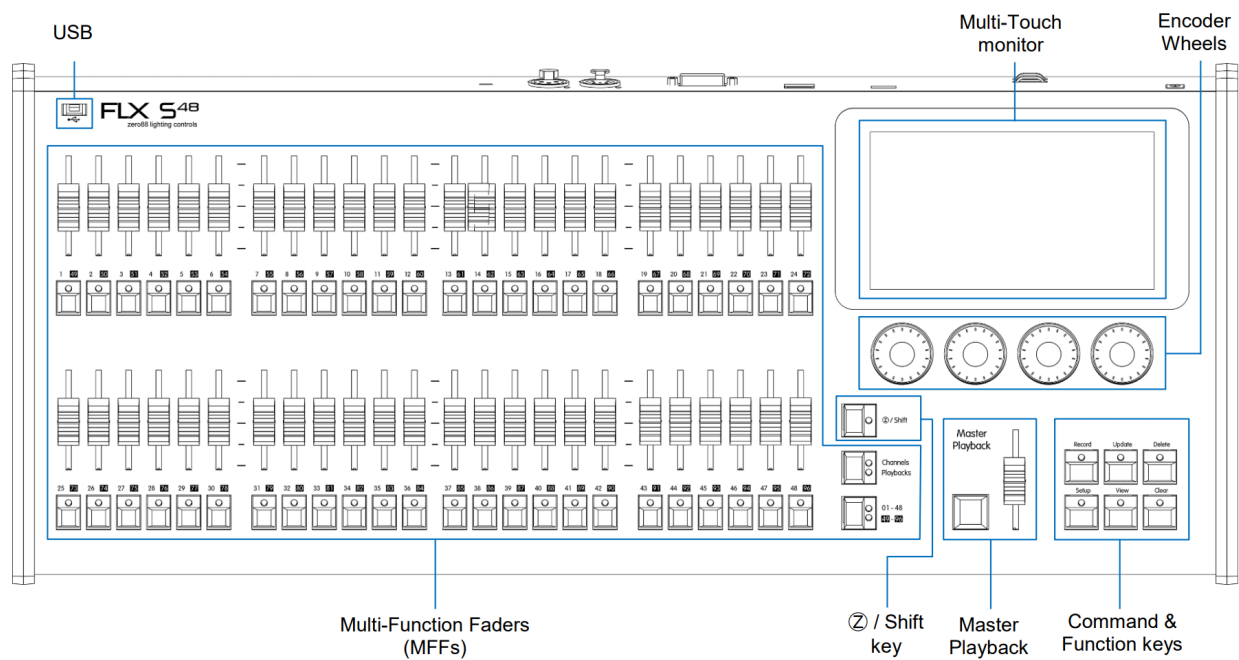
USB port

FLX consoles include a USB 2.0 port on the front panel. FLX also includes four other USB ports around the console. USB ports can be used for:

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

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 S48



Front panel definitions

Multi-Function Faders (MFFs)

FLX S48 consoles are equipped with 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 S48 has two pages of channel faders, and can therefore control a maximum of 96 fixtures. 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 S48 consoles support 96 playbacks, 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 S48, the page button allows you to switch between faders 1 – 48 and faders 49 – 96. Switching between “Channels” and “Playbacks” will automatically change the page to the page you had previously selected when in that function.

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.

Function keys

Function keys either perform functions themselves (like **View**), or change the functionality of other buttons when pressed at the same time (like **Setup** and **Shift**).

Command Keys

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

Encoder wheels

Four encoder wheels are provided and used for accurate control of various settings. The settings currently being controlled by the four encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders. The button in the middle of each encoder is occasionally used to perform an additional, but related, task.

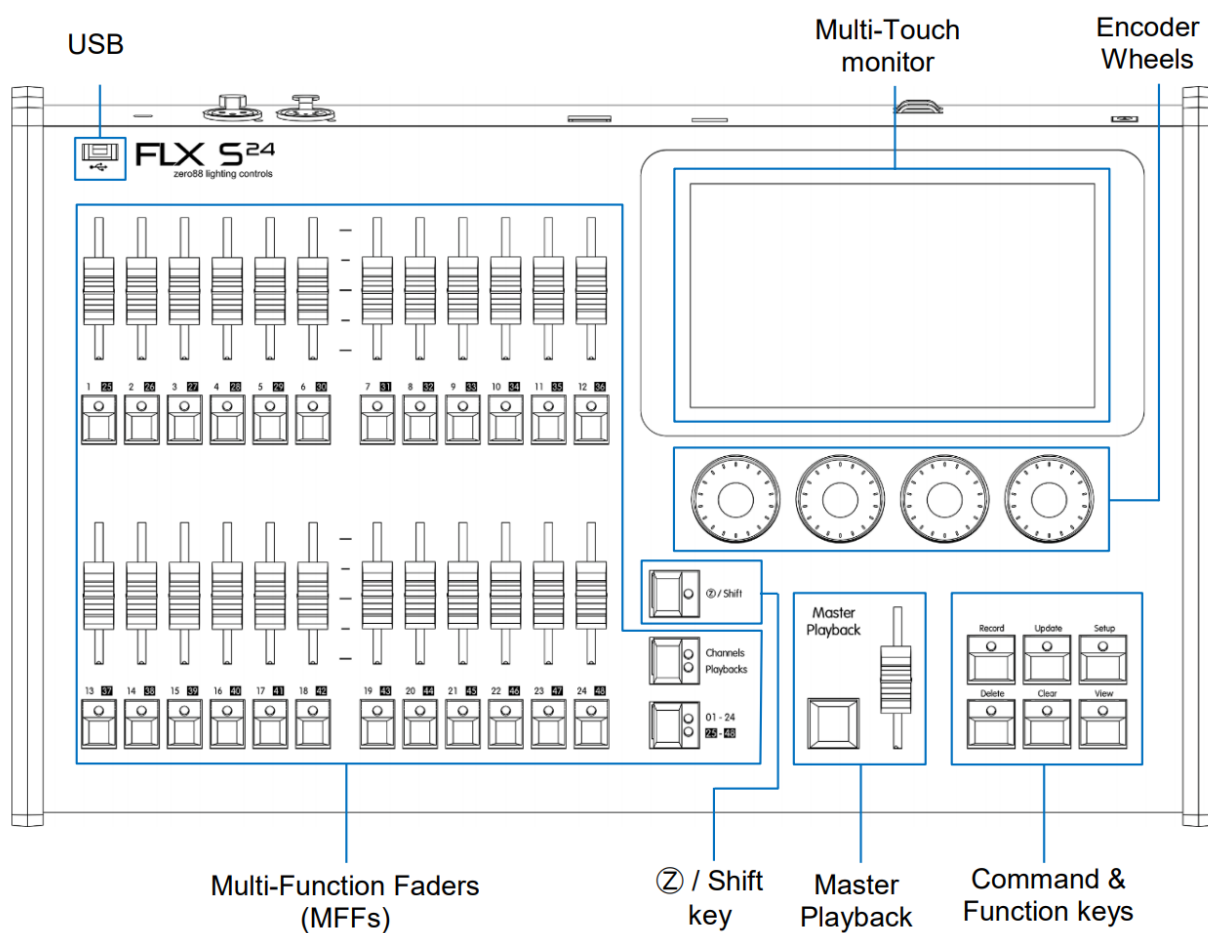
Z / Shift key

The **[Z]** Key places a range of quick access settings & functions on the internal display and encoder wheels. On FLX S48, holding **[Z]** acts as “Shift”, changing the functionality of other buttons when pressed simultaneously.

USB port

FLX S48 consoles include a USB 2.0 port on the front panel, and 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), External Storage Devices (such as Memory Sticks), ZerOS Wings.

FLX S24



Front panel definitions

Multi-Function Faders (MFFs)

FLX S24 consoles are equipped with 24 Multi-Function Faders. These can quickly and easily be switched between their two functions (“Channels” and “Playbacks”) by using the **Fader Funct.** button.

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 S24 has two pages of channel faders, and can therefore control a maximum of 48 fixtures. 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 S24 consoles support 48 playbacks, 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 S24, the page button allows you to switch between faders 1 – 24 and faders 25 – 48. Switching between “Channels” and “Playbacks” will automatically change the page to the page you had previously selected when in that function.

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.

Function keys

Function keys either perform functions themselves (like **View**), or change the functionality of other buttons when pressed at the same time (like **Setup** and **Shift**).

Command Keys

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

Encoder wheels

Four encoder wheels are provided and used for accurate control of various settings. The settings currently being controlled by the four encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders. The button in the middle of each encoder is occasionally used to perform an additional, but related, task.

Z / Shift key

The **[Z]** Key places a range of quick access settings & functions on the internal display and encoder wheels. On FLX S24, holding **[Z]** acts as “Shift”, changing the functionality of other buttons when pressed simultaneously.

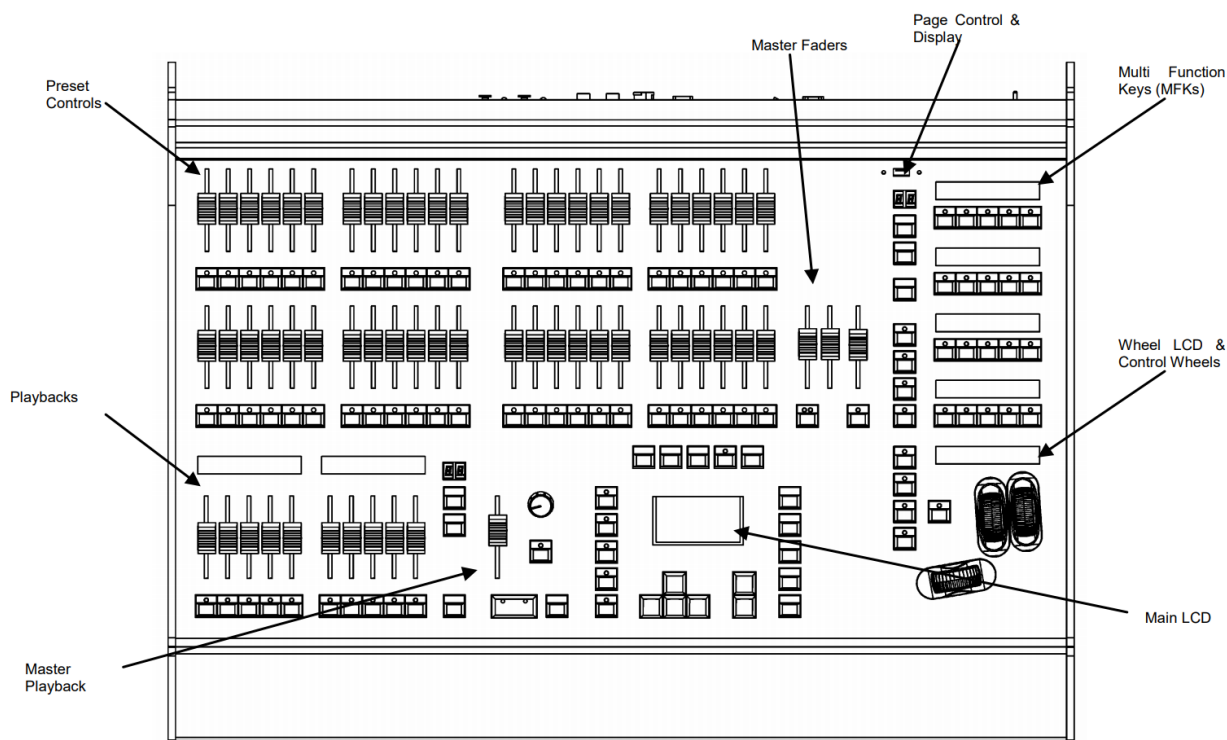
USB port

FLX S24 consoles include a USB 2.0 port on the front panel, and one other USB port on the rear of the console. USB ports can be used for: Keyboard, External Storage Devices (such as Memory Sticks), ZerOS Wings.

Solution

The image below, explains the front panel controls of the Solution console. This will also be applicable to the Solution XL console, however the Solution XL console has twice the number of channel faders (preset faders), and three times the number of playback faders.

Leapfrog 48 operates identically to Solution, and Leapfrog 96 operates identically to Solution XL, and so the guide below is also applicable to these consoles too.



Fixtures

Solution console can control up to 248 fixtures, and Solution XL consoles can control up to 296 fixtures. Fixtures can be a simple generic dimmer channel, or an LED fixture, moving head, or in fact any device that can be controlled with DMX.

Fixtures with multiple controls, have their controls or "parameters" grouped into attributes. These attributes are Colour, Beamshape and Position. Fixtures can be given a user defined name and number, for ease of reference, and may be patched across 64 universes. These universes can then be output from the DMX ports on the rear of the console, or output over Ethernet. The total number of DMX channels that can be patched is 2048 channels.

Cues & Playbacks

Solution & Solution XL allow you to record lighting scenes into "Cues". Each cue has a number, name (optional), trigger, a wait time (auto cues) and a set of delay & fade times. Each cue is stored within a "Playback". A Playback can have a single cue (equivalent of a "submaster") or multiple cues (equivalent of a "cue list"). If there are multiple cues, they can either be played sequentially one after another, or turned into a chase (where the desk will automatically and continuously cycle through each cue). Multiple Playbacks are available to help separate and group cues together. A "Master Playback" is also available with larger GO button and dedicated PAUSE button.

The Solution desk has 20 pages of 10 playbacks, plus the Master Playback (201 in total).

The Solution XL desk has 20 pages of 30 playbacks, plus the Master Playback (601 in total).

Groups

Solution consoles provide 400 groups. Automatic groups for each fixture type can be generated if required.

Palettes

Solution consoles provides 400 user programmable palettes for each of the attributes (Colour, Beamshape and Position). The desk can also generate auto palettes which provide basic colours, gobos and positions based on the fixture types used in the desk.

Effects

The desk provides 400 user programmable effects. The desk can also generate a number of standard effects which include intensity, colour, beamshape and movement effects.

Macros

The desk provides 400 user programmable macros.

Lock Functions

The desk has a lock function which will prevent misuse of the desk.

Audio Input

The desk has an audio input, which may be used to trigger chases with bass drives.

Optional Remote Triggers Card

The desk provides SMPTE, MIDI and 6 contact closure inputs as an optional upgrade card, which can be used to trigger cues with SMPTE or MIDI timecode triggers.

Ethernet

The desk has an Ethernet port capable of supporting Art-Net and sACN. In addition to these outputs, this allows smart phones and laptops to be used as remotes.

USB Ports

The desk has four USB ports, which may be used for saving and loading show files, loading user fixture types and performing software upgrades. The USB ports on the desk support keyboard, mouse, external touch screens, memory sticks and desk lights.

Mouse and External Keyboard

The desk provides a USB mouse interface to allow you to move quickly around the monitor screen, select fields, choose options etc. The desk provides a USB interface to a standard PC keyboard, to allow text and numeric data to be entered.

Video Output

The desk provides the interface for one external monitor display (XGA). It is highly recommended that the desk is operated with a monitor display connected, as important information is displayed here.

DMX Output

Data is output on DMX channels 1 – 512 on four DMX universes as standard. The DMX output sockets on the rear panel of the desk default to outputting universes 1 to 4 only when fixtures are patched onto the respective universes.

Solution Introduction

Preset Faders

The Solution presets have three modes - "Disabled", "Two Preset" or "Wide". This can be changed using the PRESET MODE setting in Special Page 1 of the MFKs.

Preset Faders

The Solution desk has 48 preset faders arranged as two rows of 24 faders and buttons. These control 48 channels when Preset Mode is "Disabled", 48 channels when in "Wide", or 24 channels in "Two Preset" mode. The Solution XL desk has 96 preset faders arranged as two rows of 48 faders and buttons. These control 96 channels when Preset Mode is "Disabled", 96 channels when in "Wide", or 48 channels in "Two Preset" mode.

Channel Flash Buttons

Each desk has a CHANNEL FLASH button located below each PRESET fader, used to flash, solo or latch the channels or to select the channels or fixtures assigned to the corresponding faders; their action being determined by the CHANNEL BUTTON MODE setting in Special Page 1 of the MFKs.

A and B Master Faders

"Disabled" – these faders are unused "Two Preset" – The A MASTER fader controls the maximum output levels from the PRESET A FADERS. The B MASTER fader controls the maximum output levels from the PRESET B FADERS. "Wide" – The A MASTER and B MASTER faders control the maximum output levels from all the PRESET faders or the stored scene according to the setting on the PRESET CONTROL button.

Preset Control Button

The PRESET CONTROL button is only applicable in "Wide" mode and is used to control which of the A or B MASTER faders has control of the preset faders and which has control over the stored scene. The red LEDs in the button indicate the current state. Pressing the button swaps the function of the two faders.

Page Controls, Mode Keys and Multi Function Keys (MFKs)

This section of the front panel contains page controls and a seven segment display, a set of Mode keys (FIXTURE, GROUP, COLOUR, BEAMSHAPE, POSITION, EFFECTS, MACRO, SPECIAL) and a block of 20 Multi Function Keys (MFKs).

Page Controls and Display

The current Page is indicated on the dual seven segment display. The PAGE UP and PAGE DOWN keys are used to select the required page. Pressing the PAGE UP and PAGE DOWN keys together selects Page 1. Each mode (Fixture, Group, Colour etc.) has its own current page.

Mode Keys

The mode keys (FIXTURE, GROUP, COLOUR, BEAMSHAPE, POSITION, EFFECTS, MACRO, SPECIAL) determine the function of the block of 20 Multi Function Keys (MFKs). Each of the mode keys contains a red LED, which is lit when selected. If the mode key is flashing, this indicates that the wheels are in control of this attribute but the MFKs are showing another function. This allows simultaneous selection of fixtures whilst still manipulating attributes, for example.

Multi Function Keys (MFKs)

The Multi Function Keys are arranged in 4 rows of 5 keys with a graphical LCD above each row of keys. The brightness and contrast of the LCDs can be adjusted as required. Each Multi Function Key contains a red LED. These LEDs are used to indicate which fixtures, groups etc. are selected depending on their current function. Pressing and releasing one of the Mode Keys changes the MFK's to that page and the control wheels follow (when appropriate). The MFKs remain in that mode until a different Mode key is pressed. Pressing and holding down a Mode key temporarily changes all the MFKs to that function. Selecting an MFK will apply that MFK but the MFKs will return to the previous MFK mode, when the Mode key is released. For example – Press and release the FIXTURES key. The MFKs change to fixture selection keys. Select a number of fixtures. Press and hold down the COLOUR key. The MFKs change to colour palette selection keys (while the COLOUR key is being held down). Press one of the colour palette MFKs to apply the colour palette to the selected fixtures. Release the COLOUR key and the MFKs return to being fixture selection keys.

Playback Faders

The Playback faders controls the maximum output level of the cue being output on the Master Playback. This fader only affects the dimmer and brightness fixture channels (if applicable). The Colour, Beamshape and Position fixture channels are not affected by the master fader.

Playback Buttons

The Playback buttons, located below each of the playback faders are used to flash, solo or latch the data programmed on the playback. When multiple cues are programmed on the Playback, these buttons can act as a GO or Pause function. Each button can have two actions, a "Normal" action and a "Shifted" action (when SHIFT and the PLAYBACK BUTTON are pressed together). The actions of these buttons are user definable via the Playback Setup Window (accessible by holding SETUP and pressing the PLAYBACK BUTTON).

Playback Page Controls and Display

The current Playback Page (1-20) is indicated on the dual seven segment display. The PAGE UP and PAGE DOWN keys are used to select the required playback page. Pressing the PAGE UP and PAGE DOWN keys together selects Playback Page 1.

Step Button

The STEP button is used to initiate the Global Tap tempo when Playbacks are set to "Chase" and have "Global Tap Tempo" enabled. There is no difference between the two Step buttons.

Master Playback

The Master Playback controls "Playback 0". This Playback is no different to any of the other Playbacks, except that it's separated out and is always available, no matter which Page the console is currently set to.

Fader

The MASTER fader controls the maximum output level of the cue being output on the Master Playback. This fader only affects the dimmer and brightness fixture channels (if applicable). The Colour, Beamshape and Position fixture channels are not affected by the master fader.

Go Button

The GO button is used to initiate a crossfade between the cue currently being output and the Next cue in the Playback as indicated on the Playback screen. Other actions are available via the Playback Setup Window (accessible by holding SETUP and pressing the GO button).

Pause Button

The PAUSE button is used to pause a crossfade between the current and next cue. When a crossfade has been paused, the red light in the button flashes. Pressing the GO button releases the pause. Pressing Pause again will step backwards in the cue stack.

Override Control

The OVERRIDE control is used to slow down or speed up the crossfade between the current and next cue. When the control is moved away from the central neutral position.

Main LCD

The Main LCD provides part of the user interface on the front panel of the desk. The content, layout, operation and other information displayed on this screen is dependent on the current operation being carried out on the desk. When the Playbacks screen is selected, the Main LCD acts as a small viewing portal on the Playbacks window. When any of the other main windows (Outputs, Groups etc.) are selected, the Main LCD displays a simple text message directing you to refer to the monitor, plus the desk software version and other helpful information,

SETUP - used to enter Setup mode and display the Setup screen on the Main LCD and monitor. Also used for exiting Setup mode.

MEMORIES - opens the Cue List of the selected Playback. To select a different playback, hold MEMORIES and press the flash/GO button of any Playback together.

SUBMASTERS - displays information on the current page of "Playbacks".

OUTPUTS - used to display the Outputs screen on the monitor.

PGM WIN - opens the "Fixture Levels" window of the selected Playback, which displays the value of every fixture in every cue. To select a different playback, hold PGM WIN and press the flash/GO button of any Playback.

Cursor Keys (UP, DOWN LEFT, RIGHT) - used to move around the fields on the main LCD (where appropriate) and/or the monitor screen. These buttons are equivalent to the four cursor keys on an external keyboard (if fitted).

Plus (+) and Minus (-) - used to increment or decrement the value of the current selection.

NAME - used for naming cues, playbacks, palettes etc.

TIME - used in combination with other keys to perform various functions over the internal fade time (eg outputting palettes over a time).

LOAD - load a cue into the programmer, press LOAD, type the cue number on the MFKs, and then press the flash/GO button of the playback containing the cue you wish to load.

CLEAR - used for clearing the "programmer". As soon as any changes are made to the look in the programmer, the LED in the CLEAR key is lit, to indicate that dimmer or fixture parameter values have changed. Pressing the CLEAR key once clears the fixture selection in the Output Window. Pressing the CLEAR key a second time will clear (undo) all the operations made in the "programmer" since the LED was first lit and the LED in the key goes out.

UPDATE - used to update loaded items or items modified by the programmer.

RECORD - used for programming cues, groups and palettes.

COPY - used to copy Cues and Playbacks from one location to another

INSERT - includes a range of functionality, customisable by the user by holding SETUP and pressing INSERT.

DELETE - used when deleting items (cues, playbacks, groups, palettes etc.)

ENTER - used for completing commands and selecting 'soft' buttons on the Main LCD, monitor screens and popup windows.

HOME - used as a quick method for setting all the parameters, or all the parameters for a particular attribute to their home values.

GRAND MASTER - controls the final output values of all dimmer and fixture intensity channels, resulting from the Program Window, Playback X and submasters. The Grand Master level is displayed on the monitor screen.

BLACKOUT - reduces the outputs of all dimmer and fixture intensity channels to zero. Pressing the BLACKOUT key toggles between active and not active. The red LED in the BLACKOUT key flashes when blackout is active.

SHIFT - used in conjunction with various front panel controls to provide additional functions, eg holding SHIFT and pressing the COLOUR key displays the Colour Palette Window on the monitor.

Wheel LCD

The Wheel LCD is used to indicate which fixture parameters or other data are being controlled by each of the three control wheels. Example - When showing fixture parameter values - The Wheel LCD displays the parameter name (eg Colour1) and the value in %, DMX or the parameter detail name. Tag status is shown by inverse graphics – a white background shows a tagged parameter, and a blue background display shows an untagged parameter.

Control Wheels

The three control wheels are used for setting fixture parameter levels and other data. The names of the fixture parameters or other data currently assigned to each of the wheels and their values is shown on the Wheel LCD.

Wheel Editing Modes

There are a number of wheel editing modes which apply when editing several fixtures at the same time (Absolute, Relative, Fan First, Fan Middle, Fan Last, Fan V). For each attribute there is a normal wheel mode which applies when the control wheel is moved and a shifted wheel mode which applies when the SHIFT key is held down and the control wheel is moved.

ZerOS Wing



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, or Phantom ZerOS on PC, and it is instantly upgraded.

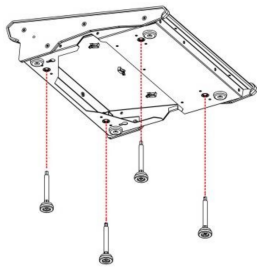
It is always recommended to ensure your console is running the latest software. You must be running ZerOS 7.9.2 or later to use ZerOS Wings.

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.

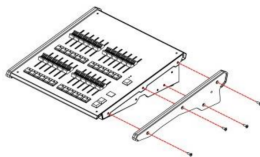
Using ZerOS Wing with FLX

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 or ZerOS Server. 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.



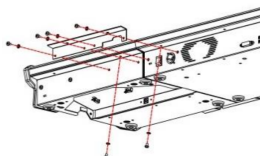
Adding feet to raise ZerOS Wing behind FLX

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.

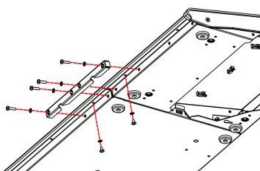


Mechanically connecting ZerOS Wing to FLX

To mechanically connect two ZerOS Wings, or a ZerOS Wing to a FLX, coupling brackets are required (order code 0021-000005-00). First, remove the two mating sides by removing the four screws, as shown.



Choose the rear coupling bracket (the right angular piece) and place it up against the console and wing. 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.



Now choose the front coupling bracket and place it along the front of the console. 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.

Connecting ZerOS Wings to your console does not unlock additional fixtures, channels or playbacks. Adding ZerOS Wings simply adds more hands-on faders, allowing for less paging, quicker access to fixtures and playbacks, and with the extension of the USB cabling, remote control.

Desktops & Windows

FLX range lighting consoles have multiple different windows that can be displayed, which allow you to view, and control all aspects of your fixtures and your show. On all FLX range consoles, these windows can be viewed on the internal touchscreen. On FLX, FLX S48, and ZerOS Server, these windows can also be displayed on an external monitor.

All windows can be viewed on the internal touchscreen, meaning all functionality of FLX consoles can be accessed standalone, without an external monitor if required.

Touch Scrolling

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



Internal Display

All three FLX range 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, 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.

Find out more about available screens, desktops and windows...

- [FLX S Touchscreen](#)
- [External Display](#)
- [External Desktops](#)
- [View Button](#)
- [Output Window](#)
- [Faders Window](#)

FLX S Touchscreen



Along the top of the FLX S touchscreen are six square icons. Additional tabs (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 currently controlling. The currently selected button is highlighted in blue.

See below for information on the six icons:

Save – FLX S automatically saves you're 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. [See the Output Window section to learn more.](#)

Cue list window – this window displays the list of cues on a specific playback, ready to be progressed by pressing the GO button. [See the Cues Window section to learn more.](#)

Faders window – this window displays the current functionality of the 24 or 48 faders on the left hand side of the console. [See the Faders Window section to learn more.](#)

Groups window – this window is used to select fixtures that are often used together. Groups can be automatically or manually created. [See the Groups section to learn more.](#)

On FLX S48, if you enable the external monitor, the Outputs, Cues, and Faders icons will disappear, as these windows can be accessed on the external monitor by pressing View.

External Display



External monitors can be connected to FLX, FLX S48 and ZerOS Server.

DVI-D or HDMI

As the external monitor output connection is a DVI-D (digital) connector, passive DVI to VGA adapters will not work, as the digital signal will need to be converted to analogue. To do this an active adapter will be required to convert DVI-D to VGA.

Passive DVI to HDMI, or DVI to DisplayPort adapters may be used.

Beginning July 1, 2025, all FLX S48 consoles will ship with an HDMI connector.

Enabling/Disabling the External Monitor

On FLX S48 and FLX consoles, the windows the internal touchscreen displays are affected by whether you have an external monitor connected. This is primarily to avoid having information duplicated on the internal and external monitor.

By default, FLX S48 will have the external monitor disabled. This does not mean that your external monitor won't work. Your external monitor will still display, and if you have a touchscreen or mouse connected, you will still be able to interact with the external monitor. When the external monitor is disabled this means that the **View** button will control the internal touchscreen, and you will have access to all information internally. Enabling the external monitor, will result in the **View** button controlling the external monitor instead, and some windows will then no longer be available internally.

To do this, tap **Setup** -> **Settings** and use the Monitor option under Displays.

By default, FLX will automatically detect whether a monitor is present or not, and therefore will automatically switch between whether your **View** button controls the internal or external monitor.

If you would rather enable/disable the external monitor manually, tap **Setup** -> **Settings** and use the Monitor option under Displays.

The command line will always be displayed along the bottom of the external monitor. If you disable the external monitor, or unplug the external monitor when FLX is set to auto detect, the command line will also be displayed along the bottom of the internal touchscreen.

External Touchscreen



The external monitor connected to FLX S48, FLX and ZerOS Server, can be a touchscreen. The user interface displayed on the external monitor is designed to be used with a touchscreen.

To connect a touchscreen, use the DVI-D or HDMI connector for video, and USB for the touch. You will then need to Calibrate your external touchscreen.

[Click here for Calibration information.](#)

Touchscreens that are plug and play with Windows 10 and do not require a driver, should work with ZerOS. Zero 88 however make no guarantee that all touchscreens will be compatible. [Contact Zero 88 for more information.](#)

For testing and demonstrations, the Zero 88 team use [liyama Prolite T2236MSC-B2](#). These touchscreens are pretty rugged, and are capacitive and so support multi-touch, which is ideal for use with the consoles.

External Desktops

The external monitor connected to FLX, FLX S48 or ZerOS Server, can display one of four different desktops. These desktops are pre-defined layouts of various different windows.

When the External Monitor setting is enabled, your **View** button will cycle you through the desktops on the external monitor. If using a touchscreen or you have a mouse connected, you can simply click on the desktop button from bottom right of the external monitor.

As well as the external monitor displaying one of these desktops, an unlimited number of remote connections can also display these desktops.

Desktops can be viewed using the ZerOS Monitor apps for Windows, iOS or Android.



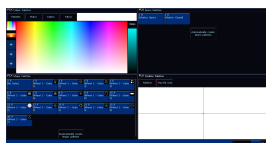
"Cues" desktop

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



"Fader" desktop

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



"CBSP" desktop

The CBSP desktop or "Palettes" desktop shows the four attribute windows (Colour, Beam, Shape and Position) in each corner.



"Grp, FX, Colour" desktop

The Groups, Effects and Colour desktop, displays a Group window top left, Effects window top right, and then two colour windows at the bottom, allowing for two methods of colour control to be used and viewed simultaneously.

You can rename the desktops if you wish, by tapping the Name button, and clicking on the button of the desktop you want to give a custom name to (you can't name the currently viewed desktop).

View Button

On FLX S24 (and FLX S48 and FLX when the external monitor is disabled), the **View** button can be used to control your internal touchscreen. Pressing **View** will toggle you between the Cues and Faders windows. Holding **Shift** and pressing **View** will take you back to the Output window.

On ZerOS Server, and FLX S48 and FLX when the external monitor is enabled, the **View** button can be used to cycle you through your 4 available external desktops, displayed on the external monitor. Holding **Shift** and pressing **View** will cycle back through your external desktops.

Output Window

The Output Window is arguably the core window that can be viewed in ZerOS. The Output Window will show patched fixtures in channel number order. The channel numbers of fixtures are displayed in white, with intensity percentages displayed below them.

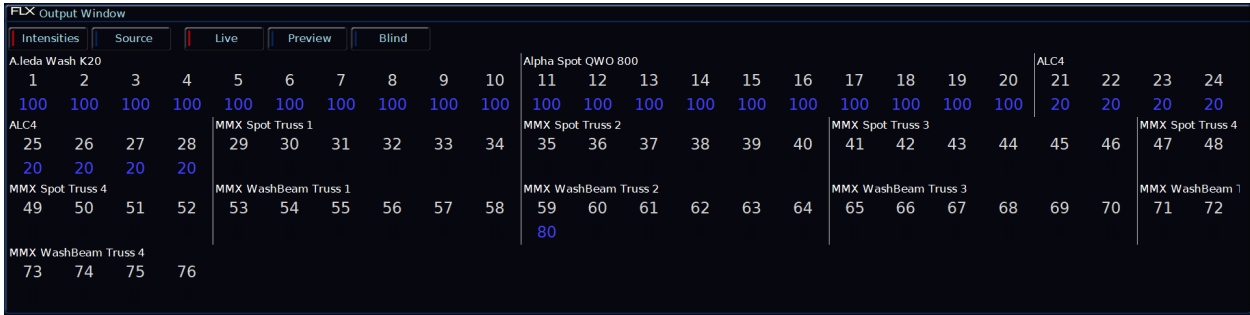
Internal Touchscreen



The shortcut to view the Output Window on the internal touchscreen of consoles without a monitor, is hold Shift and press View.

External Desktop

If you have an external monitor or remote monitor connected, the Output window is shown on the top half of both the Cues and Faders desktops:



Intensity Colour Coding

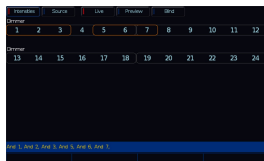


The intensity percentages of your lights are displayed in various colours, which indicate the following:

- **Red** - Programmer value - these are any intensities currently being controlled manually, not by a cue.
- **Blue** - Cue value - values that have faded on from a cue
- **Green** - Cue value - values that have faded down from a cue
- **Purple** - Tracked value - a value which has not been given a new instruction by a cue, and is therefore still the same value it was in the previous cue.
- **White** - Blocked value - a value which is recorded in a cue, that is identical to the value recorded in the previous cue. The intensity is therefore told to go to the value it is at already.
- **Yellow** - Other control:
 - [Highlight active](#)
 - [Rem Dim active](#)
 - [UDK Channel Data](#)
 - [HTP Channel Data](#)
 - [Intensity defaulted to greater than 0%](#)
 - [DMX Input Channel Control](#)
 - [MIDI Notes Channel Control](#)
 - **Red Background** - Parked
 - **Grey Background** - Moved On Dark
 - **Line above value** - A Topset/Max Level is active

For more information on what these various values are, go to their relevant section of the manual.

Selection



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.

The Output window will automatically scroll to show the last selected channel number.

Grey outlines around rows of fixture numbers in the Output Window indicate which set of fixtures are currently being controlled by the channel faders.

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 current intensity percentages outputting from the console.

“Preview” displays the intensities of 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 quick way to enter and leave “Blind Mode”.

[Click here to find out more about Blind mode](#)

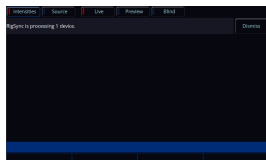
Parameter Table



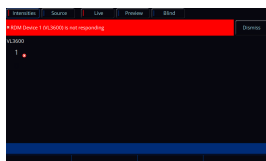
At the bottom of the Output Window on the external desktops, a parameter table will open. This will show the percentages and details of all parameters of the currently selected fixtures, and fixtures that are currently in the programmer.

RDM Notifications

When RigSync is enabled, ZerOS will continuously look for any new RDM fixtures that may be connected. When a fixture is discovered, it will be processed, and then automatically patched.



When an RDM device is detected, a banner will be shown at the top of the Output window, whilst ZerOS processes information about the fixture.



If a discovered and patched RDM fixture stops responding, an X will be shown next to the fixture's channel number, and an error message will be displayed at the top of the Output Window. A "Dismiss" button is provided to dismiss the notification. A "View Notifications" button will display if more than one fixture stops responding.

[Click here to find out more about RigSync](#)

Multicell Fixtures

"Multicell" fixtures, are fixtures that have multiple light sources which can be controlled individually. When all the "cells" of a multicell fixture are at the same intensity level, the fixture will be shown in the Output window like any normal fixture.

[Click here to find out about multicell fixtures](#)



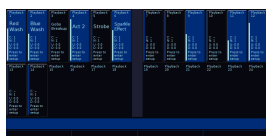
On FLX, if one or multiple cells of a multicell fixture are selected, the Output window expands to show you the fixture's individual cells.

The fixture's name, is temporarily replaced by the labels of the cells.



If the cells of a multicell fixture are not all at the same intensity level, the Output Window will display the fixture's highest cell intensity percentage below the fixture's number, followed by a "."

Faders Window



The Faders window will show you exactly what your 24 multi-functional faders (or 48 on FLX S48) are currently doing.

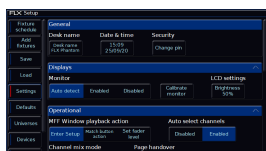
When in Channels, the on-screen faders will therefore show you the name of the fixture each fader is controlling, and their intensity percentage.

When in playbacks, the on-screen faders will display the playback name, the current cue (C), the next cue (N), the raise time (U), and the lower time (D) of that playback.

For consoles without an external monitor, tapping View will toggle between the Faders and Cues window on the internal touchscreen.



For consoles with an external monitor connected, the Faders window can be viewed on the bottom half of the Faders desktop.



By default, clicking on a playback fader in the faders window, will open that playback's settings.

Rather than pressing on an on-screen playback and opening that playback's settings, you can instead configure pressing an on-screen fader to match that playback's button function, or use the on-screen fader to change the fader level by dragging. This is particularly useful if you are viewing the faders desktop via the ZerOS Monitor app on a tablet.

This can be configured from Setup -> Settings , and using the MFF Window playback action option under Operational.



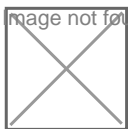
On FLX, the top four buttons running across the top of the Faders window, show what your UDKs are currently doing.

On Solution consoles, click the Submasters button to open the Faders window. This will show you the current functionality of the playback faders.

Patching

After powering your console for the first time, or after resetting the console, or after a software update, there will be no fixtures patched. This means your channel faders will not be controlling your rig, as currently the console does not know what fixtures you may have.

The “patching” process is therefore a required to tell your console about the devices, known as “fixtures”, being used in your lighting rig. From this information, ZerOS will be able to provide you the controls required on-screen (and on the fixture encoder wheels) to control all the functions, known as “parameters”, of these fixtures.



<https://youtu.be/1Rbfj0nvgYA>

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”, will be assigned a “Fixture Number”, and its intensity will be controlled using a “Channel fader”. 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

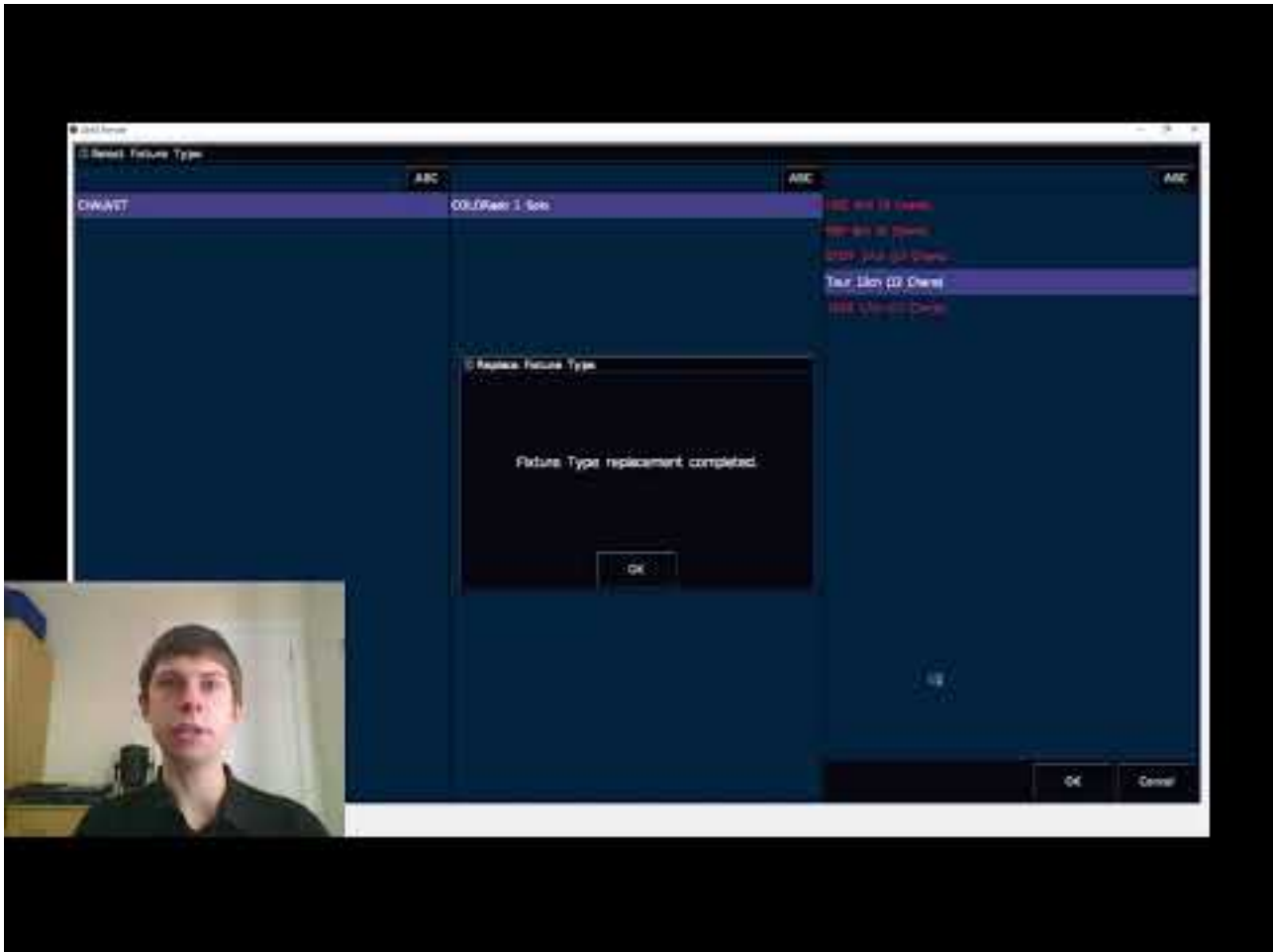
A parameter is a function of a fixture. A fixture with ten different functions has 10 different “parameters”. Dimmer channels are simple fixtures with only one parameter - the “intensity”. More complex devices (such as moving lights, LEDs etc) are fixtures with multiple parameters (for example “pan”, “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 four attributes for easy access and control. These attributes are called “Colour”, “Beam”, “Shape” and “Position”. A fifth attribute, called “Effect”, manipulates parameters to create effects such as “Circle”, “Ballyhoo” and “Rainbow”.

Watch the Patching & Universe Routing training session here...



<https://youtu.be/Ezdh92cbfg4>

Find out more...

- [An Introduction to DMX](#)
- [Available Channels](#)
- [ZerOS Library](#)
- [Add Fixtures](#)
- [Fixture Schedule](#)

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 function of a fixture, known as a parameter, will require at least 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 therefore 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 of a small system may look like this:

- 001 – 024 – Dimmers 1 to 24
- 025 – 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”.

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.



For more information on DMX & RDM, take a look at this session.

https://youtu.be/F_6ANCol8dg

Some devices such as pyrotechnics have the option to be remotely controlled from a lighting console using DMX.

You should however be aware of points 1.4 and 1.5 of E1.11 - 2008 (R2013) DMX512-A.

These are set out below...

1.4 Classes of data appropriate for transmission over links designed to this Standard

DMX512 is designed to carry repetitive control data from a single controller to one or more receivers. This protocol is intended to be used to control dimmers, other lighting devices and related non-hazardous effects equipment.

1.5 Classes of data not appropriate for transmission over links designed to this Standard

Since this Standard does not mandate error checking, DMX512 is not an appropriate control protocol for hazardous applications.

Available Channels

On all ZerOS consoles, including FLX, FLX S24 & FLX S48, ZerOS 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. The total number of used channels across the 64 universes must not exceed the number of universes your console is licensed to output. All 64 universes can be distributed over an Ethernet network using either “Art-Net”, “Streaming ACN” or “CITP”.



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.

[To find out how to choose which universe to patch onto, click here.](#)

[To find the number of universes your console is licensed for, click here.](#)

ZerOS Library

ZerOS includes the ZerOS Library. This is a library that contains information for over 30,000 fixtures, including how they work, what parameters they have, what their default values are.

ZerOS Library doesn't just include a library of fixtures. ZerOS Library includes the following data:

- Fixture Library
- Automatic Effect Palettes
- Effect Waveforms
- Art-Net OEM Codes
- Filter Libraries
- Mood Boards by LEE Filters
- Additive Colour Emitters

ZerOS Library is regularly updated. The latest version of the library can be downloaded from zero88.com/library.

To find the library version currently on your console, tap **Z** -> *System Information*:

If you are not running the latest version of the library, download it from the website, and copy the library file (.zlibr format) to the root of a USB stick. Then plug the USB stick into your console, tap **Setup** -> **Load** and choose the new library file.

[Click here to find out more about updating your console's ZerOS Library version](#)

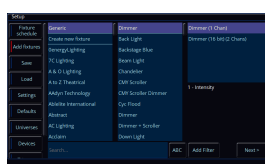
Once you are running the latest version of the ZerOS Library, you can then add fixtures to your console, by tapping

Setup -> Add Fixtures

[Click here to find out more about Add Fixtures.](#)

[If you can't find your fixture in the latest ZerOS Library, click here to find out how you can control your fixture.](#)

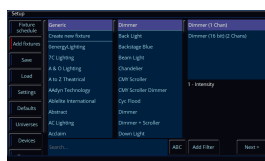
Add Fixtures



To patch fixtures into your console, you will need to go to "Add Fixtures". Add Fixtures can be accessed by tapping the Setup key, and choosing "Add Fixtures" from the left hand side. Add Fixtures gives you access to ZerOS Library, the list of available fixtures in the console.

It may be useful to first collate all the information you need, such as the fixtures, addresses and modes, prior to commencing the patch on ZerOS, as incorrectly entered data can result in the rig being unusable, and could lead to hours of troubleshooting.

If you have prepared your show using visualisation software, you will be able to export your patch list to have with you next to the console.

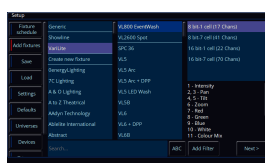


Within Add Fixtures are three columns - the fixture manufacturer, fixture model, and the fixture's mode. These can be used to choose the fixture you need to patch.

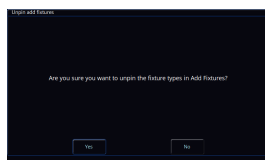
The first option in the list of manufacturers is "Generic". This contains generic profiles for single channel fixtures, and LED PARs with various different LED emitter combinations. If you are using a simple LED PAR, and cannot find it in the library, try using one of the profiles under Generic to see if they match. There are also Generic multicell fixtures available too, for controlling simple LED battens.

If you just need to patch single dimmer channels into your console, simply tap Next >, as Dimmer will be preselected.

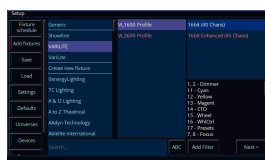
[Click here to find out about Searching & Filtering Add Fixtures](#)



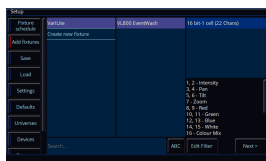
Fixture manufacturers & models that have already been patched, and fixtures that have been loaded into the console, will be "pinned" to the top of Add Fixtures. This allows you to easily patch a fixture you are already using again.



To "unpin" fixtures that are no longer in use, tap Setup -> Clear Options -> Unpin Add Fixtures.



If you see fixtures displayed in red, this means this fixture is not in the library format, and so is either from a custom fixture file, from a legacy show file, from RigSync, or from an ASCII show file.



After choosing your fixture's manufacturer & model, you will then need to use the third column to choose the fixture's mode. It is important that the mode set here matches the mode set on the fixture - if in doubt, consult the fixture's operating manual for details.

After the fixture's mode name, will be the number of channels or "DMX footprint" of that fixture, displayed in brackets. Bottom right of Add Fixtures, will be the parameter list, showing you the parameters of the currently selected fixture.

Once you have found your fixture, click **Next >**

[If you cannot find your fixture in Add Fixtures, click here](#)

Quantity & Fixture Number



After choosing your fixture, you can now state how many of these fixtures you would like to patch, and the fixture number the first fixture will use.

The fixture number, is the fader number you use to control the fixture, and on FLX, also the number you use to select that fixture with syntax commands.

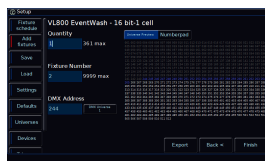
By default, a quantity of 1 will be prepopulated, and the next available free fixture number will be shown.

- On FLX, there is no fixture limit, and instead you are limited by the number of universes licensed on your console. To find the current number of universes you are licensed for, tap Setup -> Upgrade. Fixtures can be numbered between 1 - 9,999.
- On FLX S24, you are limited to 48 fixtures, numbered 1 - 48.
- On FLX S48, you are limited to 96 fixtures, numbered 1 - 96.

If you wish, rather than using the number pad to define the quantity of fixtures, and which fixture number they start at, you can instead use the Channel buttons. Ensure your faders are in "Channels" function, and you will then be able to tap the channel buttons of the faders you wish these fixtures to be controlled by. If you want to patch a sequential range, press and hold the first fixture number, and tap the last. For example, pressing and holding channel button 13, and tapping channel button 24, will tell my console I want 12 fixtures, starting at fixture number 13.

Channels that already have fixtures patched on them will have their buttons lit. Channels you are currently patching fixtures onto will have their buttons flashing. Empty Channel buttons will not be lit.

DMX Address



After stating the quantity, and the first fixture number, you can fill in the DMX address of the first fixture. This must match the DMX address set the on the first fixture.

The DMX address will be prepopulated with the next free DMX address that your fixture is able to use.

You will also be able to choose which DMX universe these fixtures are patched onto. You are able to patch fixtures onto 64 universes, so long as the total number of used channels doesn't exceed what your console is licensed for.

Tapping the "Universe Preview" button at the top, will show you the universe you are currently patching onto, with the block of fixtures you are patching displayed in blue, free channels displayed in white, and used channels in grey. You can use the universe preview to drag your block of fixtures around the universe, and as you do so the DMX address field will update. If you try and drag the fixtures into the used channels, they will go red, and jump back to the next available address when you let go.

To change which DMX universe you are patching onto, tap the DMX Universe button. On FLX, you can also type "x.y" into the First DMX address field, where x is your universe number, and y if your address number. So for example 2.51 would input address 51 on universe 2.

Patch Offset

The last field available is Patch Offset. This will only be shown if you are patching more than 1 fixture. By default, when you have a quantity of 2 or more, the console will assign the fixture's start addresses sequentially, one after the other. So for example if you had two 6 channel fixtures, starting at address 101, the console will be assign those with start addresses of 101, and 107.

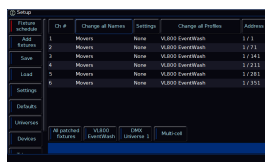
However, choosing a custom offset, will allow you to add spaces in between your fixtures. This is very common if you want to make your start addresses much easier to remember, for example, addressing your fixtures as 101, 121, 141, 161 etc. After inputting a custom offset, you will see this take affect in the Universe Preview.

For example if you have two 6 channel fixtures starting at 101, you may choose to put an offset of 10, to give these DMX start addresses of 101, and 111. When configuring a custom offset, you will have a choice of two sequences, useful if you like to address your fixtures ending with a "1", or a "0".

You can use Patch Offset, to intersperse patched fixtures between existing fixtures.

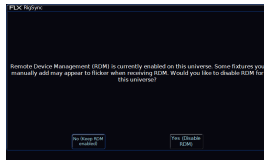
If you enter a Quantity that is too large, a Fixture Number that is already in use, or a DMX Address that conflicts with another fixture, ZerOS will automatically correct the value when you leave that field.

Finish



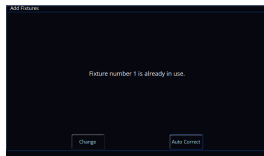
Once you have filled in the information, you can click Finish, and the console will patch these fixtures into your show. You will then be taken to the Fixture Schedule, with your newly patched fixtures shown. The fixtures should now have moved to their "Home" positions. You can repeat the Add Fixtures process for every group of fixtures you have.

After typing a value into one of the fields in Add Fixtures, pressing ENTER will advance you to the next field. A double press of ENTER in the last field will patch the fixtures.



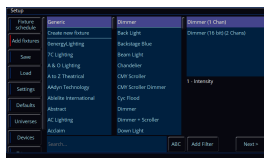
If you are patching a fixture for the first time, and you have RigSync enabled, you will receive a pop-up after clicking Finish (pictured). This will ask you whether you would like to leave RigSync enabled, so that it will continue to keep RDM fixtures synchronised with your console, or whether you would like to disable RigSync so that you can continue patching your console manually.

You will not receive this message again, however you can enable/disable RigSync at any point by tapping Setup -> Universes, and use the RigSync options under Remote Device Management.



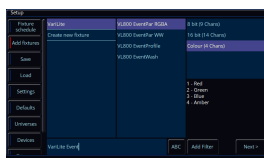
If you enter an invalid Fixture Number or DMX Address, and click Finish, ZerOS will inform you of the issue. You can then click "Change", to go back and edit the incorrect value manually. Alternatively you can click "Auto Correct", and let ZerOS change the Fixture Number or DMX Address so they are valid values that do not conflict with existing fixtures.

Searching & Filtering

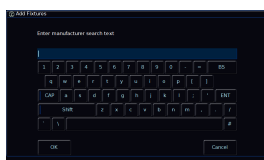


Add Fixtures gives you access to thousands of fixtures that are stored in the ZerOS Library. You therefore have the ability to search and filter the list of fixtures, to find the one you need.

Searching



Upon choosing Add Fixtures, the Search bar will be chosen. This allows you to use a USB keyboard to type in the fixture you are looking for.

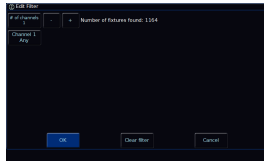


If you do not have a USB keyboard connected, simply tap ABC to bring up an onscreen keyboard.

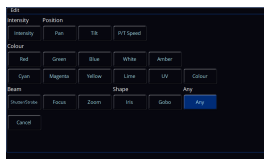
If you are on FLX, you can tap into one of the columns, and use the Up/Down arrow keys to navigate through the list. Hold **Shift** and tap the arrow keys to skip through the list. If you have a USB keyboard connected to your console, tap into one of the columns, and you can tap the first letter of the fixture you are looking for to take you there.

Filtering

Add Fixtures can also be filtered. Sometimes, you may not know the make or model of your fixture, but you might know how many DMX channels it uses, and what each DMX channel does. You can therefore add a filter, to show all fixtures in the library that have the same "DMX map" as the fixture you are trying to patch. To add a filter, click the **Add Filter** button bottom right of Add Fixtures.



This will open the Edit Filter window. This allows you to specify the number of DMX channels your fixture uses, either by clicking the "+" and "-" buttons, or by clicking the "# of channels" button.



Once you have specified the number of channels your fixture uses, you can then specify what each of those parameters is. To do this, tap a Channel button.

This will allow you to choose any of the following parameters:

Intensity Parameters:

- *Intensity*

Position Parameters:

- *Pan*
- *Tilt*
- *P/T Speed*

Colour Parameters:

- *Red*
- *Green*
- *Blue*
- *White*
- *Warm White*
- *Cool White*
- *Amber*
- *Cyan*
- *Magenta*
- *Yellow*
- *Lime*
- *UV*
- *Colour*

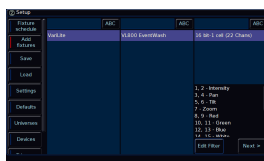
Beam Parameters:

- *Shutter/Strobe*
- *Focus*
- *Zoom*

Shape Parameters:

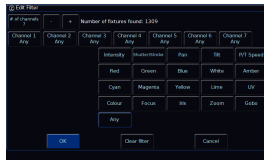
- *Iris*
- *Gobo*

You don't have to specify each parameter. You just need to add enough parameters in, so that the "Number of fixtures found" is small enough to then choose one of the suitable fixtures to patch.



To edit the filter, you can then click Edit Filter bottom right of Add Fixtures.

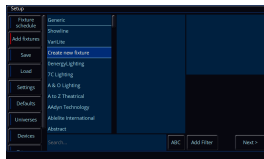
[If you cannot find a suitable alternative personality in Add Fixtures to control your fixture, click here](#)



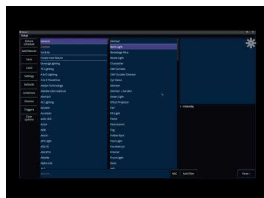
To remove a filter, you can click "Clear Filter" in the Edit Filters window.

[Once you have found a fixture, it can be Edited & Exported. Click here to find out more.](#)

Fixture Creator

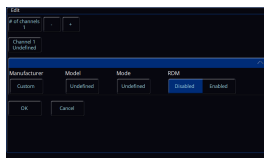


Below the "pinned" fixture manufacturers in Add Fixtures, there is a "Create new fixture" option. If you choose this, and click "Next >", you will be taken to the ZerOS Fixture Creator.



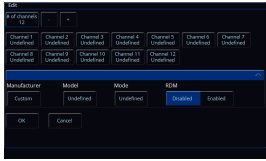
Watch this video to find out about the ZerOS Fixture Creator.

<https://youtu.be/Km8EOXCjLIk>

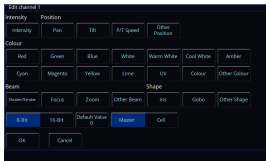


The Fixture Creator is designed to create fixtures quickly and simply - ideal if you get to site and find the fixture you need to patch is missing.

If you have filtered Add Fixtures to find a suitable fixture, upon choosing "Create new fixture", the Fixture Creator will be pre-populated with your defined DMX map. [Click here to find out more about Filtering Add Fixtures.](#)



Firstly, use the "# of Channels", or the "-" and "+" buttons, to choose how many channels your fixture uses.



You can then click on one of the channels you have added, and define what this channel is.

The following "common" parameters are available to choose:

Intensity Parameters:

- *Intensity* (defaults @ 0%)

Position Parameters:

- *Pan* (defaults @ 50%)
- *Tilt* (defaults @ 50%)
- *P/T Speed* (defaults @ 0%)

Colour Parameters:

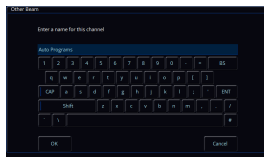
- *Red* (defaults @ Full)
- *Green* (defaults @ Full)
- *Blue* (defaults @ Full)
- *White* (defaults @ Full)
- *Warm White* (defaults @ Full)
- *Cool White* (defaults @ Full)
- *Amber* (defaults @ Full)
- *Cyan* (defaults @ 0%)
- *Magenta* (defaults @ 0%)
- *Yellow* (defaults @ 0%)
- *Lime* (defaults @ Full)
- *UV* (defaults @ Full)
- *Colour* (defaults @ 0%)

Beam Parameters:

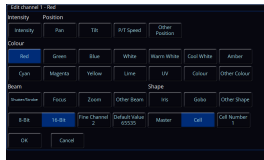
- *Shutter/Strobe* (defaults @ Full)
- *Focus* (defaults @ 50%)
- *Zoom* (defaults @ 50%)

Shape Parameters:

- *Iris* (defaults @ 0%)
- *Gobo* (defaults @ 0%)

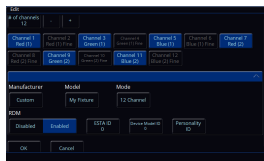


If the parameter you need to define is not listed, you can choose the "Other" option for the required attribute. This will allow you to then type in a custom parameter name.



After defining the parameter, you can then define the parameter settings if required. These include:

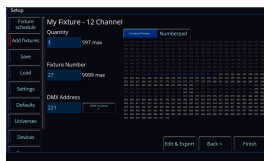
- 8-Bit / 16-Bit - if 16-Bit is chosen, you can then define the Fine channel for the parameter
- Default Value - this will be automatically populated based on the parameter you choose, but can be edited
- Master / Cell - this should be "Master", unless you are creating a "multicell" fixture. Multicell fixtures have multiple light outputs that can be controlled individually. When creating multicell fixtures, each light output is referred to as a cell. Therefore parameters that affect a particular light output should belong to that cell. Choose "Cell", and then define the Cell number. The Cell number will be automatically populated with the next available cell.



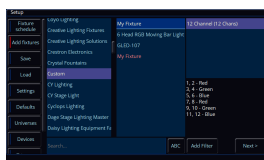
Once each parameter has been defined, you can then give the fixture a "Manufacturer", "Model" and "Mode" name.

If you know the fixture's RDM information, you can set "RDM" to "Enabled", and add the fixture's ESTA ID, Device Model ID, and Personality ID. If you do not know the fixture's RDM information, leave this Disabled.

You can then click OK.

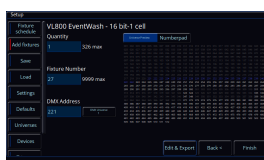


You will then be taken to the second page of Add Fixtures, with your custom fixture chosen, to allow you to patch it into your console.

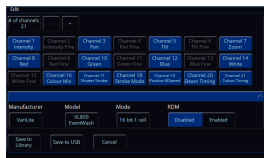


If you click "Back <", you will be taken back to the first page of Add Fixtures, where you will see your custom fixture file in the list. It will be in red text, indicating this is not a fixture from the ZerOS Library.

Edit & Export



Once you have found a fixture in Add Fixtures, you can then click Next. If required, you can then Edit & Export a copy of this fixture by clicking "Edit & Export".



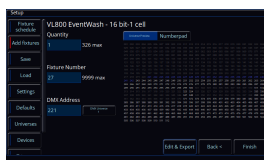
In the Edit Fixture window that opens, you can click on a parameter to customise it, such as change its name or default values.

You can also edit the fixture's Manufacturer, Model and Mode names.

[Click here to find out more about editing the channels of a fixture](#)

Edit & Export can be used in conjunction with filtering Add Fixtures, to gain control of a fixture that is not in ZerOS Library. The Fixture Filtering options can be used to find an existing fixture in the library that shares the same DMX map as the fixture you are trying control. You can then export the fixture with a new name if required.

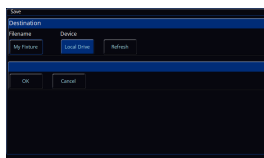
[Click here to find out about filtering Add Fixtures](#)



Once a fixture has been edited, it can then be Saved.

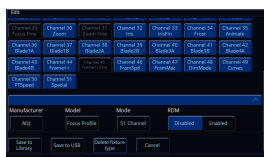
Choosing "Save To Library" will take you back to the second page of Add Fixtures, with your edited fixture chosen, to allow you to patch it.

If you were to click "Back <", you would see your edited version of the fixture has been added to the Add Fixtures list.



Choosing "Save To USB" will allow you to export your edited fixture. You can give the fixture file a name, and choose your USB storage device. The fixture will be saved in the .zfix format.

[Click here for more information on the .zfix fixture format.](#)



The Edit Fixture window can also be used to remove a custom fixture from Add Fixtures. If you click Edit & Export on a fixture that has been loaded into the console, and is not currently patched, a "Delete Fixture Type" button will be shown.

RDM



Upon exporting a fixture, you can also add RDM information to a fixture. The RDM information is in decimal (not hex), and includes the following information:

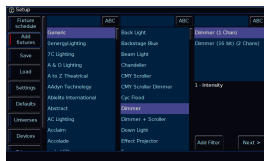
- ESTA Manufacturer ID
- Device Model ID
- Personality ID

Upon detecting a connected RDM fixture, ZerOS will look at the fixtures in the ZerOS Library, plus any custom fixtures that have been loaded. If ZerOS sees a fixture in the library or a custom fixture, that has RDM information that matches the discovered fixture, ZerOS will then automatically patch it.

If ZerOS doesn't find a matching fixture, it will create a basic fixture personality based on the information it can obtain over RDM. This basic fixture personality can then be found in Add Fixtures. To find the RDM information of the discovered fixture, tap **Setup** -> **Add Fixtures**, find the RDM fixture that has been discovered, click **Next >** then **Edit & Export**. You can then view the RDM information, which could then be added to a custom fixture file if required.

[Click here to find out more about RDM on ZerOS](#)

Missing Fixtures



Add Fixtures gives you access to thousands of fixtures. However, you may find the fixture you are trying to control is missing.

Follow the steps below if your fixture is missing:

Firstly, make sure your console is running the latest version of the ZerOS Library.

[Click here for information on finding your current ZerOS Library version](#)

If you are running the latest version of the ZerOS Library and your fixture is missing, you may find that there is a different type of fixture in the library, that can be used to control your fixture.

[Click here to learn how to find a suitable alternative fixture in your console](#)

If there are no suitable alternative fixtures in the library, you can build a basic fixture using the Fixture Creator.

[Click here to find out how to make your own fixture with the Fixture Creator](#)

Alternatively, if your fixture has RDM capabilities, ensure that RigSync is enabled on your console, and connect the fixture. ZerOS will be able to detect your fixture, and then create a basic fixture personality over RDM to allow you to control your fixture.

[Click here to find out more about RigSync](#)

If the fixture does not have RDM capabilities, check to see whether your fixture is on the GDTF Share, or whether there is a GDTF file available to download from your fixture manufacturer's website.

[Click here to find out more about GDTF](#)

If there is not a GDTF file available, you can create the fixture file yourself, using the free Fixture Editor software for Windows.

[Click here to find out more about the Windows Fixture Editor](#)

If you are unable to use the Fixture Editor software, we are pleased to inform you that fixture creation will now be outsourced to our fixture database provider. This change is aimed at enhancing the efficiency and accuracy of our fixture management process.

Please note that this service will now be chargeable.

GDTF service - Powered by Q2Q technologies

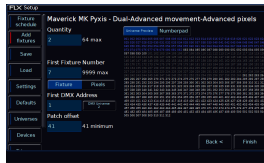
www.gdtfservice.com/#ContactUs

If you have created a fixture file, or have been sent a fixture file, you will be able to load it into your console.

Save the file to a USB stick, and plug into the console. Then tap **Setup** -> **Load** , and choose the fixture file to load in from USB.

[Click here for information on loading fixture files](#)

Multi-Part Fixtures



Some fixtures, can have multiple "parts", with each fixture part requiring its own start address. Common examples of these are dimmers channels with a scroller, movers with a separate dimmer, or LED fixtures where the pixels can be addressed separately. These are indicated in the first page of add fixtures, with the channel count displayed as "(x + y Chans)", where "x" is the channel count of the first part, and "y" is the channel count of the second part

In the second page of Add Fixtures (pictured), there will be a "Part" switch below the fixture number field, allowing you to input the DMX information in for the first part, then switch to the next part, and fill that part's DMX information in. You can then repeat this process for multiple parts. The channels used by the part you are working on will be displayed in blue in the Universe Preview.



After clicking Finish, you will then be taken to the Fixture Schedule, showing your newly patched multi-part fixtures. You will see a new "Part" column in the fixture schedule, identifying the information and addresses for each part.

"Multi-part" fixtures shouldn't be confused with "Multicell" fixtures (although, you could in fact have a multi-part multicell fixture!) . A multi-part fixture is a fixture with different parts that can be addressed independently. Multicell fixtures are fixtures with multiple light outputs that can be controlled independently. [Click here to find out about controlling multicell fixtures.](#)

Windows Fixture Editor

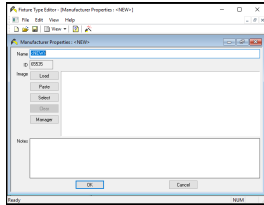
If the fixture you wish to control is not included in the ZerOS Library, it can be created using the Zero 88 Fixture Editor software for Windows.

[Click here to access the "Fixture Tools" download, which includes the Fixture Editor software](#)

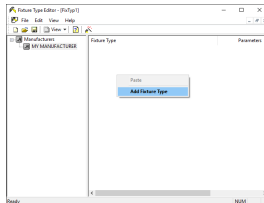
This is a quick start guide on how to use the Fixture Type Editor software for Windows to create your own fixture files. Once you have created your custom fixture file, you can then save the file to a USB stick, plug into your console, and load the file in.



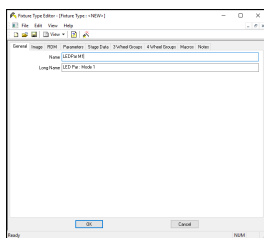
Upon opening the Fixture Type Editor, choose "Creating a New (Empty) Fixture Type File" and click OK.



Then, double click on "Manufacturers" top left, and type in your missing fixture's manufacturer name, and click OK.

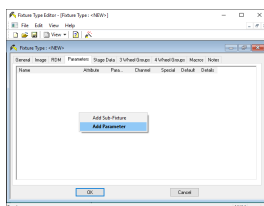


Then right click under "Fixture Type" and choose "Add Fixture Type".

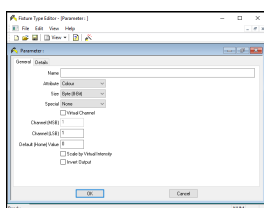


Then under the General tab of the window that opens, give your fixture a short name, and a long name. The long name is the name displayed on ZerOS consoles.

If your fixture has different modes, you will create a different fixture type for each mode. These are then named by separating the fixture name and the mode name with space colon space (:). In the example on the left, the fixture name is "LED Par", and the mode name is "Mode 1".



Then go to the Parameters tab, right click, and choose Add Parameter.



You can then give your parameter a name, and use the Attribute, Size and Special options to define the parameter. The parameter name is limited to 7 characters. As there is not a dedicated "Shape" attribute, any Gobo parameters created under Beamshape will automatically load into the Shape attribute when loading into a FLX range console.

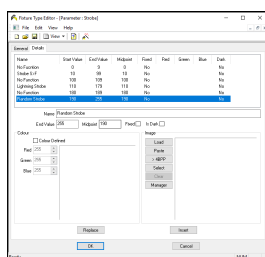
The Size field is used to select whether the parameter is 8-bit or 16-bit. 8 bit parameters use a single DMX channel. 16 bit parameters use two DMX channels. 16 bit resolution provides Coarse and Fine channels – these are entered below as MSB (Most Significant Byte) and LSB (Least Significant Byte) respectively.

When adding a Pan or Tilt parameter, select “Pan” or “Tilt” from the dropdown box.

To apply Red, Green and Blue parameters to the colour picker, simply use the "Red - Positive", "Green - Positive" and "Blue - Positive" options using the Special drop down after choosing the Colour attribute.

The channel number can be entered, and the default value of the parameter can also be entered. You must ensure that the the default values of all of your fixtures, will give you white light when the fixture is turned on. This means ensuring shutters default to open if an intensity parameter is present, and ensure Red, Green and Blue default to full to give white. Also ensure other parameters are at default, for example Pan and Tilt should be set to 127 (or 32767 for 16 bit) to default the fixture position to 50%. For a 16-bit parameter, this value can be specified up to 65535.

Note: When you add parameters to a fixture, the Fixture Type Editor will automatically increase the "DMX Allocate:" field. If you delete parameters, check that the DMX Allocate setting has the correct number, otherwise you will find the desk allocating too many DMX channels for your fixture.



Each fixture parameter can contain information about its function at any given DMX value. This is entered using the Details column in the parameter entry window. Double click a parameter to view the parameter window again. Switch to the Details tab to enter the details about a fixture.

Each detail can then be entered, with the relevant fields completed. Starting at a DMX value of 0, add the parameter details and midpoints sequentially.

The “Is Dark” box is used for defining a parameter which blacks out the beam.

If defining Colour parameters, you can enter the colour using RGB data.

Once all parameter details are entered, press OK to close the Parameter window.

Each fixture can have a Virtual Intensity channel. This channel is not assigned to a DMX address, but can be used to scale the output of other channels, creating an effective dimmer for colour mixing fixtures which do not have a separate dimmer.

An example of the use of a virtual intensity parameter would be an LED colour mixing fixture which has just 3 channels – Red, Green and Blue. By scaling these channels on a virtual master, you can dim a mixed colour.

First create the Virtual Intensity channel as a normal parameter, but tick the “Virtual Channel” box. Then select “Scale By Virtual Intensity” on the relevant fixture parameters.

Once you have created your fixture file, click File -> Save, and give your file a name. Save this file to the root of a USB stick, and you will then be able to plug it into the console.

On your console, then tap Setup -> Load, and choose your new fixture file from USB. You will then be able to tap Add Fixtures, and find and patch the fixture in the usual way.

Fixture Schedule



ID	Name	Change of Name	Settings	Address	Edit
1	LED100	1/15	1/15	1/15	
2	LED100	1/15	1/15	1/15	
3	LED100	1/15	1/15	1/15	
4	LED100	1/15	1/15	1/15	
5	LED100	1/15	1/15	1/15	
6	LED100	1/15	1/15	1/15	
7	LED100	1/15	1/15	1/15	
8	LED100	1/15	1/15	1/15	
9	LED100	1/15	1/15	1/15	
10	LED100	1/15	1/15	1/15	

The fixture schedule, lists all of the fixtures currently in your show, and allows you to edit them in various ways. The fixture schedule is automatically displayed after patching fixtures, and is the first window that opens upon tapping Setup, which opens ZerOS Setup.

By default, the fixture schedule will display your fixtures in fixture number order. However the fixture schedule can also be sorted, by holding the **[Shift]** key, and tapping the column headers. This will sort them numerically / alphabetically, and a second tap will reverse the order. For example hold **[Shift]** and tap **Address** to sort in order of DMX address.

Click to find out more about these Fixture Schedule subjects...

- [Selecting Fixtures](#)
- [Patch Groups](#)
- [Fixture Channel Number](#)
- [Fixture Names](#)
- [Fixture Settings](#)
- [Change Fixture](#)
- [Address](#)
- [Relays](#)
- [DMX In](#)
- [Syntax](#)
- [Deleting Fixtures](#)

[To quickly see which mode a fixture is in, tap on it under the "Change All Fixtures / Modes" column](#)

Selecting Fixtures

Any individual cell within the Fixture Schedule can be edited by clicking on it, to edit a single fixture. Alternatively, you can select a range of fixtures first, and then use the column header to make your edits to multiple fixtures at once.

Selecting fixtures in the fixture schedule is very useful, as it allows you to edit multiple fixtures at once. To select fixtures, press the channel buttons of the fixtures you wish to select. Their channel buttons will light to indicate they are selected. Make sure your Fader Function button is toggled to "Channels". To select a sequential range of fixtures, press and hold the first channel button, and then tap the last of your range. For example pressing and holding channel button 1, and tapping channel button 12, will select fixtures 1 through to 12. Their buttons will light, and I will just see those fixtures displayed in my fixture schedule.

To clear your selection, tap the Clear button. You will then see all fixtures in your show file listed.

Selecting fixtures with syntax

You can use syntax commands, to select the fixtures you wish to view and edit in the Fixture Schedule. Syntax commands are typed into the command line, running along the bottom of the fixture schedule window.

You can use the **And** , **Thru** and **Except** keys, to select multiple fixtures at once. Some examples:

1 **Enter**

1,

This selects fixture 1.

2 **And** **3** **Enter**

2, And 3,

This selects fixtures 2 and 3.

5 **Thru** **10** **Enter**

5 Thru 10,

This selects fixtures 5 through to 10.

5 **Thru** **10** **Except** **7** **Enter**

5 Thru 10, Except 7,

This selects fixtures 5, 6, 8, 9 and 10.

3 **Thru** **9** **Except** **5** **Except** **6** **Enter**

3 Thru 9, Except 5, Except 6,

This selects fixtures 3, 4, 7, 8 and 9. Note how Except is used twice to exclude two different channels from the range.

1 **Thru** **3** **And** **7** **Thru** **9** **Enter**

1 Thru 3, And 7 Thru 9,

This selects fixtures 1, 2, 3, 7, 8, and 9.

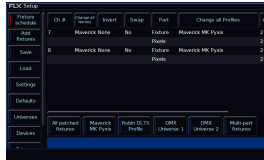
1 **And** **7** **Thru** **12** **Except** **9** **Enter**

1, And 7 Thru 12, Except 9,

This selects fixtures 1, 7, 8, 10, 11 and 12.

[You can also use Group syntax in the Fixture Schedule to select your groups of fixtures. See the groups section for more information.](#)

Patch Groups



Running along the bottom of the Fixture Schedule, just above the blue command line bar, are the fixture patch groups. These patch group buttons are automatically created, and can be used to quickly select fixtures and filter the Fixture Schedule. The currently chosen patch group is indicated with a red stripe.

You will receive the following patch groups:

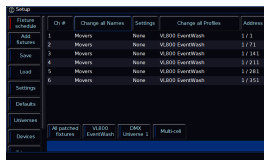
- All Patched Fixtures - allows you to see all fixtures with a DMX address
- Unpatched Fixtures - allows you to see all fixtures without a DMX address
- Fixture Type - a patch group will be created for each different type of fixture in your show file. Fixture patch groups will be shown in fixture number order, with the fixture type with the lowest channel number shown first.
- DMX Universe - a patch group will be created for each universe you patch onto

Special Patch Groups:

- [P/T Settings](#) - a patch group will be created if moving lights have pan/tilt swapped or inverted
- [Fixtures with DMX In](#) - a patch group will be created if fixtures have been assigned a DMX In address
- [Multi-Part Fixtures](#) - a patch group will be created if you have multi-part fixtures in your show file.
- [Non-Library Fixtures](#) - allows you to see any fixtures in your show file that are not from the fixture library, displayed in red
- [Multicell Fixtures](#) - a patch group will be created if you have multicell fixtures in you show file.
- [Cells Reversed](#) - a patch group will be created if multicell fixtures have their cells reversed

If you are unsure what these terms mean, read on to find out what these are.

Fixture Channel Number



The first column in the Fixture Schedule is the "Ch #" column.

This is where you can view and edit the "Channel" numbers of your fixtures.

Any fixture's channel number can be changed, so that the fixture can be controlled by a different channel fader and different number with syntax.

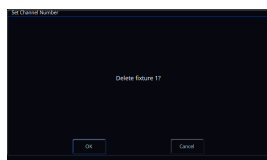
To change the channel number of a single fixture, tap on the channel number cell, and type a new fixture number. On FLX, this can be any number between 1-9999, on FLX S24 this is between 1-48, and on FLX S48 this is between 1-96. After changing the channel number of a fixture, that fixture can now be controlled using the new channel fader number.

To change the channel number of multiple fixtures at the same time, select the fixtures in the order you wish them to be numbered. Then select the column header button which is labelled **Ch #**. This will open an onscreen number pad. 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.

It is recommended that you take some time thinking about numbering your fixtures. For example, it is common to ensure your fixtures are sequential, from stage right to stage left, which won't necessarily be the order of DMX addresses.

DELETE

Fixtures can be deleted from the Channel Number window, by pressing **Delete Fixture**.



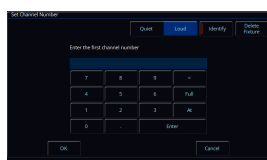
Upon pressing Delete Fixture, you will be asked to confirm the operation. Deleting a fixture removes it from all cues, and is a permanent change to the show file. There is no undo function, so exercise caution when using this function.

On FLX, it is common to start each different type of fixture on a new hundred. For example, dimmers start from 1, LEDs start from 101, first type of movers from 201, next type of movers from 301 etc.

If you have fixtures such as MAC 700's, you might want to number these starting at 701 onwards, as a very quick way to remember which number they are.

On Solution consoles, the channel faders are numbered 1 - 48 (or 1 - 96 on the Solution XL). Fixtures can also however be assigned to the MFKs. These are numbered 101 - 300.

RDM Identify



If you click the Channel number button of an RDM fixture that's been discovered and patched by RigSync, there will be an "Identify" button shown. Tapping this, so that it has a red stripe, will send an RDM identify command to the fixture. The fixture will then flash its light output, or its menu screen.

Some fixtures have the ability to choose whether they are identified subtly or obviously. In these cases, a "Quiet" and "Loud" switch will be provided, to allow you to choose the identify mode.

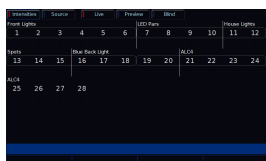
Fixture Names



By default, fixtures are named using their fixture type (eg "LED Unit"). However they can be renamed to provide more useful information. For example, you may label them "Stage Left LED Unit", "Centre Stage LED unit", "Stage Right LED Unit" or "Movers".

To rename a fixture, tap on it in the "Name" column. To rename multiple fixtures, select them, and tap the column header button labelled "Change All Names" at the top.

If a fixture's name is edited and left blank, the fixture name will revert to default.



Fixture names are shown in the Output Window (pictured), along with the MFF Window. This allows you to see exactly what each channel fader is controlling.

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

If RigSync patches an RDM fixture, the ZerOS Fixture Name is linked to the fixture's RDM "Device Label". If the fixture's name is changed in ZerOS, its Device Label will update, and vice versa. [Click here for more information.](#)

Fixture Settings



If your fixtures have additional Settings available, a "Settings" column will be shown.

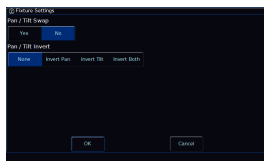
These settings can be changed by touching the relevant cell using the touch screen. Multiple fixtures can be changed at the same time by selecting the fixtures, and then tapping the **Settings** button at the top of the Settings column.

Scroll down to find out about the following Fixture Settings:

- [Pan / Tilt Swap](#)
- [Pan / Tilt Invert](#)
- [Reverse Cell Order](#)
- [Cell Intensities](#)
- [Colour Picker Controls UV](#)

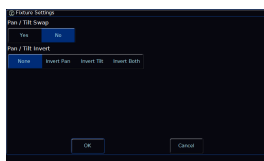
After patching fixtures, it is a good idea to configure their Fixture Settings to how you need them, prior to programming them. This is because changing Fixture Settings may change how existing cues look or behave.

Pan / Tilt Swap



If you have moving lights selected, the Pan / Tilt swap option will be available. Swapping the Pan and Tilt parameters 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).

Pan / Tilt Invert



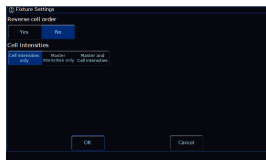
If you have moving lights selected, the Pan / Tilt invert options will be available. The invert options available are "None", "Invert Pan", "Invert Tilt" and "Invert Both".

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.

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 Invert or Swap options, you'll see the beams updating live.

Reverse Cell Order

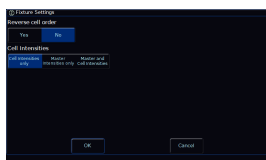


If you have a fixture selected, which has multiple light outputs arranged linearly, you will be given the option to reverse the order of the cells. This option will therefore be available if you have battens selected.

By default, a fixture's individual light outputs or cells, will be ordered as defined by the fixture manufacturer. However, ZerOS offers the ability to reverse the order. Therefore if you have a 10-cell batten, and you choose to reverse the cells, the first cell on the console will actually control cell 10, the second cell on the console will control cell 9 and so on.

This is particularly useful if you have a batten that has been rigged, placed or installed the wrong way round compared to other battens.

Cell Intensities



If you have a fixture selected, which has multiple light outputs that can be controlled individually, you will be given the option to change how you control the fixture's multiple intensity parameters.

The default option, is "Cell Intensities Only". When in this mode, the fixture's "Master Intensity" parameter (if present), is frozen at 100%, with no way of being able to adjust it. The fixture's light output is then controlled by adjusting the level of all of the fixture's cell intensities together. The fixture's channel fader, therefore controls all cells together. The nice thing about this method, is it means you never have a fixture's master intensity scaling a cell intensity, which can result in exponential level changes and strange cue transitions.

When set to "Master Intensities Only", you cannot adjust the intensities of the individual cells. This is particularly useful if the fixture has been patched in a multicell mode in your venue, but you just want to treat the fixture as a "standard" fixture, with a single intensity. If you have a large number of multicell fixtures patched, and don't need to access the individual cell intensities, choose this option.

When "Master and Cell Intensities" is chosen, you have access to both the fixture's Master Intensity, and individual cell intensities. The Master Intensity will be controlled by the fixture's channel fader. Beware that when using this method, the Master will usually scale the cells, and so care needs to be taken when programming.



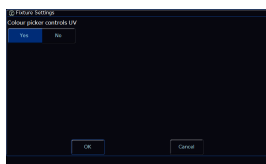
Take a look at this video, for more information on how ZerOS handles multicell fixtures, including the Cell Intensities setting.

<https://youtu.be/QKPIIL5oHeI?si=0csU9O9X11yjkL1v>

[Click here to find out more about Multicell fixtures](#)

Colour Picker Controls UV

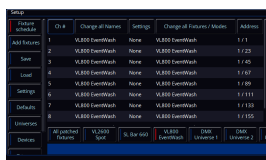
By default, if a fixture has a "UV" parameter, this will be treated as a deep violet additive colour mixing parameter. This UV parameter will therefore be controlled by the ZerOS colour mixing tools such as Automatic Colour Palettes, Colour Picker, Image Picker, Colour Faders and Colour Filters.



However, Settings will be available for fixtures with UV parameters, to allow you to prevent the UV parameter from being included in the ZerOS colour mixing tools. In the fixture's settings, set "Colour Picker Controls UV" to "No".

[Click here to find out more about Colour controls](#)

Change Fixture



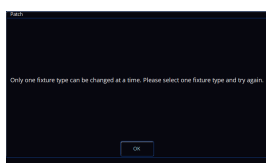
The Change Fixtures / Modes column can be used to change the currently patched fixtures in your show.

Upon choosing a replacement fixture, ZerOS will attempt to apply all the programming that was done with the original fixture, to the replacement fixture. This is also done at cell-level for multicell fixtures.

ZerOS will use the following rules:

- Original parameters will be applied to matching parameters present in the replacement fixture
- If the original fixture's parameter and the replacement fixture's parameter have details, ZerOS tries to find a detail with the same name in the replacement fixture. If unable to, the DMX value is just copied across.
- The original colour mixing space will be converted to the replacement fixture's colour mixing space
- If the original fixture has a colour wheel and the replacement fixture has colour mixing (or vice versa), the closest colour match is used
- Parameter data in the original fixture that does not exist in the replacement fixture is lost
- Parameters in the replacement fixture that didn't exist in the original fixture are left unprogrammed.

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.



If you select multiple different types of fixtures, the "Change all Fixtures / Modes" button will be greyed out. This is because only a single type of fixture can be changed at a time. This is stated in the message displayed if you tap the greyed out button.

You can therefore just choose a single type of fixture, using the patch groups.

After changing a fixture, it is strongly recommended to ensure they play back as expected by checking any cues the fixture was programmed in.

There are four key reasons you may wish to change a fixture:

- ["Swap" the currently patched fixture to a different type](#)
- ["Upgrade" the current fixtures to the latest version from the ZerOS Library](#)
- ["Convert" the current fixture, to a ZerOS Library fixture](#)
- ["Remotely" change the mode of an RDM fixture](#)

Swap

It is possible to swap out a fixture that has been patched, in situations where a mistake has been made. For example, the wrong model or mode may have been patched.

Swapping allows for a complete change 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, or you are touring and one venue has different fixtures to another.



To swap a fixture, touch the appropriate cell in the Change Fixtures / Modes column, or select all the fixtures to be changed and touch the column header button labelled Change all Fixtures / Modes. The Change Fixtures / Modes window will open with the list of manufacturers, models and modes available.

Upgrade

Software updates and ZerOS Library updates, regularly include improvements to how your fixtures can be controlled.

If you load in a show file following a software update, or perform a ZerOS Library update, your show file may continue to use the fixtures that you originally patched. These fixtures might not fully support the latest ZerOS features.

A "Non-library fixtures" patch group will be created, to allow you to quickly filter to see any fixtures that are not contained in the fixture library.

Change Fixtures / Modes allows you to upgrade these fixtures to their latest versions from the installed ZerOS Library, to take advantage of the latest features and improvements.

To do this, tap a red "patch group" button at the bottom of the Fixture Schedule, to select all fixtures of a particular type.



Then click the column header button labelled Change all Fixtures / Modes. The Change Fixtures / Modes window will open with the list of manufacturers, models and modes available. You should see the latest version of the chosen fixtures shown in white. Click this mode, and then click OK. The console will then upgrade your fixtures.

Convert

Sometimes, your show file may be using fixtures in the ".ift" format. This may be because your fixtures are from one of the following sources:

- Fixtures from show files saved in ZerOS 7.9.7 software or earlier
- Custom fixture files created using the Fixture Editor
- Fixture profiles created by importing an ASCII show file

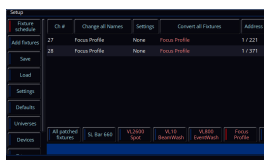


Fixtures in the .ift format will be displayed in red, meaning these fixtures are not from the ZerOS Library currently installed on the console.

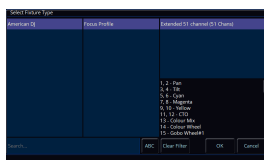
A "Non-library fixtures" patch group will be created, to allow you to quickly filter to see any fixtures that are not contained in the fixture library.

These fixtures may not fully support the latest ZerOS features. However, there may be a new version of that fixture in the latest ZerOS Library installed on the console. To take advantage of the latest features, personalities highlighted red can therefore be converted to the latest version of the fixture from the installed ZerOS Library.

To do this, tap a red "patch group" button at the bottom of the Fixture Schedule, to select all fixtures of a particular type.

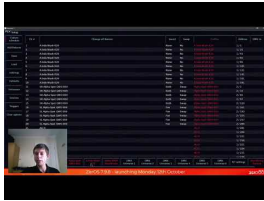


When selecting a single type of fixture that is not in the library format, the Change Fixtures / Modes column becomes a "Convert all Fixtures" column and can be used to convert the non-library fixture, to a library fixture.



After clicking Convert, ZerOS will show you the library fixtures that it reckons this fixture is. You can then choose the correct one, and click OK to confirm, and your fixtures will be converted to use the library format fixtures.

If you click "Clear Filter" at the bottom of the Convert window, you will be able to access the standard "Change Fixtures / Modes" window, giving access to all fixtures currently on your console.



https://youtu.be/Zap0htl_ax4

Check out this video, for more information on converting fixtures.

[Click here to skip straight to the relevant section.](#)

Remotely Changing Mode

If your fixture has been discovered and patched automatically by RigSync, the Change Mode column can be used to remotely change the mode of the fixture.

[Click here to find out more about RigSync](#)

Edit DMX Address



The Address column allows you to configure the DMX settings for your fixtures. This includes changing, removing, and adding DMX addresses. The DMX start address of each fixture will be displayed in this column, in the format x/y, where x is the universe number, and y is the address number. If a fixture does not currently have a DMX start address, the cell will be left blank.

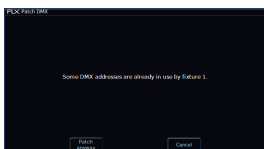


Readdressing

When you touch a single fixture's cell, the Edit DMX Address window will be displayed. This allows you to change the DMX address of the fixture. If you click the Address button at the top of the Fixture Schedule, the Edit DMX Address window will be displayed, allowing you to readdress all of the currently selected fixtures. The DMX address you enter will be given to the first selected fixture, and the next fixture will then be given the next available DMX address after the first fixture's footprint.

You can configure which Universe a fixture is patched onto, by clicking on the Universe button top left of the window, and typing the universe. If you leave the DMX address field blank, just the universe will be changed, with the existing DMX address retained.

If you type x.y, or x/y into the DMX Address field, x will set the Universe, and y will set the DMX address.



If you choose to readdress the fixture to an address that overlaps with other fixtures, you will receive a warning. This message will give the option to Cancel, allowing you to give the fixture you are addressing a different address, or you can choose Patch Anyway. Patch Anyway will give your fixture the address you defined, however leave the fixtures that were using those addresses unpatched, with no DMX address.

Unpatch

In this window you can also unpatch the fixture using 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. Going back into Edit DMX Address 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.

Add As Additional

Using the “Add as additional address” button instead of simply “OK”, it is possible to patch a fixture, or range of fixtures, 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”.

[Editing the DMX address of a fixture patched by RigSync, will update the DMX address on the console, and also send the updated address to the fixture too. Click here to find out more about RigSync](#)


Relays



Fixture	ID	Label	Universe	Channel	Settings	Address	Relay
1	1	Label 1C	1A	1	1/1	1/1	
2	2	Label 1C	1A	2	1/2	1/2	
3	3	Label 1C	1A	3	1/3	1/3	
4	4	Label 1C	1A	4	1/4	1/4	
5	5	Label 1C	1A	5	1/5	1/5	
6	6	Label 1C	1A	6	1/6	1/6	
7	7	Label 1C	1A	7	1/7	1/7	
8	8	Label 1C	1A	8	1/8	1/8	
9	9	Label 1C	1A	9	1/9	1/9	
10	10	Label 1C	1A	10	1/10	1/10	
11	11	Label 1C	1A	11	1/11	1/11	
12	12	Label 1C	1A	12	1/12	1/12	

Each fixture can be assigned an additional DMX Universe and DMX Channel to control a relay that's powering that fixture.

Multiple fixtures can have the same relay address (for example, multiple fixtures plugged into one relay). One fixture can have multiple relay addresses (for example, two identical fixtures with identical DMX addresses but plugged into two separate relays).



DMX Relay Address

Enter a DMX Address for Fixture 1

1	2	3	4	5
6	7	8	9	0
.	/	*	=	

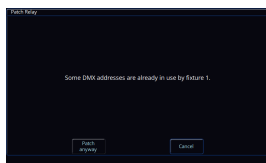
OK Cancel

Patching

When you touch a single fixture's relay cell, the Edit Relay Address window will be displayed. This allows you to change the DMX address of the relay. If you click the Relay button at the top of the Fixture Schedule, the Edit Relay Address window will be displayed, allowing you to readdress all of the currently selected fixtures. The DMX address you enter will be given to the first selected fixture, and then the next fixture will then be given the next available DMX address after the first fixture's footprint.

You can configure which Universe a fixture is patched onto, by clicking on the Universe button top left of the window, and typing the universe. If you leave the DMX address field blank, just the universe will be changed, with the existing DMX address retained.

If you type x.y, or x/y into the DMX Address field, x will set the Universe, and y will set the DMX address.



If you choose to readdress the fixture to an address that overlaps with other fixtures, you will receive a warning. This message will give the option to Cancel, allowing you to give the fixture you are addressing a different address, or you can choose Patch Anyway. Patch Anyway will give your fixture the address you defined, however leave the fixtures that were using those addresses unpatched, with no DMX address.

Unpatch

In this window you can also unpatch the fixture using the Unpatch button. A confirmation popup window will be displayed. Select the Yes button to confirm the operation. Unpatching a relay removes that relay's information from the DMX output, effectively disabling that relay. However, the information is not removed from the showfile. Going back into Edit Relay Address and adding back in the Relay 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.

Add As Additional

Using the "Add as additional address" button instead of simply "OK", it is possible to patch a relay, or range of relays, 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".


DMX In

ZerOS can receive a DMX input from an external DMX source, which allows another lighting console to remotely control fixtures patched in ZerOS.

Some ZerOS consoles have a physical DMX input connector that can be used to receive DMX.

On FLX, FLX S24, FLX S48 & ZerOS Server, either of the physical DMX output ports can be configured as an input instead.

[Click here for information on configuring a DMX Output as a DMX Input](#)



Fixture	DMX In	DMX Out
1	10	10
2	11	11
3	12	12
4	13	13
5	14	14
6	15	15

The DMX In column in the Fixture Schedule will be shown on consoles with a DMX input configured. This field can be used to assign DMX In addresses to fixtures.

If fixture 1 in ZerOS, is assigned DMX In address 10, this means DMX address 10 on the external DMX controller, will be mapped to remotely control fixture 1's intensity.

A new **Fixtures with DMX In** patch group button will be shown at the bottom of the Fixture Schedule, to allow you to see all fixtures with a DMX In address assigned.

The DMX Input will control a fixture's intensity LTP, or HTP, depending on whether the fixture is currently being controlled manually in the programmer:

- If the fixture with DMX In control is currently in the programmer, it will be controlled using Latest Takes Precedence rules (red Output Window intensity).
- This means the DMX input will have the same control over the fixture's intensity as the fixture's channel fader.
- If the fixture with DMX In control is not in the programmer, it will be controlled using Highest Takes Precedence rules (yellow Output Window intensity).
- This means the fixture's DMX Input level will mix HTP with the fixture's cue levels.

Syntax

On FLX, syntax can be used in the fixture schedule to select, readdress, and also delete fixtures.

Syntax addressing

When readdressing fixtures, the syntax format is fixture number address :

1, @ 274

“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

“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

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.

Syntax Deleting

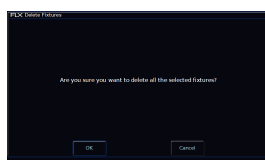
5, Delete

Fixture 5 will be permanently deleted

10 Thru 15, Delete

Fixtures 10 through to 15 inclusive will be permanently deleted.

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 channel buttons, or use the Patch Groups along the bottom of the fixture schedule, 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.

Selection & Intensity

Once fixtures (the term we use for "lights" or "devices") are patched into your console, they can then be controlled. There are two key elements to be aware of when controlling fixtures: Selection and Intensity.

Fixtures can be selected, which tells the console you wish to manually control this particular fixture. Once a fixture has been selected, you can then use the various fixture controls, such as the ability to change colour, to control the fixture. If a fixture isn't selected, the fixture controls will have no affect.

The selection and intensity (or brightness) of a fixture 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. Selection and Intensity can be adjusted using two primary methods; channel buttons and syntax commands.

Click to find out more about the following Selection and Intensity tools...

- [Channel Faders](#)
- [Commands](#)
- [Intensity Wheel](#)
- [The Clear Button](#)
- [Next & Previous](#)

Channel Faders

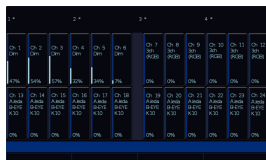
Ensure that the MFFs (Multi-Functional Faders) are in channel mode by pressing the Fader Funct. button. When set to "Channels", the MFFs directly control each fixture in the rig (this is often referred to as "Channel per Fader"). Each fixture, no matter what it is, will have a single "Channel Number", 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).

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.

As well as controlling intensity, moving a channel fader, will by default automatically select the fixture. Fixtures can also be selected manually using the channel buttons below the Multi-Function Faders. The Faders must be in "Channel" mode for this to work. When the channel is selected, the LED in the button under the fader will turn on. 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.

An orange box will be drawn around selected channel numbers in the Output Window. You can also click on channel numbers in the Output Window to change the selection. Grey outline boxes in the Output Window show which set of channels are currently being controlled on the MFFs.

[Click here to find out more about the Output Window](#)



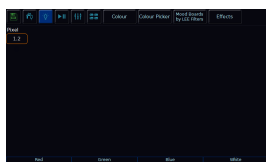
When your MFFs are controlling Channels rather than Playbacks, the Faders window will show you the names of the fixture's you are currently controlling, and their intensity percentages.

Multicell Fixture Control

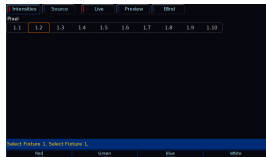
Some fixtures, such as LED battens, or moving wash lights, have multiple light sources that can be controlled individually. When controlling these fixtures, you have the ability to select, and control the intensity, of each cell/segment/zone/pixel of the fixture individually.

This can be done using the channel buttons, by holding the **Shift** key, and clicking on a channel button. This will then select the first cell of this fixture. Each additional tap of the fixture's button with the Shift key held, will cycle you through each cell individually, until you get back to the first. To reselect the whole fixture, simply double tap the fixture's channel button, to deselect the cell, and then reselect the whole fixture.

The fixture's channel fader will always adjust the whole fixture, not individual cells. To adjust the intensity of an individual cell, the cell can be selected, and then the Intensity Wheel can be used.



On FLX S, the Output window will show you the currently selected cell, displayed as "fixture number . cell number".



On FLX, the Output Window will expand to show you all the available cells of the fixture.

Commands

Fixtures can be selected, and their intensity set, using syntax commands. Syntax commands can be typed into the command line found at the bottom of the external monitor.

The first part of the syntax command selects the fixtures, and the second part of the syntax command sets the intensity. If your fixtures are already selected, perhaps via the channel buttons, you can therefore simply set the intensity, as there is no need to select fixtures if they are already selected.

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

Channel Number (s) [@] Intensity (in %) [Enter]

If [Enter] is pressed instead of [@] , the fixtures select, meaning you can simply select fixtures without setting an intensity if required.

Examples

Examples of valid commands are below:

[1] [@] [1] [0] [0] [Enter]

1, @ 100,

This sets the intensity of channel 1 to 100%.

[2] [And] [3] [@] [7] [5] [Enter]

2, And 3, @ 75,

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

[5] [Thru] [1] [0] [@] [5] [0] [Enter]

5 Thru 10, @ 50,

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

[5] [Thru] [1] [0] [Except] [7] [@] [6] [5] [Enter]

5 Thru 10, Except 7, @ 65,

This sets the intensity of channels 5, 6, 8, 9 and 10 to 65%.

[3] [Thru] [9] [Except] [5] [Except] [6] [@] [0] [Enter]

3 Thru 9, Except 5, Except 6, @ 0,

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

[1] [Thru] [3] [And] [7] [Thru] [9] [@] [2] [5] [Enter]

1 Thru 3, And 7 Thru 9, @ 25,

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

1 And 7 Thru 1 2 Except 9 @ 5 Enter

1, And 7 Thru 12, Except 9, @ 5,

This sets the intensity of channels 1, 7, 8, 10, 11 and 12 to 5%.

Shortcuts

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).

MULTICELL FIXTURE CONTROL

Some fixtures, such as LED battens, or moving wash lights, have multiple light sources that can be controlled individually. When controlling these fixtures, you have the ability to select, and control the intensity, of each cell/segment/zone/pixel of the fixture individually.

Individual cells can be selected using commands, by using the syntax:

Fixture number Cell Number

For example:

1 . 2 @ 1 0 0 Enter

1 . 2, @ 100,

This sets the intensity of cell 2 of fixture 1 to 100%.

2 . 3 And 2 . 4 @ 7 5 Enter

2 . 3, And 2 . 4, @ 75,

2 . 3 And . 4 @ 7 5 Enter

2 . 3, And . 4, @ 75,

Both of these sets the intensity of cells 3 and 4 of fixture 2 to 75%.

3 . 5 Thru . 1 0 @ 5 0 Enter

3 . 5 Thru . 10, @ 50,

This sets the intensity of cells 5 through to 10 of fixture 3 to 50%.

4 . 5 Thru . 1 0 Except . 7 @ 6 5 Enter

4 . 5 Thru . 10, Except . 7, @ 65,

This sets the intensity of cells 5, 6, 8, 9 and 10 of fixture 4 to 65%.

1 . 3 Thru . 9 Except . 5 Except . 6 @ 0 Enter

1 . 3 Thru . 9, Except . 5, Except . 6, @ 0,

This sets the intensity of cells 3, 4, 7, 8 and 9 of fixture 1 to 0%. Note how Except is used twice to exclude two different cells from the range.

1 . 2 Thru . 4 And 2 . 7 Thru 3 . 4 @ 2 5 Enter

1 . 2 Thru . 4, And 2 . 7 Thru 3 . 4, @ 25,

This sets the intensity of cells 2, 3, & 4 of fixture 1, and cell 7 of fixture 2 through to cell 4 of fixture 3 to 25%.

[2] [Thru] [3] [Enter] [.] [2] [Thru] [.] [4] [Enter]

2 Thru 3, . 2 Thru . 4,

This selects cells 2 through to 4, of both fixtures 2 and 3.

[.] [Enter] can be used, to toggle between your current fixture selection selecting whole multicell fixtures, or all of the cells of a multicell fixture. Both selections will give you similar results when making control value changes, however will give you very different results when fanning colours, or effects, across the current selection.

When multicell fixtures are selected as whole fixtures, all cells are "linked", meaning when you fan colours, or run effects across multiple cells of multicell fixtures, all of the cells of each fixture will be outputting the same values. This is the standard behaviour when using [standard syntax commands](#).

When multicell fixtures are selected as cells, the cells are fanned individually, in the order of selection.

Scaling Syntax

As well as taking fixtures or cells to a defined level, they can also be taken to a defined percentage of the level they're currently at. This can be done by using "@ +" or "@ -" syntax commands. To access "+" and "-" on FLX, hold [Shift] and tap the up or down arrows respectively.

For example, if fixture 1 is at 100%, and fixture 2 is at 50%, type the following syntax command:

[1] [And] [2] [@] ([Shift] - [Down]) [5] [0] [Enter]

1, And 2, @ -50,

This will result in fixture 1 and 2 being at 50% of their current levels, and will therefore be taken to 50% and 25% respectively.

If fixture 1 is at 30%, and fixture 2 is at 60%, type the following syntax command:

[1] [And] [2] [@] ([Shift] - [Up]) [5] [0] [Enter]

1, And 2, @ +50,

This will result in fixture 1 and 2 being 50% higher than their current levels, and will therefore be taken to 45% and 90% respectively.

[Rather than scaling the intensities of your selected fixtures, you may wish to change the levels of the fixtures by the same amount. The Intensity wheel can be used to adjust selected fixtures relative to one another. Click here to find out more.](#)

Intensity Wheel

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). Fixtures can also be selected using commands.

For example:

1 Thru 6 And 9 Enter

1 Thru 6, And 9,

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.

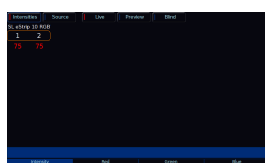


Once selected, press the **Z** key and then use the encoder wheel marked on the internal monitor as "intensity" to adjust the level. The output value is shown above the corresponding encoder wheel and in the Output Window.

The Intensity Wheel adjustment is relative, which means that if multiple fixtures are selected with different values, the movement of the encoder will be applied to each fixture individually.

For example, if you set fixture 1 to 100%, and fixture 2 to 50%, dial the Intensity wheel down to 50%, fixture 1 is @ 50%, and fixture 2 is now @ 0%. The intensity wheel has taken the value of the fixtures down by the same amount.

[To scale the intensity levels of your fixtures up or down, you can use Scaling Syntax. Click here to find out more.](#)



If required, rather than needing to tap **Z** each time to access the intensity wheel, Intensity can be locked to the first encoder wheel so it is always displayed when fixtures are selected. To do this tap Setup - > Settings and Enable "Always Display Intensity Encoder" under the Attributes section. [Click here to find out more.](#)

The Clear Button

THE **CLEAR** BUTTON

Upon adjusting the intensity of fixtures, or adjusting any parameters of a fixture, the **CLEAR** button will illuminate.

This tells you that there are manual fixture adjustments present, and therefore if you were to play back cues, they may look different to how they were programmed, as they will be mixing with manual changes. Manual fixture adjustments are sometimes referred to as "programmer values" or "values in the programmer".

The **CLEAR** button can be used for two functions; to clear the current selection, and to clear the manual fixture adjustments.

To clear the selection, you can tap the **CLEAR** button once. A second tap of **CLEAR** , will clear all manual control of your lights, reverting them to either their defaults, or to the control of any cues that may be running.

To flip these steps around, you can hold **SHIFT** and tap **CLEAR** . This therefore leaves the fixtures selected, but clears all manual values.

[Manual intensity values are indicated in red in the Output Window. Double tapping the Clear button will therefore remove these values.](#)

Clear Fixture

If you hold **CLEAR** and tap a fixture's channel select button situated below its channel fader, this will clear the fixture. This means that all manual adjustments that were made to the fixture will be cleared. The intensity, colour, beam, shape, position and effect of the fixture will therefore return to being controlled by any cues that are active. If no cues are active, the fixture will return to its default values.

Multi-select allows multiple fixtures to be cleared simultaneously by holding **CLEAR** , holding the first fixture's channel select button, and tapping the last fixture's channel select button.

[On FLX, a UDK can be configured as "Clear Fixture", meaning Clear Fixture can be used within syntax commands. Click here for more information.](#)

Next & Previous

"Next" and "Previous" can be used to quickly select individual fixtures in order. This is useful for stepping through each fixture and tweaking their parameters in turn. The Next function can be accessed by holding **SHIFT** and tapping the right arrow key, and Previous can be accessed by holding **SHIFT** and tapping the left arrow key.

Next and Previous are written in the command line, bringing the added benefit of allowing you to backspace through the commands:

1, Next, Next, Previous,

Next and Previous can also be used to select individual cells of multicell fixtures.

[Next & Previous is especially useful when highlighting fixtures. Click here to find out more.](#)

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 on FLX

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.



Groups window on FLX S

The Groups window can be opened on FLX S by tapping the groups icon at the top of the internal touchscreen, depicted with four tiles.



Groups window on the external desktops

The groups window can be accessed on the external monitor. The groups window can be found top left of the "Grp, FX, Colour" desktop.

Take a look at the online Groups training session...



<https://youtu.be/faDN1FyaXjg>

Find out more about Groups...

- [Automatic Groups](#)
- [Recording Groups](#)
- [Using groups via touch](#)
- [Using groups via syntax](#)
- [Referencing Intensity Groups](#)
- [Naming Groups](#)
- [Updating Groups](#)
- [Copying & Moving Groups](#)
- [Deleting Groups](#)

Automatic Groups



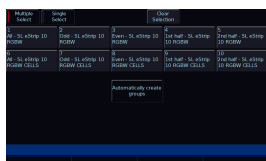
ZerOS consoles can automatically generate a group for each type of fixture you have, plus 'odd', 'even', "1st half" and "2nd half" groups for each different fixture type. Each different type of fixture will therefore have five automatic groups available.

These are very useful to quickly grab control of different selections of fixtures. The 1st and 2nd half groups are often useful for Stage Left and Stage Right splits.

To create the automatic groups, view the Groups window and choose "Automatically create groups".

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%. Double tapping a group, will therefore send all the fixtures included in the group to 100%.

Batten Groups



If you have multicell battens patched, or any fixtures that have multiple light sources arranged linearly, you will have an additional set of five groups, meaning you have 10 groups for each type of batten.

The first set of five automatic groups, will be "normal" groups that you receive for any patched fixtures. The additional five automatic groups, will have "CELLS" added to the group name. These select the cells of the fixtures, rather than the whole fixtures. Therefore the Odd and Even groups for example, select the odd and even cells of the battens, rather than the odd and even battens.

The standard "All" automatic group for battens, are useful for fanning colours or effects across battens, where each whole batten is the same colour. The "All" CELLS automatic group for battens, are useful for fanning colours or effects across the individual cells of all battens.

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. Individual cells of multicell fixtures can also be recorded into groups, as well as whole fixtures.

When groups are recorded, they will be automatically given a name, based on what's been recorded into them. This name can however be customised. [Click here to find out how to name Groups.](#)

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`

Record Group 15

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.

Intensity Groups

If the selected fixtures have an intensity value, this will also get stored within the group – this is called an “Intensity Group”. If there is no intensity value present, 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.

Selection Order

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.

If controlling fixtures with the channel faders, fixtures will automatically select in the order you raised the faders.

If you wish to select a range of a fixtures using the channel buttons, press and hold the first fixture's channel button, and tap the button of the fixture you wish to be the last in the selection. The range of fixtures will select. If you wish to have a reverse order, instead press and hold the last fixture's channel button, and tap the first.

For example on FLX, the following three commands would record three slightly different groups, despite all containing the same fixtures:

1 Thru 4, Record Group 1

4 Thru 1, Record Group 2

2 Thru 4, And 1, Record Group 3

Using groups via touch

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 and Multi-Select

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 on FLX.

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.

Using groups via syntax

Using syntax, all the commands explained within the [Intensities chapter](#) can also be used with groups. Here are two examples:

[Group] [1] [@] [4] [5] [Enter]

My Group, @ 45,

This sets all the intensities of the channels within group 1 to 45%. In this example the group is called "My Group". The name of the group is displayed in the command line, at the point of selecting the fixtures.

[Group] [1] [And] [Group] [3] [@] [8] [0] [Enter]

Group 1, And Group 3, @ 80,

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 "@ x" will no longer take the selection of fixtures to x%, but instead to x% of their recorded values.

For example:

[Group] [Group] [1]

Intensity Group 1

[Group] [Group] [1] [@] [@]

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]

Group 1, @ 25,

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]

Group 5,

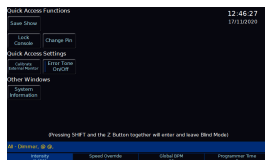
This recalls the fixture intensities from Group 5 to only the currently selected fixtures. The fixture selection does not change by using this syntax.

Referencing Intensity Groups

Intensities can be stored in groups, and recalled by double tapping a group, or by using Intensity Group syntax on FLX.

When a fixture is taken to its full level within an Intensity Group, and then recorded into a cue, ZerOS references the value back to the group's intensity, not the raw intensity values. So if the intensities in the group are updated, any cues that were recorded using that group, will automatically be updated to the new intensity too.

This is sometimes referred to as Intensity Palettes. Therefore on ZerOS, Groups and Intensity palettes are combined.



Upon recalling an intensity group, the reference is displayed on the intensity encoder wheel. For example recalling the intensities of group 1, which contains fixture's at 50%, would display "I1 (50)", where I1 stands for Intensity palette 1, and the raw intensity percentage is displayed in brackets.

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 an empty 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.

Groups can also be named at the point of recording. For example:

1 **Thru** **6** **Record** **Group** **2** **0** **Name**

1 Thru 6, Record Group 20 Name,

This would record fixtures 1 thru 6 into group 20, and the on-screen keyboard will pop-up for you to use, or use a USB keyboard to give a name. Press enter to save.

Updating Groups

To update a group, it usually makes sense to recall that group first. To do this, tap the group, or if you wish to adjust intensities, double tap the group. Then make a new selection of fixtures, or tweak the intensities, and then press **Update** followed by touching the specific group on screen. 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:

Update, Group 14, Enter,

This updates Group 14

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.

Copying & Moving Groups

Groups can be copied or moved using syntax. Copying is particularly useful if you have a group, that you would like to duplicate, so that you can use it as a starting point to build a new group, rather than starting from scratch. Moving is useful if you would like to reposition your group tiles in the Groups window.

Copying

The syntax can follow "[Group] x [Copy] y [Enter] ", where x is the source group, and y is the destination. There is no need to tap group again before y, however this is allowed.

Examples of copy syntax below:

[Group] [1] [Copy] [6] [Enter]

Group 1 Copy To 6,

Copies group 1 and pastes it to group 6.

[Group] [1] [0] [Copy] [Group] [2] [Enter]

Group 10 Copy To Group 2,

Copies group 10 and pastes it to group 2.

Moving

The Move command can be accessed, by repeating the process above, however holding the [Shift] key when tapping [Copy] . The syntax is therefore "[Group] x ([Shift] - [Copy]) y [Enter] ", where x is the source group, and y is the destination. There is no need to tap group again before y, however this is allowed.

Examples of move syntax below:

[Group] [1] ([Shift] - [Copy]) [6] [Enter]

Group 1 Move To 6,

Moves group 1 to group 6.

[Group] [1] [0] ([Shift] - [Copy]) [Group] [2] [Enter]

Group 10 Move To Group 2,

Moves group 10 to group 2.

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

Group 42 Delete,

This deletes Group 42

Delete Group 7 Enter

Delete Group 7,

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.

With syntax, you can also use the And, Thru and Except keys to delete multiple groups. For example:

Delete Group 1 Thru 6 Except 4 Enter

Delete Group 1 Thru 6 Except 4,

Deletes groups 1, 2, 3, 5 and 6.

Delete Group 1 And 5 Enter

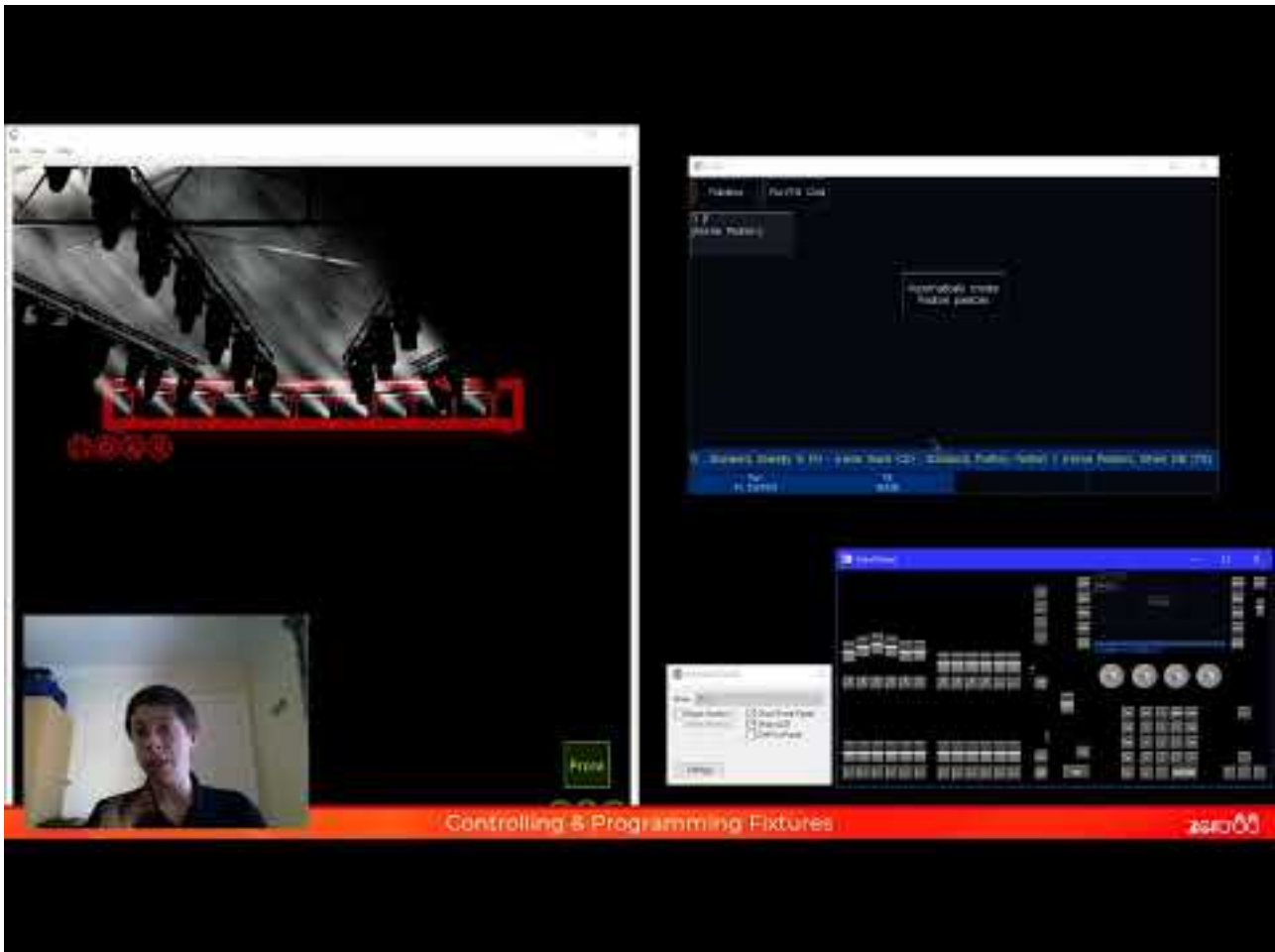
Delete Group 1 And 5,

Deletes groups 1 and 5.

Controlling Fixtures

Each light/device connected to your lighting console, is known as a fixture. Once a fixture has been selected, you can then control the fixture's control functions, known as parameters. These parameters, are grouped together into "attributes" for easy access and control.

Take a look at the online training session for information on **Controlling & Programming Fixtures...**



<https://youtu.be/cB-FgOEg1qY>

Find out more about controlling your fixtures...

- [Parameters](#)
- [Multicell Fixtures](#)
- [Colour](#)
- [Beam](#)
- [Shape](#)
- [Position](#)
- [Defaults](#)
- [Home](#)
- [Max Level](#)
- [Attribute Settings](#)
- [Tagging](#)

Parameters

Each function of a fixture, that can be controlled remotely from your console, is known as a "parameter". Each fixture will have its own set of parameters, for example Dimmer, Red, Zoom, Gobo, Pan, Tilt etc. Each parameter, will use either one or two DMX channels. These parameters, are grouped into five "attributes", to allow them to be controlled more easily. Therefore each attribute could contain no parameters, one parameter, or many parameters, depending on the fixture you are controlling.

Choosing an Attribute & Controlling Parameters

Once a fixture, or group of fixtures, have been selected, you can choose an attribute to access the parameters.

These attributes are Intensity, Colour, Beam, Shape and Position.



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. The attribute "tabs" will only be visible along the top of the touchscreen if the currently selected fixtures support that specific attribute. Depending on the number of attributes your fixture has, these tabs will scroll to give you access to all fixture controls.

Tapping an attribute button will open that attribute's window on the internal display and put the attribute's parameters onto the encoder wheels ready to be controlled. FLX series consoles have four physical encoder wheels for controlling a fixture's parameters. If a fixture has more than four parameters within an attribute, tap the attribute button again.

For example, if a fixture has six Beam parameters, tap Beam once to access the first four Beam parameters, and then tap Beam again to access the remaining two Beam parameters. Complex fixtures may have multiple pages of encoder wheels. Once you have reached the final page of encoders, another press of the attribute key will return you to the first encoder page.

Holding SHIFT when tapping an attribute button will page back through parameters on the encoders

Intensity does not need a dedicated attribute button. A fixture's Intensity parameter can be controlled via the fixture's channel fader, syntax, or the first encoder wheel by tapping **Z**



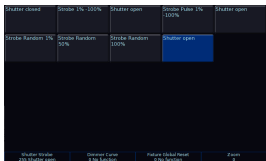
The parameters currently being controlled by the encoders are displayed in the four boxes along the bottom of the touch screen, just above the encoders.

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.

The sensitivity, mode and behaviour of the encoder wheels can be changed in the Attribute Settings.

[Click here to find out more about the Attribute Settings.](#)

Parameter Details



Some parameters are a continuous set of values, such as "Red", which will control no red at 0, through to full red.

Other parameters will instead have several different functions, accessed by different levels of the parameter. For example, the individual slots of a colour or gobo wheel. In these scenarios, the option to choose the exact slot you need is beneficial, without needing to use the wheel to cycle through all options. These parameters will have "details". This is indicated by two lines of text on the encoder display - the parameter name, and the detail name (or slot name for a gobo/colour wheel) below it with the current DMX value.

These individual details can be displayed on the internal touch screen by pressing the central encoder button. The touchscreen can then be used to tap the detail you need. The highlighted value (in blue) shows the currently active value. This is therefore particularly useful for Strobes and Prisms, as you can tap the encoder button of the parameter, tap which Prism/ Strobe you want, and then use the encoder to speed up or slow down the rate of the Strobe or Prism.


Tapping the same encoder button again closes the Parameter Details and takes you back to the palette window.

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.

Parameters and the command line

When you adjust parameters using the encoders, the changes are displayed in the command line as "Wheel Edits". For example, adjusting red will display:

```
Wheel Edit [Red],
```

This allows you to use the backspace button on your console  to step back through your commands, and undo the most recent changes if required.

If you know the exact percentage you would like a parameter to go to, hold Shift and tap the parameter's name on the touchscreen above the encoder. This will bring that parameter onto the command line, allowing you to type @ x Enter, where x is the percentage you would like to go to. For example:

```
Shift + Red @ 50 Enter
```

```
[Red] @ 50,
```

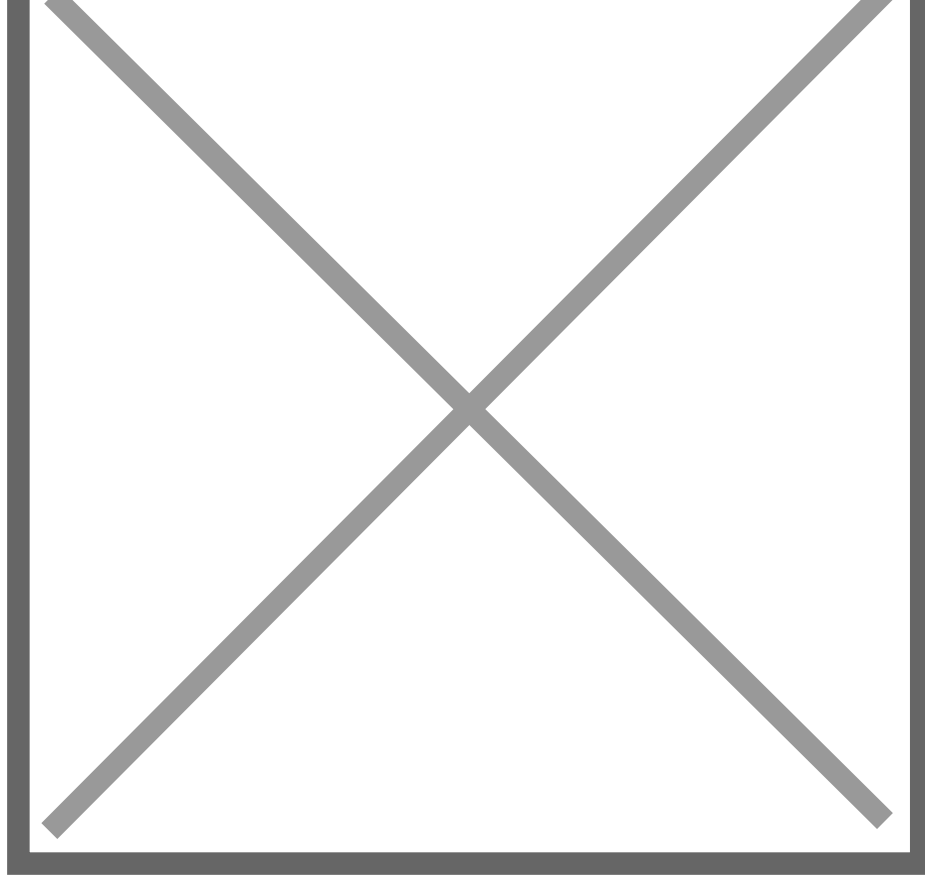
Find out about more about each attribute...

- [Colour](#)
- [Beam](#)
- [Shape](#)
- [Position](#)

Multicell Fixtures

Some fixtures, don't just have a single light output. Some fixtures may have two or multiple light sources, that can be controlled individually. These are referred to as "multicell" fixtures. On ZerOS consoles, there are many tools available, to allow you to control multicell fixtures just as easily as a "normal" fixture with a single light output.

Watch the introductory video to find out more...



<https://youtu.be/rrRmOvqMCB8?si=A8yUK8tjcmDidPgH>

Pictured is an SL Bar 660. This fixture has multiple LEDs arranged linearly, that can be controlled individually.



This is a VL800 EventWash. This is a moving wash fixture, that has 7 LEDs that can be individually controlled. This is therefore also a multicell fixture.

When you raise a multicell fixture's fader, or select the whole fixture, you will be controlling all of the fixture's cells together, as if they are linked. "Cells" may also be referred to as zones, segments, pixels or groups.

Individual cells, can also be selected and controlled.

[Click here for information on selecting and controlling the intensity of multicell fixtures using syntax commands.](#)

[Click here for information on selecting and controlling the intensity of multicell fixtures using the channel faders.](#)

Once a cell has been selected, you will be presented with all of the parameters that control that cell, plus all the parameters that can affect that cell on the encoder wheels.

Going back to the example of the VL800 EventWash pictured at the top of this page, if you just select cell 1, which is the centre cell, this cell just has colour control, and intensity control. However, as the fixture's Pan and Tilt controls affect that cell, they will also be available to control on the encoder wheels.

Master Parameters vs Cell Parameters

On some fixtures, there will be parameters that affect the whole fixture, and then an identical version of the parameter for each cell. Parameters that affect the whole fixture are known as master parameters. To avoid confusion with having duplicate parameters for both master and cells, master parameters will be displayed in brackets on the encoders.



In this example, we can see the Red, Green, Blue and White master parameters that affect the whole fixture, shown in brackets. These will not be applied to the ZerOS Colour Mixing Tools.

In most cases, you can simply use the standard Red Green Blue and White parameters, which will control the colour of the cells.

Similarly, many multicell fixtures will have a master intensity, and then an intensity for each cell. In ZerOS, by default master intensities are frozen at full, and cannot be controlled. When you are controlling a whole fixture's intensity, you are therefore actually controlling all of the intensities of the cells together.

This avoids issues with scaling, as it means you won't get into the situation where the master intensity is accidentally scaling a cell intensity, which can cause issues when fading.

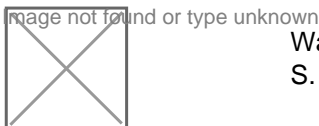
Master intensities can however be enabled in the Fixture Settings.

[Click here to find out more about Fixture Settings](#)



Watch this video for information on controlling multicell fixtures on FLX.

<https://youtu.be/5s0hB-i3Ekw?si=WLHxjnBiWc0M5kW7>



Watch this video for information on controlling multicell fixtures on FLX S.

<https://youtu.be/7Onn1GSW-FY?si=z4jOru88SsjHhiw1>

Colour



The FLX range of lighting consoles feature award winning colour control tools.

All colour parameters of your fixtures can be controlled using the colour encoder wheels, accessed by selecting the fixture and tapping **Colour** . If your fixtures have more parameters than available encoders, tap the **Colour** button again to page through. You are likely to find the following parameters in the colour attribute, depending on the currently selected fixtures:

- Additive colour parameters such as Red, Green, Blue
- Subtractive colour parameters such as Cyan, Magenta & Yellow
- Colour Wheels
- Colour Macros
- Colour Presets
- Colour Temperature

Colour Mixing

If your fixtures have colour mixing capabilities, the FLX range of consoles provide multiple colour mixing tools that can be used to control the colour of your fixtures. As well as using the colour encoders to colour mix, you will be able to use Automatic Palettes, Colour Picker, Image Picker, Colour Faders and Colour Filters. These colour mixing tools can be accessed on the internal touchscreen by tapping **Colour** but can also be found in the Colour window on the external monitor. The colour window is found top left of the "Palettes" desktop, and in the bottom half of the "Grp, FX, Colour" desktops.

There are three types of fixtures with colour mixing capabilities that can use the ZerOS colour mixing tools: Additive, Subtractive and HSI/HSV.

Fixtures with additive colour mixing will often use Red, Green, Blue and White LED emitters. However, they may also include many other additive emitters. ZerOS supports over 20 different additive LED emitter colours, that if present in your fixture, will be used by the ZerOS colour mixing tools. Supported parameters include:

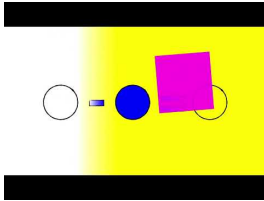
- Deep Red
- Red
- Red Orange
- Orange
- Amber
- Yellow
- Light Green
- Lime
- Green
- Mint Green
- Green Cyan
- Cyan
- Royal Blue
- Blue
- Indigo
- Deep Blue
- Congo Blue
- Purple
- Magenta
- Violet
- Pink
- UV

If using fixtures with subtractive Cyan, Magenta, Yellow mixing, the encoder wheels will display a "-" after the parameter name, to indicate these are subtractive parameters, not additive emitters.

Find out more about the colour controls...

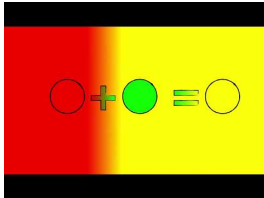
- [Colour Palettes](#)
- [Colour Picker](#)
- [Colour Faders](#)
- [Colour Filters](#)

Fixtures that can colour mix, can use two methods - subtractive colour mixing, or additive colour mixing. Take a look at the videos below for more information...



Subtractive Colour Mixing.

<https://youtu.be/xppPHtNlnEk>



Additive Colour Mixing.

<https://youtu.be/h1LXYe8rfE>

Palettes



When fixtures with colour mixing or colour wheels are patched, colour palettes can be automatically created.

ZerOS will create the following 15 "global" automatic colour palettes, if fixtures with colour mixing capabilities are patched:

1. White
2. Warm White
3. Cool White
4. Red
5. Orange
6. Yellow
7. Chartreuse
8. Green
9. Spring Green
10. Cyan
11. Azure
12. Blue
13. Violet
14. Magenta
15. Rose

These colour palettes will be available for all patched fixtures with colour mixing capabilities, and fixtures with colour wheels with a suitable slot (this is because the console compares the RGB values specified for each colour slot of colour wheels, with the RGB values of the automatic colour palettes. If the colour of a colour wheel slot is within a certain tolerance of the standard colour, the console will automatically add the relevant colour wheel slot to the relevant automatic colour palette).

This means you can select all fixtures, tap [Red], and even if you have a mix of fixtures with colour wheels and colour mixing, they'll all go red.

In addition to the "global" automatic colour palettes, the console generates an auto palette for each colour slot in each colour wheel of your patched fixtures. These palettes are labelled with the stock colour names as supplied by the fixture manufacturer, and are ordered by fixture number & colour slot position.

As well as the automatic colour palettes, you are able to program your own colour palettes, to quickly save and recall your custom colours, made by adjusting the encoders, or colour mixing features. When colour palettes are stored, they will display a colour splash preview of the saved colour on the palette tile.

[For information on programming palettes, see the Palettes chapter.](#)

Picker



The "Colour Picker" tab, allows you to choose a colour when fixtures with colour mixing capabilities are selected. Just touch the picker using the 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 "+" will be displayed.

Fanning



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 fixtures in-between will spread between these two points.

Fanning across Multicell Fixtures

On multicell fixtures, colour can be fanned in two ways. Firstly, colour can be fanned across a multicell fixture, just like a standard fixture. This means that every light output of the multicell fixture is the same, resulting in a single cross (+) per fixture on the colour picker. Alternatively, colours can be fanned across the individual cells of a multicell fixture, resulting in a cross (+) per cell on the colour picker.

The way your fixtures will be fanned across the colour picker, will be dependent on whether they were selected as whole fixtures, or individual cells. When using the channel faders, fixtures will be selected as whole fixtures, unless your fixture is a linear multicell fixture, such as an LED batten, in which case the fixture will be selected as cells.

[Click here for information on selecting fixtures using syntax commands for more information.](#)

[Click here for information on selecting fixtures using the channel faders for more information.](#)



For more information on controlling multicell fixtures on FLX S consoles, click here.

<https://youtu.be/7Onn1GSW-FY?si=z4jOru88SsjHhiw1>



For more information on controlling multicell fixtures on FLX consoles, click here.

<https://youtu.be/5s0hB-i3Ekw?si=kbAcsqs-mojrGWG8>

Value Fader



To the right of the colour picker is a "value" fader, which can be used to dim your colour, without lowering the fixture's intensity. You will find that if the value fader is at the bottom, your fixtures are still considered to be on, however in black. A preview of the colour you have created is shown at the top of the value fader.

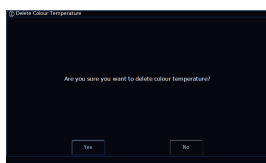
Temperature Fader



After picking a shade of white, the Colour Temperature fader can then be used to “warm up” or “cool down” the colour of your fixtures.

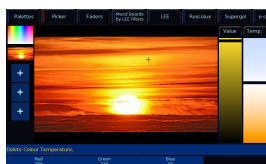
If your fixtures have a dedicated "Colour Temperature" parameter with a single, defined temperature range, the Temp. fader will control this. If your fixtures do not have a Colour Temperature parameter, the Temp. fader will adjust any white emitters your fixture may have, such as Cool White or Warm White. If your fixture does not have multiple white emitters, the Temp. fader will adjust the levels of your fixture's colour mixing parameters.

Tapping the **Temp.** button resets the fader to a default temperature of "50%". The default value of the **Temp.** button can be configured. To configure the **Temp.** button, set the Temp. fader to the required position, and then tap **Record** or **Update**, and then click on the **Temp.** button.

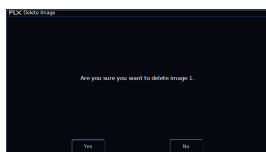


To remove a custom colour temperature and revert back to the default temperature of "50%", tap the Delete key, and then tap the Temp. button. You will then be asked to confirm the operation.

Image Picker

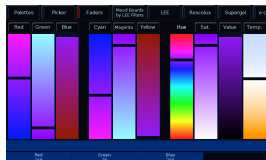


Images can be loaded into the colour picker, to allow you to choose colours from the loaded image. This is useful when wanting to use the colours of a companies' logo, or wanting to recreate the colours from a particular image you've photographed. Press one of the “+” symbols along the left hand side of the picker to open the “Load file” window which will display all the images on the connected external USB drive. Choose the image file you need, and load it in. The Image Picker also supports multi-touch for fanning across your fixtures.



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.

Faders



On-screen colour faders are available on FLX consoles, and allow you to mix in RGB, CMY or HSV, irrespective of whether your fixtures use additive, subtractive, or HSV/HSI mixing.

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. Like the other ZerOS colour mixing tools, these faders will adjust all additive emitters that your fixture may have, providing a simple set of controls that will then be converted and applied to all emitters.

On FLX, the background colour of the faders automatically updates to show you the colour you'll end up at by moving that fader.

Each fader (apart from Hue), has a button above it. The buttons take each fader to full, apart from the *Temp* button, which takes the temperature fader to default.

[Click here to find out more about the Temperature fader](#)

Filters

Mood Boards by LEE Filters



Clicking the "Mood boards by LEE Filters" tab displays a window which collates colours together in "moods". Selecting a mood will give 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. After clicking on a mood, click the "Mood boards by LEE Filters" tab again to go back to the list of mood boards.

[For more moods and colour ideas, click here to go to the LEE filters website.](#)

Filter Libraries



As well as Mood boards by LEE Filters, on FLX you can also access seven different filter libraries. To access these, you can horizontally scroll the tabs along the top of the Colour window.

The available filter libraries are:

- LEE
- Roscolux
- Supergel
- e-colour+
- Cinegel
- GamColor
- Apollo

Filter References



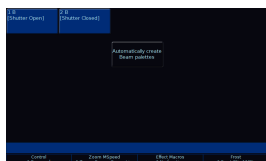
Upon choosing a colour filter, all colour mixing parameters of the selected fixtures will be taken to the values required to recreate this filter colour.

On the encoder wheels, the filter number and name will be displayed, followed by the DMX value in brackets. Upon recording filters into cues, the reference is kept, meaning that if you go into a cue, and then select the fixtures, you will be able to view the filter that is in use on the encoder wheels.

The filter reference will also be shown in the parameter details table at the bottom of the Output window, when the fixture is selected or manually adjusted.

When you apply a filter, that instruction is written in the command line. This means you can backspace to undo.

Beam



Parameters which don't change the fixtures colour, don't move the fixture, and don't cut into the fixture's beam, live under the Beam attribute. Beam is therefore where controls for lenses such as Zoom and Focus live, and also other functions such as Control or Reset.

If your fixtures have a Shutter, you will have a button to allow you to [Automatically create Beam palettes](#). This will create a "Shutter Open" and "Shutter Closed" palette for you to use. Custom Beam palettes can also be programmed, to store parameters, such as a specific beam angle for a Zoom.

If your fixtures have more than four beam parameters, tap the **Beam** button to page your encoders.

[For information on programming palettes, see the Palettes chapter.](#)

Shape

As a general rule, Shape parameters are parameters that cause a device to be placed into the fixture's beam. The most obvious of these is gobo wheels, but also includes animation wheels, prisms, irises and framing shutters. It therefore tends to be moving profiles, spots and beams that have parameters in this attribute.

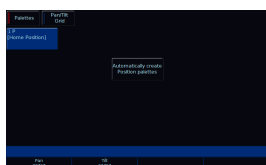


If your fixture has gobos, you will be able to automatically create shape palettes, to generate a palette for each gobo from all of the fixture's gobo wheels. The first palette will be "No Gobo", allowing you to easily remove any gobos from the beam.

You can also record your own shape palettes, useful for if you want a certain gobo rotating at a certain speed, or useful to save your hard work if you have spent time getting your framing shutters just right.

[For information on programming palettes, see the Palettes chapter.](#)

Position



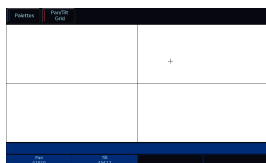
Parameters that can control the movement of your fixture, live under the Position attribute. Typically, this will be your Pan and Tilt parameters for moving lights, however you may see other parameters too, such as Pan/Tilt speed control.

Pan and Tilt will always be on the first two encoder wheels within the Position attribute. If there are more than four Position parameters available, tapping Position will page encoders three and four only.

Automatically creating position palettes, will create a single "Home Position" palette, for all of your fixtures. This can be used to set their Pan and Tilt to 50%.

Position palettes are incredibly useful, to allow you to build up your own palettes to quickly move your lights to different pre-defined locations.

[For information on programming palettes, see the Palettes chapter.](#)



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 + 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.

Fanning Position

When controlling the position of multiple fixtures at once, Fanning is a very useful tool to quickly send different Pan/Tilt values to your currently selected fixtures. To fan your pan or tilt values across your fixtures, press and hold Shift, and dial either the Pan or Tilt encoders.

There are four fan options that can be chosen.

Fan Middle is useful if you have a row of movers, and wish to fan their Pan symmetrically, to send your fixtures in to centre stage, or out to the wings.

Fan V is useful if you wish to fan the tilt of your fixtures.

[For more information see the Attribute Settings section](#)

Defaults

Fixture Defaults

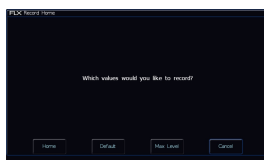
The “Default” values for fixture parameters, are the values that are output to each of a fixture's parameters when the fixture is not currently being controlled.

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%. They are therefore important, as they ensure that when you raise the intensity of a fixture, first and foremost it illuminates, and you can control the fixture successfully.

Custom Default Values

The Default values can however be edited for individual fixtures, or groups of fixtures as required, to allow you to customise what the fixture does when no playbacks are running, and you are not controlling the fixture manually.

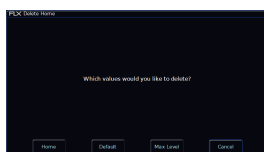
You can do this, by firstly adjusting the fixture's parameters to the values you wish them to be at by default. For information on how to adjust parameters, see each of the attribute sections for Intensity, Colour, Beam, Shape and Position.



Once the fixture's parameters are at the levels you wish to become the fixture's defaults, you can press Record, and then tap Home. The Home button is found top left of the internal touchscreen on FLX and FLX S consoles, however Home is an icon on the touchscreen on FLX S, whereas Home is a physical button on FLX. You can then choose Defaults from the window that opens.

As this is a normal record command, this means that normal Record options apply. The Record Options can be opened on the internal touchscreen by pressing and holding Record. In most cases when customising Defaults, you will need to ensure that the SmartTag option in the Record Options is disabled.

[For information on how to do this, see the programming section](#)



Removing Custom Default Values

To remove custom default values, and revert back to the console defaults, tap Delete Home, and then choose Default. This action can't be undone.

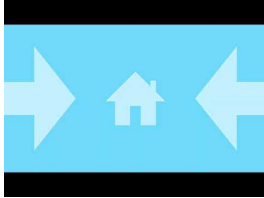
If intensities are defaulted above 0%, these will be indicated as yellow intensity percentages in the Output Window.

Home

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, shape and position parameters to the same values as “Default”, but with an intensity of 100%. After selecting a fixture(s), press the Home button. This will send the fixture(s) to its ‘home’ values.

The Home button is found top left of the internal touchscreen on FLX and FLX S consoles. Home is an icon on the touchscreen on FLX S, whereas Home is a physical button on FLX.



Take a quick look at this video for an introduction to Home.

<https://youtu.be/9vKeuYHDdaY>

Homing Attributes

On FLX, you can Home individual attributes, by holding **Home** and pressing an attribute key. For example:

Home + **Colour**

Home-Colour,

If you keep the **Home** key held, you can tap **Colour** then **Beam**, to home both Colour and Beam attributes.

You can also press and hold an attribute key, and then press Home. For example:

Colour + **Home**

Home-Colour,

Homing the Effect attribute is particularly useful for removing all effects from the selected fixtures:

Effect + **Home**

Home-Effect,

You can also use the syntax "attribute 0 Enter" to home that attribute. For example:

Colour **0** **Enter**

Colour 0,

Homing Parameters

To home an individual parameter, press and hold **Home**, and tap the button in the middle of a parameter's encoder wheel. This sends just the chosen parameter back to its Home values.

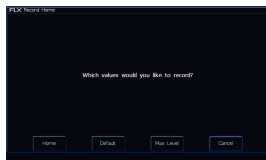
For example, if you are currently in the Position attribute, you could press and hold **Home** and tap the second encoder button to Home Tilt. The following would be displayed in the command line:

Home [Tilt],

Custom Home Values

The Home values can be edited for individual fixtures, or groups of fixtures as required, to allow you to customise what the fixture does when it is selected and Home is pressed.

You can do this, by firstly adjusting the fixture's parameters to the values you wish them to be when homed. For information on how to adjust parameters, see each of the attribute sections for Intensity, Colour, Beam, Shape and Position.

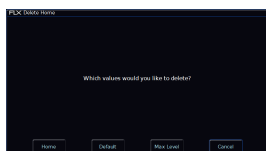


Once the fixture's parameters are at the levels you wish to become the fixture's home, you can press Record, and then tap Home. You can then choose Home from the window that opens.

As this is a normal record command, this means that normal Record options apply. The Record Options can be opened on the internal touchscreen by pressing and holding Record. In most cases when customising Home values, you will need to ensure that the SmartTag option in the Record Options is disabled.

[For information on how to do this, see the programming section](#)

Removing Custom Home Values



To remove custom default values, and revert back to the console defaults, tap Delete Home, and then choose Home. This action can't be undone.

Max Level

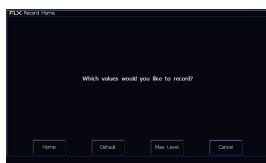
Parameter Max Levels

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%, meaning you have full control of every parameter.

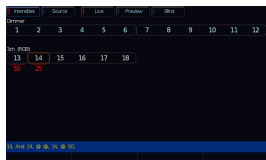
Custom Max Levels

The Max Level values can however be edited for individual fixtures, or groups of fixtures as required, to allow you to customise the maximum level a parameter can go to. Useful if you only want a dimmer channel to go to 50% for example.

You can do this, by firstly adjusting the fixture's parameters to the maximum values you wish them to be able to go to. For information on how to adjust parameters, see each of the attribute sections for Intensity, Colour, Beam, Shape and Position.



Once the fixture's parameters are at their maximum levels, you can press Record, and then tap Home. The Home button is found top left of the internal touchscreen on FLX and FLX S consoles, however Home is an icon on the touchscreen on FLX S, whereas Home is a physical button on FLX. You can then choose Max Level from the window that opens.



When setting a max level on intensities, this will be indicated in the Output Window, by a line above that fixture's intensity.

In the image to the left, fixture 13 and 14 have a max level set of 50%. Therefore setting the fixture to full takes them to 50%, and setting them to 50% takes them to 25%.

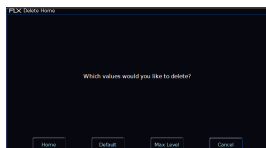
If you wanted to limit fixture 1 to 50% intensity, you could therefore use the syntax below...

`1 @ 50 Record Home Max Level`

As this is a normal record command, this means that normal Record options apply. The Record Options can be opened on the internal touchscreen by pressing and holding Record. In most cases when customising Max Levels, you will need to ensure that the SmartTag option in the Record Options is disabled.

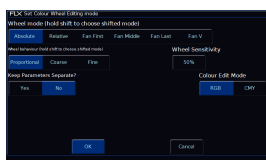
[For information on how to do this, see the programming section](#)

Removing Custom Max Level Values



To remove custom Max Level values, and revert back to the console defaults, tap Delete Home, and then choose Max Level. This action can't be undone.

Attribute Settings



Attribute settings allow you to configure how your encoder wheels behave, for each attribute. The attribute settings can be opened by pressing and holding the Setup key, and pressing the button of the attribute you would like to configure. On FLX, you could therefore press and hold Setup and tap Colour, or on FLX S, you could press and hold Setup, and tap the Colour tab, at the top of the internal touchscreen which opens when a fixture with colour parameters is selected.

The attribute settings can also be opened via Setup, by tapping Setup -> Settings, and choosing the attribute under "Attributes".

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

"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. This is the default for Colour, Beam and Shape. The DMX value displayed on the encoder is sent to all fixtures.
- "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). Relative is therefore the default wheel mode for Position. The DMX value displayed on the encoder is that of the first selected fixture.
- "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. This is the default shifted option for all attributes.
- "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. Also known as "Fan Symmetrical".

Wheel Behaviour

"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. This is the default, and provides the best overall control.
- "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

When SmartTag is disabled in the Record Options window, rather than the console deciding which parameters to record into palettes and cues, you decide. With SmartTag disabled, you choose which parameters get stored by "tagging" them. When moving an encoder wheel, you will notice the parameter goes from having a dark blue background in the encoder display, meaning untagged, to a light blue encoder display, meaning tagged. Therefore whenever you adjust an encoder, you know that value will be stored when you record a cue.

However using the "Keep Parameters Separate" option, you can decide if moving one parameter within an attribute should automatically tag all the other parameters within that attribute too.

By default, parameters are not separated for Colour and Position, as all the values within those attributes come together to create a single colour and single position. In most cases, you therefore need all of those parameters to be recorded at a time. Whereas the default is "Yes" for Beam and Shape, as often the parameters within Beam and Shape are completely independent from each other.

[Click here to find out more about SmartTag](#)

Wheel Sensitivity

"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%. Increasing the sensitivity reduces the amount of wheel rotations required, and reducing the sensitivity increases the amount of wheel rotations required. Note Wheel Sensitivity is a global option, which can be accessed from each attribute's settings.

Tagging

What is tagging?

Tagging is the process of telling the console which parameters you would like to be recorded, when you tap the **Record** or **Update** buttons. It is very rare that you would want to include all parameters of all fixtures into your cues, as this would prevent you from being able to mix playbacks, and prevent things like Move On Dark from working. By default, SmartTag is enabled in the Record Options window. To open the Record Options window on the internal touchscreen, you can press and hold **Record**.

When SmartTag is enabled in the Record Options window, you don't need to worry about tagging parameters, as the console will do the work for you, and work out which parameters need to be recorded, to ensure that you achieve the current lighting state when played back. With SmartTag enabled, you can therefore ignore this section.

[Click here to find out more about SmartTag](#)

However when SmartTag is disabled in the Record Options window, rather than the console deciding which parameters to record into palettes and cues, you decide. With SmartTag disabled, you choose which parameters get stored by "tagging" them. When moving an encoder wheel, you will notice the parameter goes from having a dark blue background in the encoder display, meaning untagged, to a light blue encoder display, meaning tagged. Therefore whenever you adjust an encoder, you know that value will be stored when you record a cue, as the console automatically tags it.

In the settings of each attribute, you have the ability to choose whether adjusting one encoder will tag just that parameter, or tag all parameters within that attribute automatically.

[See the Attribute Settings section for more information](#)



In this image, you will notice that the first pair of parameters on encoders one and two are tagged, and the last pair of parameters on encoders three and four are untagged. This is shown by the colour of the encoder display background.

Manual Tagging

As well as the console automatically tagging the parameters or attributes of the parameters you adjust, you can also choose to manually tag and untag parameters, so that you can manually choose to include or not include parameters.

To manually tag or untag a parameter, you can tap on it on the internal touchscreen. This will display Tag or untag, followed by the parameter's name in the command line. For example tapping on red would give:

Tag [Red],

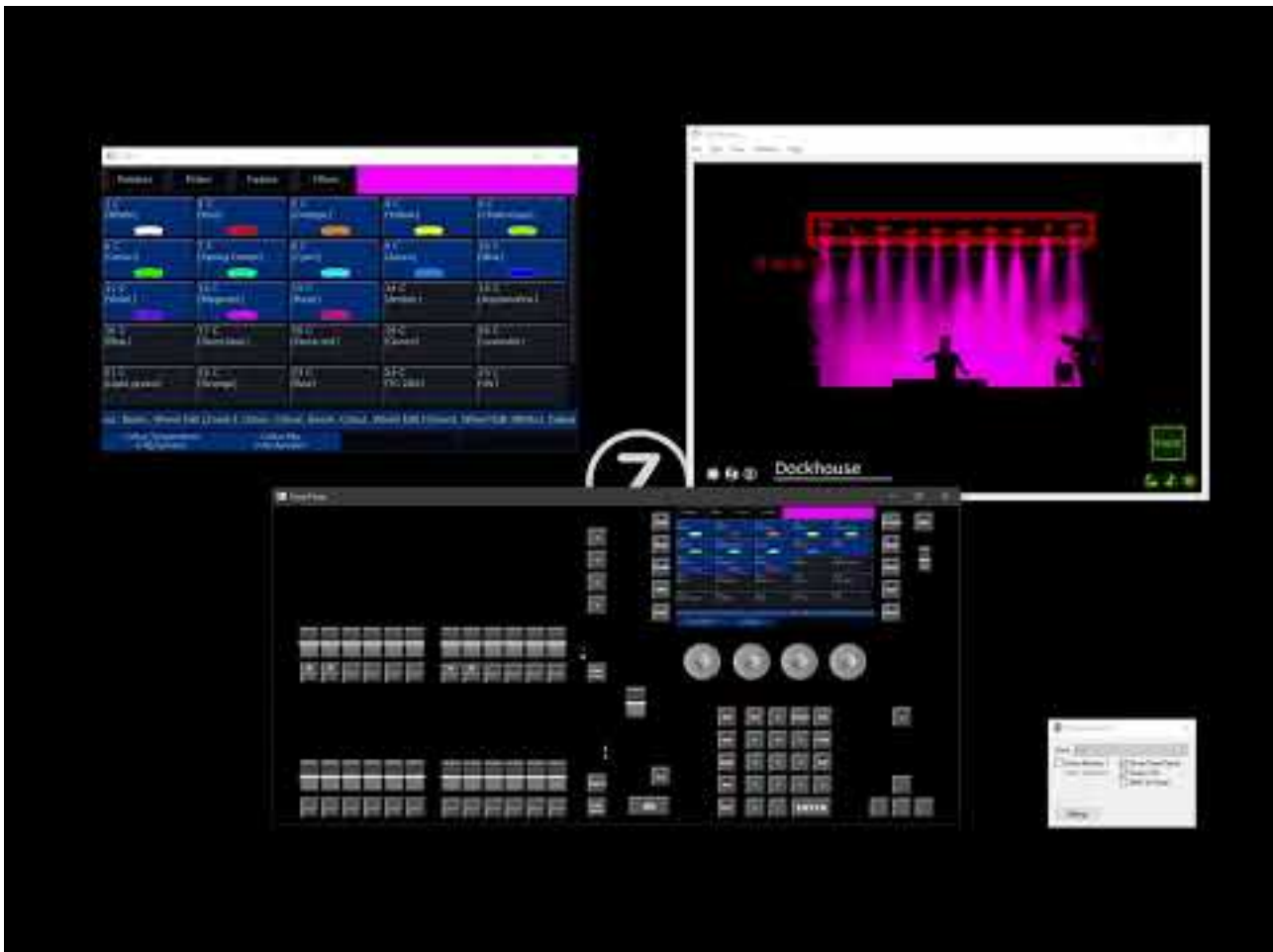
You can also manually tag or untag parameters by holding **Clear**, and jogging that parameter's encoder wheel.

To tag/untag intensity, you can tap the middle button of the intensity encoder.

On FLX, you can tag or untag whole attributes, by pressing and holding **Clear** , and tapping the attribute key on the console. For example, **Clear** + **Colour** .

[To clear manual adjustments and untag whole fixtures, you can use "Clear Fixture". Click here for more information.](#)

Watch the video below to learn more about Tagging...



https://youtu.be/b_X8mEuM--Y

Palettes

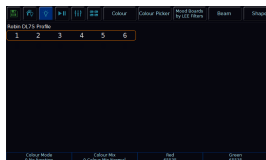
Each attribute (Colour, Beam, Shape, Position and Effect) has 240 palettes on FLX, 96 palettes on FLX S48 and 48 palettes on FLX S24.

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.

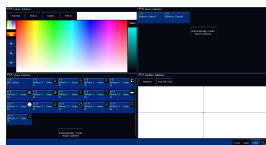
Palette Windows

Each attribute has its own palette window. This is opened automatically when you press the appropriate attribute button - **Colour** , **Beam** , **Shape** , **Position** or **Effect** . These are physical buttons on FLX to the left of the internal touchscreen, and "tabs" on FLX S which open along the top of the touchscreen.

The palette window contains palette "tiles" with 5 in a row, for each of the palettes, containing a palette number and a name.



On FLX S, the attribute "tabs" will only be visible along the top of the touchscreen if the currently selected fixtures support that specific attribute. Depending on the number of attributes your fixture has, these tabs will scroll to give you access to all fixture controls.



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

Learn more about Palettes...

- [Automatic Palettes](#)
- [Recording Palettes](#)
- [Advanced Palettes](#)
- [Using Palettes](#)
- [Naming Palettes](#)
- [Referencing Palettes](#)
- [Updating Palettes](#)
- [Copying & Moving Palettes](#)
- [Deleting Palettes](#)

Automatic Palettes



ZerOS can automatically create palettes for all 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.

Recording Palettes

To record a palette (for example, a colour palette), firstly adjust the parameters of the fixtures as required (for example, set all your lights to red). Then tap **Record**, and if you are not viewing the required palette window (for example, Colour) for the attribute you wish to record, use the attribute button to bring it into view. Then touch an empty palette, indicated by an asterisk.

This process is the same for all palettes.

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**

Record Colour 20

This records Colour palette 20.

Record **Colour** touch the required 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, Shape, Position or Effect .

Snapshot Palette

When programming palettes, you usually will want to just store the relevant parameters into their parent attribute. So for example, Red, Green and Blue levels into a colour palette.

However, you can snapshot the current lighting state on stage, and record all parameters of all fixtures into a single palette. To do this, hold Shift and tap Record, and then tap any empty palette from any attribute.

You will notice this palette is annotated "ICBSPE", meaning Intensity, Colour, Beam, Shape and Position is stored.

On FLX, you could therefore use the following syntax:

Shift + **Record** **Colour** **1** **5** **Enter**

Record All Colour 15

Snapshots the current lighting state and records it into colour palette 15.

Advanced Palettes

Recording multiple attributes into a palette

When programming palettes, you usually will want to just store the relevant parameters into their parent attribute. So for example, Red, Green and Blue levels into a colour palette.

However, you can also add additional attributes into a palette if required. To do this, adjust your fixture's parameters. For example, set your fixtures to red, and move their position to your required location.

Then tap **Record** , and tap the attribute button of where you wish this palette to be stored. For example: **Record** **Colour** . In the Record Options window that opens on the external monitor, you can manually add other attributes into the palette. To open the Record Options window on the internal touchscreen, press and hold Record, and then tap the attribute key. To add the other required attributes, disable SmartTag, so it has a blue stripe, rather than red, and then use the attribute filters along the bottom of the Record Options. To add position in for example, double tap **Position** , so that it has a green stripe. Then type the palette number followed by enter, to record. You will notice this palette is now annotated with the attribute letters of the stored attributes.

In our colour and position example, it will be annotated "CP":

Record **Colour** **Position** **Position** **1** **5** **Enter**

Records colour and position into colour palette 15.

Using palettes to copy parameters to another fixture of the same type

Palettes can be used, as a way to apply parameter values of a fixture, to another fixture of the same type.

To do this, select the fixture that has the values you wish to apply to a different fixture. Then tap **Record** , and then tap the attribute key of the attribute you wish the palette to be stored in. You can choose to store this palette to any attribute. Then in the Record Options window, ensure SmartTag is disabled, and tap **Selected Fixtures** **All Parameters** , You can then tap an empty palette tile in the attribute you tapped, or use syntax. Then, you can select the fixture of the same type that you wish to apply these parameters to, and apply your palette.

For example, this will apply all parameters of fixture 1, to fixture 2, if both fixture 1 and 2 are the same type:

1 **Record** **Beam** **3** **0** **Selected Fixtures** **All Parameters** **Enter** **2** **Beam** **3** **0** **Enter**

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

Colour 20,

This applies Colour Palette 20 to the currently selected fixtures.

1 8 Thru 2 3 Colour 2 9 Enter

18 Thru 23, Colour 29,

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

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. An external USB keyboard can then also be used. Press OK to confirm.

On FLX, palettes can also be named using syntax. These examples use Colour, however you could also instead tap Beam, Shape or Position for the following commands:

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

Colour 20 Name,

This displays an onscreen keyboard to name Colour Palette 20

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

Name Colour 3,

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.

Palettes can also be named at the point of recording. For example:

Record **Colour** **2** **0** **Name**

Record Colour 20 Name,

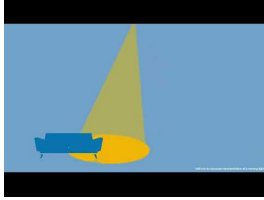
Records colour palette 20, and the on-screen keyboard will pop-up for you to use, or use a USB keyboard to give a name. Press enter to save.

Referencing Palettes



If you apply a palette to a fixture, you will notice that the encoders display a code, with the DMX value then displayed in brackets. This code is known as the palette reference. The code will be the first letter of the attribute, followed by the palette number. For example in the image on the left, the Red, Green and Blue values have just been adjusted by colour palette 10 (C10).

If you apply a palette and then record a cue or UDK, the console will record the reference to the palette rather than the actual parameter values in brackets. 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.



Take a look at this quick video for an explanation on Referencing Palettes.

<https://youtu.be/5k1GT0jxeUw>

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 need, 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. Any cues that were recorded using that palette, will now also be updated.

On FLX, palettes can also be updated using syntax. Make the changes you want and then type one of the following commands:

Update **Beam** **1** **4** **Enter**

Update Beam 14,

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.

Copying & Moving Palettes

Palettes can be copied or moved using syntax. Copying is particularly useful if you have a palette that you would like to duplicate, so that you can use it as a starting point to create a new palette, rather than starting from scratch. Moving is useful if you would like to reposition your palette tiles in the palettes window.

Copying

The syntax can follow "Attribute x **Copy** y **Enter**", where x is the source palette, and y is the destination. There is no need to tap the attribute button again before y, however this is allowed.

Examples of copy syntax below:

Shape **1** **Copy** **6** **Enter**

Shape 1 Copy To 6,

Copies shape palette 1 and pastes it to shape palette 6.

Position **1** **0** **Copy** **Position** **2** **Enter**

Position 10 Copy To Position 2,

Copies position palette 10 and pastes it to position palette 2.

Moving

The Move command can be accessed, by repeating the process above, however holding the **Shift** key when tapping **Copy**. The syntax is therefore "Attribute x (**Shift** - **Copy**) y **Enter**", where x is the source palette, and y is the destination. There is no need to tap the attribute button again before y, however this is allowed.

Examples of move syntax below:

Colour **1** (**Shift** - **Copy**) **6** **Enter**

Colour 1 Move To 6,

Moves colour palette 1 to colour palette 6.

Beam **1** **0** (**Shift** - **Copy**) **Beam** **2** **Enter**

Beam 10 Move To Beam 2,

Moves beam palette 10 to beam palette 2.

Deleting Palettes

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

Colour 42 Delete,

This deletes colour palette 42.

Delete Beam 7 Enter

Delete Beam 7,

This deletes beam palette 7.

Delete Position touch palette

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

With syntax, you can also use the And, Thru and Except keys to delete multiple palettes within an attribute. For example:

Delete Shape 1 Thru 6 Except 4 Enter

Delete Shape 1 Thru 6 Except 4,

Deletes shape palettes 1, 2, 3, 5 and 6.

Delete Colour 1 And 5 Enter

Delete Colour 1 And 5,

Deletes colour palettes 1 and 5.

Effects

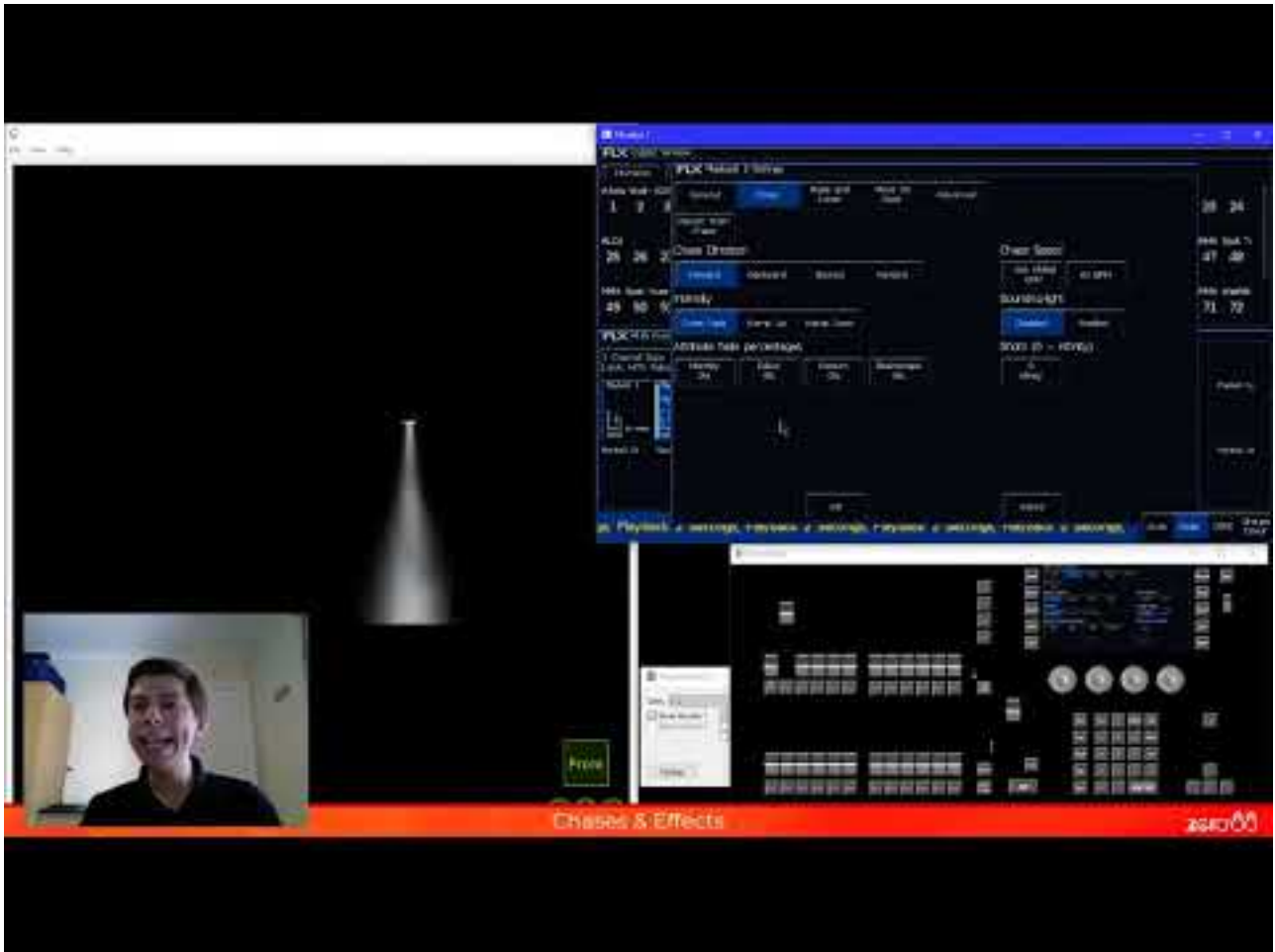
Effects can be viewed as an extra attribute, however unlike the other attributes, Effects do not directly control parameters of the selected fixtures. Instead, effects are used to manipulate parameters to create effects such as “Circle”, “Ballyhoo” and “Rainbow”. This is achieved by applying various 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.

Click the subjects below to find out more...

- [Auto Effects](#)
- [Effect Parameters](#)
- [Programming Effect Palettes](#)
- [Waveforms](#)

Take a look at the online session below, which includes information on Effects...



<https://youtu.be/OURTmQ1zkkU>

Auto Effects

Effect	Effect Name	Effect Type	Effect Category	Effect Sub-category
01	01 (Effect)	01 (Effect)	01 (Effect)	01 (Effect)
02	02 (Effect)	02 (Effect)	02 (Effect)	02 (Effect)
03	03 (Effect)	03 (Effect)	03 (Effect)	03 (Effect)
04	04 (Effect)	04 (Effect)	04 (Effect)	04 (Effect)
05	05 (Effect)	05 (Effect)	05 (Effect)	05 (Effect)
06	06 (Effect)	06 (Effect)	06 (Effect)	06 (Effect)
07	07 (Effect)	07 (Effect)	07 (Effect)	07 (Effect)
08	08 (Effect)	08 (Effect)	08 (Effect)	08 (Effect)
09	09 (Effect)	09 (Effect)	09 (Effect)	09 (Effect)
10	10 (Effect)	10 (Effect)	10 (Effect)	10 (Effect)
11	11 (Effect)	11 (Effect)	11 (Effect)	11 (Effect)
12	12 (Effect)	12 (Effect)	12 (Effect)	12 (Effect)
13	13 (Effect)	13 (Effect)	13 (Effect)	13 (Effect)
14	14 (Effect)	14 (Effect)	14 (Effect)	14 (Effect)
15	15 (Effect)	15 (Effect)	15 (Effect)	15 (Effect)
16	16 (Effect)	16 (Effect)	16 (Effect)	16 (Effect)
17	17 (Effect)	17 (Effect)	17 (Effect)	17 (Effect)
18	18 (Effect)	18 (Effect)	18 (Effect)	18 (Effect)
19	19 (Effect)	19 (Effect)	19 (Effect)	19 (Effect)
20	20 (Effect)	20 (Effect)	20 (Effect)	20 (Effect)
21	21 (Effect)	21 (Effect)	21 (Effect)	21 (Effect)
22	22 (Effect)	22 (Effect)	22 (Effect)	22 (Effect)
23	23 (Effect)	23 (Effect)	23 (Effect)	23 (Effect)
24	24 (Effect)	24 (Effect)	24 (Effect)	24 (Effect)
25	25 (Effect)	25 (Effect)	25 (Effect)	25 (Effect)
26	26 (Effect)	26 (Effect)	26 (Effect)	26 (Effect)
27	27 (Effect)	27 (Effect)	27 (Effect)	27 (Effect)
28	28 (Effect)	28 (Effect)	28 (Effect)	28 (Effect)
29	29 (Effect)	29 (Effect)	29 (Effect)	29 (Effect)
30	30 (Effect)	30 (Effect)	30 (Effect)	30 (Effect)
31	31 (Effect)	31 (Effect)	31 (Effect)	31 (Effect)
32	32 (Effect)	32 (Effect)	32 (Effect)	32 (Effect)
33	33 (Effect)	33 (Effect)	33 (Effect)	33 (Effect)
34	34 (Effect)	34 (Effect)	34 (Effect)	34 (Effect)
35	35 (Effect)	35 (Effect)	35 (Effect)	35 (Effect)
36	36 (Effect)	36 (Effect)	36 (Effect)	36 (Effect)
37	37 (Effect)	37 (Effect)	37 (Effect)	37 (Effect)
38	38 (Effect)	38 (Effect)	38 (Effect)	38 (Effect)
39	39 (Effect)	39 (Effect)	39 (Effect)	39 (Effect)
40	40 (Effect)	40 (Effect)	40 (Effect)	40 (Effect)
41	41 (Effect)	41 (Effect)	41 (Effect)	41 (Effect)
42	42 (Effect)	42 (Effect)	42 (Effect)	42 (Effect)
43	43 (Effect)	43 (Effect)	43 (Effect)	43 (Effect)
44	44 (Effect)	44 (Effect)	44 (Effect)	44 (Effect)
45	45 (Effect)	45 (Effect)	45 (Effect)	45 (Effect)

ZerOS can generate 45 automatic effects, by clicking the “Automatically create effect palettes” button. Each palette displays the effect number, content flags and a name.

Content flags indicate which attributes are programmed in the effect palette, and are displayed top left of the palettetile:

- I = Intensity
- C = Colour
- B = Beam
- S = Shape
- P = Position
- E = Effects

When applying auto effects, base values of parameters will be 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.

The following effect palettes will be created, upon pressing "Automatically Create Effect Palettes":

- Effect 1 is "No Effect". Tapping this removes any effects from your selected fixtures.
- Effects 2 - 10 are intensity effects. These will be available to all fixtures with intensity, including standard dimmer channels.
- Effects 11 - 20 are movement effects, for your moving lights.
- Effects 21 - 40 are colour effects for fixtures with colour mixing, such as LEDs.
- Effects 41 - 45 are Beam & Shape effects, including Iris, Zoom and Focus effects.

Automatic Intensity 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



Automatic Position 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)

Automatic Colour Effect Palettes

The automatic colour effects will be available for fixtures with RGB or CMY parameters.

If an automatic colour effect is applied to a fixture with additive colour mixing, the RGB parameters will be used, and all other additive colour parameters that may be present will be taken to 0%.

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)



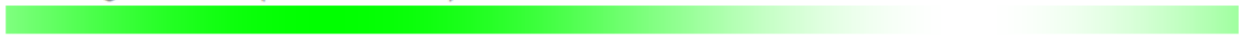
Sparkle – magenta (includes random offset)



Fade – red/white (includes offset)



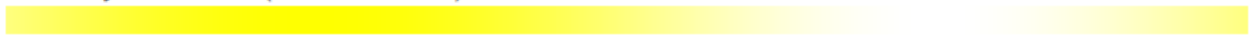
Fade – green/white (includes offset)



Fade – blue/white (includes offset)



Fade – yellow/white (includes offset)



Fade – blue/orange (includes offset)



Emergency – blue



Emergency – red/blue



Warning



Fire



Fireworks



Automatic Beam/Shape Effect Palettes

- 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)

Effect Parameters

Effect	Speed	Size	Offset	Rotation
Iris Fade	100	100	0	0
Iris Step	100	100	0	0
Zoom Fade	100	100	0	0
Zoom Step	100	100	0	0
Focus Fade	100	100	0	0

When you apply an effect, the effect parameters are assigned to the encoder wheels. Effect parameters are Speed, Size, Offset and Rotation. Auto palettes include predefined Speed, Size, Offset and Rotation values, which after applying the effect, can then be adjusted.

Speed

Controls the speed of the effect. Is a value from -100 to +100. A speed of 0 stops the effect from running, and a negative speed reverses the direction of the effect.

Size

Adjusts how visible the effect is.

- For intensity effects, reducing the size raises the base intensity, and reduces the peak intensity.
- For colour effects, reducing the size reduces the saturation of the effect.
- For movement effects, reducing the size restricts the area your movers can move in.
- For beam effects, reducing the size results in less affect to the beam.

Offset

Offsets can be applied to fixtures, so that they will lag behind other fixtures. This gives you a "chasing" effect, rather than all of your fixtures staying synchronised with one another.

If you select a group of fixtures, and adjust the offset encoder, you give all of the selected fixtures, the same offset value - the offset value displayed on the encoder. As all fixtures are offset by the same amount, no fixtures lag behind the other, and are therefore in sync. Offsets therefore need to be fanned across your fixtures. This can be done by holding Shift, and dialling the Offset encoder wheel. Different fan options are available. For example using a Fan V offset on an intensity effect, will allow your fixtures to chase in or out from centre stage. [See the attribute settings section for more information.](#)

As well as fanning offsets manually, along the top of the Effects window, are six quick offsets. These are as follows:

- *No offset* - pressing this gives all selected fixtures an offset of 0 - your fixtures are therefore in sync.
- *Forward offset (individually)* - your fixtures are evenly offset in the order of selection, from no offset.
- *Backward offset (individually)* - your fixtures are evenly offset in the order of selection, from full offset.
- *Forward offset (by group)* - if you have selected your fixtures using multiple groups, each group is evenly offset in the order of selection, from no offset.
- *Backward offset (by group)* - if you have selected your fixtures using multiple groups, each group is evenly offset in the order of selection, from full offset.
- *Random offset (by group)* - each tap of Random offset, creates a new random offset order across your fixtures.

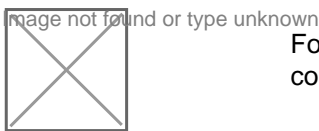
FANNING ACROSS MULTICELL FIXTURES

On multicell fixtures, effect offsets can be fanned in two ways. Firstly, effects can be fanned across a multicell fixture, just like a standard fixture. This means that every light output of the multicell fixture is the same. Alternatively, effects can be fanned across the individual cells of a multicell fixture.

The way your fixtures will be fanned, will be dependent on whether they were selected as whole fixtures, or individual cells. When using the channel faders, fixtures will be selected as whole fixtures, unless your fixture is a linear multicell fixture, such as an LED batten, in which case the fixture will be selected as cells.

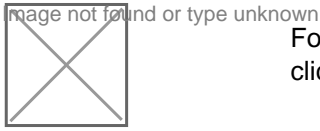
[Click here for information on selecting fixtures using syntax commands for more information.](#)

[Click here for information on selecting fixtures using the channel faders for more information.](#)



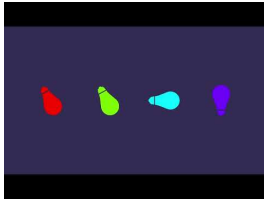
For more information on controlling multicell fixtures on FLX S consoles, click [here](#).

<https://youtu.be/7Onn1GSW-FY?si=z4jOru88SsjHhiw1>



For more information on controlling multicell fixtures on FLX consoles, [click here](#).

<https://youtu.be/5s0hB-i3Ekw?si=kbAcsqs-mojrGWG8>



Take a look at this quick video for explanation of Effect Offsets.

<https://youtu.be/qBzQG1dJnBw>

Rotation

Only available for movement effects. This is a value in degrees, and allows you to "rotate" the position effect. For example a 90 degree rotation to a Vertical Line effect, gives a horizontal line effect.

Overlaying Effects

It is possible to apply various different types of effects at once. For example, apply an intensity, colour, position and beam effect to the same fixture. When you do this, your encoders will still display "Speed", "Size", "Offset" and "Rotation" (if you have applied a movement effect). These are global parameters, and will control all effects currently running on the selected fixtures.

However if you tap the Effect button, your encoders will page, and you will then see "Ex Speed", "Ex Size", "Ex Offset" and "Ex Rotation" (if you have applied a movement effect), where x is the effect palette number. You can therefore page through each individual effect which is running, and adjust each effect palette in turn running on the fixtures. To remove an individual effect, page through to the effect you wish to remove on the encoders, and then dial its "Ex Size" parameter to 0.

Programming Effect Palettes

After applying auto effects, and adjusting the effect parameters, you can record your own custom effect palette, in the same way you record other palettes. FLX can store 240 effect palettes, FLX S48 can store 96 effect palettes, and FLX S24 can store 48 effect palettes.

Therefore configure your effect parameters including offset options, tap Record, and choose an empty effect palette to store to marked with an asterisk.

If you are recording multiple auto effects into a single effect palette, upon recalling your custom effect palette, you will no longer be able to adjust the parameters of each individual effect palette. You will instead simply have the Speed, Size, Offset and Rotation parameters to adjust your effect.

When you store an effect palette, by default you only store the Speed, Size, Offset and Rotation controls of that effect. Therefore if you have applied an effect, but also adjusted intensity, colour, beam, shape and position, by default these attributes will not get stored in the effect palette too. If you wish to store all attributes into an effect palette, hold **Shift** and tap **Record** , and then choose an empty palette to store to.

[See the Palettes chapter for more information, including naming, updating, deleting and recalling palettes](#)

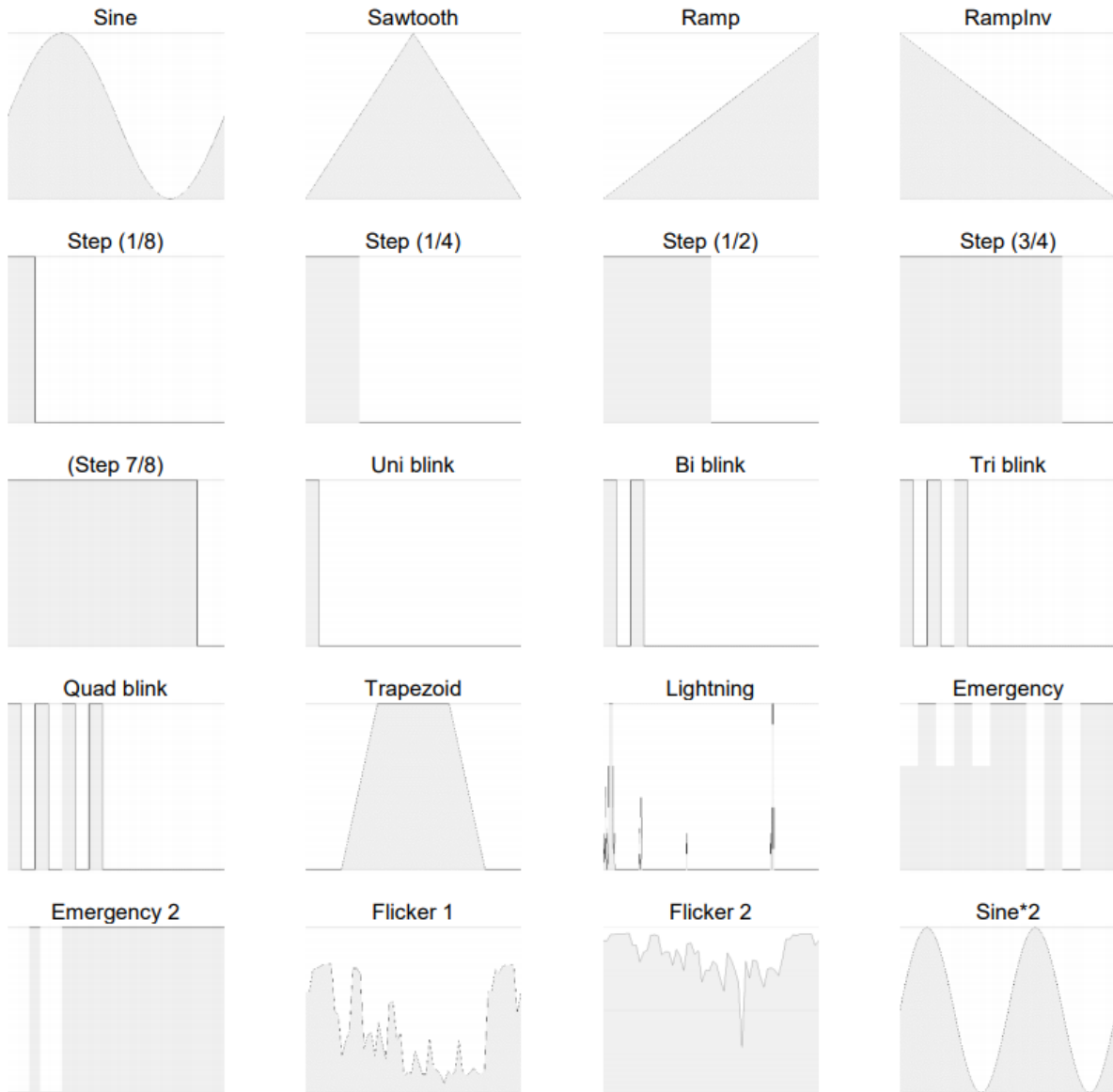
Waveforms



No effect	Intensity	Size	Offset	Rotation	Speed	Size	Offset	Rotation
Intensity	None	0	0	0	0	0	0	0
Size	None	0	0	0	0	0	0	0
Offset	None	0	0	0	0	0	0	0
Rotation	None	0	0	0	0	0	0	0
Speed	None	0	0	0	0	0	0	0
Size	None	0	0	0	0	0	0	0
Offset	None	0	0	0	0	0	0	0
Rotation	None	0	0	0	0	0	0	0
Color 1	None	0	0	0	0	0	0	0
Color 2	None	0	0	0	0	0	0	0
Beam	None	0	0	0	0	0	0	0
Shape	None	0	0	0	0	0	0	0
Position	None	0	0	0	0	0	0	0

On FLX consoles, a Waveforms tab is available from the top of the Effects window. In here, all parameters of the currently selected fixture(s) will be listed down the left hand side of the table and the effect parameters are listed across the top of the table. This allows you to apply an effect, and then adjust it, for each parameter of the fixture.

Firstly, find the parameter you would like to apply an effect to, and then double tap on the Function field. This will give you a drop down of all of the available waveforms that can be applied to that parameter. Function determines the mathematical function that is applied to the output value of the fixture parameter. Graphs of the available functions are shown below:



Function	Speed	Size	Offset
Effect 1	0	0	0
Effect 2	0	0	0
Effect 3	0	0	0
Effect 4	0	0	0
Effect 5	0	0	0
Effect 6	0	0	0
Effect 7	0	0	0
Effect 8	0	0	0
Effect 9	0	0	0
Effect 10	0	0	0
Effect 11	0	0	0
Effect 12	0	0	0
Effect 13	0	0	0
Effect 14	0	0	0
Effect 15	0	0	0
Effect 16	0	0	0
Effect 17	0	0	0
Effect 18	0	0	0
Effect 19	0	0	0
Effect 20	0	0	0

After applying a function, there will be no change on stage, as you then need to give the function speed and size. The Effect encoders will allow you to adjust the Speed, Size, Offset (and Rotation if a function is applied to Pan or Tilt), of all your fixture's parameters. Alternatively, you can tap onto the field in the Waveforms window you require, and type in the exact value required for that specific parameter of the fixture, and press Enter to confirm.

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. 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 Waveforms window.

Once you have manually created your effect, it can then be recorded into your own custom effect palette. If you have applied functions or adjusted the Speed, Size and Offset for parameters you don't wish to include in your effect palette, tap the Tag box for that parameter to untick it, to ensure it won't get stored into your palette.

You can then press the **Record** button which will display the Effect Palettes on the display, and select an empty palette.

[See the Palettes chapter for more information](#)

Cues & Playbacks

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

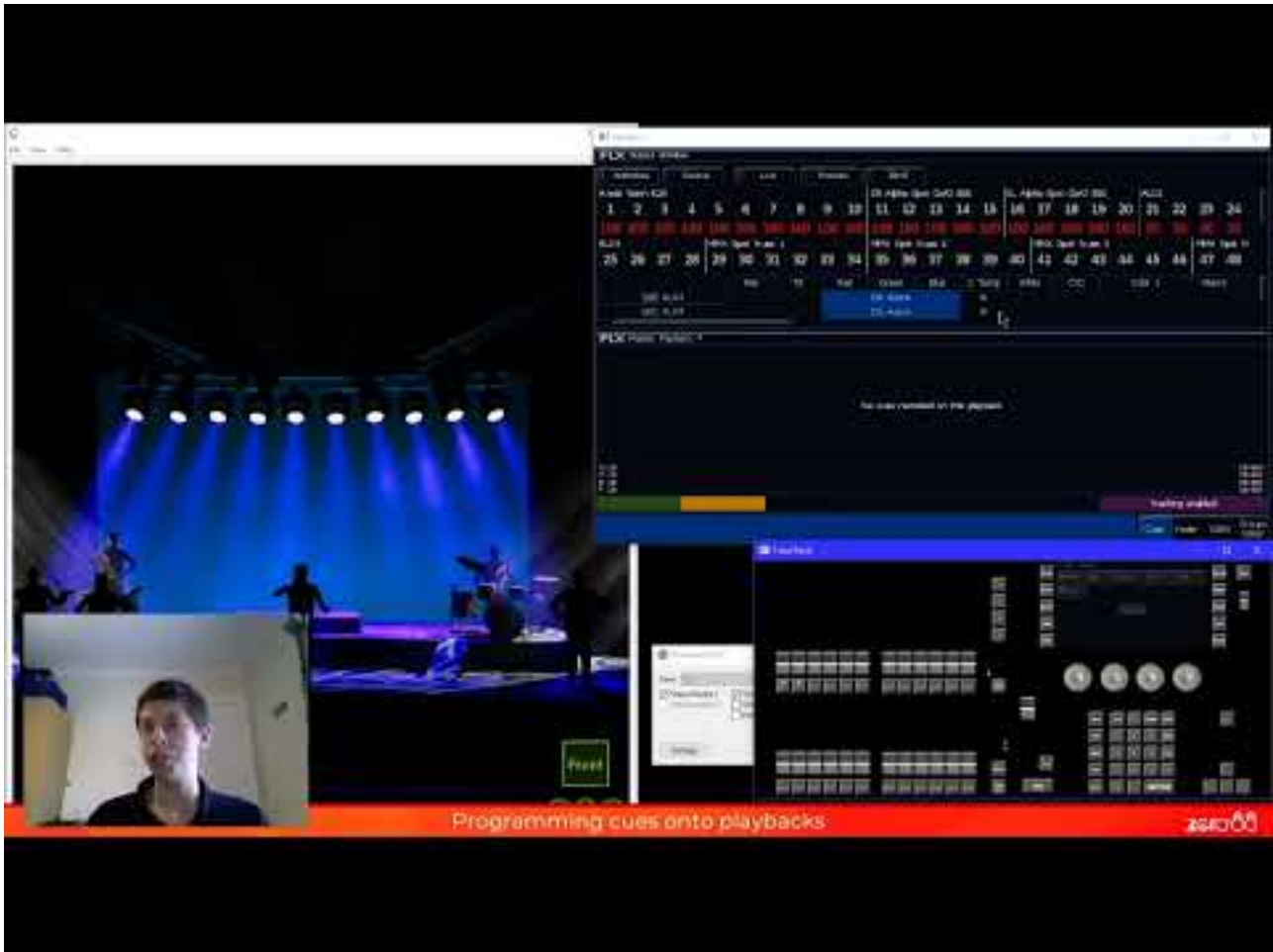
Each playback can store a single cue, or multiple cues. FLX supports 241 playbacks, FLX S48 supports 97 playbacks and FLX S24 supports 49 playbacks. All consoles can store a total of 10,000 cues across the playbacks.

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”. Playbacks will have a fader, and a button to control them. 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 Settings.

Playbacks can be accessed on the MFFs (multi-functional faders), by ensuring the Fader Funct. button is toggled to Playbacks. You can then use the page button, to page through your playbacks. FLX has 10 pages of playbacks, whereas FLX S24 and FLX S48 have 2 pages. To see which playbacks your faders are currently controlling, you can view the Faders window.

[Click here to find out more about the Faders window](#)

Take a look at the training session below, discussing Programming Cues Onto Playbacks...



<https://youtu.be/fqTxMYeRG24>

Find out more about Cues & Playbacks...

- [Master Playback](#)
- [Cues Window](#)
- [Record Options](#)
- [Recording Cues](#)
- [Cue Times](#)
- [Updating Cues](#)
- [Naming](#)
- [Copying](#)
- [Moving](#)
- [Deleting](#)
- [Cue Settings](#)
- [Chases](#)
- [Playback Settings](#)
- [Special Playback Functions](#)
- [Playing Back Cues](#)

Master Playback

In addition to the playbacks on the MFFs, an additional Master Playback is provided. For many shows, especially theatrical, a single playback is often used with a long list of pre-recorded cues. The Master Playback can therefore be used for these situations. The Master Playback is sometimes referred to as “Playback 0” within the ZerOS software.

The Master Playback is always accessible - it doesn't change function with the **Fader Funct.** button, so you can access it in both Channels and Playbacks, and don't need to worry about what page your faders are on.

The key thing to bear in mind is there's nothing special or different about the Master Playback compared to the other playbacks, it is just there for convenience.

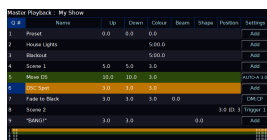
On FLX there's a double-width **[?]** (play/go) button and a dedicated **[??]** (pause) button.

On FLX S24 and FLX S48 the Master Playback has a quieter **[?]** (play/go) button.

On ZerOS Server, the Master Playback button is the **[?]** (play/go) button next to the **[Setup]** key. When running as FLX, the **[?]** (play/go) button always controls the Master Playback, however when running as an ORB range console, the **[?]** (play/go) button will control the currently selected stack. The selected stack can be changed using **[STACK]** x **[ENTER]** syntax.

The Master Playback's GO button can be triggered using a Space-Bar on an external keyboard.

Cues Window



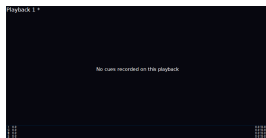
The Cues window displays all the cues within a single playback, with each cue being a different row. The columns show the name and various fade times and settings for each of those cues. The name of the playback is shown at the top of the window, with the cue fade progress bars for each attribute running along the bottom of the window.

To access the Cues window on consoles without an external monitor, press View to toggle between the Cues and Faders window.



On FLX S consoles, the Cues window can be accessed by tapping the **[> II]** icon at the top of the internal touchscreen.

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.



If you view an empty playback, you will receive a message stating that no cues have been recorded onto the playback.



On FLX and FLX S48 with an external monitor connected, the Cues window can be viewed on the external monitor. The Cues window is available on the bottom half of the "Cues" desktop.

At the bottom of the Cues window on the external desktop, is the playback status bar. This indicates the current cue the next cue, the last cue, the Move On Dark times of the playback, and also the global tracking options.

On FLX, the playback status bar will also display the clock. Tapping anywhere on the bar, will toggle the clock to show you the incoming MIDI Time Code time, if connected.

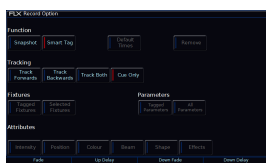
Record Options

Before diving in and programming cues, it is useful to know the Record Options you have available to you. These affect which fixtures, attributes, and parameters get stored into your cues, and in fact everything that you program on the console. This means if you have a lighting state on stage you wish to record, it could look very different when played back, depending on the Record Options that were set when you recorded the lighting state.

Record options are especially important when recording cues.

By default, when **Record** is pressed the Record Options window will open on the external monitor. If you do not have an external monitor connected, you can press and hold **Record** to open the Record Options on the internal touchscreen.

You can change when and where the Record Options window opens, in **Setup** -> **Settings**, and using the Show Record & Update Window options under Record & Update.



By default, the Record Options will have two options enabled, which will be enabled for everything you program. These are "SmartTag", and "Cue Only", indicated with a red stripe on their button. These options, ensure that the lighting state you see on stage is exactly what is recorded, and therefore exactly what you get when played back. This is done by the console deciding which fixtures to include, and which ones to ignore.

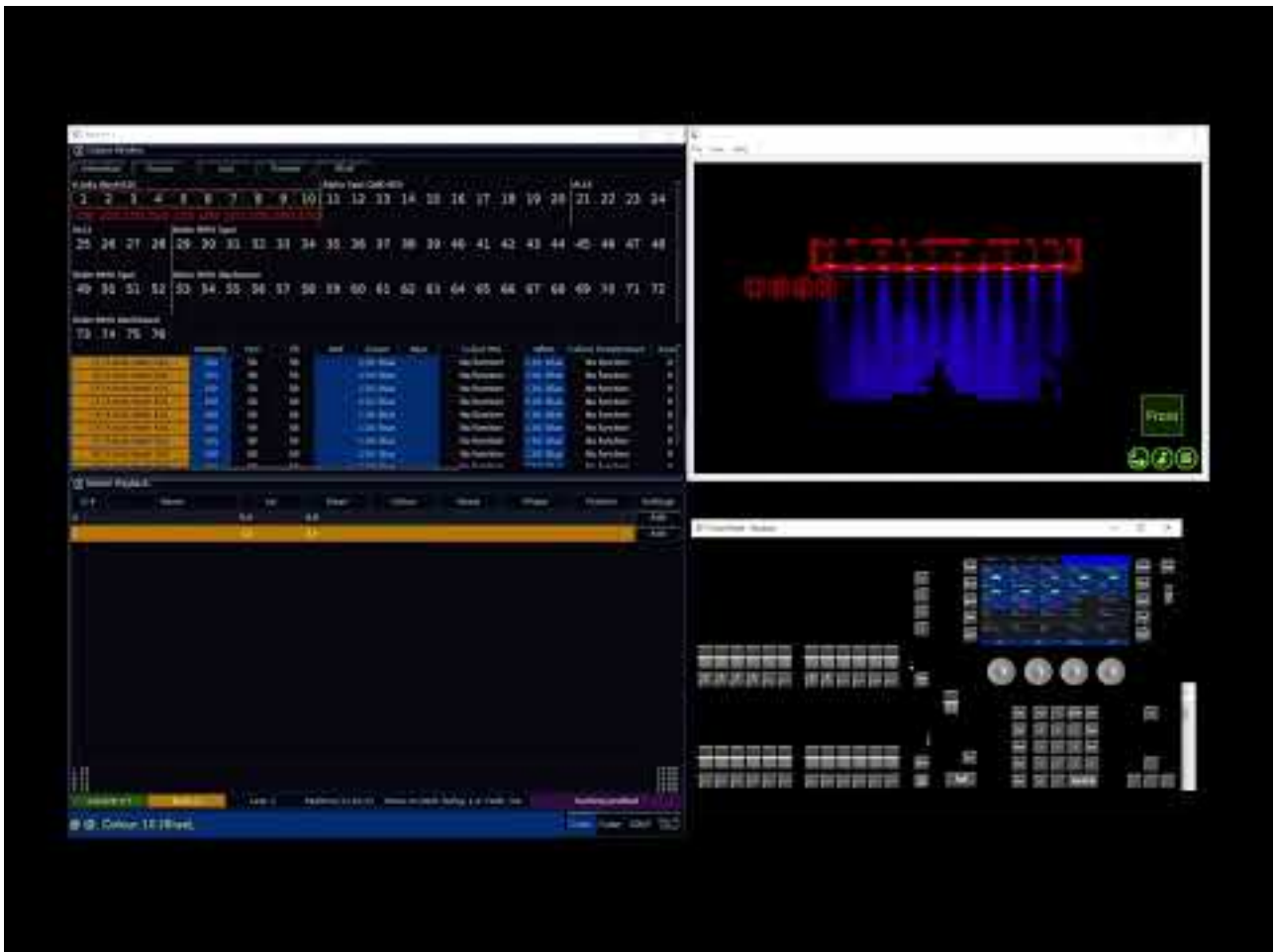
You therefore don't need to specify what gets recorded, and you can leave the console to do the job for you. If you are happy with this method of working, you can skip over the rest of this section.

[If you cannot see a "SmartTag" button top left of the Record Options window, click here to find out more.](#)

Find out more about the following Record Options...

- [Snapshot & SmartTag](#)
- [Tracking](#)
- [Remove](#)
- [Filters](#)

Watch the Record Options training session here...



<https://youtu.be/--EeATsqH-o>

Snapshot & SmartTag

Snapshot

Snapshot 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.

It is especially useful if you are recording cues with tracking behaviour, as it can be used to record cues that you know you never want values to track into. Once a cue is recorded with snapshot, it can sometimes be referred to as a "Block Cue" or "Blocked Cue", as it blocks values from tracking into the cue.

Rather than choosing **Snapshot** from the Record Options window to enable it (indicated with a red stripe on the **Snapshot** button), the shortcut to record a Snapshot cue is to hold **Shift** and tap **Record**. On FLX this will bring "Record All" into the command line, and **Snapshot** will be preselected in the Record Options window.

SmartTag

Ultimately, when SmartTag is enabled, the console decides what gets recorded. With SmartTag disabled, it is down to you.

SmartTag ensures the lighting state you see on stage, is exactly what is recorded. This means that the console will include parameters that you have adjusted manually, or "tagged", but will also include any other values required to achieve your current lighting state. SmartTag will therefore see if you have any other playbacks active, and will also record these parameters into the cue too. With SmartTag disabled, only the parameters you manually controlled, and "tagged", would get recorded.

It does not store every parameter into every cue, and therefore SmartTag and Snapshot are different functions that cannot be enabled together. The reason SmartTag doesn't simply record every parameter into every cue, is for three key factors. The main one being, is that if all cues included all parameters, it would make mixing playbacks much harder, as all the cues would be fighting over all the parameters. SmartTag also helps you use two other functions on the console, which are the other two reasons SmartTag doesn't simply include all parameters into all cues.

These functions are Tracking and Move On Dark, which are explained in other sections.

This is because with SmartTag enabled, indicated with a red stripe on the **SmartTag** button, the console will only include values that are different to the previous cue - the logic is there is no point telling a fixture to do something it is doing already! It therefore doesn't store "block" values, and so allows you to use tracking to easily update multiple cues at once.

When SmartTag is enabled, it also will not store parameters of a fixture, if its intensity is at 0%. All it will do, is store the intensity value at 0, and leave the remaining parameters untouched. This allows Move On Dark to be able to prepare that fixture for when it is next used.

When SmartTag is disabled, indicated with a blue stripe on the **SmartTag** button, you decide what gets stored into cues and palettes, by tagging required fixtures, attributes and parameters. This means that when SmartTag is disabled, you then have access to the filtering options, found under the "Tracking Options" in the Record Options window.

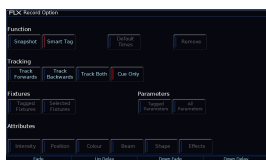
[Click here to find out about tagging parameters in the Tagging section](#)

If a cue is recorded or updated with SmartTag enabled, ZerOS will not include information for a fixture, if the fixture's information is identical to the previous cue. SmartTag can therefore be used to unblock a cue.

To do this, go into a cue you wish to unblock. Then tap UPDATE, ensure SmartTag is enabled, and then tap your playback's button. ZerOS will remove any blocked values from this cue, meaning information will be removed from the cue for fixtures that were being told to go to a value they were at already in the previous cue.

Now instead, the fixtures will track from the previous cue.

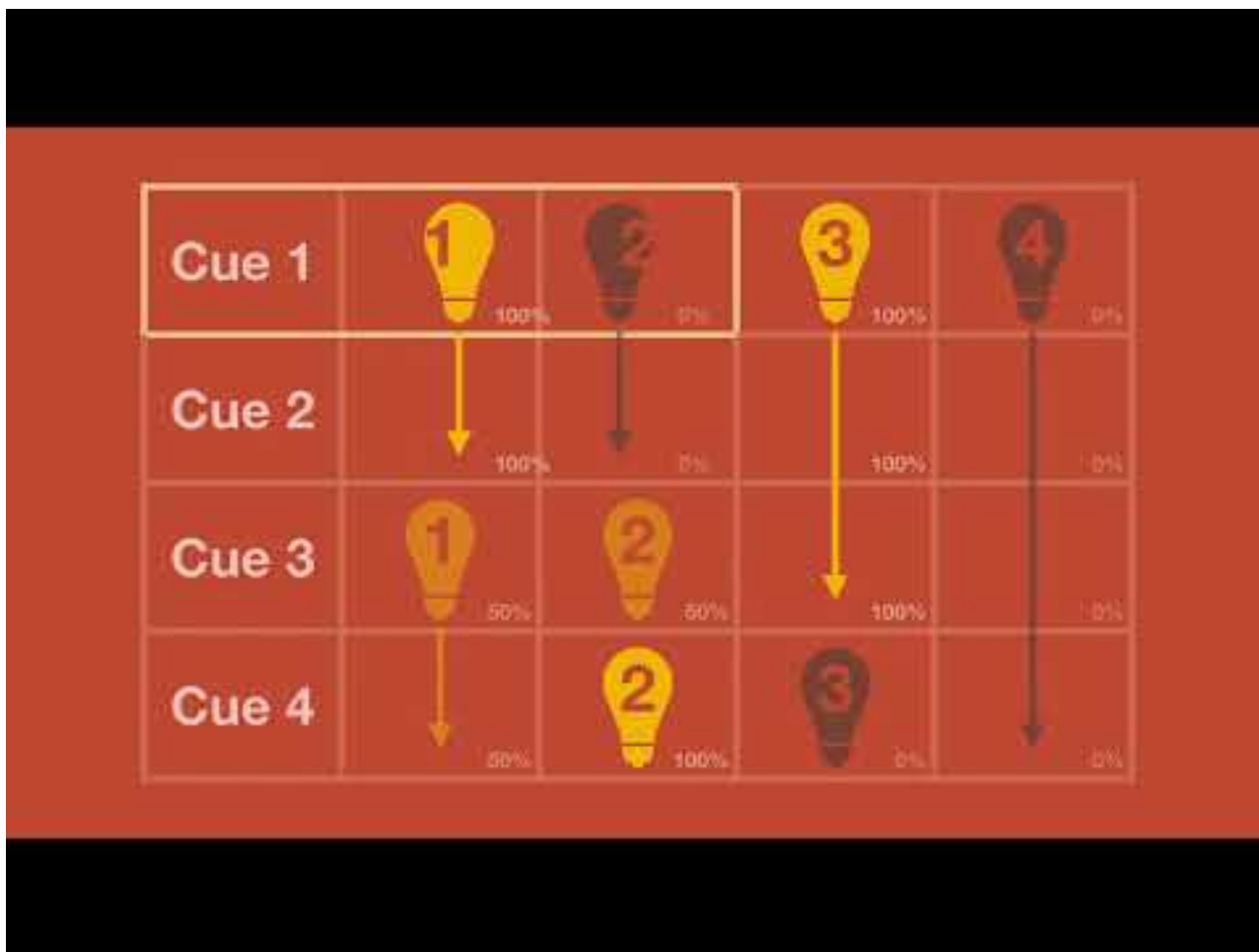
Tracking



In the Record Options window, are four Tracking Options. These are “Track Forwards”, “Track Backwards”, “Track Both” and “Cue Only”.

Cue Only is selected by default, meaning the console is not recording your cues with tracking methodology.

See the quick video below, for an overview of what “Tracking” means...



https://youtu.be/v_ALd1i90Jc

Track Forwards

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, change colour, beam, shape and position, 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.

Choosing **Track Forwards** allows the change to flow through into the following cues. For example, add a new light into a cue, and it will then stay on through subsequent cues, until it is next told to change. 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.

Track Backwards

With **Track Backwards**, rather than ZerOS making your changes to the cue you are currently in, it will instead look back up the cue stack, until it finds the cue that instructs your fixture to be at the level it is at in the current cue. It will then update this cue, and the change will then track back down the cue stack to the cue you are currently in. The change will not track down from the current cue into following cues.

It is therefore useful to use Track Backwards to make a change to multiple cues in a scene, when you are currently in the last cue of that scene.

Track Both

Track Both is the same as Track Backwards, in that when you update a cue, you are actually updating the cue further up the cue stack that gave the fixture you are working on an instruction. However Track Both, then allows your change to filter through the cue you are currently in, and onto subsequent cues.

If you go into a cue, and change a fixture's intensity, its percentage will go red in the Output window. If you then update the cue using Track Backwards or Track Both, the fixture's intensity percentage will go from red to purple. This is the only time you will see this when updating a cue - normally when you update a cue you are changing the information in the cue you are working on, resulting in the colour of intensity percentages changing to blue, green or white.

Cue Only

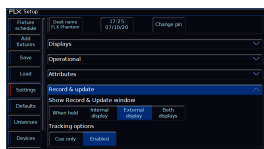
When Cue Only is enabled, only the cue you are working on will be affected. In the background, this is because the console undoes any changes you made in the next cue, to ensure the next cue looks exactly how you left it. This is useful when recording a cue out of sequence, or when updating a cue, to ensure the update you make doesn't affect any subsequent cues in the cue list. This is therefore the default option, to ensure the cue you record, doesn't affect other cues.

Take a look at this quick video for an explanation of Cue Only.

So, I updated a cue once and it ruined everything!

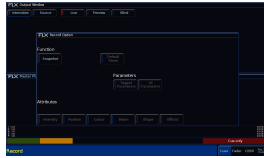
<https://youtu.be/eyYtnDpd9k4>

Global Tracking Options



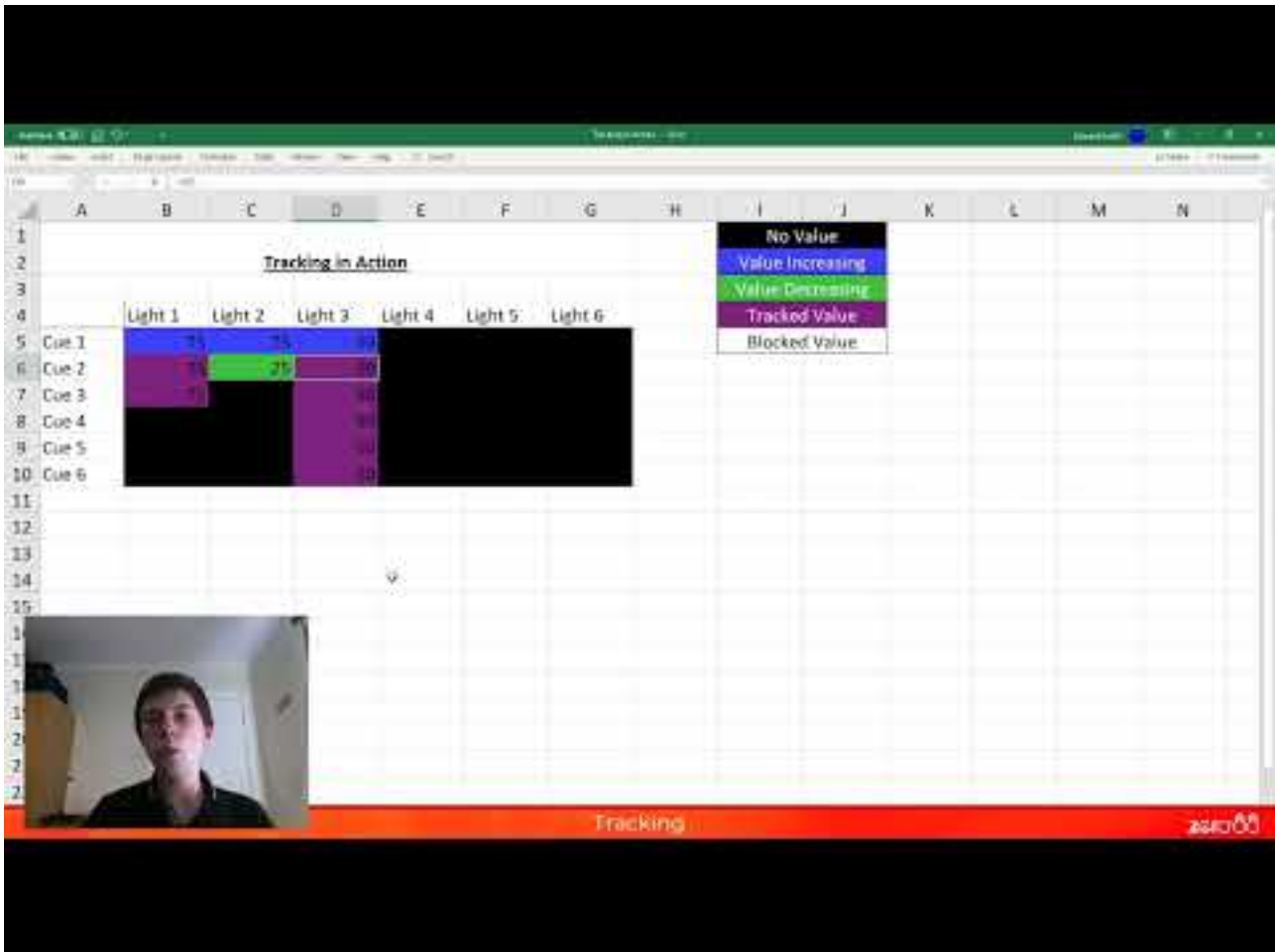
Changing settings in the Record Options, will affect what gets stored, and what doesn't. Therefore some users, like to hide the majority of the Record Options, to prevent any accidental change in options. To hide the majority of the Record Options, tap Setup -> Settings, and tap the "Cue Only" Tracking Option under "Record & Update".

When this global Record & Update option is set to Cue Only, the console will snapshot any fixtures that are currently active when cues are recorded or updated. This means you have much less capability for mixing cues together. The downside to setting the console to global Cue Only, is if you do need to be specific with what parameters get stored into your cues, or need to configure your fixture's home or default values for example, you cannot simply use the Record Options window. You have to first go into Setup -> Settings, enable the Tracking Options again, to give yourself access to the Record Options.



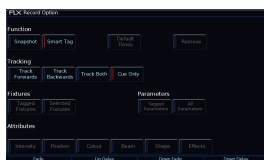
When the Record & Update tracking options are set to Cue Only globally from Setup -> Settings, "Cue Only" will then be displayed with a red background, bottom right of the Cues window on the external desktop. The Record Options will then have a reduced set of options.

Still a little hazy on what tracking means? It is best to see it in action, so let's take a look at this training session below...



<https://youtu.be/G-LiS0MF5II>

Record Filters



There are three different filters in the Record Options, which can be used to define what gets recorded. These will be greyed out if SmartTag is enabled, as the console will be choosing what gets recorded, and greyed out if "Snapshot" is enabled, as the console will store everything.

The filters available are "Fixtures", "Parameters" and "Attributes".

Fixtures

By default, *Tagged Fixtures* will be chosen, indicated with a red stripe, meaning any fixtures that you have adjusted, or "tagged" will get stored. Remember tagged parameters are indicated as red intensities in the Output Window, and parameters with a blue encoder background in the encoder displays.

Instead, you can choose *Selected Fixtures*, meaning only the currently selected fixtures will be recorded. This is very useful, as it allows you to choose exactly which fixtures get recorded.

For example if there is just one fixture you don't want to record, you could type the following:

Selected Fixtures

Enter Enter, Except 5, Record 10

This would record the current lighting state except fixture 5, to cue 10 in the currently viewed playback.

Parameters

By default, *Tagged Parameters* will be chosen, meaning only tagged parameters will get recorded. However choosing *All Parameters* will tag all parameters, obeying the "Fixtures" filter. This is therefore useful for recording all parameters of just the selected fixtures.

Attributes

When *Tagged Parameters* is chosen, this can be filtered further using Attributes filters. Each attribute is listed, and can be switched between a blue stripe (no parameters within this attribute will be recorded), red stripe (only tagged parameters within this attribute will be recorded) and green stripe (all parameters within this attribute will be recorded). By default, after tapping you will see attributes that are not currently tagged with a blue stripe, and any attributes that have been tagged with a red stripe.

Recording Cues

Once you have set up a lighting state 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 [Cues Window](#) is displayed.

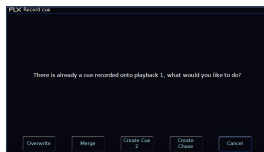
To record a cue, press **Record** and then press the button of the playback you wish to record the cue into (for example, the Master Playback's Go button). The multi-function faders will automatically take you to Playbacks, and you can use the page buttons if you wish to record your cue onto playbacks on another page.

Flashing playback buttons indicate empty playbacks, whereas static playback buttons indicate cues are already recorded on that playback. Pressing the playback button you require, will stop your playback's flashing, the Record button LED will turn off, and your cue is stored.

Subsequent cues can then be set up and recorded using the same method. Remember, you can use the [Record Options](#) to choose what gets recorded into your cues.

After recording a cue, one of three things will happen, depending on the Record Options set:

1. By default, the cue will not be played back, and your lights will remain tagged and selected. This is because SmartTag is enabled. On FLX, the command line is cleared.
2. If SmartTag 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.
3. If SmartTag is disabled, and the playback fader is below the "trigger level", ZerOS will ask you to raise the Playback fader. Once done, the command line is cleared, the fixture parameters are automatically untagged, but the fixtures remain selected.



If you tap Record, and then tap a playback button that is not flashing, you will receive a popup, shown here. The console will state that a cue is already recorded onto that playback, and so will offer you some options:

- **Overwrite** - this allows to replace whatever was stored on the playback, with the current lighting state.
- **Merge** - this is an alternative for update - push up a playback first, make your changes, tap **Record**, tap the playback's button, and choose **Merge**.
- **Create Cue 2** - this allows you to start to create a cue stack onto your chosen playback. Hold **View** and tap the playback's button to view the cues.
- **Create Chase** - this allows you to create a chase onto your chosen playback. [Click here to find out about Chases.](#)
- **Cancel** - cancels the record command, after pressing **Cancel** tap **Clear** to continue.

After choosing "Create Chase" or "Create Cue 2", you will no longer receive this pop-up when recording another cue onto this playback.

Recording cues with syntax

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 Playback Button

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** Playback Button

This will record cue 5 within the playback of the Go button you press.

Inserting Cues

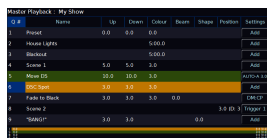
“Point Cues” can be recorded in between other cues. For example, to add an extra cue between Cue 5 and Cue 6, you could record a Cue 5.5. “Point Cues” can be defined up to two decimal places, and will be automatically placed into the cue stack in numerical order.

On FLX S, the cue number you require can be defined by tapping **Record** **Z/Shift** and using the on-screen number pad to type your cue number. Then, tap the playback's button to record as usual.

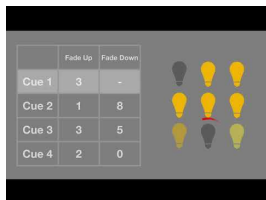
It is always a good idea to define the cue number exactly halfway between your existing cue numbers. This means if you then need to insert cues again, you have the most amount of empty cue slots to do so. You can record up to two decimal places, and so can have 99 cues recorded between two whole cue numbers if needed.

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

Cue Times



When an attribute has been recorded into a cue, timings are available, to configure how quickly your lights get to their recorded values when the cue is played back. Times for each attribute are displayed in columns in the Cues window, and each field can be edited, to customise your timings.



Take a look at this video for a quick introduction to Fade Times.

<https://youtu.be/17zJxOlewmM>

When you record a cue, it will be stored with the default fades for each attribute. Fade time defaults can be customised in **Setup** -> **Defaults**.

The default fade times are as follows:

- Fade Up and Fade Down - 3 seconds
- Colour and Position - 3 seconds
- Beam and Shape - 0 seconds

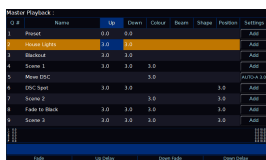
For fade up, it is the time it takes for any intensities to raise from their current level to get to their recorded levels.

For fade down, it is the time it takes for any intensities to lower from their current level to get to their recorded levels.

For Colour, Beam, Shape and Position attribute fades, it is the time it takes from the cue being triggered, for the attributes to fade from their current value, to the programmed value.

Cue 1, will always have a 0 second fade up and fade down time for intensity. This is to ensure that the intensity follows the level of the playback fader.

Editing Fades with Encoder Wheels



To edit your cue times, tap on the time you wish to edit in the Cues window. Your encoder wheels will then allow you to adjust the time for each attribute.

Tapping Fade Up or Fade Down will give the same intensity options on the encoders. The first encoder, will simply be Fade. This allows you to adjust the fade up and fade down together. Adjusting the fade down on the third encoder, then separates your up and down fades.

Each "tick" of the encoder wheel will increment by a second. If you wish to define half a second for example, tap on the middle encoder button of the time you wish to edit, and you will be able to customise a time, such as 1.5.

Delay

As well as fades, you will also be able to adjust the delay time for each attribute too. Delay time can be added so that upon triggering the cue, the delay time runs, and then the fade time runs. This means you could put a delay on the fade up, resulting in your fixtures fading down, and then your fixtures fading up afterwards, all from a single cue.

Delays will be shown in the Cues window in brackets, starting "(D: "

Recording a Cue with Fade Times

As well as defining fade times after recording a cue, you can set fade times at the point of recording a cue. To do this, create your lighting state in the usual way, and then tap Record. Your encoders allow you to input the intensity fades for the cue, with the encoder button of the first encoder setting both up and down times. You can then press the button of the playback you wish to store the cue onto, and it will be stored with your intensity times.

On FLX, other attribute fades can also be configured at the point of recording, by tapping the required attribute key to bring the times onto the encoders.

Using Arrow Keys

On FLX, you can also navigate the Cues window like a spreadsheet, using the arrow keys to select the cell you need, and press **Enter** to then allow you to type into the cell, and press **Enter** again to store.

You can also tap on a fade time cell, and hold **Shift** and tap the up arrow key, to increase the time by a second. Hold **Shift** and tap the down arrow, to decrease time by a second.

Updating Cues

After recording a cue you may need to make changes to it, and update it. The most effective way to do this, is firstly go into the cue you wish to change and update. The easiest way to do this, is view the playback your cue is stored in, by pressing and holding **View** and tapping your playback's button. Then tap your cue on screen, and press the playback's go button to go into it, the cue will highlight in green, meaning it is the current cue. Ensure your playback's fader is raised.

Your cue will then be outputting, and you can then make the changes required using the fixture controls. When you have made the changes required, and your lighting state on stage now looks how you need it, tap **Update**, and then tap the button of the playback which is currently outputting. The current cue of that playback is then updated, and you will notice the **Clear** button LED automatically turns off, as the console has saved all your manual changes into the cue.

Fade times can also be updated whilst updating the cue, as after pressing **Update** your encoders will allow you to adjust the fades of the cue, in the same way you can when recording a new cue.

By default, cue only is enabled, meaning any changes you make to a cue, will then be reverted in the next cue, ensuring only the cue you are working on is affected, and the following cues look however you programmed them. You can however update a cue with tracking enabled, as a method of sending your changes into several cues.

[When updating cues there are various Update Options available. Click here to find out more.](#)

Update Syntax

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

Update Enter

Update, Enter,

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

Update 5 Enter

Update, 5, Enter,

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

Update Playback button 10

Update, Stack 10,

This will update the current cue within Playback 10

Update 5 Playback button 10

Update, 5 Stack 10,

This will update Cue 5 within Playback 10

Updating multiple cues

As well as updating the current cue, or a single cue you define, multiple cues can be updated at once. After you have created the required lighting state on stage, you can then define which cues you wish to be updated to your current lighting state. To do this, you will need to be in Cue Only, so that only the cues you define get updated.

For example:

Update 2 Thru 5 Enter

Update, 2 Thru 5, Enter,

Updates cues 2 thru to 5 with your current lighting state. Cues 3 to 5 are tracking from cue 2.

Update 3 And 5 Enter

Update, 3 And 5, Enter,

Updates cues 3 and 5 with your current lighting state.

Tip - to update a cue within a chase, or a cue that has an auto-cue after it, press and hold Shift, and tap your playback's go button, to go into the cue you wish to update. The following cue will then not automatically play, allowing you to update the cue you need.

Update Options



After tapping Update, the update options window will open on the external monitor, to allow you to choose what gets added, or removed, from the cue you are updating. To open the Update Options on the internal touchscreen, press and hold Update.

The top of the Update Options window, will display all palettes and cues currently active, with the cue you are currently in selected, indicated with a red stripe. In most cases, you therefore do not need to adjust this, as the console will always default to update the cue you are working on. If you click on your active cue, this will deselect it. You can then click the **Selected Stack** button, to reselect it.

Tracking Options

The Update Tracking Options are exactly the same options as found in the Record Options window, however they can also be accessed from here.

[Click here to find out about the Tracking Options](#)

Merge/Remove

The default Update method, is **Merge**. This means parameters that are tagged, will get added to your cue. However, you can choose **Remove**.

Remove will mean any parameters that are currently tagged, will be removed from the cue. This is therefore a useful tool to remove parameters, attributes, or whole fixtures from a cue. SmartTag must be disabled, to allow you to use the Remove tool. Ensure the SmartTag button has a blue stripe, meaning disabled.

To remove a whole fixture, select it, and press **Home**. This is a quick way of tagging all its parameters, and you will then be able to tap **Update** **Remove**, to remove the fixture from the cue. To remove a whole attribute on FLX, select your fixture, and then hold **Clear** and tap the attribute key, such as **Colour**, to tag all of that attribute's parameters.

As well as choosing **Update** **Remove**, Remove is also available in the Record Options. You can therefore also tap **Record**, type your cue number, choose **Remove**, and press that cue's playback button to remove tagged parameters from the defined cue.

Update References

If you go into a cue, and tweak fixture's parameters, you can then update the cue with these changes. However, if your fixture's parameters were referencing a palette, changing their values will have now broken the reference. If you wish to update the palette as well as update the cue, and therefore reinstate the palette reference into the cue, the palettes can be updated at the same time as the cue by enabling the *Update References* button, saving you needing to update the palettes manually first.

[Click here for more information on palette references](#)

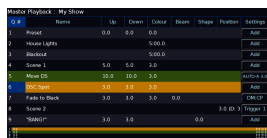
Filters

The attribute filters along the bottom of the Update Options, allow you to choose which attributes get included, and which don't.

[See the Record Filters section for more information](#)

[The SmartTag option can be enabled/disabled from both the Record Options and Update Options window. For more information on SmartTag, click here.](#)

Naming



Naming Cues

Naming is really important, to ensure you know what a cue will do when output. You could name the cue with a brief description of what the cue does, or more commonly in theatrical shows, you could name the cue with a description of when the cue should be triggered. For example, a line in the script, or when a performer does something on stage.

To name a cue, double touch/click the "Name" cell in the Cues Window. An onscreen keyboard will be displayed to name the cue. An external keyboard can also be used.

FLX users can also navigate the Cues window like a spreadsheet, meaning you can use the arrows keys to navigate to the name field you require, and then press **Enter** .

Naming cues with syntax

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

Name **5** **Enter**

Name 5

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

Name **5** Playback button 3

Name 5

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.

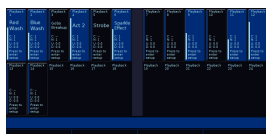
Rather than recording the cue, and then naming them afterwards, you can name the cue at the point of recording it. This is done by using the normal Record syntax, however by pressing **Name** instead of **Enter** :

Record **Name**

This will record the next available cue, within the playback you are currently viewing, and allow you to name it.

Record **5** **.** **5** **Name**

This will record cue 5.5, within the playback you are currently viewing, and allow you to name it.



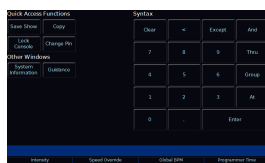
Naming Playbacks

Playbacks can be named, by opening the playback's settings, tapping Advanced, and then giving the playback a name. The playback settings can be opened by pressing and holding Setup, and tapping the playback's button. This name is then displayed in the Faders window, allowing you to very quickly see which playback fader does what.

On FLX, playbacks can be named by tapping Name, and then tapping the button of the playback you wish to name.

Copying

Individual cues, and whole playbacks, can be copied. Often, you may want to use a lighting state multiple times in a cue stack. You can therefore copy a cue to another empty cue number. Copying whole playbacks is useful, as it allows you to make yourself a backup of your cue stack.



The Copy button on FLX S, can be found in the Z window by pressing Z/Shift.

Copying Playbacks

To copy one playback to another playback, press the **Copy** button. Then, tap the flashing button of the playback you wish to copy, and then tap the flashing button you wish this playback to be copied to.

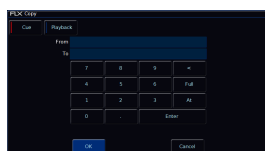
Alternatively, after pressing **Copy** to open the copy window, you can choose "Playback" and then type the number of the playback you wish to copy in the "from" field, and the number of the playback you wish to copy it to in the "to" field.

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** **1** **0** **Enter**

Copy Playback button 5, Playback button 10

Copy Playback 5 **Down Arrow** **1** **0** **OK**



Copying Cues in a Playback

To copy one cue to another cue, press the Copy button. Ensure Cue is selected in the window, which it should be by default. 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.

Copying Cues to Other Playbacks

To copy a cue to or from different playbacks, press the playback's button 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 pressing the button of playback 15, and then type 25 in the "to" field, followed by pressing the button of playback 18.

The from field would look like this:

15/7

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** **1** **0** **Enter**

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

Copy **5** **Down Arrow** **1** **0** **OK**

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

Copy **5** Playback button 10 **2** **0** **Enter**

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

Copy **7** Playback button 15 **2** **5** Playback button 18

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

Copying Multiple Cues

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** **1** **0** **Enter** **4** **7** **Enter**

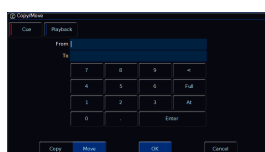
This will copy cues 5,6,7,8,9,10 to cues 47,48,49,50,51,52 within the playback you are currently viewing.

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.

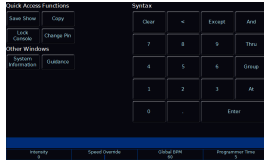
Moving

Individual cues, and whole playbacks, can be moved. Moving cues is useful to allow you to change the cue number, and therefore order, that your cues sit in the cue stack. Moving playbacks allows you to rearrange playbacks on your faders. For example, you may have multiple playbacks programmed, and when you need to use one, you could move it to the Master Playback.

To access the Move function, you can hold **Shift** and tap the **Copy** key.



Alternatively you can tap the Copy button, and then select Move from the Copy/Move window.



On FLX S consoles, the Copy button can be found by tapping the Z/Shift key.

Moving Playbacks

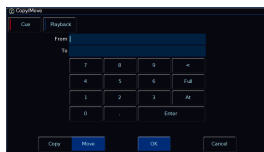
To move a playback, hold **Shift** and press the **Copy** button. Then, tap the flashing button of the playback you wish to move, and then tap the flashing button you wish to move the playback to.

Alternatively, after pressing **Copy** to open the Copy/Move window, you can choose **Move**, and then choose **Playback**. This allows you to then type the number of the playback you wish to move in the “from” field, and the number you would like this playback to become in the “to” field.

On FLX, pressing either Down or Enter will move to the next field. So the following syntax will allow you to move playbacks:

Copy **Move** **Playback** **5** **Enter** **1** **0** **Enter**

Shift - **Copy** Playback button 5, Playback button 10



Moving Cues in a Playback

To move a cue, hold Shift and tap the Copy button. Ensure Cue is selected in the window, which it should be by default. Then type the number of the cue you wish to move in the “from” field, and the number you wish to move it to in the “to” field. This will move cues from and to the currently viewed playback.

Moving Cues to Other Playbacks

To move a cue from one playback to another, press the playback's button after typing the cue number. Doing this moves onto the next field automatically.

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

The from field would look like this:

15/7

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 move a cue:

[Shift] - [Copy] [5] [Enter] [1] [0] [Enter]

This will move cue 5 to cue 10 within the playback you are currently viewing.

[Copy] [Move] [5] [Down Arrow] [1] [0] [OK]

This will move cue 5 to cue 10 within the playback you are currently viewing.

[Shift] - [Copy] [5] Playback button 10 [2] [0] [Enter]

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

[Shift] - [Copy] [7] Playback button 15 [2] [5] Playback button 18

This will move cue 7 from Playback 15 to cue 25 within Playback 18.

Moving Multiple Cues

To move 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.

[Shift] - [Copy] [5] [Thru] [1] [0] [Enter] [4] [7] [Enter]

This will move 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

Whole playbacks, and individual cues from a playback, can be deleted if no longer required. After deleting a cue or a playback, this action cannot be undone. Therefore if you delete a cue or playback by mistake, you will either need to load in an earlier version of the show from USB, or recreate the item you deleted.

Deleting Playbacks

To delete a playback (and all the cues within that playback), press the **Delete** button, and any programmed playbacks will flash. Tap the button of the playback you wish to delete. A popup will appear to confirm this action. To clear all playbacks, tap **Setup** -> **Clear Options** -> **Clear Playbacks**.

Deleting Cues

To delete a cue, press the **Delete** button, followed by typing in the cue number you wish to delete. FLX S users will need to press **Z/Shift** to access the number pad. Then press the button of the playback which contains the cue you wish to delete.

FLX users can use the following syntax...

Delete **1** **5** **Enter**

Delete 15,

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

Delete **1** **5** playback button 1

Delete 15 Stack 1,

This will delete cue 15 within the playback of the Go button you press, in this example playback 1.

Multiple cues can be deleted from a playback at once, using the **And** and **Thru** keys:

Delete **1** **5** **Thru** **2** **0** **Enter**

Delete 15 Thru 20,

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

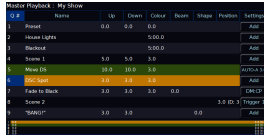
Delete **1** **5** **Thru** **2** **0** playback button 1

Delete 15 Thru 20 Stack 1,

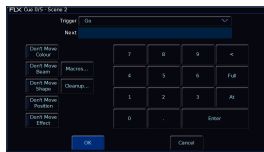
This will delete cues 15, 16, 17, 18, 19 and 20 within the playback of the Go button you press, in this example playback 1.

When deleting cues, your tracking options matter. Therefore if you wish to delete a cue, and you want to make sure no other cues are affected, ensure you are in Cue Only. This is the default tracking option, but to check,press and hold Record to open your Record Options on the internal touchscreen. Choose the option you need,press Record to save and close, and then delete your cue.

Cue Settings



Every cue recorded on the console, will have settings available for it. To access a cue's settings, tap the "Add" button under the Settings column for that cue in the Cues window.



After clicking "Add" the Cue Settings window will open, with the cue number and name displayed at the top.

Trigger

The Trigger drop-down option allows you to change what's going to trigger this cue to run. By default, this is "Go".

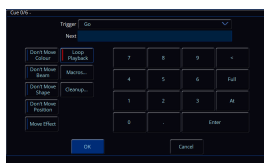
[To find out more, see the Cue Triggers section](#)

Next

The Next field, allows you to type in 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. This is sometimes referred to as a "Jump Cue".

When a Next cue is entered, the Settings button for the cue in the Cues window will then display "Next:x", where x is the next cue to run.

[Move On Dark will obey custom "Next" instructions, meaning ZerOS will prepare fixtures for the next cue, even if the cue stack is being run with a custom cue order. Click here for information on Move On Dark.](#)



When in the Cue Settings of the last cue in a playback, a "Loop Playback" button will be shown. When enabled, indicated with a red stripe, the first cue in the playback will automatically become the next cue, when the last cue in the playback is triggered.

Move On Dark Settings

On the left of the window, are buttons which can be used to configure the Move On Dark behaviour for this cue.

[To find out more about Cue Move On Dark Settings, click here](#)

Macros...

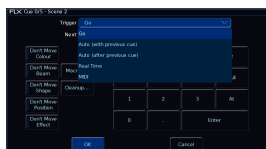
This option allows you to automatically trigger or release other playbacks, or run macros, by executing this cue.

[To find out more, see the Cue Macros section](#)

Cleanup...

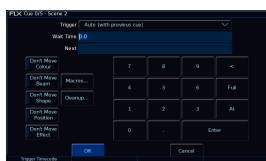
Clicking **Cleanup...**, will display **Combine Parts**, **Remove Complex Times** and **Cancel** options. You will only need these, if you are working with a show file that has been programmed on an Orb series ZerOS console. Orb series consoles have the ability to program part cues and complex timings. After loading in the show file, you have the ability to combine any part cues, and remove any complex timings that may have been programmed on the Orb console.

Cue Triggers



By default, cues will run when they are selected as the next cue, (indicated by the cue being highlighted in yellow in the cues window), and they are then triggered with a press of the "Go" button.

However, there are other trigger options available, by using the "Trigger" drop down.



Auto (with previous cue)

This will trigger the 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. This can therefore be used to achieve what is sometimes referred to as "part cues" - simply different cues running at the same time.

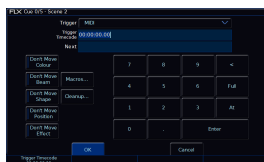
When this option is selected, a "Wait Time" field will appear just below the drop down. This allows you to enter a wait time, for example 5 seconds. This means the selected cue will be triggered 5 seconds after the previous cue is triggered, even if the previous cue is still running as it's fade time is longer than 5 seconds. As well as typing in the Wait Time, the first encoder wheel can be used too.

When the trigger is changed to Auto with previous cue, the Settings button for the cue in the Cues window will then display "Auto-W x", where x is the wait time.

Auto (after previous cue)

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

When the trigger is changed to Auto after previous cue, the Settings button for the cue in the Cues window will then display "Auto-A x", where x is the wait time.



FLX and ZerOS Server, have two other trigger options.

Real Time

This option allows you to trigger the cue at a specific time in the day (a "real time"). For example, at 8:00, or 19.30. (Ensure the time is set correctly on the console by going to Setup -> Settings -> Date & Time).

When the trigger is changed to Real Time, the Settings button for the cue in the Cues window will then display "REALx:x:x", where x is hours:minutes:seconds.

MIDI

Consoles with a MIDI input socket, have the ability for any cue to be triggered via the MIDI Timecode (MTC) protocol. This option allows you to trigger the cue at a specific time during a MIDI Time Code(MTC) signal. MTC signals are often generated by software running on a PC or Mac, and connected to the console via a USB to MIDI interface. The format is Hours:Minutes:Seconds:Frames.

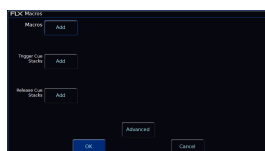
MTC auto senses between 24fps, 25fps, and 30fps, and can be configured in Setup -> Triggers.

When the trigger is changed to MIDI, the Settings button for the cue in the Cues window will then display "MIDIx:x:x:x", where x is hours:minutes:seconds:frames.

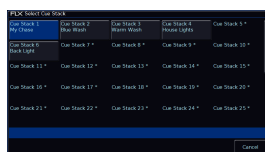
[To find out more about MIDI Timecode, click here](#)

On consoles with timecode, the timecode is displayed at the bottom of the Cues window in the status bar on an external Cues desktop. To toggle between viewing the real time and incoming MIDI timecode, just tap the time displayed in the status display.

Cue Macros



In the Cue Settings window, pressing the Macros... button gives you the option to Trigger a playback, Release a playback, or run a Macro, when the cue is executed.



Triggering/Releasing Playbacks

To Trigger or Release a playback, click "Add" next to either "Trigger Cue Stacks" or "Release Cue Stacks". You will then see all of your programmed playbacks, displayed as tiles on screen, with their playback names shown.

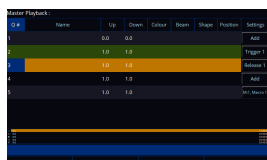
Programmed playback buttons will also be flashing, and so you can tap the playback you need onscreen, or tap the button of the playback you require. Unprogrammed playbacks will be indicated with an asterisk (*). Tap Cancel to go back to the Cue Macros window.

Chases will be highlighted blue, as chases are the most common playback to be triggered from 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. You could then release it in cue 21, so that it only runs over the top of cue 20 if required.

[Click here to find out more about Chases](#)

When a playback is triggered from a cue, the triggered playback's intensity will fade up over the fade time of the cue that triggered it, once the cue's Up Delay time has completed. The triggered playback's attributes will fade in over its own cue time. The attribute transition will not be governed by the Master Playback.

When a playback is released from a cue, the released playback's intensity will fade down over the fade time of the cue that released it, once the cue's Down Delay time has completed. The released playback's attributes will release as soon as the fixtures have faded out.



When a playback is chosen to be triggered or released by a cue, the Settings button for the cue in the Cues window will then display "Trigger x" or "Release x", where x is the playback number to be triggered/released.



Triggering Macros

To run a macro, click "Add" next to "Macros". You will then be shown all of your macros as tiles on screen, for you to click the one you require.

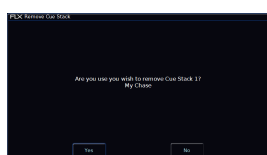
Fixture macros will be shown in [square brackets], and cannot be chosen. Unprogrammed macros will be indicated with an asterisk (*).

When a macro is configured to be run by a cue, the Settings button for the cue in the Cues window will then display "M:x, Macro x", where x is the macro number.



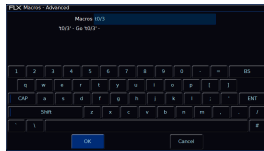
Cue Macros Window

After choosing the playback or macro, you will be taken back to the Cue Macros window. If you wish to add another playback or macro, simply click Add again.



To remove a macro or playback from the Cue Macros window, simply tap the macro or playback you wish to remove, and then confirm the action.

Advanced



The final option in the Cue Macros window is Advanced. This allows for macros to be typed in using the on-screen keyboard or external keyboard. As you start to type into the text field, the console will suggest commands, or warn you of invalid commands.

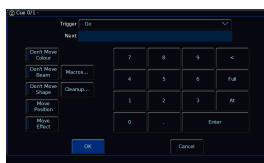
The following commands can be used:

- Gx Trigger Playback x
- Sx Pause Playback x
- Rx Release Playback x
- Tx/y Trigger Playback/Cue
- Nx/y Make Playback/Cue Next
- Mx Macro x
- DMx Don't Move - follow with required attribute letters

If more than one of these is needed for a cue, use a colon : as a delimiter between each command.

Sometimes it is useful to record completely blank cues, that control no lights themselves, but trigger other playbacks or macros. This means that all methods of triggering cues, such as MIDI, can be used to trigger macros.

Move On Dark



On the left of the Cue Settings window, are buttons which can be used to configure the Move On Dark behaviour for this cue.

What is Move On Dark?

Move On Dark is enabled by default. This means whenever a fixture goes dark (it's intensity falls to zero, or the shutter is closed), ZerOS will look ahead in the playback to upcoming cues to see what values the Colour, Beam, Shape and Position parameters are next programmed at for that fixture. Although this is called Move On Dark, this isn't just for position parameters - this is for Colour, Beam and Shape too.

It will then output those values after the fixture has gone dark (according to the Move On Dark delay and fade times). When the fixture comes back on again in a later cue, the Colour, Beam, Shape and Position parameters will already be at their correct values and just the intensity will fade up or the shutter open.

Move On Dark Settings per Cue

The Move On Dark buttons you see in the Cue Settings, will depend on which attributes are set to "Don't Move", in the Move On Dark options of the Playback's Settings.

[For information on Move On Dark Playback Settings, click here.](#)

Don't Move

If an attribute is allowed to Move On Dark in the Playback Settings (which is the default for Colour, Beam, Shape and Position), the option found in the Settings of any cue in the playback will be "Don't Move" for this attribute. This means that in this particular cue, you can prevent ZerOS moving parameters of this attribute in this cue. ZerOS will wait until the next opportunity to move parameters. For example, you may not want colour scrollers changing during a very quiet scene, but you need them to be prepared during other scenes, so during the quiet scene "Don't Move Colour" can be selected in the Cue Settings, indicated with a red button stripe.

When attributes are marked with "Don't Move", the Settings button for the cue in the Cues window will then display "DM:x", where x is the first letter of the attribute which won't be moved in the cue.

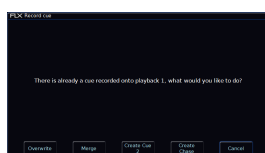
Move

If an attribute is configured to "Don't Move" in the Playback Settings, like Effect is by default, the option found in the Settings of any cue in the playback will be "Move" for this attribute. This means you can force ZerOS to move parameters for this attribute, ready for the cue when this fixture is next used.

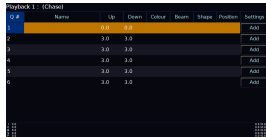
This is sometimes known as a "Mark Cue", used to prepare or "Mark" an attribute manually for when it is next used.

When attributes are marked with "Move", the Settings button for the cue in the Cues window will then display "M:x", where x is the first letter of the attribute which is forced to move in the cue.

Chases



When you program multiple cues onto a playback, rather than this playback behaving as a cue stack, instead it can become a chase. A chase simply means the cues in the playback will automatically run one after the other in sequence, rather than pressing a go button to advance through them. If you go to record a second cue onto a playback, you will receive the popup shown. This allows you to choose "Create Chase", to create the second cue of your chase. You can then create another lighting state, record this to your playback you chose to become a chase, and this will be stored as the third cue of the chase. You will not receive a popup again, as the console now knows you are building a chase.



When you record cues onto a playback behaving as a chase, you can view it in the Cues window, just like any other playback. You can do this by holding View, and tapping your chase's button. You will notice this playback has (Chase) shown at the top.

Once you have programmed your chase, by recording multiple cues onto the playback, you can then raise your chase's playback fader. The chase will begin to run, at 60 BPM (beats per minute) by default. The button of your chase, will be a tap tempo, allowing you to tap twice or more to set the speed of the chase. Useful to tap along to the beat of a song, and get your chase quickly synchronised.

The LED in a Chase's playback button will flash in time with the chase. The LED flash rate is capped @ 240bpm.

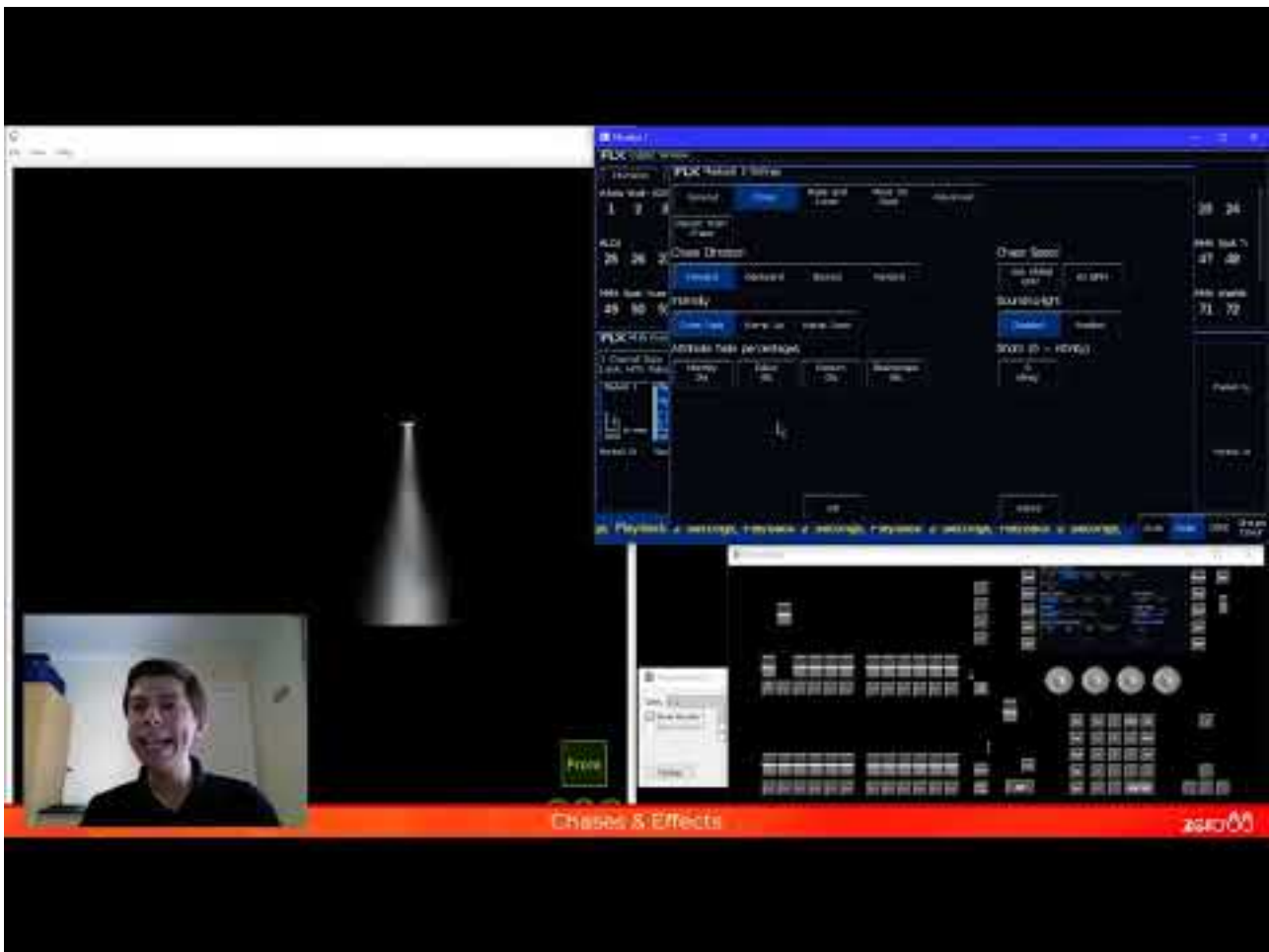
Recording, updating and deleting the cues of a chase, is the same process as if it were a cue stack. There is a useful tip to be aware of if you wish to update a cue of a chase. To update a cue in a cue stack, usually you go into it first, to play it back, make your changes, and update the cue. When working with a chase, this means that if you go into a cue to make changes, the chase continues to run. To stop this happening, by default you can hold **[Shift]** and tap the chase's button, to snap you into the cue you need to edit. The chase will be paused, allowing you to make your updates.

Sometimes, it is useful for chases to run over the top of a cue. For example, you have front light fading up in a cue, and would also like some fixtures to chase over the top. You can of course achieve this, by going into your cue on another playback on the console, and then manually fading your chase over the top. To make your life easier, you can also automatically trigger chases from cues. This is done by triggering the chase, from the cue you would like your chase to run in.

Click the subjects below to find out more about the following chase options...

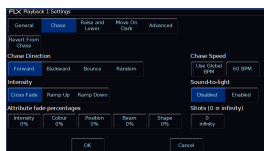
- [Chase Settings](#)
- [Triggering Chases from Cues](#)

The first half of the session below, goes in depth on how you can record a chase, and the settings available to you...



<https://youtu.be/OURTmQ1zkkU>

Chase Settings



Like all playbacks, chases have various settings available to you. To access the settings of a chase, hold Setup and tap the chase's button. This will take you straight to the chase tab of the playback's settings. You can name your chase from the chase settings by tapping Advanced.

The first button in the Chase's settings, is **Revert From Chase**. Clicking this allows you to revert your chase back into a normal cue stack, and the remaining options in the chase's settings tab are hidden. This button then becomes **Turn into Chase**, meaning that any playback can be turned into a chase, by opening the playback's settings, and tapping **Chase** -> **Turn into Chase**. This is the reason that cue fade times are shown for chases. These timings are not used by the chase itself, but are used as cue times if reverted from a chase.

Find out about the following Chase Settings...

- [Direction](#)
- [Intensity](#)
- [Attribute fade percentages](#)
- [Speed](#)
- [Shots](#)
- [Sound to Light](#)

Chase Direction

This option determines which order the 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. The default option is **Cross Fade**. After choosing the intensity option, you can then configure the intensity fade percentage, explained below.

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 cues are ignored and the transition between each cue is determined by the “Intensity” and “Attribute fade percentages” options above.

By default, chases will run at 60BPM. The default button function for chases is "Tap Tempo", meaning the console can calculate the BPM required by tapping the chase's button. Tapping a tempo for the chase using the playback's button will overwrite the BPM entered into the chase speed field. Therefore if you require a chase to run at a given speed by entering a speed in BPM, it is a good idea to then change the chase's button function to become flash for example, to stop the custom speed being overwritten. To change the button function from the chase settings tap **General** ->

Flash

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.

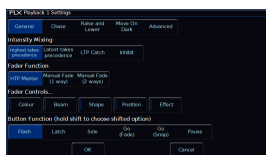
Shots

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 cues in the cue stack.

Sound-to-light

When enabled, each step is triggered by a bass beat on the audio input on the desk rather than the BPM set above. It is a good idea to send the console a bass filtered signal which has volume control, such as a feed from a sound mixer. This gives you the greatest control over what will trigger the chase.

Playback Settings



Every playback which has cues recorded, will each have their own settings available. To open the Playback Settings, hold Setup, and tap the playback's button. Alternatively, in the Faders window, ensure your faders are in Playbacks function, and tap on the onscreen fader. By default, this will open its Settings, however the behaviour of the onscreen faders in the Faders window can be customised in Setup -> Settings.

Playback Settings are split into five sections – **General**, **Chase**, **Raise and Lower**, **Move On Dark** and **Advanced**. These are accessed via the five buttons along the top of the window. 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.

Click on the Playback Settings section to learn more...

- [General](#)
- [Chase](#)
- [Raise and Lower](#)
- [Move On Dark](#)
- [Advanced](#)

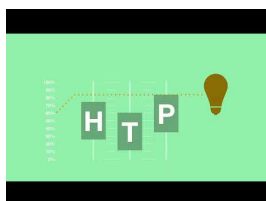
General



The “General” tab is split up into four key parts; Intensity Mixing, Fader Function, Fader Controls... and Button Function.

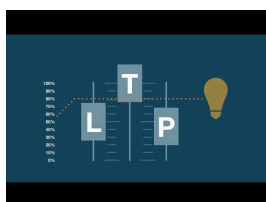
Intensity Mixing

This option determines how the intensity parameters controlled by this playback are mixed with other playbacks. The following options are available:



<https://youtu.be/CK7BM2FaV3k>

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.

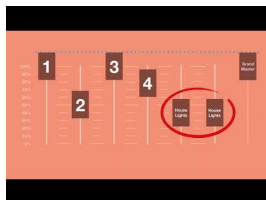


<https://youtu.be/xQnDv2YaAiE>

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. When this fader is lowered all the way to 0, by default it will release, meaning it loses control again of the fixtures. Release on Lower can be disabled.

[See the Raise & Lower playback settings for more information](#)



<https://youtu.be/h0syngno6nc>

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 button. This is the default option.

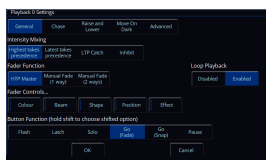
Manual Fader (1 Way) - Raise the playback's fader, and the first cue is output. Lower the fader, and the next time the fader is raised, the next cue is output. The fader controls the HTP levels; the LTP channels are triggered when the fader is moved from zero and then fade according to the times defined in the incoming cue. As the playback's fader position is used to advance through cues, the GO button is disabled.

Manual Fader (2 Way) – Raise the playback's fader, and the first cue is output. Lower the fader, and you cross fade into the next cue. Raise the fader, and you crossfade into the next cue, and so on. 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. As the playback's fader position is used to advance through cues, the GO button is disabled.

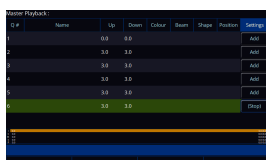
Fader Function options are not available if the playback is a chase.

Loop Playback

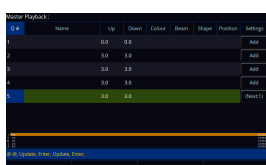
If there is more than one cue on a playback, and the playback is not a Chase, a "Loop Playback" option will be displayed in the General tab of Playback Settings.



“Loop Playback” can be enabled / disabled per-playback, and provides the ability to stop a playback from looping back to the first cue after the last cue. “Loop Playback” is enabled by default on all Playbacks apart from the Master Playback.



When “Loop Playback” is disabled, the last cue's “Settings” button will display “(Stop)”. Upon going into this cue, the "Next" will no longer be defined. This means the GO button will no longer function until a cue is manually selected to be the next cue. This can be done by tapping on the cue you'd like to go to next, or by using the arrow keys.



When “Loop Playback” is enabled, the Cue Settings of the last cue will display “(Next:X)”, where “X” is the first cue of the Playback. The brackets indicate the “Next Cue” has not been set manually and so could automatically change. If a “Next Cue” has been defined manually, this takes precedence.

The setting is also available in the “Cue Settings” of the last cue of each Playback.

Pressing the down arrow key from the last cue highlights the first cue in the playback as the “Next” cue, even when “Loop Playback” is disabled.

When a fixture goes dark for the last time in a playback, if Loop Playback is enabled Move On Dark also loops, meaning fixtures will be prepared ready for when they are first used.

Fader Controls...

By default, Colour, Beam, Shape and Position attributes, will go to their programmed levels when a cue is triggered, using the cue's fade time. However, Fader Controls allows you to force attributes to follow the movement of the fader for its crossfade. 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 tap the attributes required using the on-screen buttons to enable them, indicated with a red stripe. 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 is where you can configure the function of the playback's button under the fader. Available options are **Flash**, **Latch**, **Solo**, **Go (Fade)**, **Go (Snap)**, **Pause** and **Tap Tempo** ("Tap Tempo" is only available if the playback is set as a chase).

- Flash - the next cue of the playback (highlighted in yellow in the Cues window) will be output at full when the button is held.
- Latch - the next cue of the playback (highlighted in yellow in the Cues window) will be output at full when the button is tapped, and can be turned off by tapping the button again, a bit like a light switch.
- Solo - all other playbacks will be taken to 0%, and the next cue of the playback (highlighted in yellow in the Cues window) will be output at full when the button is held.
- Go (Fade) - the next cue of the playback (highlighted in yellow in the Cues window) will fade in using the cue's fade times, and will output dependent on the level of the fader.
- Go (Snap) - the next cue of the playback (highlighted in yellow in the Cues window) will snap in ignoring the cue's fade times, and will output dependent on the level of the fader. Subsequent auto cues will not run automatically after this cue. If you are using a playback with a dedicated pause button, it will flash to indicate this. If the playback is a chase, it will be paused.
- Pause - pressing pause will pause the cue stack, and any cue transitions from running. A second press of pause will go back up through the cue list.

A secondary "shifted" option can be chosen whilst holding down the **Shift** key on the console. This means every playback will have two button functions - a function when pressed, and a function when pressed with Shift.

The default option changes dependent on the "status" of the playback:

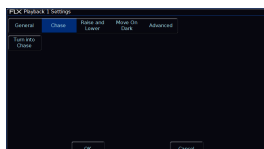
- For a playback with a single cue (submaster), the default is Flash (shifted default: Solo).
- For a playback with multiple cues (cue stack), the default is GO (Fade) (shifted default: GO (Snap)).
- For a playback which is set to a chase, the default is Tap Tempo (shifted default: GO (Snap))

Once the button function has been customised, it will not change again automatically, even if the playback "status" changes.

If you tap the currently selected button function, this will deselect the option, meaning the playback's button has been disabled.

Tip - Want to be able to prep your fixture's colour, beam, shape or position, prior to raising the playback's fader, to avoid see beams swing across your stage? Change the button function to a Go option, to allow you to give the playback's button a tap, prior to raising the fader, so you simply raise the intensity over the top.

Chase

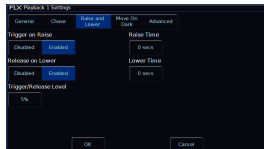


The Chase tab allows you to turn a playback into a chase. Clicking "Turn into Chase" will then display the chase settings.

To find out more about chase settings, click the link below...

- [Chase Settings](#)
- [What is a Chase?](#)

Raise and Lower



Raise and Lower options allow you to configure how the playback's fader will control the playback. These settings can be accessed by holding the Setup button and tapping a playback's button, and choosing Raise and Lower from the top.

Trigger on Raise

By default this is enabled, meaning when the playback fader is raised, the first cue is automatically triggered. In the Cues window, this allows you tap the cue you need, so that it highlights in yellow, and then raise the fade to output the chosen cue. However, if you disable Trigger on Raise, you will need to manually trigger the cue you require with a press of the Go button, as well as raise the fader.

Release on Lower

By default this is enabled, meaning when the playback fader is lowered, the playback is released. The playback no longer has control of the programmed fixtures, and the next cue in the cue list window automatically highlights cue 1, ready for the playback to be raised again. Disabling Release On Lower, means you can lower the intensity of the cue you are in, but it will still be active, and still have control of the fixtures. This allows you to then raise the intensity again, and you remain in the cue you were in.

Trigger/Release Level

By default, the Trigger/Release level is 5%. This means that the fader will have no affect between 0%-4%, but above this level will trigger the playback. If you are using LED fixtures with a poor low-end dimmer curve, you may want to set this to 1%, to allow you more control of the bottom-end dimming.

Raise Time

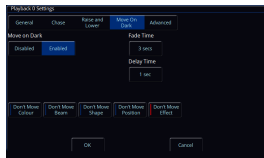
This time simulates a time the physical fader is raised over. So, setting it to 5 seconds, and pulling up the fader instantly, will instead take 5 seconds to fade up the playback. This is very useful for use when house lights are recorded to a playback. The raise time can be seen in the Faders window, with the onscreen playback fader annotated with "U" (for Up).

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. This is very useful for use when house lights are recorded to a playback. The lower time can be seen in the Faders window, with the onscreen playback fader annotated with "D" (for Down).

Move On Dark

Move On Dark is a feature that allows ZerOS to prepare lights ready for when they are next used. When Move On Dark is enabled for a playback, if a fixture goes dark (it's intensity falls to zero, or the shutter is closed), ZerOS will look ahead in the playback to upcoming cues to see what values the colour, beam, shape and position parameters are next programmed at for that fixture. It will then output those programmed values after the fixture has gone dark (according to the Move On Dark delay and fade times). When the fixture comes back on again in a later cue, the Colour, Beam, Shape and Position parameters will already be at their correct values and just the intensity will fade up or the shutter open. Although this is called Move On Dark, this isn't just for position parameters - this is for Colour, Beam and Shape too.



By default Move On Dark will be enabled, but can be disabled in the playback settings. When disabled, ZerOS will not prepare fixtures. This means upon going into a cue that includes intensity, colour, beam, shape or position information, you will see the colour, beam, shape or position information transition to the programmed values as the intensity fades in.

[Move On Dark looks down the cue stack to find the next cue a fixture is used in. It then prepares the fixture ready for this cue. If "Next" commands have been added into a cue's settings, Move On Dark will obey this, and prepare the fixtures ready for the custom "Next" cue. Click here for information on configuring custom "Next" cues.](#)

Fade Time

The Move On Dark Fade Time is the time it takes for the fixture's parameters to move to the values that they are in the next cue they're used. The default is 3 seconds, as this keeps larger older moving lights quieter when being prepared for when they're next used.

Delay Time

When a fixture goes dark, the Move On Dark Delay Time can be used to delay the fixtures, prior to them fading to their values using the fade time. The default is 1 seconds, meaning when a fixture goes dark, it waits a second, and then fades to the values required for the upcoming cue.



The Move On Dark timings are displayed in the Playback Status bar at the bottom of the Cues window on the external monitor.

The Output Window will indicate which fixtures are being prepared by Move On Dark for when they're next used. Upon going into a cue which is able to move attributes for when they're next used, any fixtures that will be moved on dark will have a grey background around their intensity percentage.

This grey background will remain present throughout the fade down of the cue, the Move On Dark Delay, and the Move On Dark fade. The grey background will then disappear, indicating the fixtures are now ready for when they're next used.



Fixture	1	2	3	4	5	6	7	8	9	10	11	12
Intensity	100	100	100	100	100	100	100	100	100	100	100	100
Move On Dark	100	100	100	100	100	100	100	100	100	100	100	100
Fixture 13	100	100	100	100	100	100	100	100	100	100	100	100

In this image, fixture 13 is currently being prepared by Move On Dark.

Don't Move Attributes

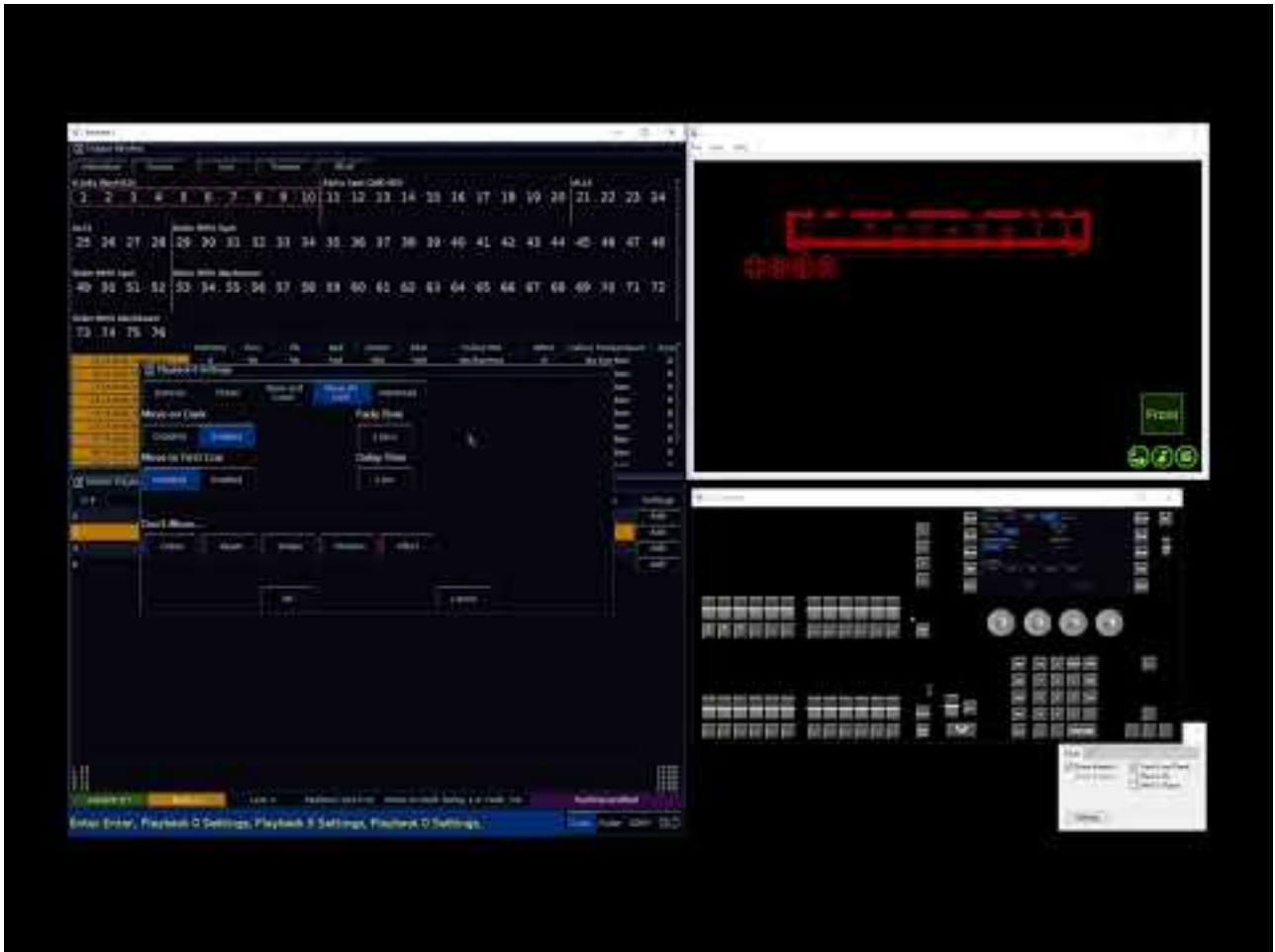
This option allows you to disable a specific attribute from moving in dark across the whole playback. By default, only "Don't Move Effect" will be enabled, indicated with a red stripe.

If an attribute is allowed to Move On Dark for a playback, attributes can be prevented from being Move On Dark in individual cues, using the Move/Don't Move options in the settings of each cue.

If an attribute is set to Don't Move for a playback, attributes can be forced to Move On Dark in individual cues, using the Move/Don't Move options in the settings of each cue.

[Click here to find out more about Move/Don't Move options per cue.](#)

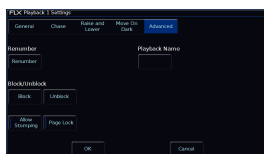
Watch the Move On Dark training session here...



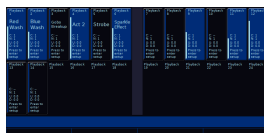
https://youtu.be/cA1Rdr_RR1o

The default Move On Dark settings used by any future playbacks you program, can be configured by tapping [Setup -> Defaults -> Playback Defaults -> Move On Dark](#). Click here to find out more.

Advanced

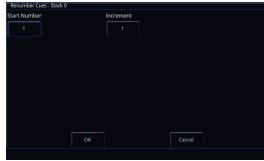


The last tab in the Playback Settings is Advanced.



Playback Name

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



Renumber

This option allows you to renumber all the programmed cues in the playback. To do this tap Renumber. This brings up the Renumber Cues box. You can then press OK, to renumber the cues sequentially from 1.

The "Start Number" and "Increment" buttons can be used to customise the Renumber behaviour if required.

Block

Pressing the **Block** button, will ask you whether you are sure you want to make the playback fully blocked. Pressing **Yes** allows all cues in the playback to be converted to block cues. This means the console automatically programs all the parameters at the values they would normally be output at when the cue is played back. You will no longer see purple values (tracked) in the Output window when the cues of this playback are played back.

Unblock

Pressing the **Unblock** button, will ask you whether you are sure you want to make the playback fully unblocked. Pressing **Yes**, will remove any parameters from cues where they are at the same value as in the previous cue, and they will instead track from the previous cue. You will no longer see white values (blocked) in the Output window when the cues of this playback are played back.

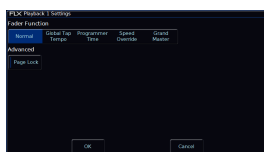
Allow Stomping

The **Allow Stomping** button allows for compatibility with show files saved in earlier software versions.

Page Lock

Enabling **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. This is sometimes useful for if house lights are recorded on a playback fader, so you know no matter the playback page, that playback fader controls your house lights.

Special Playback Functions



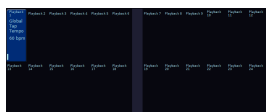
Playbacks that do not have any cues recorded on them, can be configured to give you access to four extra functions. To do this, hold Setup and tap an empty playback's button.

The following options are available...

- [Global Tap Tempo](#)
- [Programmer Time](#)
- [Speed Override](#)
- [Grand Master](#)

[On FLX range consoles, Speed Override, Global BPM, and Programmer Time can also be accessed on the encoder wheels by tapping Z. Click here to find out more.](#)

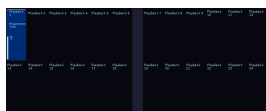
Global Tap Tempo



Global Tap Tempo can be chosen, to turn the fader into a Global BPM control. This will therefore control the speed of any chases which are configured to use Global BPM. The button of this playback becomes global tap tempo. In the faders window, the current BPM is displayed on the onscreen fader (pictured). Lowering the fader to 0, will pause any chases using Global BPM.

[Click here to find out how to configure a Chase to use Global BPM](#)

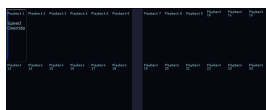
Programmer Time



Programmer Time can be used to apply a fade to live manual commands. This time is applied to syntax, palettes, and manually releasing playbacks.

The button of this playback can then be used to enable/disable Programmer Time. In the Faders window, it is highlighted in blue when enabled (pictured). The fader can then be used to set the time from 0 seconds, to 11 minutes 30 seconds.

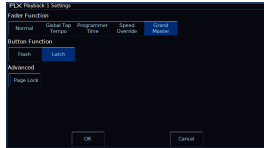
Speed Override



Speed Override can be chosen, to allow the fader to speed up or slow down cue crossfades occurring on the currently viewed playback. By default, Override will be at 50% to give "normal" crossfades, and so this fader will then need to be at half of its travel for no override. Raising the level above 50% will increase the crossfade speed proportionally and reducing the level below 50% will slow down the fade proportionally. Fully raised will snap the cue, and fully down will stop the cue.

Speed Override can also be used to speed up or slow down effects running in the currently viewed playback.

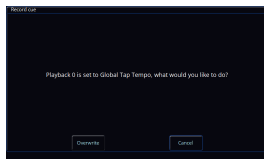
Grand Master



If you choose Grand Master, this playback fader will then become your console's Grand Master. This means that all of the current light output from the console can be controlled with this fader, and therefore if the Grand Master is at 0, you will have no light output as all intensities will be taken to 0.

After choosing Grand Master, you will receive a button function option. "Latch" is the default, meaning pressing the playback's button will activate Blackout. This means all intensities are taken to 0, and a second press resumes the intensities. Changing the button function to "Flash", will mean blackout will only be activated when the playback's button is held. The Page Lock option can be used, so that this fader is always your Grand Master, irrespective of the playback page you're on.

On FLX, pressing and holding Setup and tapping the Blackout key above the Grand Master fader, will also offer these four Special Playback options. Therefore you can configure your Grand Master fader to become one of the other extra options, such as Speed Override. Alternatively, you can tap Delete -> Blackout, to remove the Grand Master functionality altogether. It can then be configured again by holding Setup and tapping Blackout.



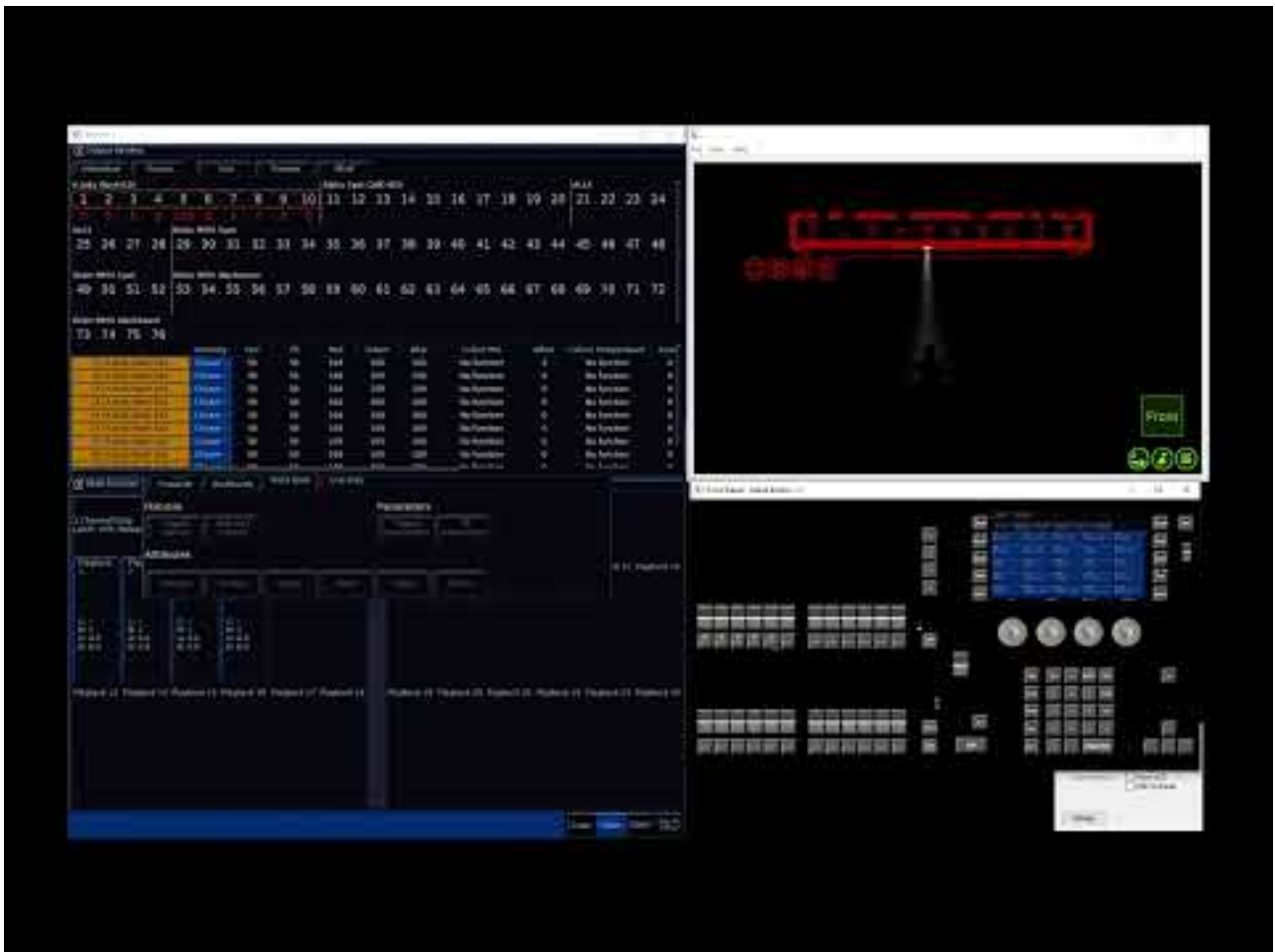
If you attempt to record a cue onto a playback configured as a special function, ZerOS will give you the option to overwrite the special function, and instead record a cue onto the playback.

If you have configured an empty playback to become one of the four extra functions, the settings can be cleared by tapping Delete, followed by pressing the playback's button.

Playing Back Cues

After programming your cues, you can then play them back.

Watch the "Mixing Playbacks & Running the Show" training session [here...](#)



<https://youtu.be/hRdjcnFIUI8>

Find out about playing back cues...

- [Mixing](#)
- [Triggering & Releasing Playbacks](#)
- [Next Cue](#)
- [Pause](#)
- [Goto Cue](#)
- [Cue 0](#)
- [RGB Colour Mixing on Playbacks](#)

Mixing

Whenever a cue is triggered which contains Colour, Beam, Shape or Position parameter values, these values are sent to the fixtures. This cue has become the latest instruction for the fixtures, and hence this behaviour is called Latest Takes Precedence (LTP).

Intensity however behaves a little differently. Intensity will by default mix between playbacks (and UDKs) with Highest Takes Precedence behaviour (HTP), meaning whichever playback has the highest intensity percentage for that light, is the one that has control.

However, if a fixture's intensity is being controlled manually (and therefore not from any cues or UDKs), this has the highest priority on the console. As manual values have the highest priority, outputting cues will not be able to take over control of a fixture's intensity. Manual values are indicated in red in the Output Window.

This is where the **Clear** button comes in. **Clear** allows you to remove all manual values, sending them either back to defaults, or allowing any cues to then take control of the fixtures.

Pressing **Clear** once clears the selection, and a second tap of **Clear** removes the manual values.

Therefore it is vital before playing back cues to check if the **Clear** button is lit. If it is, give it a double tap, to ensure your cues will have control over all lights.

Triggering & Releasing Playbacks

By default, raising a playback's fader will automatically trigger the first cue within the playback. Lowering the fader, will by default automatically release the playback.

[Click here to find out more about triggering and releasing playbacks with their fader](#)

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 fixtures. When you lower a fader, the playback is automatically released.

You can also manually release a playback by holding **Clear** and pressing the Go button of the playback.

To release all the playbacks (and UDKs on FLX), except the Master Playback, hold **Clear** and press the **Fader Funct.** button. To manually release the Master Playback, hold **Clear** and press the Go button of the Master Playback.

On Solution consoles, you can press and hold **Clear** and tap **Memories** to release all playbacks except the Master Playback.

On ORB consoles you have some further options for releasing:

- **Shift** + **Release** - Releases all Playbacks & UDKs
- **Release** + **Stack** - Releases all Playbacks
- **Clear** + **Fader Funct.** - Releases all Playbacks EXCEPT the Master Playback
- **Sub** <Playback Number> **Release** - Releases the individual Playback via syntax

Next Cue

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

Individual cues cannot be renumbered. If you need to reorder a few cues, you can do this by moving them to the cue number you need.

The whole playback can be numbered, by opening the playback's settings, and tapping **Advanced** -> **Renumber**.

When running through your cues, the highlighted cell in the cue list window (blue cell) will be the cue number of the Next cue, highlighted in yellow. Pressing **Enter** will allow you to type into the cell. This will not renumber the cue, but instead allows you type in the cue you wish to be next, and press **Enter**. The Next cue jumps you to the cue you typed, (if present), meaning the next go button press will run that cue.


Pause



If at any time you wish to pause a cue while it is running, you can use the pause function. This will pause the cue's fade time transition. It will not pause playback Raise/Lower times.

Pause is a button function that can be chosen within the Playback Settings.

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. After the initial press of the pause button, subsequent presses will step backwards through the playback. To continue running the playback, press the Go key.

[Click here to find out about configuring a playback's button function](#)

On FLX, the Master Playback includes a dedicated pause key  above the Go button and next to the master fader.


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

Goto Cue


GOTO CUE



Goto cue allows you to jump to a specific cue. On FLX, simply hold down the playback's Go button. "Goto Cue x/" will be written in the command line, where x is the playback number. You can then type the cue number you wish to go to with the other hand, for example:

```
Goto Cue 0/5.5
```

Then release the playback's GO button, and you will go to that cue. FLX S users can also do this, using the number pad found by pressing .

SNAP TO CUE

To snap to a cue ignoring fade times, for example, during a programming session when you want to alter a cue without having to wait for the cue fade to complete, hold  and then tap the Go button of the playback you are using. 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).

To snap to a specific cue number, rather than simply the next cue, hold , and then hold Go, and "Snap to Cue x/" will be written in the command line, where x is the playback number. Then release , and with Go held type the cue you wish to snap to, for example:

```
Snap to Cue 1/20
```

If this doesn't work, the playback's settings must have been changed. Ensure the shifted function is set to "Go (Snap)".

Cue 0

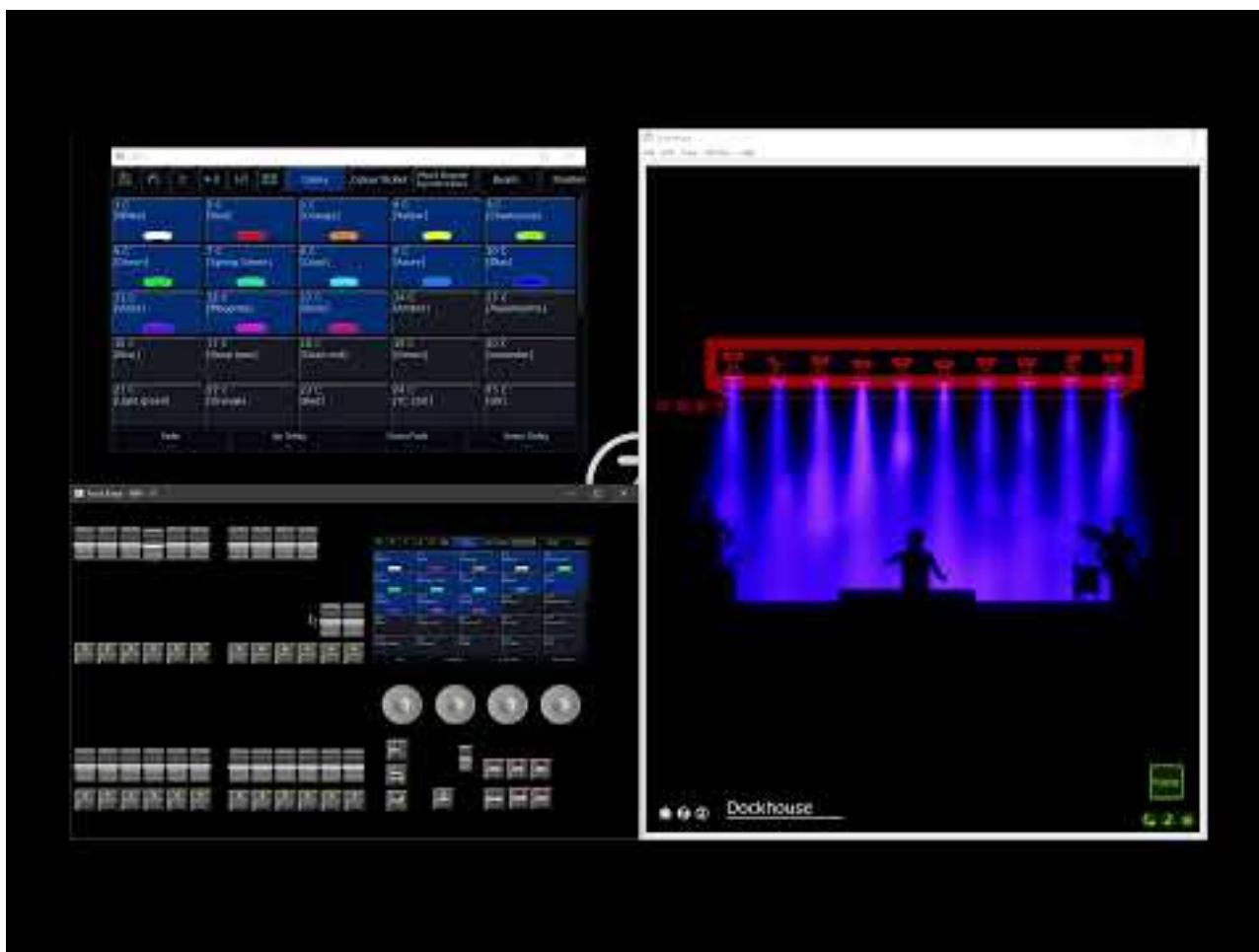
Every programmed playback will have a blank cue 0. Going into cue 0, means the playback is still triggered, however is not controlling any fixtures. You can either jump to Cue 0, by holding down the playback's Go button and typing 0, or by using the arrow keys to move up from Cue 1, which will display Cue 0 (--).

RGB Colour Mixing on Playbacks

Sometimes it's useful to have direct RGB control on faders for a fixture. This allows you to, for example, add Red in and Blue in using faders to colour mix and create Magenta.

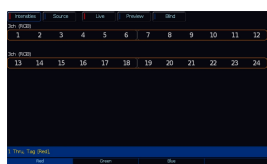
ZerOS will by default treat colour as LTP. This stands for Latest Takes Precedence. This means that if you raise a playback, the fixture will go to the colour of that playback, as it was the latest instruction for that light. It won't by default mix the colours together. However there is a method to give you colour control on faders.

Take a look at the tutorial below to guide you through the steps...



<https://youtu.be/pbS4sX7VbKA>

The steps required are as follows...



Select the LED Fixtures you wish to have RGB control over, but leave their intensity off. The first encoder wheel should display "Red". Tap the "Red" parameter name on the touchscreen above the encoder wheel, and you should see it goes from having a dark blue background to light blue background.

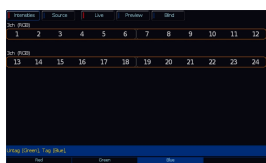


Now press and hold Record, and ensure SmartTag is disabled in the Record Options Window. It shouldn't have a Red Stripe next to it, if it does tap "SmartTag".

Then tap the button under the Playback you wish to control RED.



Now tap "Red" on the touchscreen again, and you should see it goes back to having a dark blue background. Now tap "Green" on the touchscreen above the encoder.



Now tap Record, and tap the button under the Playback you wish to control GREEN. Now tap "Green" on the touchscreen again, and you should see it goes back to having a dark blue background. Now tap "Blue" on the touchscreen above the encoder.



Now tap RECORD, and tap the button under the playback you wish to control BLUE.

Now tap the middle encoder button of any of the RGB encoders to take you to the colour picker, and drag the onscreen fader to the right of the picker to 0%.

Now turn the fixtures on to full intensity. You can use the intensity wheel to do this, by pressing Z, and using the first encoder. Note the fixtures won't come on, as they are currently black.

Now tap Record, and tap an empty playback button - this playback is your Colour Mix Intensity fader.



Now hold Setup, and tap the Playback button of the "Red" fader, and tap "Colour" under "Fader Controls..." so that it has a red stripe next to it, and press OK.

Repeat this for the Green and Blue fader.

Whilst you're in the Playback Settings, you can tap **Advanced** from the top, and you can give your playbacks a name.

Now clear the programmer by pressing the **Clear** button twice, and then when you want to use your colour mixing playbacks, raise your Colour Mix Intensity playback - note by default this playback will have a 3 second fade time for colour, which you may wish to remove. To do this press and hold **View** and tap the playback's button. In the cue list window you can tap on the colour time, and use the encoder wheels to dial this to 0 seconds.

You can then use your RGB faders to colour mix on your fixtures. Raising all four will give you full white.

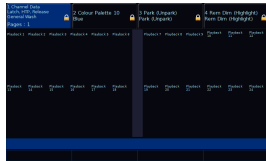
When your Intensity Mixing Playback fader is lowered, by default it will "release". This means you will then need to raise it again, before you can use your colour mixing faders. You may wish to stop it releasing. To do this, press and hold Setup and tap the playback's button, to open the Playback Settings. Choose Raise and Lower from the top, and then set Release on Lower to disabled.

User Definable Keys

FLX and ZerOS Server provide four physical User Definable Keys (UDKs), numbered 1-4. On FLX these are located vertically above the **Fader Funct.** button, and on ZerOS Server these are on the right hand side of the front panel.

These can be paged along with the playback faders, giving a total of 40 UDKs. By default, they are page locked, meaning you have four different functions available, irrespective of which playback page you are on.

UDKs can be configured as shortcuts, advanced functions, or you can record lighting states onto them.



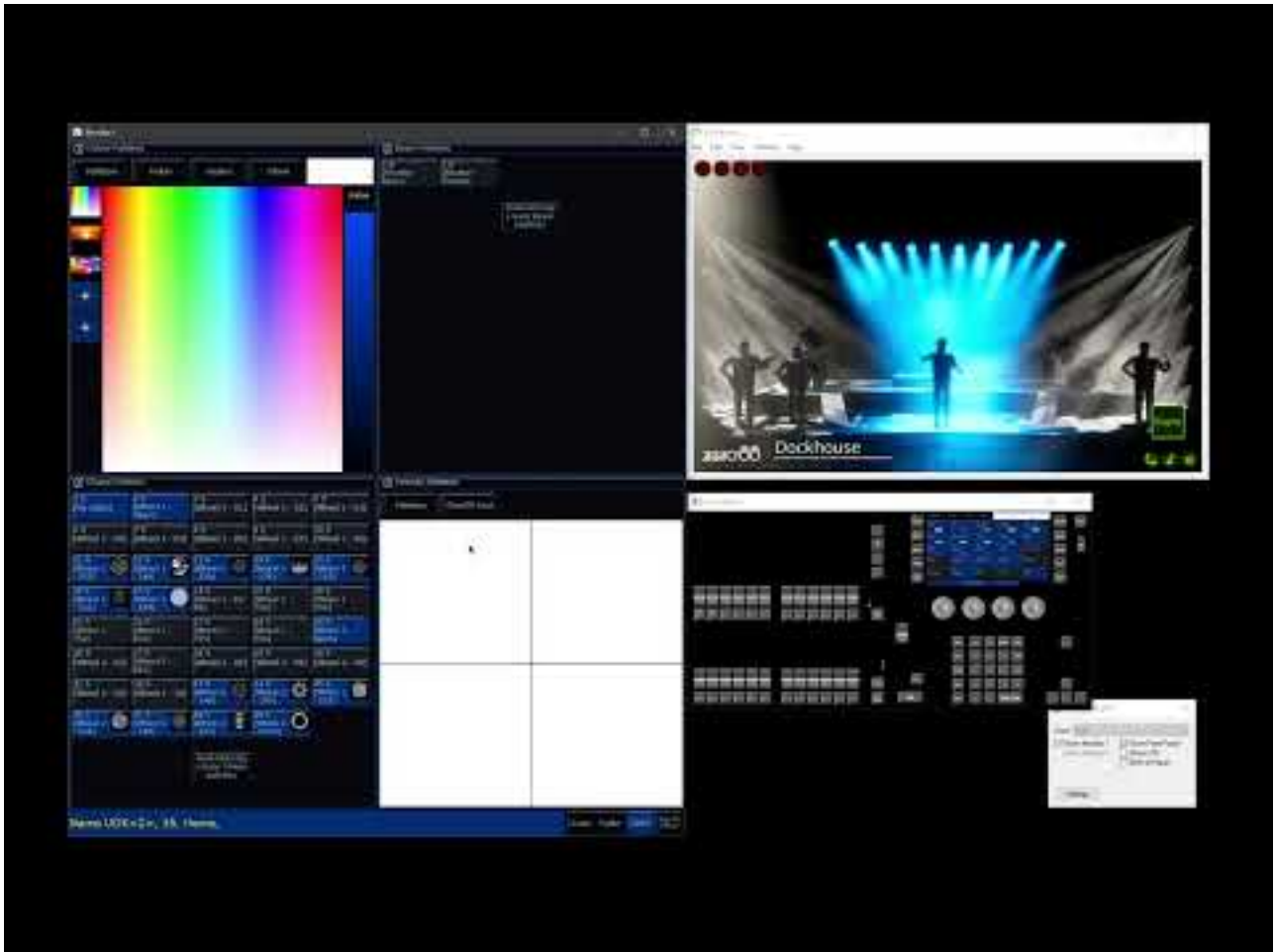
The functionality of the UDKs is displayed in the four boxes, running along the top of the Faders window.

Click the different available UDK functions to learn more...

- [Channel Data UDKs](#)
- [Shortcut UDKs](#)
- [Advanced UDKs](#)

You can delete any UDK by pressing the Delete key and then pressing the UDK button. After confirming, this cannot be undone.

Take a look at this online training session on User Definable Keys...



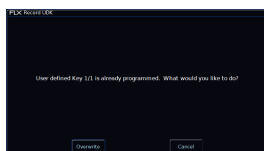
https://youtu.be/XWQ0_1CIne0

Channel Data UDKs

Recording Channel Data UDKs

In the same way you can record a lighting state onto a playback as a cue, lighting states can be recorded directly onto User Definable Keys (UDKs) as "Channel Data" UDKs. 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.

Then tap **Record** followed by tapping the UDK you wish to store your lighting state onto. UDKs will flash after tapping Record if they are empty, and will not light if there is something on them already.



Tapping a UDK that is already recorded, will give you the option to cancel, or overwrite it. The console will state the "User Defined Key x/y is already recorded", where x is the UDK page, and y is the UDK number.



The Faders window will show you information about programmed channel data UDKs. It will display the UDK number, the fact it is a Channel Data UDK, and then a row of settings information.

Naming Channel Data UDKs

UDK's which have been recorded can be named by pressing **Name** and then pressing the UDK button. An onscreen keyboard will appear for you to type in the required name. Press **Enter** to complete.

The name will then be displayed in the onscreen UDKs in the Faders window.

Updating Channel Data UDKs

If you need to make a change to a UDK you can update it. As with updating cues, it is a good idea to output your UDK, make your changes, and then save the update. You may therefore wish to configure the UDK button to be latch rather than flash, if it isn't already.

[See the UDK Settings section for more information](#)

Once set to latch, tap the UDK so that it is active and outputting, make your changes, tap **Update**, and then tap your UDK. Your manual values will be merged with the UDK.

Deleting Channel Data UDKs

To delete a UDK, tap **Delete**, and then tap the flashing button of the UDK you wish to Delete. You can then confirm by clicking **Yes**. Tapping the button of an unprogrammed UDK will display a message stating the UDK is not programmed.

For example:

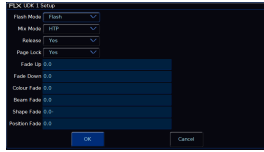
Delete **UDK1** **Enter**

Delete UDK <1>.

This deletes UDK 1.

[Once you have recorded a UDK, there are various settings available. Click here to find out about Channel Data UDK Settings.](#)

UDK Settings



Once you have programmed a channel data UDK, you can configure it. To do this, hold Setup and tap the UDK you wish to configure, to open the UDK Settings.

After making changes in the UDK Settings, click OK to save, or Cancel to discard.

Flash Mode

The flash mode can be switched between “Flash” and “Latch” using the Flash Mode drop down, and changes the button function of the UDK.

The default is “Flash”, which means the recorded lighting state is output by pressing and holding the UDK and released when the UDK is released (fade times, are ignored). This is useful for bursts of smoke, or flashes of blinders for example.

When set to “Latch”, the recorded lighting state will fade according to the UDK fade times configured. 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

The default Release option is Yes, meaning that when the UDK has been turned off, and the controlled intensities fall to 0%, the UDK will be released. This means the UDK will no longer be controlling those fixtures.

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 manually by holding down the **Clear** key and pressing the UDK's button, or by controlling the fixtures by triggering another LTP command from elsewhere on the console.

Holding down **Clear** and pressing **Fader Funct.** will release all playbacks 1 – 240 and all UDKs.

Page Lock

Page lock is used to lock a specific UDK to the button, no matter which playback page you are on. This is enabled by default, so can be disabled to access UDKs on additional pages. Some users may wish to page lock all of their playbacks, and not page lock their UDKs, so that the playback page control only changes the functions of your UDKs.

Fade Times

Fade times can be given to each attribute, and are used if the UDK is set to “Latch”. All UDK fade times will default to 0 seconds. Any unprogrammed attributes, will be indicated by their fade followed by “-”.

Fade times can be adjusted by using the up and down arrows to navigate through the times, and typing in the required timings. Fade Up is the time it takes for the UDK intensities to fade on after tapping the button, and Fade Down is the time it takes for the intensities to fade down after tapping the button again. Colour, Beam, Shape and Position times are used to get from the fixture's current values, to the programmed values. They are not used when releasing the UDK.

Shortcut UDKs

A UDK can be configured as a shortcut to a Group, Palette, or Macro. To do this, firstly make sure the Group / Palette/ Macro is recorded first.

Find out more about the different Shortcut UDKs...

- [Group UDK](#)
- [Palette UDK](#)
- [Macro 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.

To record a Group UDK, type in your group, tap record, and then tap a UDK. For example:

Group 1 Record UDK2

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

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. If Programmer Time is enabled, the palette will fade in over the programmer time.

To record a Palette UDK, type in your palette, tap record, and then tap a UDK. For example:

Colour 2 0 Record UDK3

This records a shortcut to Colour 20 onto the third UDK. This syntax is available for all palette types; Colour, Beam, Shape, Position and Effect.

Macro UDK

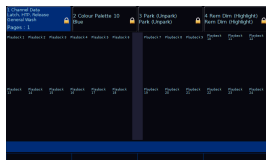
The Macro UDK is used to run the user defined macro assigned to the UDK. The macro is run by pressing the UDK.

To record a Macro UDK, type in your macro, tap record, and then tap a UDK. For example:

Macro 1 4 Record UDK3

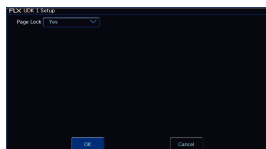
This records a shortcut to Macro 20 onto the third UDK.

When recording a Group, Palette or Macro UDK shortcut, you will notice that the playbacks do not flash after pressing Record, as the console knows you are not storing channel data.



MFF Window

The Faders window will display shortcut UDKs with the specified shortcut displayed, and the name of the group, palette, macro or fixture below. A shortcut for colour palette 10 "Blue" has been configured on UDK 2 in this picture.

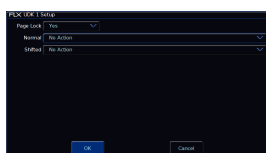


Page Lock

By default, Shortcut UDKs will be page locked, meaning whichever playback page you're on, that UDK will remain with your configured shortcut. However page lock can be disabled, giving you a maximum of 40 shortcuts, across the 10 playback pages.

To configure a shortcut UDK's page lock, hold Setup, and tap your Shortcut UDK. You can then use the Page Lock drop down, and click OK.

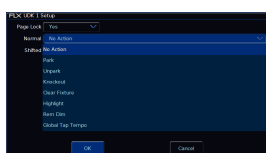
Advanced UDKs



A UDK can be assign an advanced function. To do this, hold Setup, and tap a blank, empty, unprogrammed UDK. This will open the UDK Settings window where the function you wish to use can be selected.

The "Normal" drop down 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.

As with all UDKs, you can also choose whether it is page locked.



Opening the Normal or Shifted drop down, will display the available functions. After choosing the required option, press OK. In the Faders window, the onscreen UDK will have the Normal function displayed, with the shifted function in (brackets).

The available options are detailed below:

Park/Unpark

A UDK can be configured to be Park or Unpark. Parking, is a method of temporarily "freezing" the DMX output to a fixture or cell, "parking" it in its current values. If Park is used, it is common for the normal function to be Park, and the Shifted function to be Unpark.

[Click here to find out more about Parking](#)

Knockout

Knockout can be used to release a fixture or multiple fixtures from a cue or channel data UDK. Therefore select the fixture, and tap the Knockout UDK, and the fixture is released from the cue or UDK. The fixture will be controlled by the cue or UDK again, the next time the cue or UDK is triggered. It will not clear the selected fixture from the programmer.

For example, to knockout fixture 3:

3 **UDK3**

3, Knockout,

Select the fixture, and tap your UDK configured as Knockout.

Clear Fixture

Clear fixture can be used to remove a single fixture, or single cell of a fixture from the programmer, and remove all manual controls, allowing it to be controlled by active cues or UDKs. This is therefore very useful, as double tapping **Clear** will clear the selection and programmer information for all fixtures, whereas Clear Fixture clears both selection and programmer information for just the currently selected fixtures or cells.

For example, to clear fixture 4 through 6:

4 **Thru** **6** **UDK4**

4 Thru 6, Clear Fixture,

Select the required fixtures, and tap your UDK configured as Clear Fixture.

Highlight

Highlight can be used as a method of quickly identifying the selected fixture or cell.

[Click here to find out more about Highlight](#)

Rem Dim

Rem Dim is short for Remainder Dim, and is a method of dimming the remaining fixtures or cells that are not currently selected.

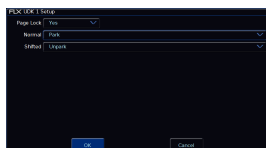
[Click here to find out more about Rem Dim](#)

Global Tap Tempo

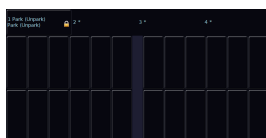
A UDK can be configured as a Global Tap Tempo, to tap along to music to set the speed of any chases assigned to use global BPM. The BPM value you have tapped will be shown on the third encoder wheel by tapping **Z**

[Click here to find out more about Chase Settings](#)

Parking



To access the Park/Unpark functions, hold Setup and tap an empty UDK. It is common to configure the Normal UDK function to be Park, and the Shifted UDK function to be Unpark. After choosing Park and Unpark, click OK.



In the Faders window, the normal Park function will be shown, on the onscreen UDK, with the shifted Unpark function shown in (brackets).

This UDK can then be used to Park or Unpark your selected fixtures or cells. Parking, is a method of temporarily "freezing" the DMX output to a fixture or cell, "parking" it in its current values. Neither manual control, or any cues or channel data UDKs will be able to control parked fixtures or cells. The Grand Master and Blackout will also not affect a parked fixture or cell. To regain control, the fixture or cell can be unparked.

To park fixtures or cells in their current values, select them, and tap your park UDK.



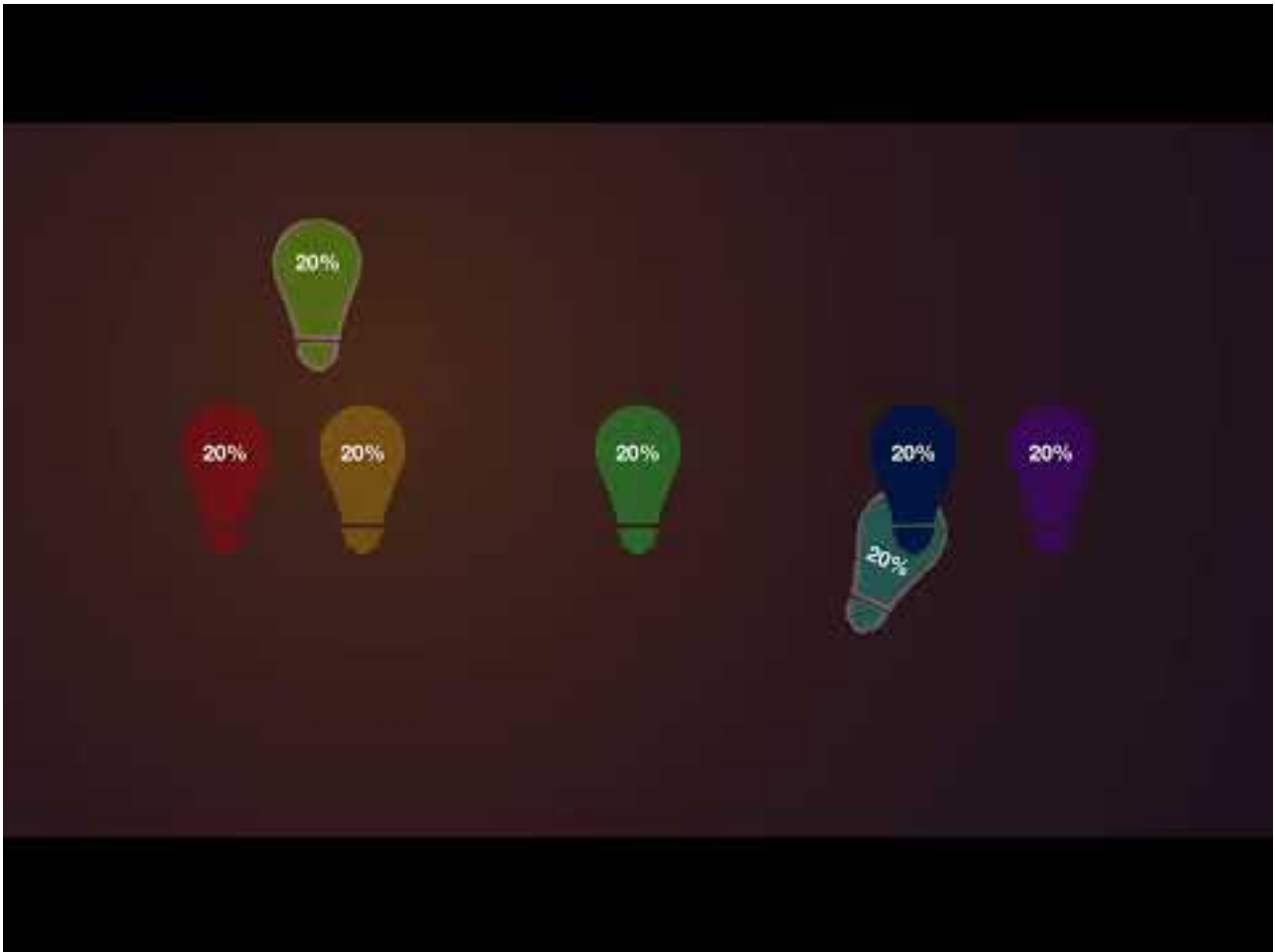
When a fixture is parked, its intensity percentage will be displayed in black in the Output window with a red background, as can be seen for fixture 5 in the image.

If the Output window is showing Sources rather than Intensities, "PARKED" will be displayed for the fixture. Parked fixtures will also be noted with "PK" at the start of their row in the parameter table at the bottom of the Output window, when the fixture is selected or tagged.

Whilst a fixture or cell is parked, it is still possible to modify the values associated with the fixture or cell in cues and palettes etc but the output values from the console will not change. You can therefore continue to program parked fixtures or cells "blind".

To unpark a fixture or cell, select it and then hold **Shift** and tap the Park UDK. The fixture or cell will then jump to its currently defined parameter levels.

To find out more about parking, watch the quick video below...



<https://youtu.be/sXdhMqBIDas>

Highlight & Rem Dim

Highlight

"Highlight" provides a quick method of finding/identifying/locating a fixture or cell of a fixture. As well as highlighting single fixtures or cells, multiple fixtures or cells can be highlighted at once.

To use Highlight, press and hold **Setup** and tap an empty UDK, and choose **Highlight** from the drop down menu. The "shifted" option allows a second function to be stored on the UDK, accessed by holding **Shift** and pressing the UDK.

You can then select the required fixture(s) or cell(s) and tap the Highlight UDK, for example if UDK 2 is configured as Highlight:

1 **And** **3** **UDK2**

1, And 3, Highlight,

This will set the intensity of the currently selected fixtures and cells to the "High value". The High Value can be customised in **Setup** -> **Settings**, and choosing **High Value** under the Operational options. The default high value is 100%.

Any colour parameters of the fixture, will go to their library defaults, which should give you white light. Beam and Shape parameters will be left unchanged, apart from any Shutter parameters that will be opened.

Pan and Tilt, will also be left unchanged. While a fixture is highlighted, only the Pan and Tilt parameters can be edited using the encoders. This allows the position to be adjusted without affecting any of the other parameters. This can be particularly useful when creating or updating position palettes.

Watch the short video explaining Highlight below...



<https://youtu.be/vrWq3l231tU>

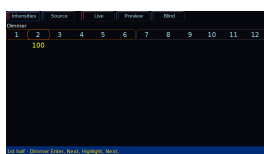
Rather than using a UDK to access Highlight, the shortcut for Highlight is hold Shift and tap Home. The Home key will flash when Highlight is active.

Next & Previous

Whilst Highlight is active, Next and Previous can be used to navigate between fixtures or cells, tweaking their Pan and Tilt in turn. The Next function can be accessed by holding **[Shift]** and tapping the right arrow key, and Previous can be accessed by holding **[Shift]** and tapping the left arrow key.

Next and Previous are written in the command line, bringing the added benefit of allowing you to backspace through the commands:

1, Next, Next, Previous,



When a group is used to select fixtures, Next and Previous will select individual fixtures within the group, selecting in the order the fixtures were selected when the group was first recorded. Rather than the whole group being displayed as selected in the Output window with the usual orange box, a dark orange box is displayed around the group, with the currently selected fixture displayed in the usual orange box.

This is particularly useful for focusing the positions of a group of movers, as it allows you to select the group, select Next to select the first fixture in the group, and then choose Highlight. You can then work through the fixtures one by one by tapping Next, and when you get to the last fixture you will cycle back to the first in the group, in case you then need to fine tune the focus.

Once finished adjusting fixtures, press the Highlight UDK again (or **[Shift]** + **[Home]** again) to un-highlight the selected fixture(s). The other fixture parameters will return to their previous output level.

Rem Dim

Rem Dim is short for Remainder Dim, and is a method of dimming the remaining fixtures or cells that are not currently selected. This is therefore particularly useful to use whilst focusing fixtures, as a method of just turning the required fixtures on onstage, and turning others off. It can therefore also be considered as a method of soloing a fixture or cell.

To use Rem Dim, press and hold **[Setup]** and tap an empty UDK, and choose **Rem Dim** from the drop down menu. The "shifted" option allows a second function to be stored on the UDK, accessed by holding **[Shift]** and pressing the UDK.

You can then use this function by selecting the fixture(s) or cell(s) required, and then tap the Rem Dim UDK. For example if UDK 1 is set as Rem Dim:

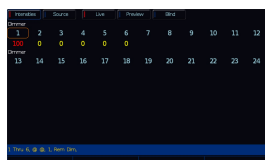
[2] **[0]** **[UDK1]**

20, Rem Dim,

If the selected fixture or cell's intensity level is above 0% and Rem Dim is activated, it remains at that level. If the selected fixture or cell's intensity level is at 0% and Rem Dim is activated, the selected fixture or cell is taken to the "High Value".

If the remaining unselected fixtures and cells are above the Rem Dim low value, they will be taken down to the low value. If the remaining unselected fixtures and cells are below the Rem Dim low value, they will not be changed.

The High Value and Low Value can be customised in **[Setup]** -> **Settings**, by choosing **High Value** or **Low Value** under the Operational options. The default high value is 100%, and default Low Value is 0%.



Output Window

Any values adjusted by Highlight or Rem Dim, whether that be fixtures taken to the High Value or Low Value, will be displayed as yellow intensity percentages in the Output Window.

Watch the short video explaining Rem Dim below...



<https://youtu.be/MTTfd1fQAol>

Did you know, there is a free ZerOS Remote app for Apple Watches, that allow you to remotely Highlight and Rem Dim fixtures straight from your wrist, perfect for focusing.

Take a look...



<https://youtu.be/VsCZyKajmrc>

Macros

There are two types of Macros in ZerOS - Fixture Macros and User Macros. User Macros are not available on FLX S consoles.

If a fixture macro or user macro is activated, the console will replay a sequence of actions for you.

Some fixture functions, such as resetting a fixture or switching a fixture's lamp on, are accessed via Macros rather than using a particular parameter within one of the attributes. This is to make controlling the fixture's function easier. Often, fixture functions require parameters to be at certain levels, for a certain amount of time, for the function to be activated. Fixture macros have all of this information stored in them. It also means you don't need to trawl through attributes and parameters to find the function you are after.

[illegible]

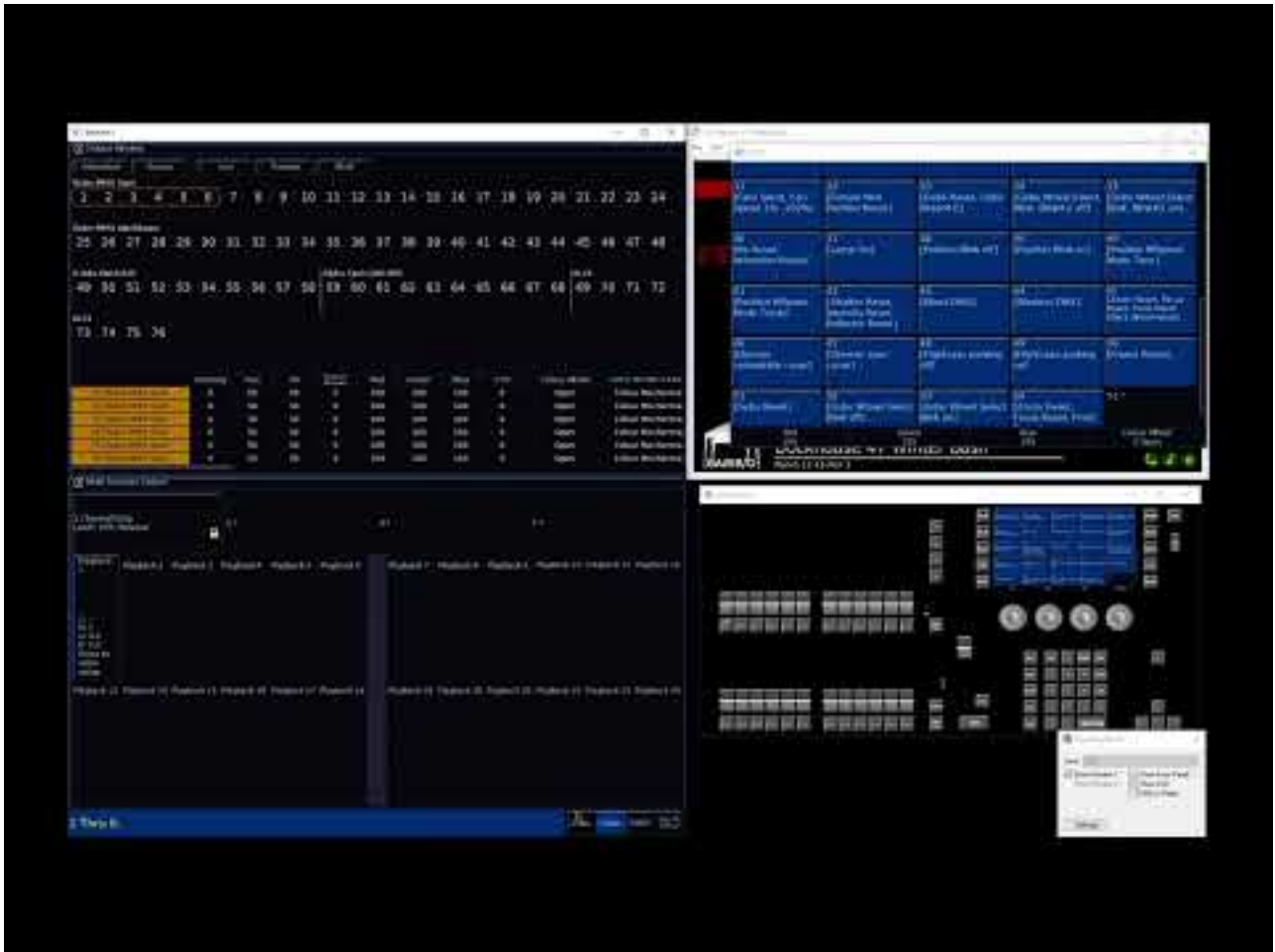
Test Matrix	Linux PC	Windows XP/7	Windows Vista/7/8/10	Mac OS X	Android OS	IOS	Other
1001 (Power Off - GPT)	1001 (ZigBee Card - G4)	1001 (2-sec Sleep) 1001	1004 (Power Auto)	1005 (Picture Display On)			
1006 (Picture Display 1006)	1007 (Picture Global Reset Picture Wakeup)	1008 (Picture Wake Position Reset)	1006 (Picture Shutdown)	1010 (Power Sync Off)			
1011 (Power Sync On)	1012 (Position Reset)	1013 (Display on colour panel)	1014 (Reset to default)	1015 (Standard)			
1016 (Status check)	1017 (Reset)	1018 (Refresh)					

Reserved	Macros	Reserved	Macros	Reserved
Macros	Reserved	Macros	Reserved	Macros
Reserved	Macros	Fan On Menu	Fan Speed 1% 100%	

This means that macros can be used to control that parameter, rather than using the parameter manually.

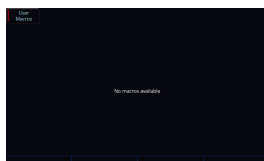
Printed: 08/07/2025 15:36:09 ES

Take a look at the online Macros training session below...



<https://youtu.be/7VXM8qUgZOM>

User Macros



Custom user Macros can be programmed, to record either sequences of button presses or syntax commands. Macros can then be recalled and played back via various methods.

FLX can store up to 240 user macros.

Recording Macros

To start recording your own sequence of button presses or commands as a macro, you can first choose the macro number you wish this macro to be recorded to. You can use either of the following methods:

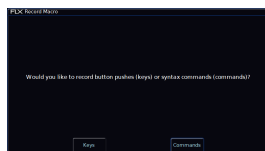
Record Macro 1 5 Enter

Record Macro 15

Record Macro tap an empty macro tile marked with an asterisk in the macros window.

Record Macro

If the Macro window is already displayed, you can simply tap Record , and then the empty macro tile you wish to record to.



After doing this, you will receive the following message, allowing you to record either "Keys" or "Commands":

- **Keys** will record any physical button presses you make on the console, Wings, or USB keyboards. It will capture key presses, repeats, and releases, meaning press-and-hold commands can be captured.
- For example holding **CLEAR** and tapping **Fader Funct.** can be recorded into a macro to create a "Release All" button.
- **Commands** will record just the text being typed into the command-line.

Therefore if you are simply recording a string of syntax, both **Keys** and **Commands** would record the same information, just in a different way.

Commands is the pre-selected option, meaning if you press **Enter**, this will be chosen.

After choosing either **Keys** or **Commands** the console will now start recording your macro. The LED in the **Macro** and **Record** button will be flashing to indicate this.

You can then type in the series of key commands from the front panel.

Once you have finished typing your button sequence, press the **Macro** key to complete recording the macro.

You may wish to record a macro that triggers another macro. Therefore when recording a macro, holding **Shift** and tapping **Macro** can be used to add "Macro" onto the command-line. This allows you to include fixture macros in user macros, by holding **Shift** and tapping **Macro**, followed by entering a fixture macro's ID.

Macros can be used for many scenarios. The "Commands" example below, can be used to record the syntax string required to create a blocked blackout in the next available cue:

Record **Macro** **2** **0** **Enter** **Commands:** **1** **Thru** **@** **.** **Record** **Enter** **Macro**

The "Keys" example below, will record a macro of the faders "Page Up" key being pressed. This macro can then be triggered from a cue. When you go into that cue your MFFs will then automatically change page for you.

Record **Macro** **2** **Enter** **Keys** **Page Up** **Macro**

Naming Macros

Both user macros and fixture macros can be named using syntax by typing one of the following commands:

Macro 4 8 Name

Macro 48

This displays an onscreen keyboard to name Macro 48.

Name Macro 7 Enter

Name Macro 7

This displays an onscreen keyboard to name Macro 7.

Name Macro tap the macro you wish to name.

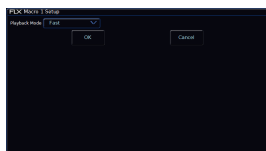
Name Macro

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.

Macro Settings

The playback speed of the macro commands/button presses can be configured in the macro settings. Macro settings can be accessed by holding Setup and tapping the onscreen macro tile, or using syntax:

Macro 2 3 Setup



The Macro Settings allows you to use the Playback Mode drop down to toggle between Fast or Slow. Fast is the default, and will be suitable for almost all macros. Some macros that take you in and out of Setup for example, may require to be played back at a slower rate.

Copying Macros

Macros can be copied. This can be done using the following syntax:

Macro 2 0 Copy 3 0 Enter

Macro 20 Copy To 30

Moving Macros

Macros can be moved, which is useful if you wish to rearrange your macro tiles in the macros window. This can be done using the following syntax:

Macro 20 Shift + Copy 30 Enter

Macro 20 Move To 30

Deleting Macros

To delete any macro, press **Delete** followed by touching the relevant macro tile on the touchscreen. Macros can also be deleted using syntax by typing one of the following commands:

Macro 42 Delete

This deletes macro 42.

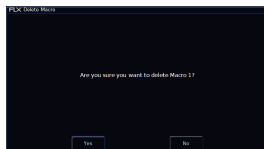
Delete Macro 7 Enter

Delete Macro 7

This deletes macro 7.

Delete Macro tap the macro you wish to delete.

You do not need to press the “Macro” button if the macro window is already displayed.



After choosing a macro to delete, the console 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.

Triggering Macros

Once macros have been created, they can be triggered using any of these methods:

- [Macros Window](#)
- [Syntax](#)
- [UDK](#)
- [Cues](#)
- [OSC](#)
- [Vision.Net](#)
- [Remote Switches](#)
- [Keyboard Shortcuts](#)

Macros Window & Syntax

Macros can be triggered directly from the Macros window, by tapping the one you need.

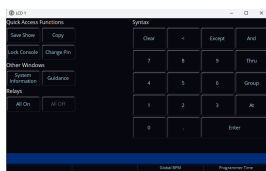
Alternatively, Macros can also be triggered using syntax:

`Macro 1 Enter`

This triggers macro 1.

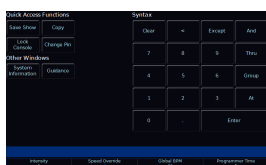
Z Key

The **Z** Key on FLX and FLX S consoles places a range of quick access settings & functions on the internal touchscreen and encoder wheels. It can be pressed at any time unless you are in Setup, and the LED in the button will light when you are in the **Z** window.



On FLX the Z window contains Quick Access Functions, Quick Access Settings, Other Windows, and also a handy clock top right of the window. There is also an "Error Tone On/Off" button, which can be used to turn on/off the built in error tone which can sound every time there is a popup, warning or error.

[Scroll down to find out more about the Z key options.](#)



On FLX S consoles the Z window contains Quick Access Functions, Other Windows, and also an onscreen syntax number pad. FLX S48 consoles also have a button to allow you to calibrate external touchscreen monitors.

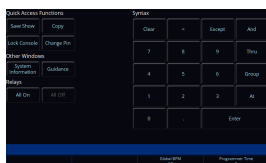
[Scroll down to find out more about the Z key options.](#)

Find out more about the Z Key functions...

- [Save Show](#)
- [Lock](#)
- [Calibrate External Monitor](#)
- [Guidance](#)
- [System Information](#)
- [Z Encoders](#)

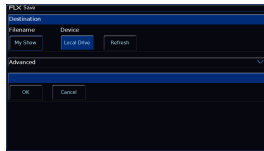
??

Save Show



The Save Show option within Z, is a "quick save" function. If the current show file has already been saved to your USB storage, pressing Save Show will save the show to USB, and will save a new copy of the show file with the next sequential number on the end automatically.

After tapping "Save Show", the Z window is automatically closed.



If the show hasn't yet been named, ZerOS will ask for a name before saving the show file.

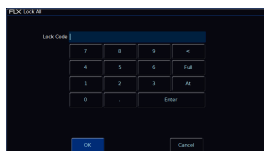
On FLX S, the save icon top left of the internal touchscreen can also be used as a Quick Save option, meaning you don't need to tap the Z/Shift key.

Lock

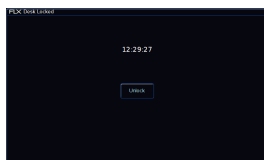


The Lock option allows you to lock the console with a pin number, so you can leave the console unattended safely. Locking the console will enable cues to still playback, and the faders can be used, however no programming or settings can be adjusted.

The default Pin is 0000. It's highly recommended that you change this pin.



To Lock the console, click Lock Console, and then enter the pin.



After entering the correct pin, the lock screen will be shown. FLX will display the current time, whereas FLX S will display the duration of time the console has been locked for.



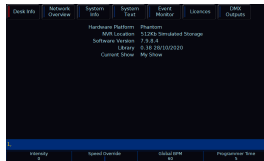
Pressing Unlock, will allow you to enter the lock code. You will then be taken back to the Z window.

On FLX, the shortcut to lock the console is Left + Right + Enter.

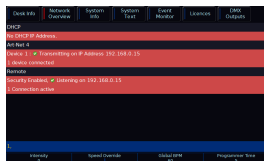


To change the pin, click Change Pin. You can then enter the current pin, and then enter and confirm the new pin. The pin must be four numbers long.

System Information

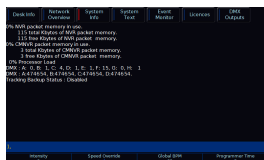


Tapping the "System Information" button in the Z window, will open the System Information window. The first tab you will be viewing is the Desk Info screen. This lists information such as your current software version and current library version installed on the console. If you contact Zero 88 support, we will probably ask you to let us know the information displayed here.

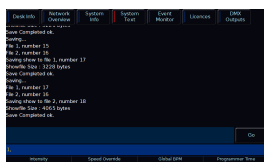


The next tab from the top of the System Information window, is Network Overview. This will list any network protocols that are enabled, and their IP addresses. Connections such as "Remote", will also state the current number of active connections.

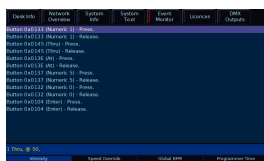
The console's MAC address will also be displayed here.



The System Info screen will show you the hardware details of your console, including processor load and CPU temperature. This is a little bit like Task Manager on windows.



System Text allows you to access the initialisation text displayed when booting the console, saving shows, loading shows, and exiting Setup.



Event Monitor will display button presses and fader levels received by ZerOS. Useful for giving your console a quick check to ensure all front panel controls are registering correctly.

Event Monitor will also display Remote Switch, MIDI Notes and MIDI Show Control commands the console is receiving.



Licences allows you to view the End User Licence Agreement, and other licence texts.

[Click here for more information on using the Intensity Wheel](#)

Speed Override

The Speed Override encoder is used to override the current crossfades occurring on the currently viewed playback. If Speed Override is not displayed, this means your Cues window is currently viewing an empty playback. To view a playback, press and hold **View** and tap the button of the playback you wish to view.

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 used to speed up or slow down effects running on the currently viewed playback.

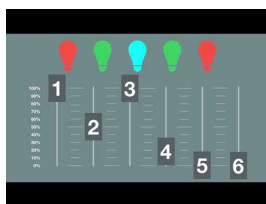
Global BPM

The Global BPM encoder is used to adjust the Global BPM (beats per minute) speed from 1 to 600 BPM. The central button acts as a Tap Tempo, and the encoder can be dialled to speed up / slow down the current Tap Tempo. Any chase can be set to use the “Global BPM” rather than its own individual BPM.

[See Chase Settings for more information.](#)

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 Programmer Time function, press the middle button of the encoder. Now, activating palettes, changing intensities via syntax, clearing the programmer, releasing playbacks, Highlight & Rem Dim etc will all take the time set on the encoder, rather than happening instantly.



Programmer Time is an ideal tool to use for busking. Take a look at the video for a quick explanation of the term busking in the world of lighting.

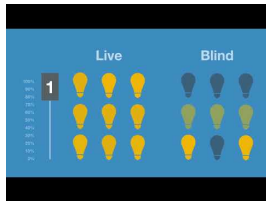
<https://youtu.be/yMEHEvnwouY>

[Speed Override, Global BPM, and Programmer Time, can be configured to be controlled by playback faders, as well as the encoders. For more information click here.](#)

Blind

Blind mode can be used to allow you to control fixtures in ZerOS, however not send those changes to the fixtures. You are therefore controlling your fixtures "blind". ?Blind mode is not available on FLX S consoles.

To go into Blind mode, either tap **Blind** at the top of the Output Window, or on FLX hold **[Shift]** and tap **[Z]** .



Take a look at the quick video for an introduction.

<https://youtu.be/HslFilBH-is>



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

Programming in Blind Mode

Changing intensities and fixture parameters within blind mode is exactly the same as normal operation, except it won't change the lighting state on stage. It is therefore especially useful to allow you to record new cues in blind without the audience knowing, and then play them back live once recorded.

To record a cue in blind, create a lighting state using the fixture controls in the normal way. The lighting state can then be recorded to a fader by tapping **[Record]** , followed by tapping a playback's button.

Playback in Blind Mode

Programmed playbacks can be raised whilst in Blind mode and the recorded lighting state will then output live. This functionality is the same for both playbacks that have been recorded in Blind mode and playbacks that have been recorded Live (playbacks that have been recorded normally whilst not in Blind mode).

Pressing GO on a playback will continue to work like normal, even though blind mode is active.

When in Blind, playback faders can be raised and playback GO buttons can be pressed, and the programmed cues will still output live. Blind therefore doesn't simply freeze the DMX output, but instead allows fixtures to be adjusted manually without the audience knowing.

Load

When in Blind Mode, you can "load" a cue by holding down the playback's Go button and typing the cue number. For example:

Go into blind mode, and then press and hold the Master Playback, and type 5:

Blind, Load Cue 0/ 5,

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, a **Prev** and **Next** button are shown at the top of the Output Window, to allow you to easily work through the cues in the chosen playback.

After loading a cue and making changes, pressing **Update** will update the loaded cue automatically, and you will be taken back to Live mode.

If a cue is loaded in Blind, and you then exit Blind, the loaded cue is remembered upon next entering Blind. Pressing **Clear** whilst in Blind will "unload" a loaded cue.

Whilst in Blind Mode, Goto cue functionality is not available. This is because pressing and holding GO whilst in Blind is used to define which cue number you wish to load.

Exiting Blind Mode

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

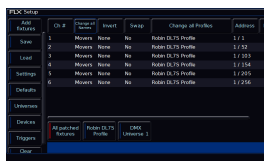
Setup

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. To exit Setup, press the **Setup** key again.

Find out more about each Setup tab...

- [Fixture Schedule](#)
- [Add Fixtures](#)
- [Save](#)
- [Load](#)
- [Settings](#)
- [Defaults](#)
- [Universes](#)
- [Devices](#)
- [Triggers](#)
- [Clear options](#)
- [Upgrade](#)

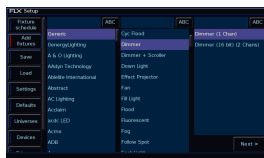
Fixture Schedule



The fixture schedule, lists all of the fixtures currently in your show, and allows you to edit them in various ways. The fixture schedule is automatically displayed after patching fixtures, and is the first window that opens upon tapping Setup, which opens ZerOS Setup.

[For more information on the Fixture Schedule, click here to head to the Patching chapter.](#)

Add Fixtures



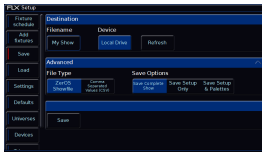
Add Fixtures, allows you to find the fixture you need from the console's fixture library to then patch into the console.

[For more information on Add Fixtures, click here to head to the Patching chapter.](#)

Save

Consoles in the FLX range will save the show automatically to their 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.

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. After saving the show you can then press **Setup** to exit Setup if required.

Advanced

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

ZerOS Show file

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:

Save Complete Show : This option ensures all of the available information in the console, including setup options, patch, cue and palette data is saved in the show 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.

Save Setup Only : This option saves your console's patch, and all the configuration in Setup including network settings. It will not include any programming that may have been done outside of Setup.

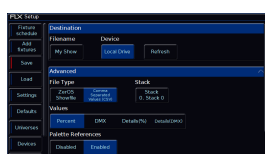
Save Setup & Palettes : This options saves everything EXCEPT Cues, UDKs and Macros.

It is recommended that you choose **Save Complete Show** , which is the default option.

ZerOS Show Files are saved with the file extension .zos

Comma Separated Values (CSV)

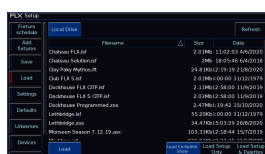
This saves the information into a text file that can be imported into most spreadsheet applications to get a print out of all the cues and the values of each fixture in each cue. These values cannot be loaded back into FLX or any other ZerOS console.



When selecting Comma Separated Values (CSV) you are given the option to select which Playback stack you wish to export (only one can be chosen at a time). You can then choose whether the fixture's parameter values are displayed as "Percentage", "DMX Values" "Details(%)" or "Details(DMX)". 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).

Once you have saved a copy of your show file, you can then use the quick save function to periodically create backups to USB. [Click here for more information.](#)

Load



The Load tab of Setup is used to load in various file types from a connected USB drive.

The option at the top of the window allows you to choose your USB storage device to load from. If your USB storage device doesn't appear, tap Refresh. You should then see a button for your USB drive, displaying its drive label.

The Filename, Size and Date columns, can be sorted, by tapping the column headers. This sorting choice will be remembered and recalled the next time you enter the Load menu. The first file in the list will be automatically selected, allowing you to quickly tap Load to load it.

The Date column is not shown on FLX S, as FLX S consoles do not have an internal clock.

On FLX, you can click on a file, and use the up/down arrows to navigate through the list of files.

The following file types can be loaded...

- [ZerOS Show Files](#)
- [ASCII Show Files](#)
- [Fixture Files](#)
- [ZerOS Library](#)
- [ZerOS Software](#)

ZerOS Show Files

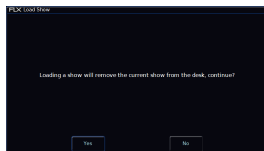
Any ZerOS Show file, saved from any console or Phantom ZerOS, can be loaded onto the console from a USB Storage Device. For ultimate compatibility, it is suggested that both consoles are running the same software version.

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

Two formats of ZerOS show files can be loaded; .zos and .isf files. .zos show files are ZerOS show files saved in ZerOS 7.9.8 or later. .isf show files are "legacy" show files, saved in ZerOS 7.9.7 or earlier.

Select the show file you wish to load in and press **Load** to load the show. The console will load the show and you will automatically leave Setup.

When loading a ZerOS Show file, 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. Loading just the setup, will give all your settings and the patch, however load none of the programming in the show file. Loading setup and palettes, is especially useful if you always use the same rig with your console - your base configuration including palettes will be loaded, ready for you to program the next show.



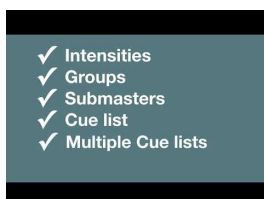
After clicking "Load", the console will warn you that the current show on the console will be lost. Click Yes to proceed with loading the new show, and overwrite the current show on the console. Click No if you need to save the current show first, prior to loading in the new show.

ASCII Show Files

ASCII show files are a generic file format that can be shared between a range of consoles from a range of manufactures. The ASCII show file 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 adds support for moving lights, LEDs and other fixtures, along with referencing palettes. Submasters are imported as Playbacks with single cues. When loading large ASCII show files, ZerOS may take some time whilst it creates fixture personalities for the fixtures, and converts the show to the ZerOS format.

ASCII show files can have the following file extensions:

- .asc (ASCII)
- .alq (ASCII Light Cues)
- .txt



Take a look at this video for an explanation of ASCII show files.

<https://youtu.be/l5GsbexwpTY>

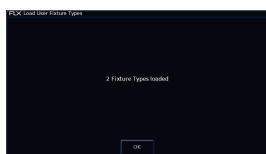
Fixture Files

If the fixture you need to control is not included in the latest ZerOS Library, don't worry! There are many options available to you to gain control of your fixture.

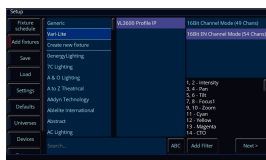
[Click here for more information on what to do if your fixture is missing from the ZerOS Library](#)

If you have a fixture file for a missing fixture, it can then be loaded into the console.

When you have a fixture file on a USB drive, plug the USB drive into the console. Then tap **Setup** -> **Load**, and choose the fixture file to load in from USB.



Once loaded, a confirmation will appear saying "x Fixture Types loaded" (x being the number of fixtures included within the single file).



Upon pressing OK, you will be taken to Add Fixtures, with your loaded fixtures "pinned" to the top, to allow you to quickly patch them.

[See the Patching chapter for more information.](#)

Fixture files come in three different formats:

- [.zfix](#)
- [GDTF](#)
- [.ift](#)

.zfix

If you export a fixture from your console it will be saved as a .zfix file. zfix files are in the same format as fixtures in the ZerOS Library, and so will be displayed like a normal library fixture in Add Fixtures and the Fixture Schedule. .zfix files may occasionally be provided by the Fixture Support team.

[Click here for more information on Editing & Exporting fixtures from Add Fixtures](#)

GDTF

GDTF, jointly developed by the GDTF Group, is an industry standard for entertainment fixture profiles, intended as a unified definition for the exchange of data for the operation of intelligent luminaires. A GDTF file for a specific fixture can be downloaded from the fixture manufacture's website, or GDTF Share, and loaded into the console.

[Click here to head to the GDTF Share](#)

Fixtures from manufactures who do not provide GDTF files can be built using the GDTF Builder online tool. This tool is the primary way to make comprehensive fixture personalities, including multicell fixtures.

[Click here to access the GDTF Builder](#)

GDTF fixtures may feature control parameters greater than 16bit. ZerOS will convert these parameters to 16bit when loading the fixture file.

.ift

The Windows Fixture Editor software can be used to create fixtures in the .ift format. These are custom fixture files, and will be displayed in red in Add Fixtures and the Fixture Schedule.

[Click here for more information on the Windows Fixture Editor](#)

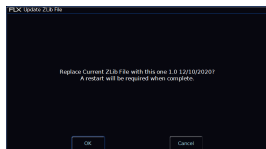
ZerOS Library

ZerOS software, will contain the latest ZerOS Library as of the date that version of ZerOS software was released. However, ZerOS Library is updated more regularly than ZerOS software, and so ZerOS Library files can be loaded into the console.

[Click here to download the latest ZerOS Library file](#)

Once downloaded, copy the library to the root of a USB stick, and plug into the console. You will then be able to tap **Setup** -> **Load**, and choose the library file to load in.

Contained in ZerOS Library, is the fixture library, auto effects, and Art-Net OEM codes. ZerOS Library will use the file extension .zlbr



Upon loading the ZerOS Library file, the console will ask you to confirm, and inform you a power cycle will be required after installing the ZerOS Library update.

ZerOS Software

ZerOS, the software running on FLX and FLX S, is regularly updated. Software updates can be downloaded from the ZerOS webpage, and installed onto your console.

[Click here to go to the ZerOS webpage](#)

Do not attempt to load "Phantom ZerOS" into the console. Phantom ZerOS is the Windows application which allows you to emulate a console running ZerOS on PC. It is not the software application for the console.

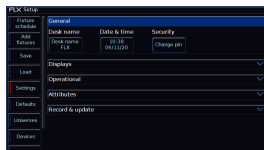
Always read the release notes prior to installing new software for important information, and handy tips.

Software updates completely wipe the console's memory. Ensure you have saved a copy of the current show file to a USB drive first, prior to installing the software.

Do not disconnect the USB stick or power during a software update. Doing so could render your console unusable.

1. From the ZerOS webpage, download the latest ZerOS Version
2. Once downloaded, go to your Downloads folder
3. Plug a USB drive into your computer
4. Copy the .exe software application file onto the root directory of the USB drive (not inside folders)
5. Once copied to the USB drive, plug the USB drive into the console.
6. Disconnect the DMX cables from the rear of the console - this will ensure that when the console reboots, it does not automatically patch and potentially readdress connected RDM fixtures.
7. On the console, tap **Setup** -> **Load** , and choose the software application to load in.
8. After choosing the software file to load in, the console will ask to confirm you are happy to proceed with the installation, and wipe the current show from the console. The console will also warn you, that disconnecting power mid installation could render the console unusable. Click Yes to proceed, or No to allow you to save your show file first.
9. The console will then warn you a second time. There's no excuse for not realising your show will be lost!
10. Once loaded, you will be required to switch the console off and on again to restart the console.
11. Upon rebooting, sometimes the console will state that a firmware update is required. This is because in some ZerOS software updates, a firmware update is included too. If this is the case, proceed with the firmwareupdate, again ensuring the console's power will not be disconnected mid installation.
12. Once the firmware has installed, switch the console off and on again to restart the console.
13. You will then boot into the newly installed software, and can reload your show file if required.
14. Once the show file has been loaded, you can reconnect the DMX cables to the rear of the console.

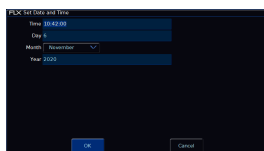
Settings



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.

Desk Name

The desk name is used to identify itself. For example, when using the mobile apps, the name of every console on the network will be displayed. By default, the desk name will be 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

All ZerOS consoles except FLX S have an internal clock. Press the Date & Time button on the monitor to open the Set Date and Time window. Enter the correct time, day, month and year in the fields provided and then confirm by selecting the OK button. This setting is especially important when using Real Time cue triggers.

Security

This allows you to change the Lock pin 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.

[Click here to find out more about locking your console](#)

Find out about the remaining panel drop downs in the Settings tab...

- [Displays](#)
- [Operational](#)
- [Attributes](#)
- [Record & Update](#)

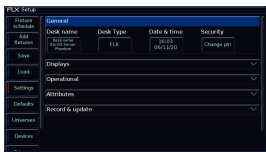
Desk Type

ZerOS Server can run as any of the following consoles that run ZerOS:

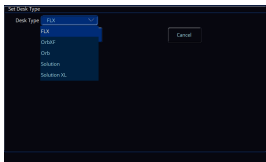
- FLX
- OrbXF
- Orb
- Solution
- Solution XL

By default, ZerOS Server will run as FLX.

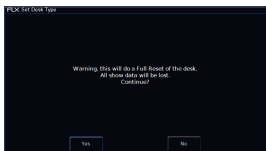
If ZerOS Server is being used as a Backup device in a Tracking Backup system, it must be configured to match the Desk Type of the Master console. Feature availability for ZerOS Server is based upon whichever console it's currently emulating.



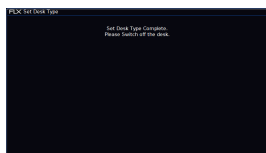
To change the ZerOS Server's Desk Type, click Desk Type in Settings.



A drop-down can then be used to choose the console type. You can then click OK.

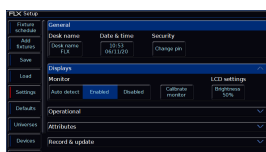


Changing the Desk Type will completely wipe the ZerOS Server's memory. On the Warning message, click Yes to proceed, or No to allow you to save your show to USB first.



After clicking Yes, the ZerOS Server will change the Desk Type, and ask you to switch off the server once complete. ZerOS Server will boot into the newly selected Desk Type when it is next powered.

Displays



The Displays section of Settings contains "Monitor" settings for the external monitor, and "LCD Settings" for the internal touchscreen. FLX S24 only has the "LCD Settings", as there is no external monitor output on FLX S24 consoles.

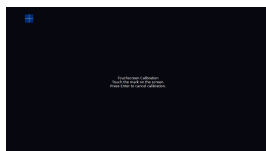
Monitor

FLX, FLX S48 and ZerOS Server have a DVI-D connector on the rear of the console for an external monitor output. 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 on FLX this is set to **Auto Detect**).

[For more information on external monitor settings, click here](#)

Calibration

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.

If you find the touchscreen does not respond, wait a couple of seconds, and try again. Whilst in the calibration window, you may receive a message suggesting you press the **Update** button. If you receive the message, and the external monitor is not responding, press the **Update** key on the console, and try tapping the mark again.

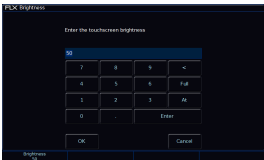
This completes the calibration and ZerOS will ask you to draw on the screen to check the calibration has worked correctly. You should ensure that the line drawn is displayed in the same place you touch the monitor. Press **Enter** (or, on FLX S48 **Z/Shift**) to confirm and return to Settings.

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.

Resolution

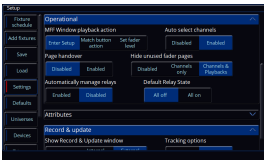
On FLX and ZerOS Server, to manually change the monitor's resolution, click "Resolution" and select one of the listed resolutions (or select "Auto Detect"). FLX will change the resolution for 15 seconds, and then automatically revert it to the previous setting unless you click Keep on the internal monitor within those 15 seconds.

LCD Brightness



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. The first encoder wheel will allow you to adjust this, as well as the on-screen numpad.

Operational



There are several options in the Operational section of Settings. FLX S consoles do not have the last couple of settings pictured.

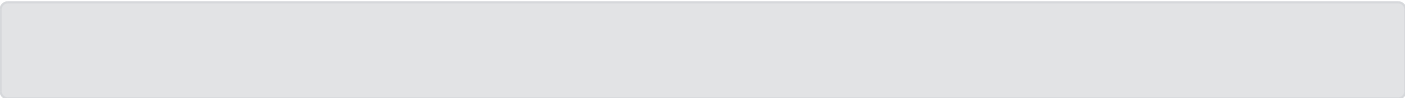
Operational settings are explained below.

MFF Window Playback Action

"MFF Window Playback action" defines what happens when you press an onscreen playback in the MFF (Faders) window. By default this opens the Playback's Settings, but it can instead match the physical button action, or set a Fader Level.

When set to "Match button action", the button function is displayed in the MFF window.

When set to "Set fader level", this will also work in Channels function too.



Auto Select Channels

This setting automatically selects a fixture when a channel fader is moved. This is enabled by default, however can be disabled if you wish, meaning you will need to manually select fixtures.

Page Handover

Page handover defines the behaviour of active playbacks when you change page. "Disabled" is the default behaviour, which means changing playback 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

On FLX, "Recovery Mode" defines how the console should react when it's powered off and powered back on again:

- "Disabled" will release all playbacks when ZerOS starts, so no lights are on.
- "Enabled" will output 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. Transition timings of the "recovered" cue that outputs will already be complete. This includes Move On Dark timings ready for upcoming cues. If your lighting system is configured to hold last state when DMX data is lost, there should be no change in DMX values when FLX restarts with Recovery Mode enabled.

Rem Dim & Highlight options

These "High value" and "Low value" settings affect the values of Rem Dim & Highlight.

Rem Dim will take all unselected fixtures down 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".

Hide Unused Fader Pages

By default, "Hide Unused Fader Pages" is enabled for **Channels & Playbacks**. This means only Channel pages with fixtures patched can be accessed, and only Playback pages with playbacks programmed can be accessed.

For example:

- On FLX:
- If only Channels 1-36 are patched, the Page Up / Page Down buttons will cycle between Page 1 & Page 2
- If Playbacks are only programmed on the first page, the Page Up / Page Down buttons will not function
- On FLX S:
- If Playbacks are only programmed on the first page, the Page button will not function

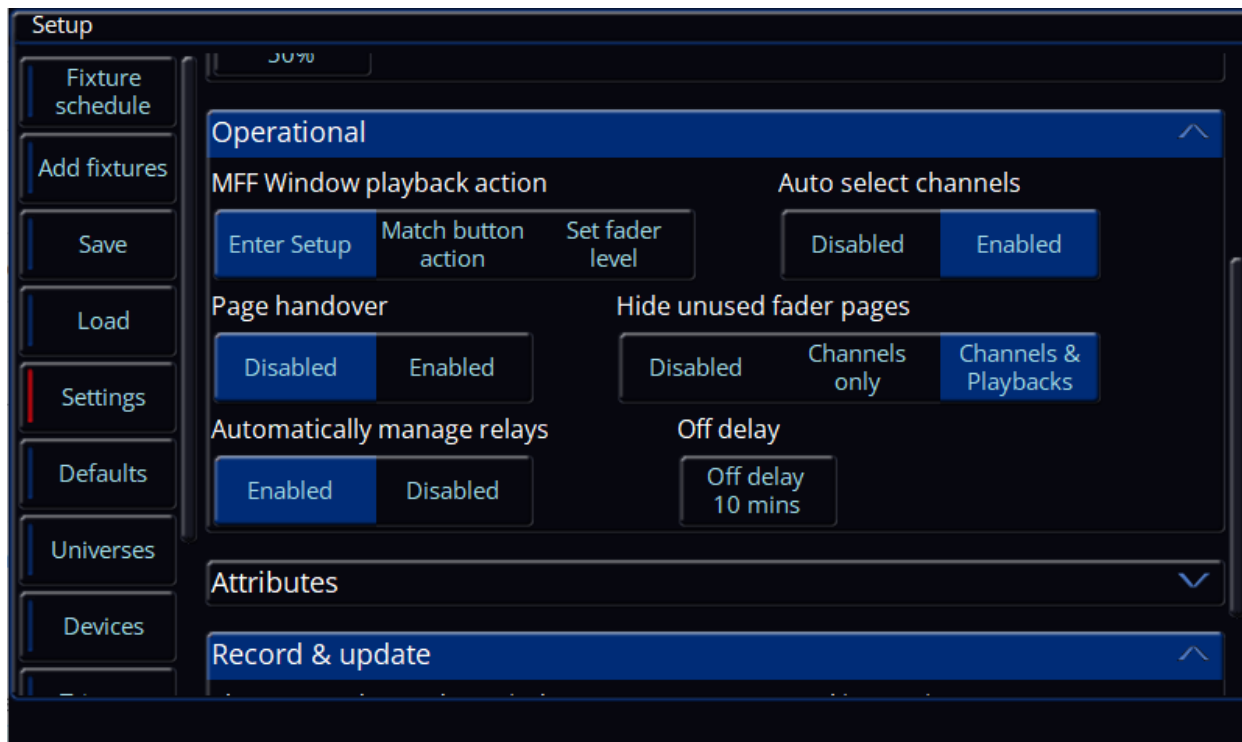
All playback pages are always available after tapping **Record**, holding **Setup** or **View**, or during a Copy/Move action.

Setting "Hide Unused Fader Pages" to **Disabled**, will allow all Channel and Playback pages to be accessed, irrespective of whether faders are populated. It is also possible to just limit this functionality to **Channels Only**, allowing all Playback pages to be accessed.

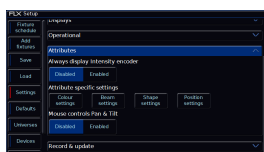
Automatically Manage Relays

When enabled:

- If a fixture's intensity goes above 0%, the associated relay is automatically turned on. If a fixture's intensity goes to 0%, the associated relay is automatically turned off after the "Off delay" (unless they are "on" for other reasons).
- If a Playback is active ("triggered"), the associated relays of ALL fixtures programmed into that Playback are automatically turned on, even if the fixture isn't used until a future cue. When that Playback is released, the associated relays are automatically turned off after the "Off delay" (unless they are "on" for other reasons).



Attributes



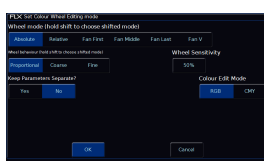
The attributes section allows you to edit global Intensity, Colour, Beam, Shape and Position settings. These are explained below.

Always Display Intensity Encoder

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

[For more information on the Intensity wheel, click here](#)

Attribute Specific Settings



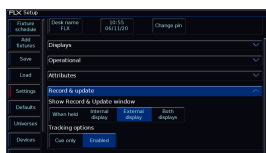
These options allow you to change various settings for each attribute. The same windows can also be opened outside of the Setup Window, by pressing Setup and the attribute button together (on FLX S, these are soft buttons along the top of the touchscreen).

[For more information on Attribute Settings, click here](#)

Mouse controls Pan & Tilt

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.

Record & Update



The Record & Update options of the Settings tab, allow for the Record & Update window to be configured, and the global tracking options to be set. These are explained below:

Show Record & Update Window

This can be changed to decide when these two windows should be shown during programming.

When held: means the windows will only be displayed on the internal touchscreen when the Record or Update buttons are held for around half a second. This is useful if you are regularly programming palettes using the external monitor.

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. This is the default option.

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. It can be seen a little bit like a "Beginner" (Cue Only) or "Normal" (Enabled) mode. 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.

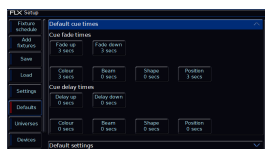
[Click here for more information on the Tracking settings in the Record Options window](#)

It is strongly recommended to use the console with Tracking Options enabled. This does NOT mean Tracking is enabled - it simply means the Tracking Options are available to you.

Cue Only should only be used when basic programming is required. Cue Only significantly limits the complexity of programming, and is not designed to allow for complex mixing between playbacks.

Switching the Tracking Options between "Enabled" and "Cue Only" can change data in existing cues. Therefore, this option should only be changed prior to programming.

Defaults



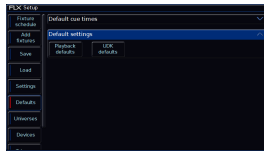
Defaults within the Setup menu allows you to change the default times and settings given to newly programmed Cues, Playbacks, or UDKs. Changing the default settings will never change existing Cues, Playbacks or UDKs.

Default Cue Times

These settings change the default times that cues are recorded with. Both the default fade and default delay of the Intensity Up, Intensity Down, Colour, Beam, Shape and Position times can be changed in this window. The default timings are pictured above.

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

Default Settings



Default Settings allow you to configure the defaults of any future playbacks or UDKs that are programmed. On FLX S, "UDK defaults" will not be shown.

Playback Defaults



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.

Loop Playback

"Loop Playback" can be "Enabled" or "Disabled", to determine the behaviour of any future playbacks that are programmed. If neither "Enabled" or "Disabled" are shown as selected, the setting will be disabled on the Master Playback (when programmed) whilst enabled on all other playbacks (when programmed).

Button Function

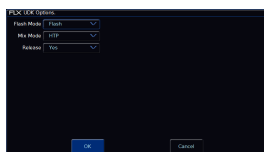
When the button function is left as "Automatic", this allows the button to automatically change function, dependent on the state of the playback. These states are as follows:

- A single cue on a playback - button function set to flash, shifted function set to Solo.
- Multiple cues on a playback - button function set to Go (Fade), shifted function set to Go (Snap)
- Chase - button function set to Tap Tempo, shifted function set to Go (Snap)

If the active button function is tapped, no button function will be selected, meaning the button of newly programmed playbacks will be disabled.

[For more information on Playback Settings, click here](#)

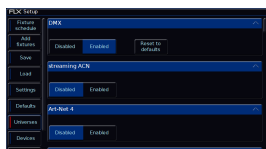
UDK Defaults



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

The default Flash Mode option is particularly useful if you wish to be able to tap your UDK, and your channel data be output, and then tap it again to release the UDK. To do this, configure the default Flash Mode to "Latch".

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.

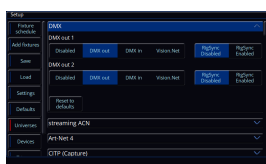
Fixtures can be patched across 64 “Desk Universes”. The total number of channels used across the 64 universes cannot exceed the total number of channels your console is licenced for.

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 universe routing (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).

Find out more about the available protocols and the Desk Universes in the Universes tab...

- [DMX](#)
- [streamingACN](#)
- [Art-Net 4](#)
- [CITP \(Capture\)](#)
- [Remote Device Management \(RDM\)](#)
- [Desk Universes](#)

DMX



The DMX section of the Universes tab in Setup, allows you to configure the behaviour of the DMX ports of the rear of the console. FLX series consoles have two DMX ports.

If you are outputting DMX over the network, and you are not using the DMX ports, it is possible to disable them.

DMX Out

By default, DMX port 1 outputs Desk Universe 1 and DMX port 2 outputs Desk Universe 2 (on 1 Universe FLX S consoles, both DMX ports output Desk Universe 1). This means as soon as a fixture is patched onto universe 1, DMX will be output from DMX port 1.

To configure which Desk Universe is sent from a DMX Output, scroll down to the "Desk Universe" you need. You can then add a DMX port to the Desk Universe, so that the Desk Universe is then sent from the chosen DMX Output.

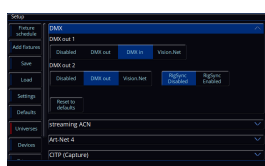
[Click here to find out more about routing Desk Universes out of your console](#)

When a DMX port is configured as a DMX Output, a RigSync switch will be shown for that port, allowing you to Disable or Enable RigSync on that port. For example, both DMX Outputs could be sending the same Desk Universe, however one with and one without RDM data.

RigSync must be enabled globally, to allow RigSync to be enabled on either DMX output.

[Click here to find out more about RigSync](#)

DMX In

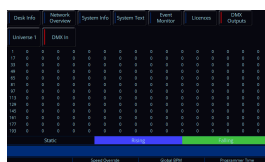


Either of the console's DMX ports, can be configured as a DMX Input rather than an output. Using a male-to-male XLR adapter, this allows you to send a DMX signal into your console from an external DMX source, which can then be used to control fixture intensities, or playback levels.

Only one DMX port can be used as an input at a time.

[Click here to find out about controlling fixture intensities with DMX input](#)

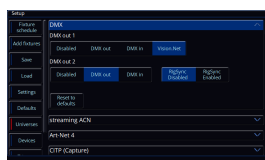
[Click here to find out about controlling playback levels with DMX input](#)



Once a DMX port is configured as a DMX Input, the incoming DMX can be viewed in Z -> System Information -> DMX Outputs -> DMX In

FLX series consoles will only receive DMX from DMX sources that send a whole DMX universe. DMX controllers that only send the first few channels, for example a Zero 88 Level 6, will not work.

Vision.Net



FLX series consoles can receive Vision.Net commands over RS-485, using either of the DMX ports. Once you have chosen the DMX port you wish to receive Vision.Net messages, you can then configure Vision.Net in the Triggers tab of Setup.

A Vision.Net to XLR adapter is required with the following pinout:

Vision.Net 9-Pin connector:

1. Data +
2. Data -
3. (nothing)
4. 24V
5. COM
6. 24V
7. COM
8. 24V
9. COM

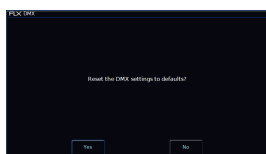
[Click here for information on configuring Vision.Net](#)

Transmission

You can change the DMX Transmission between Continuous or Delta. Continuous transmission will result in DMX data being sent at a steady refresh rate, and is the default option. FLX series consoles transmit at 29Hz.

Changing the Transmission to Delta, will result in the console sending DMX "updates". This means DMX frames will be sent whenever there are level changes on the console. If there are no level changes, DMX will be transmitted at 1Hz. If you are controlling a fixture that doesn't seem to be responding correctly, change the Transmission to see if the fixture prefers the change in frame rate. If it does, your fixture is not truly DMX compliant.

Reset to Defaults



If you have configured individual Desk Universes, you can press the Reset to Defaults button to reset the DMX Outputs to their default settings.

Take a look at the session below for some DMX theory...



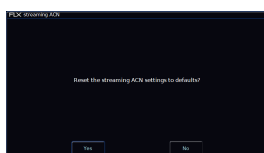
https://youtu.be/F_6ANCol8dg

streamingACN

Streaming ACN (sACN) 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.

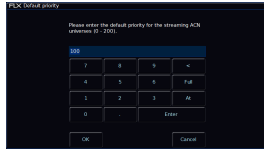


Within the sACN panel, you can choose to enable sACN. Once enabled, you will be able to configure the sACN protocol. By default, sACN universes will be mapped 1:1 with Desk Universes.



Reset to Defaults

If you have changed the sACN settings in individual Desk Universes, you can choose to “Reset to defaults” (which outputs each Desk Universe on the equivalent number sACN Universe).



Default Priority

Transmitted sACN universes 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 configured in each Desk Universe panel, or can be set to use the “Default priority” listed in the sACN panel.

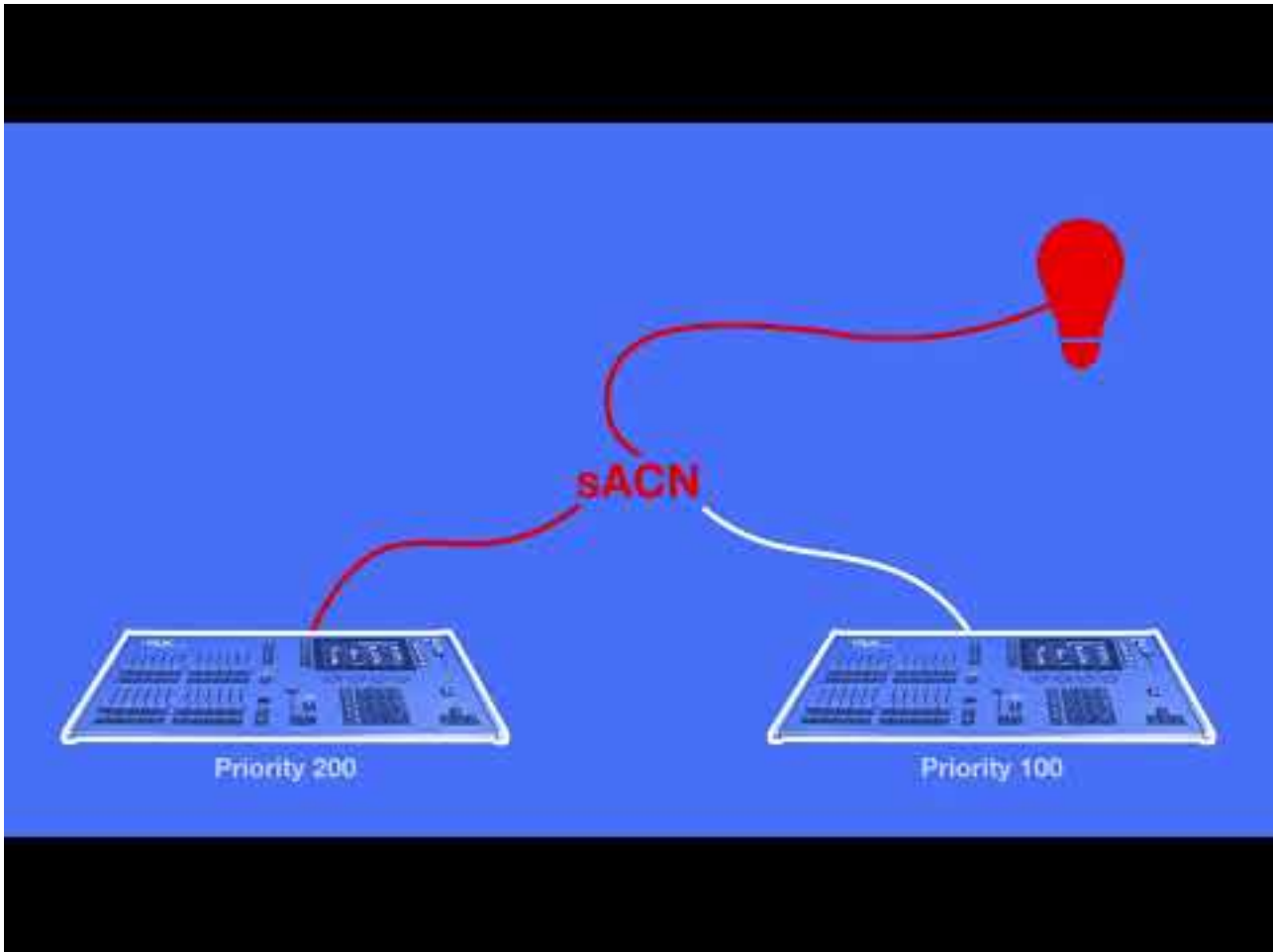
IP Address

The IP address options will allow you to configure your sACN network settings. You can choose between using a DHCP address, or a static IP address.

sACN will be set to DHCP by default.

[For information on network settings, see the Networking chapter](#)

Take a look at the short video below for an explanation of sACN...



<https://youtu.be/AIBMe9XvK94>



<https://youtu.be/L-dl4ZLf1gs>

Once you have transmitted your sACN data from the console, you can then send it to your fixtures over Ethernet. Often, sACN universes are then converted back to DMX universes, using an Ethernet to DMX Gateway.

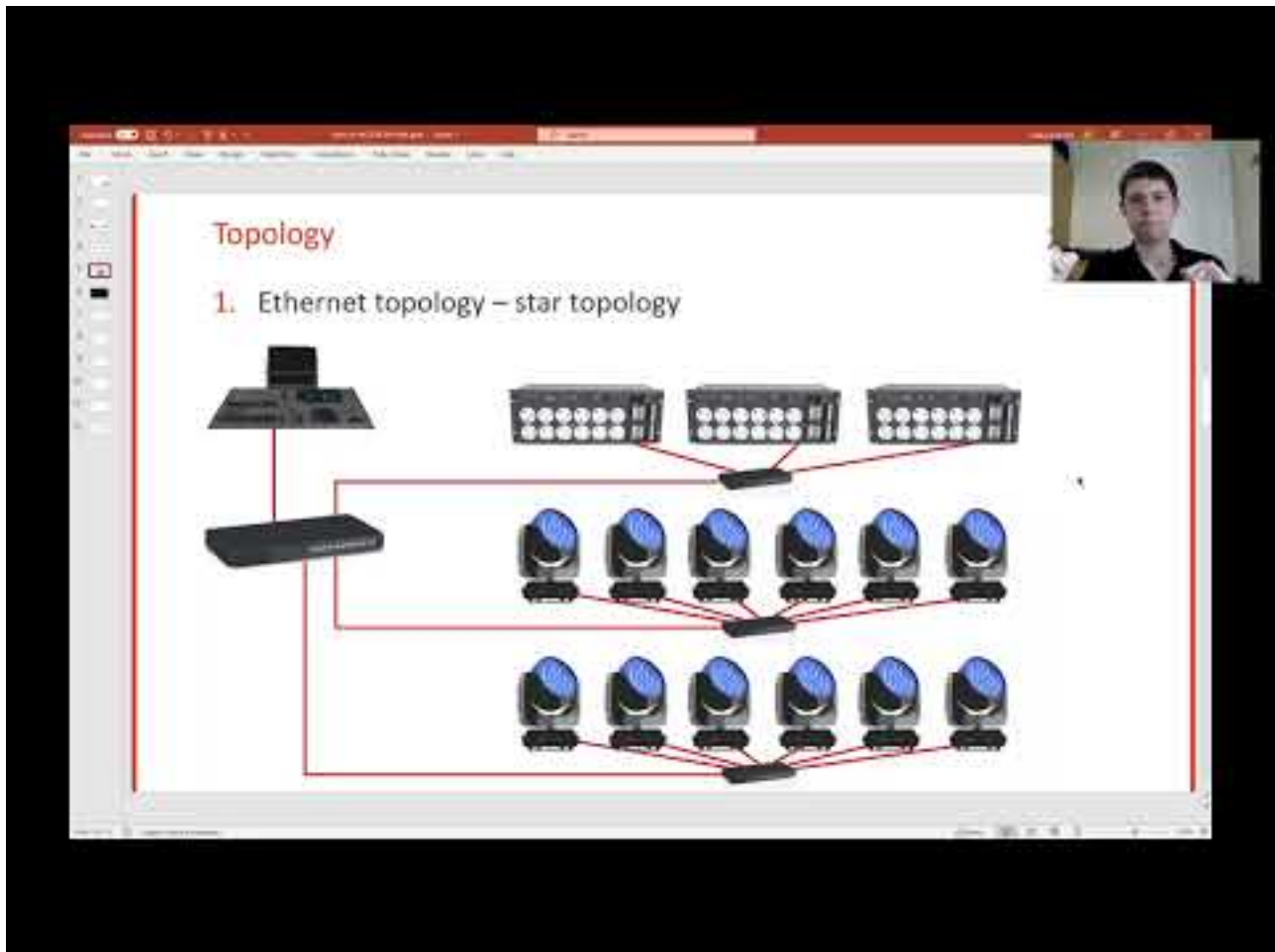
Zero 88 manufacture Gateway 4 and Gateway 8 Ethernet to DMX Gateways.

[Click here to head to the Gateway 4 page.](#)

[Click here to head to the Gateway 8 page.](#)

Watch the video here for an overview of Gateway 4 and Gateway 8.

Take a look at the session below for an introduction to streaming ACN...

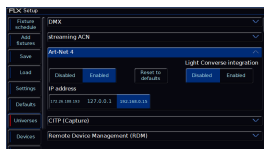


<https://youtu.be/WSBGaCqnKHM>

Art-Net

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.

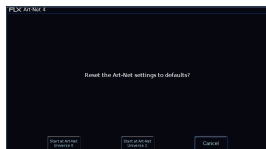
[For more information, click here to head to the Art-Net website](#)



Within the Art-Net 4 panel, you can choose to enable Art-Net 4. Once enabled, you will be able to configure the Art-Net 4 protocol.

By default, Art-Net 4 universes will be mapped 1:1 with Desk Universes.

[To customise your universe routing, click here to find out about Desk Universe configuration](#)



If you have changed the Art-Net 4 settings per Desk Universe, 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. Technically the first available Art-Net 4 universe is “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.

IP Address

The IP address options will allow you to configure your Art-Net network settings. You can choose between using a DHCP address, a static IP address, or a Primary/Secondary IP address.

The Primary/Secondary IP address are predefined IP addresses, in the format 2.x.x.x for the primary, and 10.x.x.x for the secondary (both with subnets of 255.0.0.0). Many Art-Net devices default to either a 2.x.x.x or 10.x.x.x IP, and so the Primary and Secondary option are quick ways to get you communicating with Art-Net devices with as little configuration required as possible.

Art-Net will be set to use the Primary (2.x.y.z) IP address by default.

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

[For information on network settings, see the Networking chapter](#)



<https://youtu.be/L-dl4ZLf1gs>

Once you have transmitted your Art-Net data from the console, you can then send it to your fixtures over Ethernet. Often, Art-Net universes are then converted back to DMX universes, using an Ethernet to DMX Gateway.

Zero 88 manufacture Gateway 4 and Gateway 8 Ethernet to DMX Gateways.

[Click here to head to the Gateway 4 page.](#)

[Click here to head to the Gateway 8 page.](#)

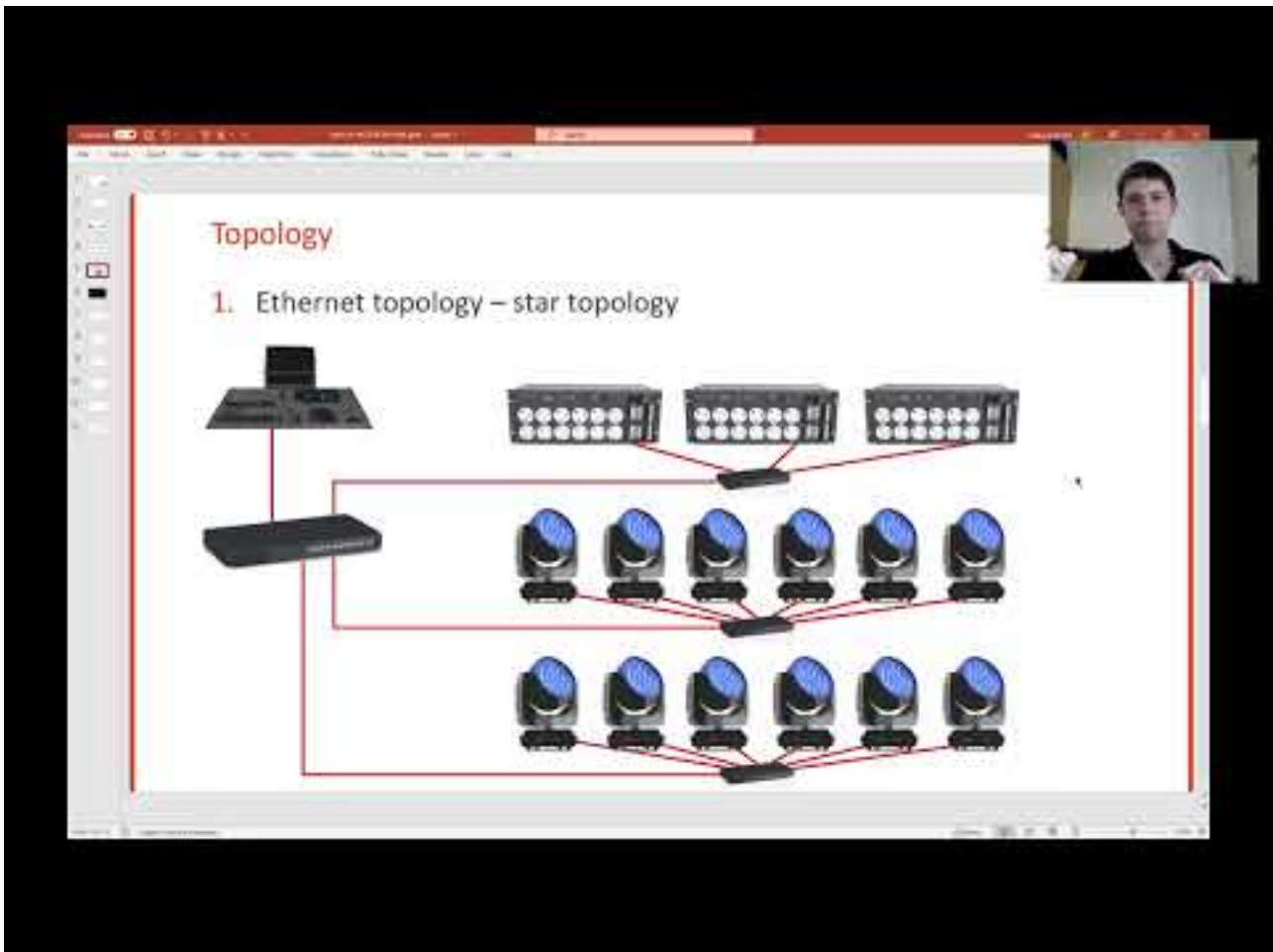
Watch the video here for an overview of Gateway 4 and Gateway 8.

Once Art-Net has been enabled, and network settings configured, any Art-Net devices that your ZerOS console can see, will be displayed in the Devices tab of Setup. [Click here to find out more.](#)

Once Art-Net has been enabled, ZerOS will tell other controllers on the network which Art-Net universes are currently being transmitted. ZerOS uses the Art-Net OEM code of 0x2BFE.

The console's Desk Name, set in Setup -> Settings -> Desk Name, is reported as the console's Art-Net name. This cannot be edited by other Art-Net devices.

Take a look at the session below for an introduction to Art-Net...



<https://youtu.be/WSBGaCqnKHM>

CITP

CITP 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, and has been designed specifically for communication between lighting consoles, visualisers and media servers.

CITP is primarily used to connect ZerOS to Capture visualisation software. When connected using CITP, ZerOS & Capture integrate seamlessly, allowing for two-way control and selection communication. Therefore if using Capture visualisation software, we recommend using the CITP protocol.

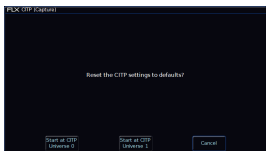
[CITP data can be sent from Phantom ZerOS PC software to Capture visualisation software without the need for a Phantom ZerOS Unlock Dongle.](#)

[For more information on Capture Visualisation software, click here](#)

[For more information on the CITP protocol, click here](#)



Within the CITP panel, you can choose to enable CITP. Once enabled, you will be able to configure the CITP protocol. By default, CITP universes will be mapped 0:1 with Desk Universes.



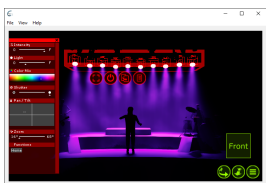
If you have changed the CITP settings per Desk Universe, you can choose to “Reset to defaults”. This will prompt you to start the Universe numbering from either CITP Universe 0 or CITP Universe 1. If using Capture visualisation software, Start at CITP Universe 0.

IP Address

The IP address options will allow you to configure your CITP network settings. You can choose between using a DHCP address, or a static IP address.

CITP will be set to DHCP by default.

[For information on network settings, see the Networking chapter](#)



Selection

When using CITP to communicate with Capture visualisation software, as well as DMX information being sent over Ethernet from ZerOS to Capture, selection information is sent too. Selected fixtures are then indicated in Capture with the fixtures selecting in red.



External Level Set

When using CITP to communicate with Capture visualisation software, as well as ZerOS sending DMX information to Capture, Capture can send DMX information back to ZerOS. This allows you to use the fixture controls in Capture to control your fixtures, which you can then record as a cue in ZerOS. You will see the parameter values live updating in ZerOS, and "External Level Set" will be displayed in the command line, as ZerOS receives the updates from Capture.

In Capture, when you have moving lights selected you can right-click on a position on stage, and your moving lights will move to that location. Therefore connect your ZerOS console to Capture with CITP, and in Capture right click on the location you want your movers to go to. Then record that as a cue or palette in ZerOS.

Remote Device Management

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.

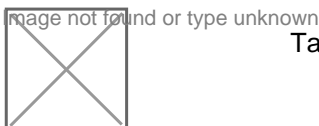
ZerOS will patch RDM fixtures with dimmers first, then LED fixtures, and then moving lights, in the order of their current DMX address.

When RigSync discovers RDM fixtures, "RigSync is processing x devices" will be shown at the top of the Output window, whilst ZerOS processes the fixtures and patches them. If any of the devices patched by RigSync go offline, whether that be because they lose DMX connection or power, an error notification will be shown in the Output window. You will be able to view the errors, or dismiss them. A red cross will be displayed next to the fixture numbers of fixtures that are currently offline.



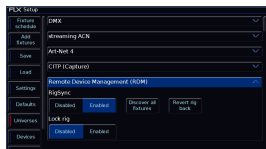
Take a look at this video to see RDM in action.

<https://youtu.be/9d2XQKankbo>



Take a look at this video to see RigSync in action.

<https://youtu.be/1Rbfj0nvgYA>



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 on DMX port 1.

Discover All Fixtures

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 re-patched unless you press **Discover all fixtures**.

Revert Rig

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

By default, Lock Rig is disabled. However when enabled, "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, Pan/Tilt 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”.

Art-RDM

As well as RigSync using RDM on the DMX ports on the rear of the console to keep your console and fixtures synchronised, RigSync will also use RDM over Art-Net if Art-Net is enabled.

[Click here to find out more about Art-Net](#)

If Art-Net is enabled, pressing Discover All Fixtures will force Art-Net gateways to discover fixtures.

To go in depth on RDM, take a look at the session below...



https://youtu.be/F_6ANCol8dg

Sometimes, you may find that fixtures flicker, with the presence of RDM on the DMX line. If so, then unfortunately your fixtures are not truly DMX compliant.

To stop the flicker, you will need to remove RDM data from the fixture's DMX line. This can be done by either disabling RigSync completely, or disabling RigSync just on the DMX port the fixtures are connected to. Alternatively connect your non-compliant fixtures from a feed of a DMX Splitter with RDM removed.

Contact the fixture's manufacturer, to see if there is a firmware update to solve the flicker.



If you need to remove RDM from a DMX line, Splitter 8 has a switch to allow you to remove RDM data from the DMX Outputs. Watch the video to find out more.

[Click here to go to the Splitter 8 page.](#)

<https://youtu.be/ViBPm4DEbvk>

RigSync: The Concept

RigSync allows you to be completely unconcerned with the technical elements that allow consoles to talk to lighting rigs. RigSync doesn't simply read your rig or just patch your console, it manages your lighting rig with absolutely no interaction from you – ensuring your console and lighting rig are continuously synchronised and problem free by automatically and invisibly solving potential disputes such as collisions in DMX address or changes of fixture mode.

In a large percentage of low to medium sized events and venues, technicians are not concerned with DMX addresses so long as their fixtures are functioning correctly. Often, settings such as DMX address, mode, Pan / Tilt invert etc are not discussed or decided upon until the build. In these situations, the DMX addressing and patch processes (both on the physical fixtures and the console) often delay progress and are inefficient, resulting in messy notes on the back of a set list or within a script margin, while the console op shouts up to a technician in a cherry picker or up a ladder, attempting to get the rig and the console synchronised. The console op often is interrupted from their programming to test a fixture's new settings or, even worse, having to use trial and error to find the address or mode of an inaccessible fixture.

We see these as unnecessary steps that delay the operator from designing and programming their show, resulting in an inferior show. This is especially prevalent for the low end users we now see adopting colour mix and movers for the first time.

With RigSync, ZerOS manages the rig – ensuring the console and lighting rig are synchronised, not just at the point of “patching” but continuously through the performance. RigSync is the first implementation of DMX, RDM and ArtRDM in a lighting console that allows the installer and operator to be completely unconcerned and oblivious to the technical elements that allow their consoles to talk to their lighting rig. 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.

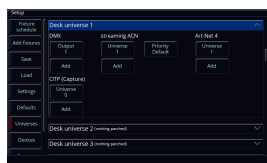
RigSync only changes settings when it's necessary to make the rig work. When the show is over, the user can choose to revert the rig back to its original settings, ensuring touring venues are left happy.

Users can choose to disable RigSync per output of the console, addressing issues often experienced on lower value equipment where the DMX & RDM specifications haven't been accurately implemented.

Desk Universes

Below the various protocol settings within the Universes tab, is a panel for each of the console's 64 "Desk Universes".

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



Within each Desk Universe panel, you can configure the four different control protocols for that desk universe – DMX, streaming ACN, Art-Net 4, and CIP (Capture).

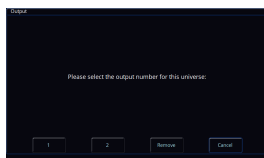
For each of the control protocols within a Desk Universe, an **Add** button allows you to add another universe of that protocol. For example, you could have Desk Universe 1 being output to both Art-Net Universe 1 and 2 (or more). This might be useful when visiting a venue that uses Ethernet to DMX gateways, as you can have the same data from both Art-Net ports without having to reconfigure the venue's gateway.



If you add a protocol universe to a desk universe, which is already in use by another desk universe, you will receive a popup with the option to Cancel, or Use on this Desk Universe instead.

DMX

To edit which DMX Output port a Desk Universe is being sent from, click on the **Output** button below DMX in the required Desk Universe, or click **Add** to add another.



You can then choose which physical output port you wish this Desk Universe to be routed from. FLX series consoles have a pair of DMX outputs on the rear of the console.

You can also Remove the DMX output from this Desk Universe.

streaming ACN

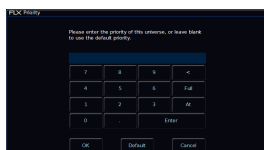
To edit which streaming ACN universe a Desk Universe is being sent on, click on the **Output** button below streaming ACN in the required Desk Universe, or click **Add** to add another.



You can choose to send DMX data on any streaming ACN universe from 1 to 63,999.

You can also Remove streaming ACN universes from this Desk Universe.

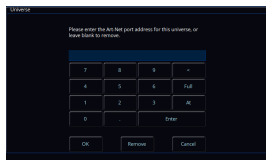
Each sACN Universe has the option to set a custom priority, which is a value from 0 to 200. streaming ACN receivers will listen to the controller that has the highest priority value for the universe they are set to receive.



To change a streaming ACN universe's priority, press "Priority" and either enter the new number, or click "Default". Clicking default means this universe will then use the default streaming ACN priority value set in the global streaming ACN settings at the top of the Universes tab of Setup.

Art-Net 4

To edit which Art-Net universe a Desk Universe is being sent on, click on the **Output** button below Art-Net 4 in the required Desk Universe, or click **Add** to add another.



You can choose to send DMX data on any Art-Net 4 universe from 0 to 32,767. It is recommended to avoid using Art-Net universe 0 if you can, and start with Art-Net universe 1, to avoid any offset confusion.

You can also Remove Art-Net universes from this Desk Universe.

CITP

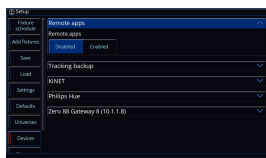
To edit which CITP universe a Desk Universe is being sent on, click on the **Output** button below CITP in the required Desk Universe, or click **Add** to add another.



You can choose to send DMX data on any CITP universe from 0 to 255.

You can also Remove CITP universes from this Desk Universe.

Devices



The Devices tab displays settings for any devices connected to the console which can be remotely configured.

Click on the following Devices to find out more...

- [Remote Apps](#)
- [Tracking Backup](#)
- [KiNET](#)
- [Philips Hue](#)
- [Art-Net Devices](#)
- [Enttec USB to DMX Devices](#)
- [RDM Devices](#)

Remote Apps

ZerOS consoles can be remotely controlled using free remote applications, compatible with iOS, Android and Windows 10.

There are two applications available:

- "ZerOS Remote" enables wireless control of your rig, allowing you to manipulate, control and playback your shows. This is available for iOS and Android devices including iPads and tablets, but is mainly designed for use on smart phones.
- "ZerOS Monitor" emulates a wireless additional external touchscreen monitor. This is available for iOS, Android and Windows 10.

If you're on an iOS device...

- [Click here to go to the App store to download the Remote app](#)
- [Click here to go to the App store to download the Monitor app](#)

If you're on an Android device...

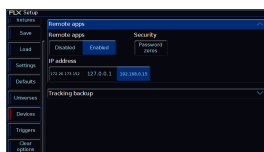
- [Click here to go to the Google Play store to download the Remote app](#)
- [Click here to go to the Google Play store to download the Monitor app](#)

If you're on a Windows device...

[Click here to download ZerOS Monitor for Windows.](#)

When running the ZerOS Monitor app on Windows 10, keyboard shortcuts are available to remotely control the console.

[Click here to find out more about keyboard shortcuts.](#)



To enable access to the console from these apps, change "Remote" to "Enabled".

Security

Your 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.

IP Address

The IP address options will allow you to configure your Remote network settings. You can choose between using a DHCP address, or a static IP address.

The Remote connection will be set to a Static IP address of 192.168.1.10 (Subnet Mask 255.255.255.0) by default.

[For information on network settings, see the Networking chapter](#)

Once you have configured your console's remote settings, connect your remote device to the same network as your console. You can then start the app on the remote device, and your console should be found. Press on the name of your console, and click the connect button.

[Click here to find out how to build a Remote Network.](#)

On ZerOS Server, when the Remote is enabled, the IP address and subnet are displayed on the front display when the "Remote" LED is illuminated. The IP address will be displayed first, and then the display will cycle to show the subnet.

If you see 0.0.0.0 shown on the front display when the "Remote" LED is illuminated, this means ZerOS Server's Remote IP has been set to DHCP, however there is no DHCP Server on the network.

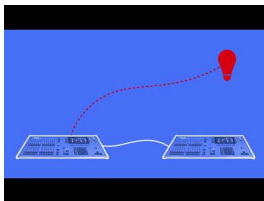
Take a look at this training session for more information on the Remote Apps...



<https://youtu.be/LjHvt6vVI-0>

Tracking Backup

Tracking backup allows a continuous and full back up of a master console to another device, which will automatically take over if anything happens to your main console. Tracking backup is ideal for show-critical scenarios where a backup solution must be provided.



Click the video for a description of Tracking Backup.

<https://youtu.be/txg3IDjG01A>



<https://youtu.be/L-dl4ZLf1gs>

The most common system to use with tracking backup, is a Master console and a Backup console networked together, which both have the ability to control any Ethernet devices on the network, such as an Ethernet to DMX gateway. The Master and Backup devices will then be able to send DMX to the Ethernet devices, using the sACN or Art-Net 4 protocols.

See the video to find out about the Zero 88 Gateway 4 and Gateway 8 Ethernet to DMX gateways.

[Click here to find out more about sACN](#)

[Click here to find out more about Art-Net](#)

Due to the way Art-Net data is cast, Art-Net cannot be used with tracking backup when Art-Net is configured to use a static IP.

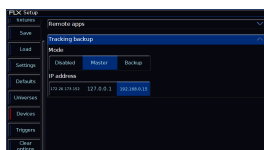
This is because when the Master and Backup synchronise, they will share the same Ethernet over DMX IP address when configured to use a static IP. This is fine for sACN, however because Art-Net data is unicast, no two Art-Net controllers can share the same IP. Therefore to use Tracking Backup with Art-Net, ensure your master is configured to use a DHCP address, or the Primary/Secondary IP. The backup will then use its respective setting when synchronised.

The following can be used as the backup device in a Tracking Backup system:

- Another console of the same type - for example a master and backup FLX
- [ZerOS Server](#) - running as the same desk type as the master console.
- [SCD Server](#) - running as the same desk type as the master console.
- [Phantom ZerOS on PC with an Unlock Dongle](#) - running as the same desk type as the master console.

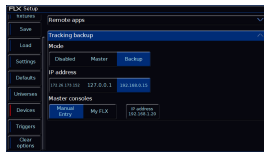
Ensure your backup device is licenced for the same number of DMX Channels as the master you are backing up if you wish the backup to fully takeover in the event that the master goes offline.

The Master and Backup device must be running the same software version.



To configure your Tracking Backup system, first choose "Master" on the console you wish to be the Master device. The IP address options will allow you to configure your Tracking Backup Master console network settings. You can choose between using a DHCP address, or a static IP address.

You can then exit Setup on the Master device, and continue to program or run your show.



On the console you wish to be the backup device, choose Backup under the Tracking Backup settings. The IP address options will allow you to configure your Tracking Backup Backup console network settings. You can choose between using a DHCP address, or a static IP address.

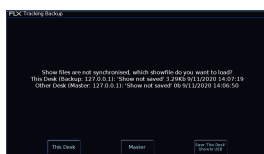
[For information on network settings, see the Networking chapter](#)

Both the Master and Backup device can have their own Remote connection enabled. This means you can remotely connect to the Master or Backup device in the system.

Once your network settings are configured, on both the Master and Backup devices, the Backup device will then display any Master consoles it can see on the network under "Master Consoles". The Desk Name of the Master console will be displayed. This can be configured in **Setup** -> **Settings** -> **Desk Name** on the Master console.

Click on the Master console you wish to backup. If it isn't displayed, your network settings are either incorrect, or the Master and Backup devices are not on the same network and port forwarding is required. In these cases **Manual Entry** can be chosen, and the IP address of the master console can be manually entered.

You can then exit Setup on the backup device.



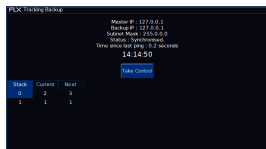
Upon exiting Setup on the backup device, both the Master and Backup will receive a popup, asking you to confirm which show file you wish to use. This popup will display the IP address of the Master and Backup device, the show name of the Master and Backup device (if the show has been saved to USB), and the last time the show was saved to the devices internally.

ZeroOS is therefore asking whether you wish to send the Master's show file over the network to the Backup, or the Backup's show file to the Master. In most cases you will require the backup to take the master's show file, and therefore the master show is sent to the backup.

Choosing to send the Master's show to the Backup, will overwrite the current show on the Backup.

Choosing to send the Backup's show to the Master, will overwrite the current show on the Master.

Therefore, a third option is provided, to allow you to save the current show to USB first.

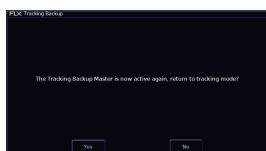


After choosing your show, the show will then be sent over the network. Once the Master and Backup are synchronised, the synchronisation screen will be shown on the Backup device (pictured).

The Backup device is now tracking the master, and programming changes made on the master, are automatically sent to the backup. If the Backup loses sight of the Master console on the network, whether that be because the Master loses power or network connection, the Backup device will automatically take control of the rig.

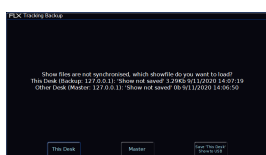
In the Synchronisation screen, the playback status table is shown, indicating which playbacks and cues are currently running on the master device currently in control (Stack 0 is the Master Playback).

A **Take Control!** button is provided in the Synchronisation screen, giving the option for the backup device to manually take control. Pressing this, would then result in the Master console tracking and backing up the Backup device, and the Master would then be displaying the Synchronisation screen.



If the Master has gone offline, the Backup will automatically take control. If the Master then comes back online, it will not automatically take control again. Instead, the Master will display a Take Control button, and the Backup device will alert you that the Master has come back online (pictured).

You can then choose for the Backup device to go back to tracking the master.



If whilst the Master has been offline changes have been made to the show file on the Backup device, again you can choose which show file you wish to use.

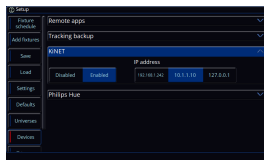
On ZerOS Server, when Tracking Backup is enabled to either Master or Backup modes, the IP address and subnet of Tracking Backup are displayed on the front display when the "Backup" LED is illuminated. The IP address will be displayed first, and then the display will cycle to show the subnet.

If you see 0.0.0.0 shown on the front display when the "Backup" LED is illuminated, this means ZerOS Server's Tracking Backup IP has been set to DHCP, however there is no DHCP Server on the network.

KiNET

KiNET, an Ethernet-based lighting control protocol from Color Kinetics, is designed to enable larger lighting projects and provide control over luminaires which is beyond the limitations of other protocols. ZerOS can use KiNet to control a range of Color Kinetics architectural luminaires.

[Click here to find out more about Color Kinetics](#)



KiNET can be enabled from the Devices tab of Setup, in the KiNET panel. Once enabled, the KiNET protocol network settings can then be configured.

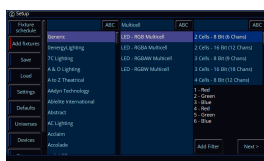
IP ADDRESS

The IP address options will allow you to configure KiNET network settings. You can choose between using a DHCP address, or a static IP address.

KiNET will be set to a Static IP address of 10.0.0.1 (Subnet Mask 255.0.0.0) by default.

[For information on network settings, see the Networking chapter.](#)

Once KiNET has been configured, KiNET devices on the network will then automatically appear in the Devices tab. For each KiNET device that appears, you can use the device's Universe field to assign a Desk Universe to it. Fixtures can be patched onto this assigned Desk Universe in the usual way from Add Fixtures.



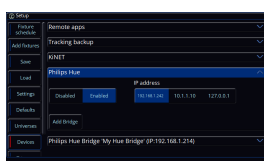
If patching Color Kinetics fixtures with multiple cells, go to Add Fixtures, and under Generic, you can choose an RGB, RGBA, RGBAW or RGBW multicell fixture. You can then choose the relevant number of cells from the Mode column.

Philips Hue



FLX S24, FLX S48, FLX and ZerOS Server can control the full range of Philips Hue Smart Light Bulbs and Philips Hue Smart Plugs when connected via Ethernet to a Philips Hue Bridge. Smart Light Bulbs are controlled within ZerOS in the same way as a LED fixture, whilst Smart Plugs are controlled like a relay. These can be programmed into standard cues, allowing simultaneous control with the rest of the entertainment lighting system.

[Click here to head to the Philips Hue website](#)



Philips Hue can be enabled from the Devices tab of Setup, in the Philips Hue panel. Once enabled, the Philips Hue network settings can then be configured.

IP ADDRESS

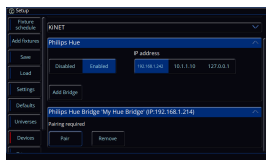
The IP address options will allow you to configure the Philips Hue network settings. You can choose between using a DHCP address, or a static IP address.

The Hue connection will be set to a Static IP address of 192.168.1.10 (Subnet Mask 255.255.255.0) by default.

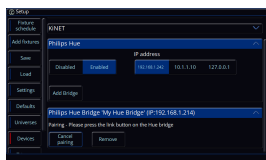
Hue Bridges will default to DHCP. Therefore, if you have a DHCP server on your console's network, you will be able to connect the Hue Bridge, and simply choose **DHCP** on your console. The DHCP server will then ensure your console and your Hue Bridge can talk to one another. If you do not have a DHCP server on your console's network, the Hue Bridge's network settings will need to be manually configured, to a static IP address in range of your console.

[For information on network settings, see the Networking chapter.](#)

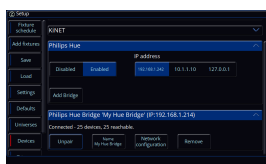
Philips Hue Smart Bulbs and Smart Plugs must be paired to a Hue Bridge first, prior to connecting the Hue Bridge to your console. To pair Hue Smart Bulbs and Smart Plugs with a Hue Bridge, the Hue Bridge must be connected to the Internet. Once paired, the Hue Bridge can then be connected to your console's network.



Once the network settings have been configured, Hue Bridges on your console's network should automatically appear after a few seconds, and will be displayed as separate panels in the Device tab. Once a Hue Bridge has been found, it will be displayed with its name and IP address shown.



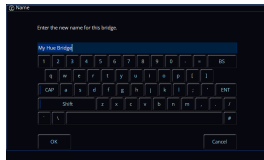
You will then need to pair your console with your Hue Bridge. To do this, click the "Pair" button in the Hue Bridge's panel within the Devices tab. The console will then be ready to pair. You can then press the large link button on top of the Hue Bridge.



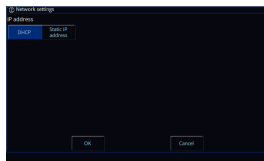
Once paired, ZerOS will detect all of the Smart Light Bulbs and Smart Plugs that may be connected to the Hue Bridge, and add them into the console. This functionality is very similar to RigSync detecting and patching RDM fixtures.

Once ZerOS has been paired with a Hue Bridge, it will have control. No other Philips Hue controls, such as Smart Switches or the Philips Hue app, will be able to take control, until ZerOS has been unpaired.

After all the Smart Light Bulbs and Smart Plugs have been added in, you can then exit Setup on your console by tapping the **Setup** key. You will then be able to control and program the connected Smart Light Bulbs and Smart Plugs. The Smart Light Bulbs and Smart Plugs will be named using their preconfigured Hue names.



Hue Bridges can be renamed from ZeroOS. To rename a Hue Bridge, click the Name button within a Hue Bridge's panel in the Devices tab.

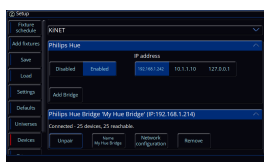


It is possible to remotely change a detected Hue Bridge's network settings from ZeroOS. To do this, click the "Network Configuration" button within the Hue Bridge's panel in the Devices tab. You can then choose whether the bridge is set to DHCP, or a Static IP address.

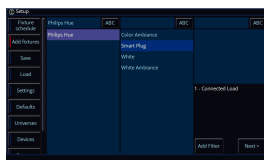


If a Hue Bridge does not automatically appear in Devices, ensure the network settings on both the Hue Bridge and ZeroOS are correct.

If you need to manually connect to a Hue Bridge, click the Add Bridge button in the Philips Hue panel, and type in the IP address of your bridge.



To remove a Hue Bridge that has been manually added, click the Remove button within the added Hue Bridge's panel.

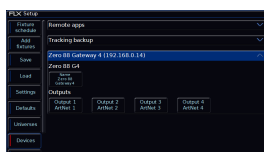


Philips Hue Smart Light Bulbs and Smart Plugs will be automatically added, but are also available in Add Fixtures.

Philips Hue Gradient lights will be treated as a single full colour Smart Bulb, with a single set of colour controls for the whole strip.

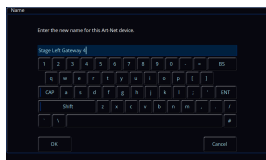
Art-Net Devices

If you enable the Art-Net protocol in the Universes tab of Setup, any Art-Net devices ZeroOS can see will be displayed in the Devices tab.



In this image, [Zero 88 Gateway 4](#) can be seen by ZerOS. This is how most Ethernet to DMX gateways (sometimes referred to as "nodes") will be displayed in Devices.

In the panel header of an Art-Net device, the name of the device will be displayed, along with the IP address.

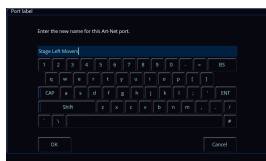


The name of Art-Net devices can be customised, by clicking on the "Name" field in the device's panel. This is very useful if you have multiple gateways in different locations, so you know which is which.



You can also remotely configure the individual DMX Output ports of the gateway using the "Outputs" fields. This allows you to choose which Art-Net universe that physical port will output. For example, you may configure all the ports to output Art-Net universe 1.

With some Ethernet to DMX Gateways, such as Gateway 4 and Gateway 8, you can remotely configure whether the port outputs streaming ACN or Art-Net data. This allows you to use the sACN standard for your DMX over Ethernet, and then just use Art-Net for configuration and monitoring. This is configured with the switch at the bottom of the Output port configuration window, if your particular Ethernet to DMX gateway has this capability.



Some Art-Net devices allow their individual DMX Output ports to be renamed. If they do, a "Port Label" field will be available to the left of the "Cancel" button.

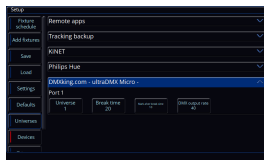
For example, if port 2 of the gateway is outputting universe 2, and your Stage Left Movers are on universe 2 connected to that port, you could rename the port, so you know exactly which fixtures are connected to this physical DMX output.

If you change a setting of an Art-Net device, but the setting reverts a second or two later, this suggests the device does not allow its settings to be remotely configured. Consult your Art-Net device's manual for configuration information.

Enttec USB to DMX Devices

USB to DMX devices which use Enttec's DMX USB Pro Widget API will be displayed within this panel. Many USB to DMX devices from many different manufacturers support this API.

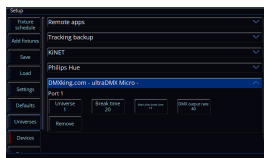
[Click here to find out more about Enttec](#)



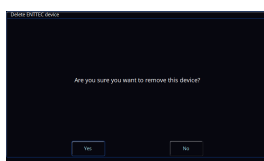
This image shows a [DMX King ultraDMX Micro](#) dongle connected to ZerOS.

The Desk Universe output from the USB to DMX dongle's port can be configured using the "Universe" field. The Enttec USB to DMX protocol allows for DMX timings to be edited, such as the Break Time (BT), Mark After Break Time (MAB) and DMX Output Rate (Hz).

The options available for each device depend on the device present.



Upon unplugging a USB to DMX device, the device will remain displayed in the Devices tab of Setup. This allows you to continue configuring it. These settings will then take affect when the device is plugged back in. A Remove button is shown to allow you to Remove the device from the console.



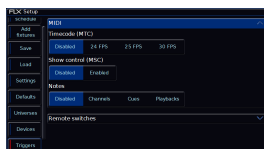
Upon clicking Remove, ZerOS will ask you to confirm the operation.

RDM Devices

Some RDM devices are not "fixtures", and don't have any DMX control channels. If RigSync discovers an RDM device with no DMX channels, the device will be displayed in the Devices tab of Setup, along with options applicable to that device.

[Click here for information on RigSync](#)

Triggers



The "Triggers" tab within Setup allows you to configure any triggers entering the console.

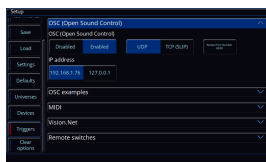
Click on the different methods of triggering ZerOS consoles to find out more...

- [OSC](#)
- [MIDI Timecode \(MTC\)](#)
- [MIDI Show Control \(MSC\)](#)
- [MIDI Notes](#)
- [Vision.Net](#)
- [CAN](#)
- [Remote Switches](#)
- [DMX In](#)

OSC

ZerOS can receive triggers over OSC. Support includes Cues (Go, Pause, Next), Playbacks (Go, Pause, Playback Level with optional fade time, Release, View), Macros, Grand Master (with optional fade time) and Blackout.

[Click here to find out about OSC](#)



OSC can be enabled from the Triggers tab of Setup, in the OSC panel. Once enabled, the OSC protocol network settings can then be configured.

OSC differs from other protocols that can be configured in ZerOS. This is because the network port number that OSC is received on can be customised. ZerOS uses "8830" as the default port number, but this can be configured using the **Receive Port Number** field.

OSC messages can also be sent as "UDP" or "TCP (SLIP)". The setting in ZerOS will need to match the option set in the application sending the OSC messages. UDP is the default setting.

IP ADDRESS

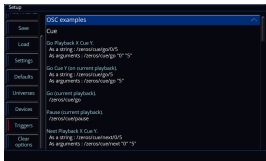
The IP address options will allow you to configure your OSC network settings. You can choose between using a DHCP address, or a static IP address.

OSC will be set to a Static IP address of 192.168.1.10 (Subnet Mask 255.255.255.0) by default.

Once configured, your console will be listening for OSC commands.

[For information on network settings, see the Networking chapter.](#)

OSC Examples



The OSC Examples section of the Triggers tab, lists all of the OSC commands that ZerOS can receive.

Commands can be received as a string, as an argument (with or without quotes) or combined. For example, the following commands would all trigger Cue 5 of Playback 1:

- /zeros/cue/go/1/5
- /zeros/cue/go/1 "5"
- /zeros/cue/go "1", "5"
- /zeros/cue/go "1/5"

The below table lists all available commands. Where alternative "shorthand" commands are listed in the same cell, these are interchangeable - made available to speed up programming. For example "/zeros/cue/go" and "/lx/q/go" have identical functionality - the first being easier to read, and second being quicker to type.

1st	2nd	3rd
/zeros /flx /lighting /lx	/cue /q	/go
		/pause
		/next
	/playback /pb	/go
		/pause
		/level
		/release
		/view
	/blackout /bo /dbo	
	/grandmaster /gm	/level <i>(can be omitted)</i>
	/macro	

Find out about the types of OSC messages...

- [Cue](#)
- [Playback](#)
- [Macros, Grand Master & Blackout](#)
- [Unsupported](#)

Cue

Go

	String	Combined	Argument (with or without quotes)
Go Playback X Cue Y	/zeros/cue/go/X/Y	/zeros/cue/go/X "Y"	/zeros/cue/go "X", "Y" /zeros/cue/go "X/Y"
Go Cue Y (current playback)	/zeros/cue/go/Y		/zeros/cue/go "Y"
Go (current playback)	/zeros/cue/go		

Pause

	String	Combined	Argument (with or without quotes)
Pause (current playback)	/zeros/cue/pause		

Next

	String	Combined	Argument (with or without quotes)
"Next" Playback X Cue Y	/zeros/cue/next/X/Y	/zeros/cue/next/X "Y"	/zeros/cue/next "X", "Y" /zeros/cue/next "X/Y"
"Next" Cue Y (current playback)	/zeros/cue/next/Y		/zeros/cue/next "Y"

Playback

Go

	String	Combined	Argument (with or without quotes)
Go Playback X	/zeros/playback/go/X		/zeros/playback/go "X"
Go (current playback)	/zeros/playback/go		

Pause

	String	Combined	Argument (with or without quotes)
Pause Playback X	/zeros/playback/pause/X		/zeros/playback/pause "X"
Pause (current playback)	/zeros/playback/pause		

Playback levels

	String	Combined	Argument (with or without quotes)
Playback X to level Y% over Z seconds	/zeros/playback/level/X/Y	/zeros/playback/level/X "Y"	/zeros/playback/level "X", "Y"
	/zeros/playback/level/X/Y/Z	/zeros/playback/level/X/Y "Z" /zeros/playback/level/X "Y", "Z" /zeros/playback/level/X "Y/Z"	/zeros/playback/level "X/Y" /zeros/playback/level "X", "Y", "Z" /zeros/playback/level "X/Y/Z"
<i>Level in %. Optional fade time, in seconds If fade time is not set, ZerOS will use the raise/lower time ("move" rather than "fade")</i>			

Release

	String	Combined	Argument (with or without quotes)
Release Playback X	/zeros/playback/release/X		/zeros/playback/release "X"
Release (current playback)	/zeros/playback /release		

View

	String	Combined	Argument (with or without quotes)
View Playback X	/zeros/playback/view/X		/zeros/playback/view "X"

Macros, Grand Master & Blackout

	String	Combined	Argument (with or without quotes)
Run User Macro X	/zeros/macro/X		/zeros/macro "X"
Grand Master to level Y% over Z seconds	/zeros/grandmaster/level/Y /zeros/grandmaster/level/Y/Z	/zeros/grandmaster/level/Y "Z"	/zeros/grandmaster/level/ "Y" /zeros/grandmaster/level "Y", "Z"
	/zeros/grandmaster/Y /zeros/grandmaster/Y/Z	/zeros/grandmaster/Y "Z"	/zeros/grandmaster "Y" /zeros/grandmaster "Y", "Z"
	<i>Level in % (The word "Level" is optional within the string. It is not required but can be included to match the equivalent Playback level command). Optional fade time, in seconds</i>		
Blackout	/zeros/blackout/X		/zeros/blackout "X"
	<i>To turn Blackout on, X can = "1", "on", "enable", "enabled", or "true" To turn Blackout off, X can = "0", "off", "disable", "disabled", or "false"</i>		

[Click here to view these examples as a PDF](#)

Unsupported Commands

Time tag

OSC allows for time tags within "bundles" of messages. ZerOS only supports bundles of messages with the time value of "immediately". If a timestamp is present, ZerOS will ignore the WHOLE message and not run the command.

Wildcards

OSC allows for wildcards. ZerOS does not support wildcards. If a wildcard is present, ZerOS will ignore the WHOLE message and not run the command.

MIDI Timecode

A MIDI signal can be connected to your console using 5 pin DIN connectors, inserted into the MIDI Input port. There is also a MIDI Thru port, which can be used for daisy chaining other MIDI devices in your system. ZerOS does not support MIDI over USB protocols, and therefore to connect to software packages you may need a USB to MIDI interface box.

The Zero 88 team use the [MOTU FastLane USB MIDI interface](#) for testing and demonstrations using [QLab](#).

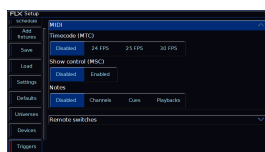
MIDI Timecode (MTC) is a clock signal, with time given in Hours:Minutes:Seconds:Frames. Any cue across any playback can be assigned a Time Code stamp, meaning that when this clock time is received from a MTC clock source, this cue will be triggered. This is configured by opening the settings of the cue you would like to trigger, and from the Trigger drop down menu choose MIDI. You can then define the time, and click OK.

[Click here to find out more.](#)

MTC has the option to be streamed in 24 fps (frames per second), 25 fps, and 30 fps. When a MTC signal is present, ZerOS will automatically detect the frame rate. If you wish to define timings before a clock signal is present, tap **Setup** -> **Triggers** -> Time Code, and choose the frame rate.

To see the incoming MIDI clock signal, view a playback, and along the bottom of the cue list you should see "Realtime" displayed in the status bar. Press this, and this will take you to your MIDI Time Code clock.

To use MIDI Timecode (MTC), there needs to be a MTC clock source, which is commonly a software package such as QLab running on a computer. The MTC clock source is typically started on a computer at the same time as an audio track, to allow lighting, sound, and other departments, to be synchronised.



The MIDI Timecode frame rate can be configured in the Triggers tab.



Watch this quick video for an introduction to time codes

<https://youtu.be/KgtmkD9K0co>

If you wish to Timecode cues to multiple songs, it is common to record each song as a separate playback, containing all the lighting states required for that song. In each cue's settings, you can then put the MTC time stamp this cue needs to run at. A common way to do this, is start each song at a new hour. Therefore track one outputs timecode at 1:00:00:00, song two at 2:00:00:00 and so on.

MIDI Show Control

A MIDI signal can be connected to your console using 5 pin DIN connectors, inserted into the MIDI Input port. There is also a MIDI Thru port, which can be used for daisy chaining other MIDI devices in your system. ZerOS does not support MIDI over USB protocols, and therefore to connect to software packages you may need a USB to MIDI interface box.

The Zero 88 team use the [MOTU FastLane USB MIDI interface](#) for testing and demonstrations using [QLab](#).

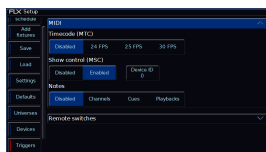
The MIDI Show Control (MSC) protocol is a suite of messages that can be used to trigger lighting cues. The MSC source is often a computer software package, with a USB to MIDI interface. MSC can be used to trigger the lighting in sync with other media (such as sound & video).

MIDI Show Control messages consist of a "Q_List" and Q_Number" ID. Therefore a Q_List 0, Q_Number 2 message, will be triggering cue 2 on the Master Playback.

If the received MSC message has a blank Q_List ID, ZerOS will trigger cues on the currently viewed playback.

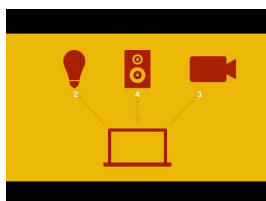
Action commands supported by ZerOS are:

- GO - Go will trigger the cue number defined in the MSC message. If no cue number is defined, the next cue in the playback will be trigger using its fade time.
- STOP - Stop will pause the defined playback.
- LOAD - Allows you to choose the next cue, without going to it.
- ALL_OFF - Blackout
- RESTORE - Turn Blackout off (opposite of All_Off).
- RESET - Go to cue 0.



To enable MIDI Show Control, go into Setup, and enable MIDI Show Control. You can then define the MIDI Device ID, which by default will be 0. The MSC source can "tag" a MSC message with a Device ID, so that only the device with the defined ID in the MIDI daisy chain will listen to the message - a little bit like a DMX address in a DMX daisy chain.

If you choose a Device ID of 127, ZerOS will listen to all Device IDs.



https://youtu.be/IUIWG0jW_SM

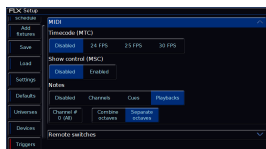
Watch the quick video for an introduction to MIDI Show Control.

[To see the incoming MIDI Show Control commands, go to the Event Monitor window. Click here to find out more.](#)

MIDI Notes

A MIDI signal can be connected to your console using 5 pin DIN connectors, inserted into the MIDI Input port. There is also a MIDI Thru port, which can be used for daisy chaining other MIDI devices in your system. ZerOS does not support MIDI over USB protocols, and therefore to connect to software packages you may need a USB to MIDI interface box.

The Zero 88 team use the [MOTU FastLane USB MIDI interface](#) for testing and demonstrations using [QLab](#).



ZerOS supports the MIDI Notes protocol input. In the Triggers tab of Setup, you can define whether these Note commands trigger Channels, Cues or Playbacks.

After choosing **Channels** , **Cues** , or **Playbacks** , select the MIDI Notes **Channel #** . This is essentially your console's MIDI address, so that if you have multiple devices listening to a MIDI Notes source, your console can be unique.

You can then use a MIDI Notes source, to send a Note Number, and that Note's velocity. MIDI Notes sources could be a software package running on a computer (with an appropriate USB to MIDI interface), or could be a MIDI button bank, or MIDI keyboard.

Combine Octaves

When MIDI Notes Octaves are combined, only the first 11 Channels, Cues or Playbacks can be triggered. For example, if MIDI Notes is set to trigger channels:

- Note 1 thru Note 11 triggers Fixture 1 thru 11
- Note 13 thru Note 23 triggers Fixture 1 thru 11
- Note 25 triggers Fixture 1, and so on.

Separate Octaves

When MIDI Notes Octaves are separate, the first 127 Channels, Cues, or Playbacks can be triggered. The "First Note" field can be used to set a MIDI Notes offset. For example, if MIDI Notes is set to trigger channels:

- When First Note = 0 : Note 1 triggers Fixture 1
- When First Note = 1 : Note 2 triggers Fixture 1

Channels

MIDI Note-On and Note-Off commands can be used to turn fixture intensities on or off respectively. MIDI Notes intensity control is mixed HTP with ZerOS outputs. Velocity information from the Note-On commands is used to determine the fade up time, and velocity information from the Note-Off commands is used to determine the fade down time. The Note Number controls the console fixture number. A Velocity of 0 will not trigger the channel. A velocity of 1 will give a 5 second fade time to full, and as the velocity is increased, this will shorten the fade time, until you reach a velocity of 127 which will Snap.

Cues

A MIDI Note On command, will trigger the same cue number as the note number. For example a MIDI Note On of Note Number 10, will trigger cue 10. The playback used is the currently viewed/selected playback. Programmed Fade times are used, and velocity information is ignored.

MIDI Notes only allows for whole note numbers. Therefore if you have point cues you wish to trigger, you will need to renumber the cues in the playback. To do this hold **Setup** and tap the playback's button, and from the settings choose Advanced -> Renumber.

If you wanted to simply emulate a Go button press with the same MIDI Note command, you can do this through programming a Macro.

Firstly, program a macro that presses your Go button. You can do this by tapping RECORD MACRO x ENTER (where x is an empty macro number) -> Keys -> Press your Playback's Go button -> MACRO. Now, view an empty playback, and program an empty cue. Go into this cue's settings -> Macros... -> Macro Add -> Choose your Macro -> OK -> OK. Now, whenever you send a MIDI Note 1 command and you are viewing this playback with a single macro trigger, it will emulate a Go button press of your main cue stack.

Playbacks

MIDI Note-On and Note-Off commands can be used to turn playbacks on or off respectively. Playback levels are mixed HTP with physical fader positions to control the level of the playback. Velocity information from the Note-On messages is used to determine the fade up time, and velocity information from the Note-Off commands is used to determine the fade down time. MIDI Notes are mapped 1 to 1 with playbacks. Therefore, MIDI Note 0 will trigger the Master Playback, MIDI Note 1 will trigger playback 1, and so on. Velocity of 0 will not trigger the playback. A velocity of 1 will give a 5 second fade time to full, and as the velocity is increased, this will shorten the fade time, until you reach a velocity of 127 which will Snap.

Vision.Net

Vision.Net, a command protocol from Vari-Lite, is designed to fully integrate lighting systems that scale from a single room to large multi-building campuses. ZerOS consoles can be triggered using Vision.Net button panels, touchscreens, sensors and I/O modules.

[Click here to find out more about Vision.Net](#)

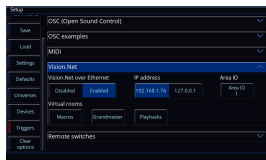
The Vision.Net protocol has 0-255 Room IDs. Within a Vision.Net Room, you can send "Presets" or "Levels":

- A Room can have 0-32 Presets, which can be used to trigger cues on a particular playback, or trigger macros.
- A Room can have 0-127 Levels messages, which can be used to control the levels of playbacks or the Grand Master. Levels come in three forms, but are received by ZerOS in the same way, so any can be used:
 - "Slider Stations" (VN Message ID 4)
 - "Submasters" (VN Message ID 17)
 - "Sliders" (VN Message ID 19)

ZerOS can receive Vision.Net messages over the network via Ethernet, or over RS485 via the physical DMX ports.

[Click here for information on receiving Vision.Net commands using the console's DMX ports.](#)

Vision.Net Over Ethernet



To receive Vision.Net over Ethernet, enable Vision.Net from the Triggers tab of Setup in the Vision.Net panel. Once enabled, the Vision.Net protocol network settings can then be configured.

IP ADDRESS

The IP address options will allow you to configure your Vision.Net network settings. You can choose between using a DHCP address, or a static IP address.

Vision.Net will be set to a Static IP address of 192.168.1.10 (Subnet Mask 255.255.255.0) by default.

[For information on network settings, see the Networking chapter.](#)



When using Vision.Net over Ethernet, you have 1-1000 Area IDs. Each of these areas contains the standard 0-255 Vision.Net Room IDs. This is a bit like DMX - when using RS485, you have a single universe ("Area" in Vision.Net), whereas when using Ethernet, you have multiple universes ("Areas" in Vision.Net).

ZerOS can be assigned an Area ID, so that it will receive messages within this Area. By default, Vision.Net devices default to an Area ID of 1. However, if you would like ZerOS to be triggered by Vision.Net devices on a different Area ID, the Area ID can be changed by clicking the **Area ID** button in the Vision.Net settings.

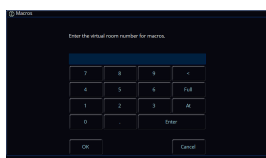
Virtual Rooms

Once Vision.Net has been enabled, you then need to tell the console which Vision.Net Room ID you are using, and what part of ZerOS you want your Preset/Level messages to control. The following aspects of ZerOS can therefore be assigned to a particular Vision.Net Room...

- [Macros](#)
- [Grandmaster](#)
- [Playbacks](#)
- [Cues](#)

Macros

Macros on the console can be triggered using Vision.Net Preset commands. Vision.Net Presets 1-32 are mapped 1 to 1 with Macros on the console.



To trigger macros using Vision.Net commands, click the Macros button under Virtual rooms in the Vision.Net settings. Vision.Net preset commands with this room number, will then trigger their respective macro number.

So if Macros are assigned a room of 2, and ZerOS receives a Vision.Net Room 2, Preset 5 message, this will trigger macro 5.

[Click here to find out more about Macros](#)

Grandmaster

The Grandmaster level on the console can be adjusted using Vision.Net Level messages, by using Vision.Net Raise & Lower buttons, or Vision.Net Sliders/Submasters.



The Grandmaster can be assigned a room by clicking "Grandmaster" under Virtual rooms in the Vision.Net settings. Level 0 messages within the assigned room, will adjust the Grandmaster.

Playbacks

The levels of the console's playbacks can be adjusted using Vision.Net Level messages. Vision.Net Level messages are mapped 1 to 1 with playbacks.

As well as controlling playback levels with Vision.Net Level messages, playbacks can be triggered and released by sending Vision.Net Toggle Up or Toggle Down commands.

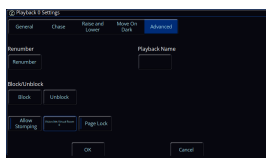


Playbacks can be assigned a room by clicking "Playbacks" under Virtual Rooms in the Vision.Net settings. Vision.Net Level messages and Toggle messages within the assigned room, will control playbacks.

So if the Playbacks room is set to 2, and you receive a VN Channel 5 Toggle Down message, within Room 2, playback 5 will be triggered. A VN Channel 5 Toggle Up message, within Room 2, will release playback 5.

Cues

Any programmed cue, can be triggered with Vision.Net Preset commands by assigning a particular playback a room number.



To assign a playback a room number, press and hold Setup, and tap a playback's button, to open the playback's settings. Go to the Advanced tab at the top, and then choose the Vision.Net Virtual Room button.



You can then enter the room number. If ZerOS receives Vision.Net preset commands with this room number, the preset number will trigger the respective cue number in the playback.

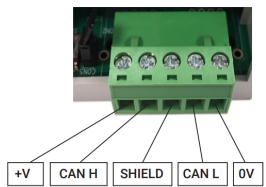
So if playback 1 is given a room number of 2, and ZerOS receives a Vision.Net Room 2, Preset 3 message, this will trigger cue 3 on playback 1.

CAN

ZerOS Servers are available in CAN variants. ZerOS Servers with CAN are able to accept iCAN triggers from architectural lighting networks, to control DMX lighting networks.

This is done using the green phoenix connector on the rear of the server. If your ZerOS Server has a blanking plate instead of a green iCAN connector, CAN settings will be hidden from the Triggers tab of Setup.

Connecting ZerOS Server to the iCANnet Network

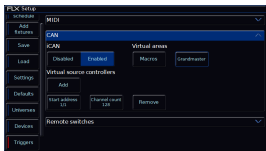


The phoenix connector uses this pinout.

Function	iCANnet Cable Colours
0V	Black
CAN L	Blue
Shield	Silver
CAN H	White
+VDC	Red

These colours are used.

Configuring CAN



CAN will be enabled by default on ZerOS Servers with CAN. When enabled various iCAN settings can be changed.

CAN Virtual Areas

The iCAN protocol sends "Area" number commands and "Scene" number commands. Areas can be mapped to Macros, the Grand Master, or Playbacks.

Grand Master

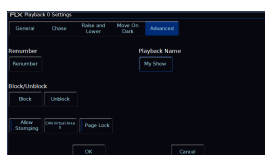
The Grand Master can be assigned a virtual Area Number from the Triggers tab of Setup. Scene Modify messages can be used to alter the current Grandmaster level (Latest Takes Precedence with the physical fader).

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 in the Triggers tab of Setup.

Playbacks

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. To map an area number to a playback, go into the playback settings.



To open the settings of a playback press and hold Setup and tap the playback's button. Then choose Advanced from the top and enter a number into 'CAN Virtual Area'.

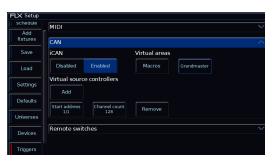
Scene messages will trigger the relative cue within that playback (Scene 1 = Cue 1 etc.). This means a Scene 0 will trigger cue 0 of that playback, turning off any active cues in the playback.

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.

An Area number of 0 means the playback will not be triggered by iCAN.

Virtual Source Controller

ZerOS Server can be configured to emulate a Source Controller. This allows DMX from ZerOS Server to be controlled as 'physical channels' of one or more virtual source controllers. Normal source controller operations of programming and outputting scenes are supported.



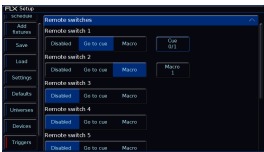
To do this, CAN must first be enabled within the Trigger tab of Setup. In the CAN settings of the Triggers tab, virtual Source Controllers can be created by pressing “Add”. Each virtual Source Controller requires a DMX Start Address and a number of Channels. Only create Source Controllers you intend 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.

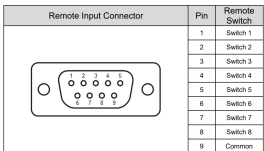
Remote Switches

There are 8 close-contact remote switches available. These can be wired in and configured to trigger either a specific cue or a macro when the circuit is made.



For each switch, choose between Disabled, Go to Cue, or Macro.

For Go to Cue, you can then type x/y, where x is the playback number and y is the cue number. Cue 0 of a playback can be triggered as a way to release it.



A 9 pin D-sub connector providing 8 remote switches (common ground) can be found on the rear of the console. Short pin 1-8 to pin 9 (common) to simulate a button push.

As well as the close contact input on the rear of the console triggering these remote switches, keyboard shortcuts can too. Ctrl-F1 to Ctrl-F8 will mimic a press of Remote Switch 1 through to 8, giving you 8 keyboard hotkey functions.

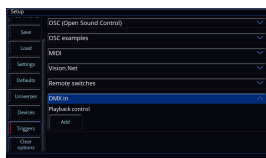
DMX In

ZerOS can receive a DMX input from an external DMX source, which allows another lighting console to remotely control playback levels in ZerOS.

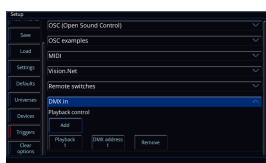
Some ZerOS consoles have a physical DMX input connector that can be used to receive DMX.

On FLX, FLX S24, FLX S48 & ZerOS Server, either of the physical DMX output ports can be configured as an input instead.

[Click here for information on configuring a DMX Output as a DMX Input](#)



The DMX In section in Triggers will be shown on consoles with a DMX input configured. An Add button is available, to allow you to map a DMX Input to a playback.



Upon pressing Add, a Playback field, and a DMX address field will appear. This allows you to choose which playback you wish to control, and the DMX address you wish to use to control it.

A Remove button is also available to remove DMX control from a playback.

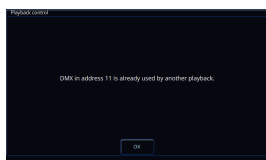
Once a playback has been assigned a DMX address, this playback's level can be controlled by the level of the respective DMX slot.

DMX Input levels will mix Highest Takes Precedence with playback levels in ZerOS.

If the level of the assigned DMX slot is @ 0, and the DMX slot level is snapped to full, this will emulate a press of the playback's button.

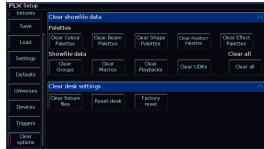


Once a playback has been configured, clicking Add another time, automatically populates the next playback number and DMX address.



If you attempt to assign a playback a DMX address that is already in use by another playback, you will receive an error message.

Clear Options



Clear options allows you to clear certain areas of the console, or reset the console back to factory settings. The Clear Options are split into Showfile Data, and Desk Settings.

Clear Show File Data

Data stored on the console is separated into nine types, each of which can be cleared independently to each other. Alternatively, **Clear All** will clear all nine types in one go, and therefore clear all programming on the console.

Options will only be shown if data has been created in the current show file for that data type. Selecting any of these options will offer confirmation before clearing. Once confirmed, this action cannot be undone.

These data types are:

- Colour Palettes
- Beam Palettes
- Shape Palettes
- Position Palettes
- Effect Palettes
- Macros
- Groups
- Playbacks
- User Definable Keys

Clear Desk Settings

Clear Fixture Files

A separate option, that is not included within **Clear All**, is **Clear Fixture Files**. This removes all custom fixtures from the console, that are not contained in the fixture library. It will therefore clear all fixtures which are displayed in red in the Fixture Schedule and Add Fixtures. It will not remove fixture files that are currently patched, meaning you can clear fixtures files knowing your programming won't be affected. It also means if you need to clear all custom fixtures apart from one, temporarily patch the one you want to keep, and then clear fixture files to remove the rest.

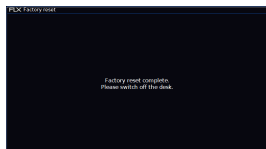
Unpin Add Fixtures

Fixture manufacturers & models that have already been patched, and fixtures that have been loaded into the console, will be "pinned" to the top of Add Fixtures. This allows you to easily patch a fixture you are already using again. To "unpin" fixtures that are no longer in use, tap **Setup** -> **Clear Options** -> **Unpin Add Fixtures**

Reset

Reset desk will reset all settings and data on the console, excluding network settings and touchscreen calibration. This cannot be undone.

Factory Reset completely wipes the console back to a fresh installation of ZerOS.



After confirming a Factory Reset, the console will need to be restarted.

Upgrade

If your console is fully upgraded to the maximum number of universes, the Upgrade tab in Setup will be hidden.

Therefore the Upgrade tab will be hidden on:

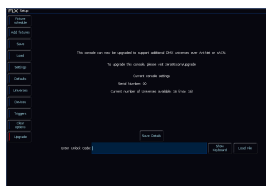
- 2 universe FLX S24 and FLX S48 consoles
- 16 universe FLX and ZerOS Server

The Upgrade tab will also be hidden in Phantom ZerOS, as Phantom ZerOS will run the fully upgraded variant of the chosen Desk Type.

FLX, FLX S24, FLX S48 and ZerOS Server have the ability to have their channel count upgraded in individual universe increments.

FLX and ZerOS Server, can be upgraded to a maximum of 16 universes of channels (8192 channels), patchable across the 64 desk universes. They can come as a 16 universe version from the factory, or have extra universes added at a later date.

FLX S24 and FLX S48 can be upgraded to a maximum of 2 universes of channels (1024 channels), patchable across the 64 desk universes. FLX S can either come as a 2 universe version from the factory, or have the additional universe added at a later date.



To upgrade, tap Setup, and choose "Upgrade", which will be the bottom tab from the left-hand options.

Then click **Save Details** to save a text file to USB which includes all the information required for the upgrade.

[Then, click here to email your console's Universe Upgrade file to us](#)

Once your universe upgrade has been approved, you will be emailed your console's universe upgrade code file. This can then be saved to a USB drive, and loaded into the console from **Setup** -> **Upgrade** -> **Load File**

After loading the unlock code, the console will then ask to be restarted. The next time the console boots, the extra universes will be unlocked.

Unlock codes are **not** transferable between consoles.

Shortcuts

This is a list of shortcuts you can use on the console. Explanations of each function are described in their relevant sections of the manual.

Shifted playback button function

Shift + Playback Button

Record All

Shift + Record

Move To

Shift + Copy

Jump to MFF Page 1

Page Up + Page Down

Snap to previous cue

Shift + Pause

Clear manual values, leaving selection

Shift + Clear

Fan parameters

Shift + dial encoder

Highlight

Shift + Home

Next

Shift + ->

Previous

Shift + <-

Select fixtures above 0%

Enter Enter

Select All Fixtures

1 Thru Enter

100% Intensity

@ @

0% Intensity

@ .

Blind

Shift + Z

Show Output Window

(or reverse cycle desktops with external monitor enabled)

Shift + View

Release a playback

Clear + Playback Button

Release all playbacks (except Master)

Clear + Fader Funct.

Tag/Untag an attribute

Clear + Attribute Key

Bring parameter onto command line

Shift + tap parameter name

Tag/Untag a parameter

Clear + jog an encoder

Home an attribute

Attribute Key + Home

Playback Settings

Setup + Playback Button

Attribute Settings

Setup + Attribute Key

UDK Settings

Setup + UDK

Lock

<- + -> + Enter

Name a group, palette or playback

Setup + tap

Keyboard Shortcuts

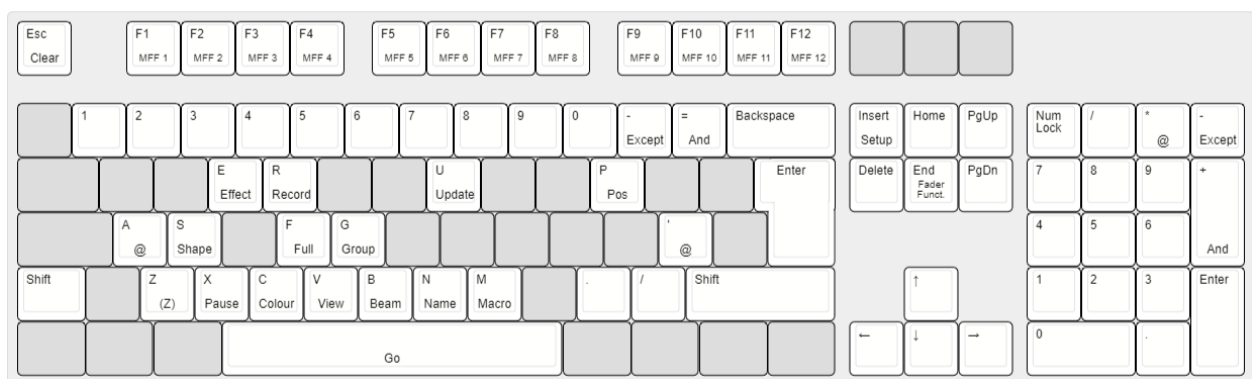
On FLX range consoles, a keyboard shortcut is available for many of the front panel buttons. These shortcuts can be used with a keyboard plugged into the console, Phantom ZerOS, or ZerOS Monitor for Windows, for remote use of the console. Some of these keyboard shortcuts can be used on other ZerOS consoles too.

Click your console to scroll down...

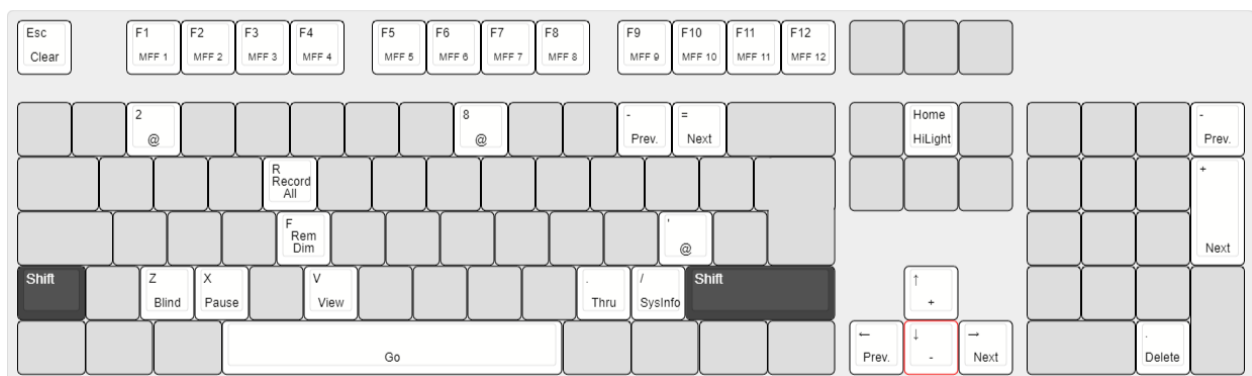
- FLX
- FLX S24 & FLX S48

FLX

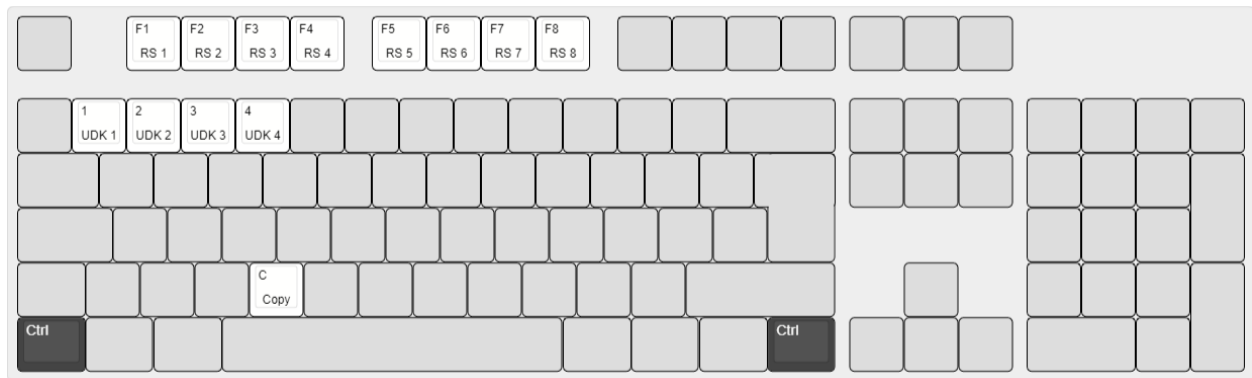
Normal Functions



FLX Keyboard functions with Shift held down



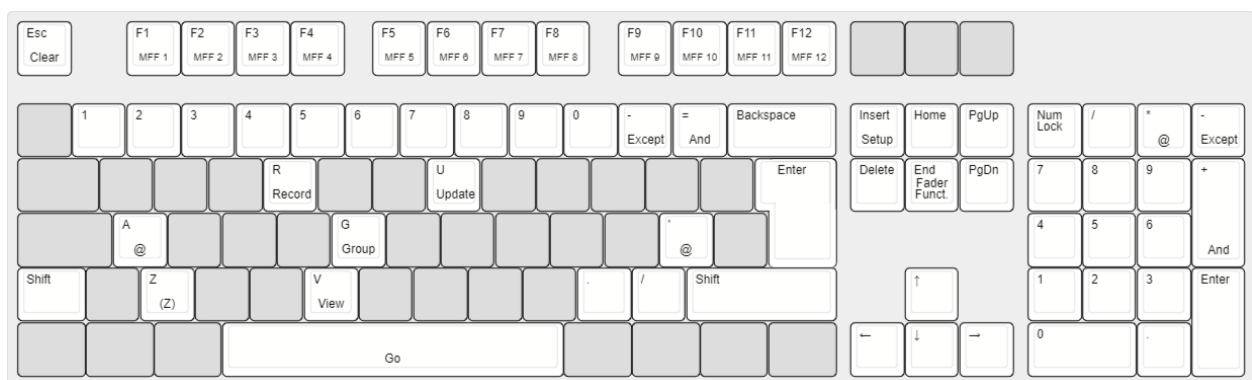
FLX Keyboard functions with Ctrl held down



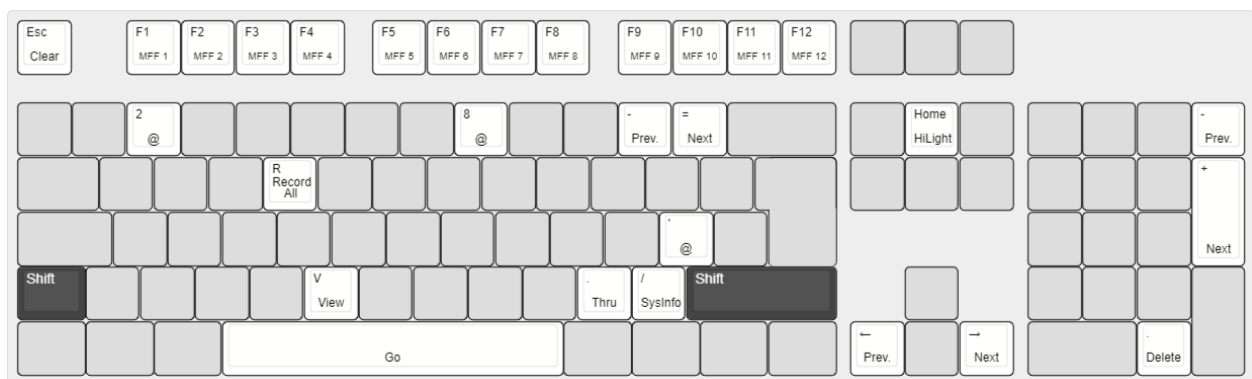
When Ctrl is held down, F1 through to F8 mimic Remote Switch triggers 1 through to 8. Remote switches can trigger macros or cues, meaning you can assign yourself eight hot key functions. [Click here for more information.](#)

FLX S

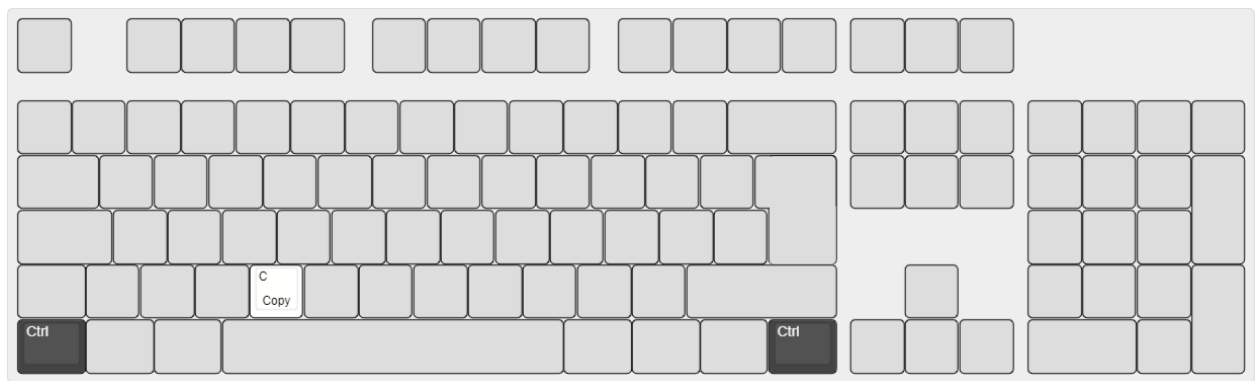
Normal Functions



FLX S Keyboard functions with Shift held down



FLX S Keyboard functions with Ctrl held down

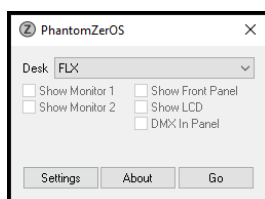


Phantom ZerOS

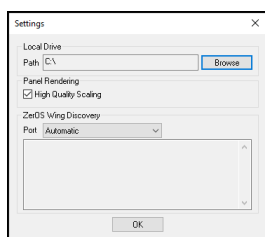
Phantom ZerOS is free software to download for Windows 10 PCs, that can emulate any ZerOS console. Show files can be loaded, edited, saved, and transferred to “real” consoles, useful to setup your show, or make slight changes while you’re not at the console.

Phantom ZerOS can also be used as a PC-based lighting controller when unlocked with a Phantom ZerOS Unlock Dongle. The Unlock Dongle allows Phantom ZerOS to output DMX over Ethernet or over USB. ZerOS WINGS can be connected to the PC running unlocked Phantom ZerOS, for hands on faders.

[Click here to download Phantom ZerOS.](#)



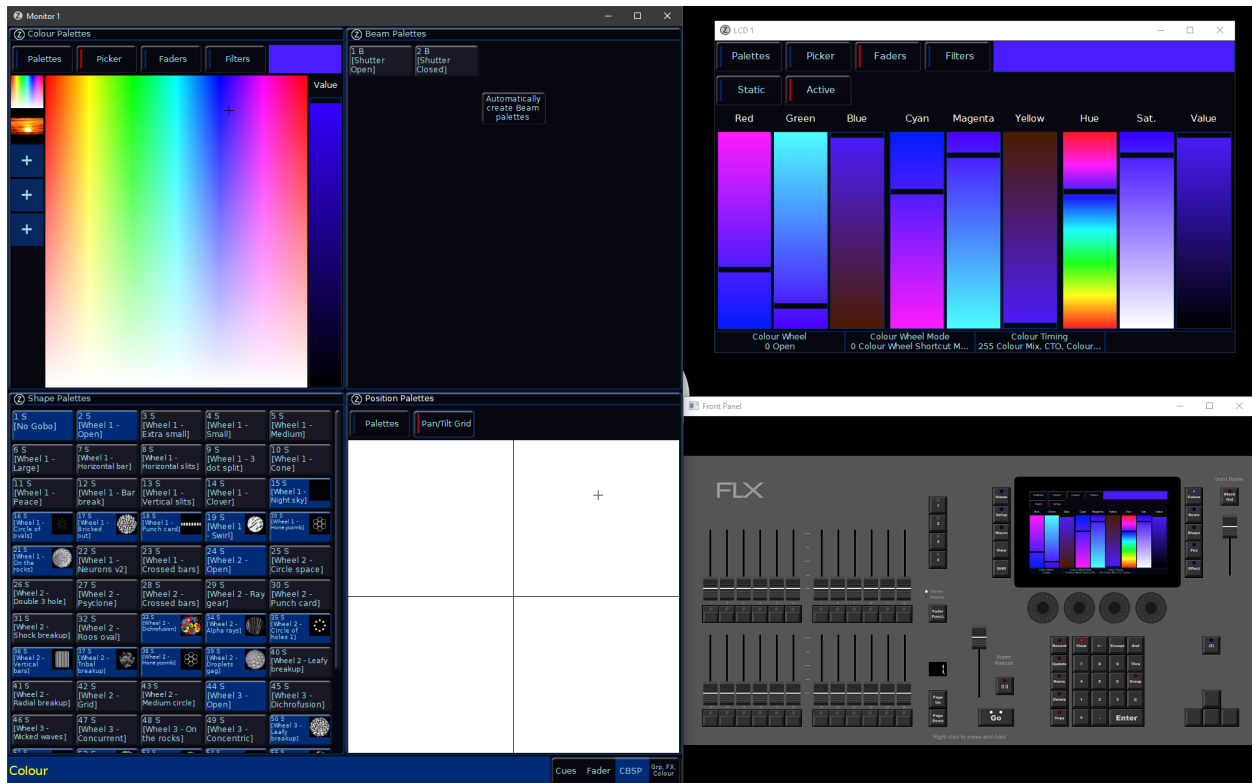
After installing Phantom ZerOS, upon opening Phantom ZerOS, you will be presented with the launcher. This is where you can use the "Desk" drop down to choose the Desk Type you wish Phantom to run as.



The Phantom Settings allow you to define the "Local Drive". This is the file location Phantom will be able to access to load and save files to.

Phantom will also be able to access other media, such as USB sticks and disk drives.

When configured, press "GO", to boot your Phantom console.



Use the Launcher tick boxes, to open the windows you need. The image above is a common layout to use with Phantom.

Note how the Monitor 1 window is the full left hand side of the screen - the quick way to do this is open the Monitor 1 window by clicking "Show Monitor 1" in the Launcher, and then hold the Windows Key and press the left arrow key, to snap it to the left hand side of your screen.

The "LCD" emulates the internal touchscreen.

You can now operate Phantom as you would the console it is emulating.

[Click here to find a list of handy keyboard shortcuts to use with Phantom.](#)

To hold down virtual buttons on the Phantom Front Panel window, right click on a button to hold it. Right click it again to release.

If the PC running Phantom ZerOS has a touchscreen, you can interact with the Phantom ZerOS Monitor window as if it were a touchscreen connected to a console.

If you don't have a touchscreen connected with Phantom ZerOS, you can right-click on a Phantom ZerOS screen, to emulate a touch-and-hold on the touchscreen. This allows multitouch functionality to fan in the Phantom ZerOS Colour Picker or Pan/Tilt Grid.

Networking

ZerOS supports various Ethernet communication protocols. These are used for sending DMX over a network, connecting to visualisation tools, using remote apps, and for creating a full tracking backup system.

FLX and ZerOS Server have an EtherCON connector on the rear panel for connecting them to a network. A female EtherCON connector 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 and other ZerOS consoles have a standard RJ45 connector on the rear panel for connecting them to a network. EtherCON connectors cannot be plugged into FLX S.

Watch the video below to find out more about Ethernet networks and an introduction to DMX over Ethernet protocols...



<https://youtu.be/4dVW5mGui2g>

Find out more about Ethernet Networking...

- [Building a Network](#)
- [IP Addressing](#)
- [DHCP](#)
- [ZerOS Network Settings](#)
- [Connecting to Capture](#)
- [Example Systems](#)
- [Using the Remote Apps](#)
- [Windows IP Configuration](#)
- [Wireshark](#)

Building a Network

If you wish to use the networking abilities of ZerOS, you will have to connect your console to your show network. "Show network", means the dedicated Ethernet network used to control your show. The term for a local network of devices is LAN (Local Area Network).

Your show network could be as simple as a single Ethernet cable linking your console to another device, or it could be a network with thousands of devices connected.

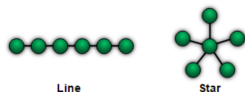
In many situations, it is useful to connect your ZerOS console, to just one device. For example, you may wish to connect your console directly to the following devices:

- DMX to Ethernet Gateway - to give you more physical DMX outputs from your console. The Ethernet gateway could be next to your console, or side of stage with a longer Ethernet cable
- Laptop - to connect to visualisation software on the laptop, or ZerOS Monitor software for an extra external monitor.

This can be done with a single Ethernet cable linking your console to the device. In these situations, there is no "DHCP Server" present.

[See the IP Addressing section for more information](#)

If you want to connect your console to more than one device, then you will need to use an "Ethernet Switch". An Ethernet Switch is used to connect multiple Ethernet devices together. Unlike DMX, Ethernet operates in a different topology. DMX is daisy chained (bus or line topology) from device to device, whereas Ethernet data is connected using a Star topology.



In this simple diagram, the Ethernet Switch would be symbolised by the middle dot of the Star Topology, with 5 devices connected to that switch.

You could start to expand your network, and have multiple Ethernet switches present. For example, one of the dots connected to the middle dot in the diagram above, could also be another Ethernet switch, allowing more devices to be connected to it.

For example, picture you have many Ethernet devices at your console's front of house position that need connecting, and then multiple devices side of stage. You could have an Ethernet switch front of house and side of stage, linked with a single Ethernet cable.

It is strongly recommended to not "daisy chain" Ethernet switches. If you are connecting multiple devices, it is better to use a few Ethernet switches with many ports, rather than lots of Ethernet switches connected to each other with fewer ports.

Zero 88 networking devices are designed for use within a dedicated, stand alone, private, local area network only, for the sole purpose of transmitting and/or receiving nonsensitive entertainment lighting control data. Although they utilize Ethernet networking, these devices should not be connected to the Internet.

IP Addressing

When network devices are physically connected, they then need to be configured to allow them to talk to one another.

Every device on a network needs a unique address, to be able to talk to one another.

IP Addresses

IP Addresses are a device's identity on an Ethernet network. They are formed of four 8bit numbers (with a value of 0-255), known as octets separated by dots. For example, 192.168.0.1. Every device needs an IP address, which can either be manually assigned to a device, or automatically assigned to a device by a [DHCP Server](#).

It is recommended (but not required) to use IP addresses within the following ranges:

- 10.0.0.0 - 10.255.255.255
- 172.16.0.0 - 172.31.255.255
- 192.168.0.0 - 192.168.255.255

These IP addresses have been reserved for use on local networks by IANA (Internet Assigned Numbers Authority).

Subnets

Every device, will also have a subnet mask along with their IP address. The subnet mask also uses the same format as IP addresses, with four octets separated by dots. The Subnet mask indicates what a device can see on the network. This is because the subnet mask is used to split the device's IP address into the "network address", and "host address".

There are three classes of subnets, also known as "natural masks":

- Class A - Subnet of 255.0.0.0 (can be displayed as a "/8" prefix after an IP address)
- Class B - Subnet of 255.255.0.0 (can be displayed as a "/16" prefix after an IP address)
- Class C - subnet of 255.255.255.0 (can be displayed as a "/24" prefix after an IP address)

As can be seen, working from octet one through to octet three of the subnet, each class changes the next octet to "255", rather than "0". Typically in show networks, subnets in use will either be a class A, B or C.

Put simply, if there is a "255" in an octet of a device's subnet, this device can only talk to other devices with an identical value in that octet of their IP addresses.

With a class A subnet, all devices must all have an identical first octet of their IP address, with the remaining octets not having to match. For example, all devices could have 10.x.y.z. The first available IP a device could use in the range would be 10.0.0.1, and the last would be 10.255.255.254. Every device must have a unique address within this range. In this example, "10" is considered the network address - any devices that want to talk must all be on network number 10. The remaining three octets "x.y.z" are then the host address - each device (or "host") has a unique address within that network number. 10.255.255.255 could not be used by a device on this network, as this address is known as the broadcast address. If information needs to be sent to everything on this network, it could be sent to 10.255.255.255, and all devices would receive it.

With a class C subnet, all devices must share the first three octets of their IP address, leaving only the last octet to be unique for the device. For example, 192.168.1.x where x can be any number between 0-254. Every device must have a unique address within this range. As you can see, with a class C subnet, only 254 different devices will be able to talk to one another. In this example, "192.168.1" is considered the network address. Any devices that want to talk on this network must all be on network number 192.168.1. The remaining octet "x" is the host address. Each device (or "host") must have a unique address within that network number. 192.168.1.255 could not be used by a device on this network, as this address is known as the broadcast address. If information needs to be sent to everything on this network, it could be sent to 192.168.1.255, and all devices would receive it.

For example, these two devices could talk:

- Device 1 - IP: 10.1.1.10, Subnet: 255.255.255.0
- Device 2 - IP: 10.1.1.20, Subnet: 255.255.255.0

They have a "class C" subnet, and therefore have the first 3 octets of their IP identical. "10.1.1" is the network address.

These devices could talk:

- Device 1 - IP: 10.1.2.10, Subnet - 255.255.0.0
- Device 2 - IP: 10.1.3.10, Subnet - 255.255.0.0

They have a "class B" subnet, and therefore have the first 2 octets of their IP identical. "10.1" is the network address.

These devices could not talk:

- Device 1 - IP: 10.1.2.10, Subnet: 255.255.255.0
- Device 2 - IP: 10.2.3.10, Subnet: 255.255.255.0

They have a "class C" subnet, and therefore the first 3 octets must match. In this example however, they don't, meaning device 1 is on network address "10.1.2", and device 2 is on network address "10.2.3".

Thankfully, there is a way of avoiding needing to worry about all this. Instead, we can use a DHCP server, to automatically assign your devices their required IP address and subnets.

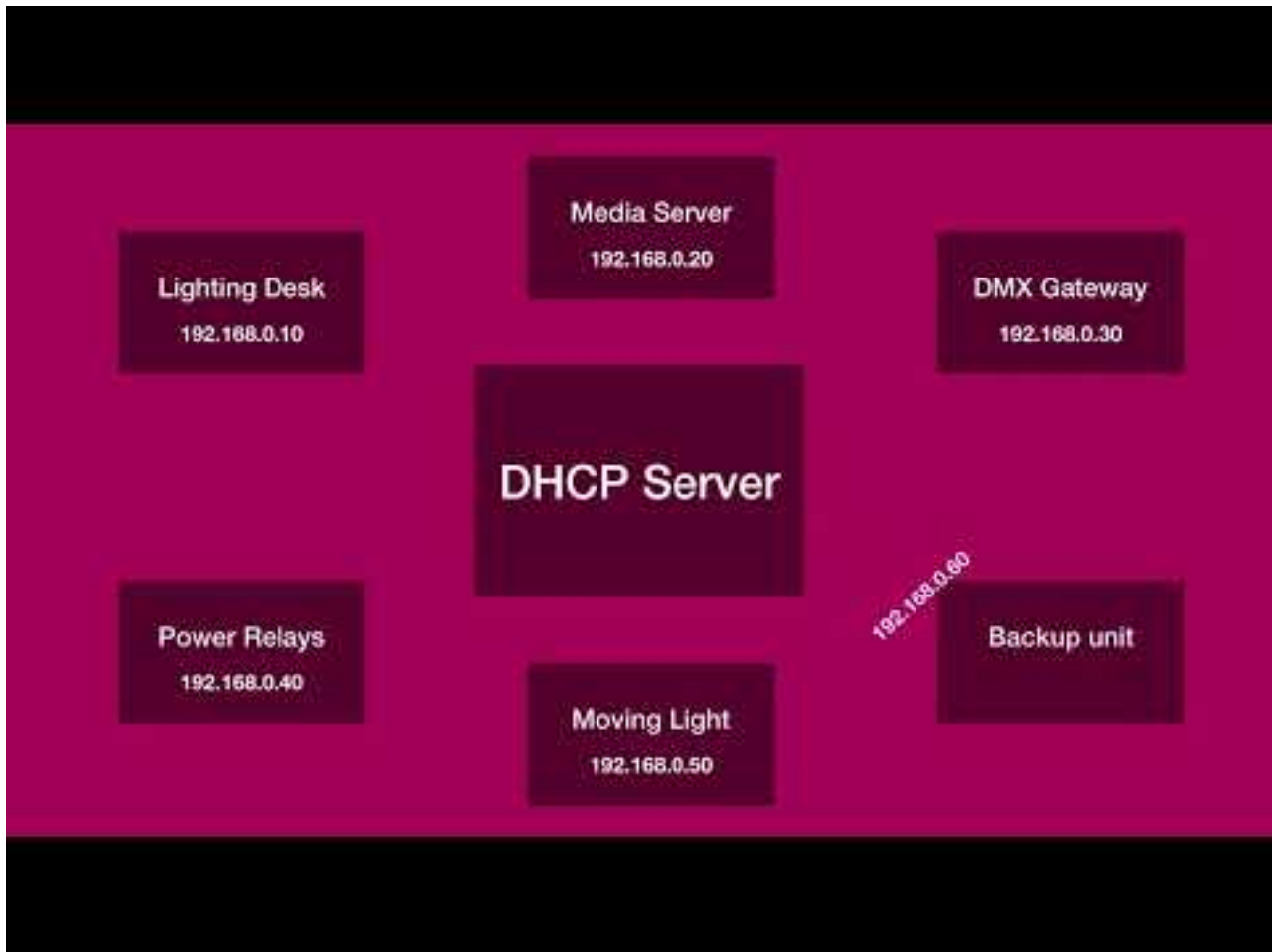
[Click here to find out about DHCP](#)

[Click here to be taken to the Cisco website, to go more in depth](#)

DHCP

DHCP stands for Dynamic Host Configuration Protocol. It is a protocol used by devices and a DHCP server, to automatically assign connected devices an IP address and subnet, to ensure they can talk to other devices on the network. This is how when you connect your phone, tablet or laptop to a WiFi network, you don't need to manually configure any IP addresses - your device is given all of that information from the DHCP server which will be on the network.

Take a look at the quick video below for a description...



<https://youtu.be/bfCINejdFs>

DHCP Servers

To benefit from DHCP, you need a DHCP server. Some Ethernet Switches offer DHCP server capabilities, as do standard Wireless Routers.

If a device is configured to use DHCP and is connected to the network, it will send requests out asking to be assigned information. If a DHCP server is on the network, it then provides the device with all the necessary information.

DHCP servers will assign devices IP addresses within a defined IP range. This can often be configured in the DHCP server's settings.

It is important that you ensure that there is only one DHCP server on a network. Otherwise they will be fighting over devices, and cause malfunctioning of the system. This is the reason ZerOS consoles do not have a DHCP server built in - you can ensure you build just one dedicated device into the network to act as a DHCP server, if required.

Not only do DHCP servers assign devices an IP address and subnet, they also assign devices with other information, such as a router IP, and DNS.

Another benefit of a DHCP Server is that it will also ensure it never allocates two devices the same IP address, always ensuring each device has its own unique address.

DHCP Servers will build up a list of devices they can see on the network, and then store this to their own internal memory. This means if you switch a DHCP server off and back on again, it will reassign the devices back to the IP addresses it had assigned them previously.

MAC Address Reservation

MAC addresses (Media Access Control addresses), is the hardware address of a NIC (Network Interface Controller). For example, a ZerOS console's Ethernet port NIC will have a MAC address, and your smart phone's Wi-Fi NIC will have a MAC Address. Typically, these cannot be changed, and are unique to the device.

When a DHCP server sees a MAC address on the network, it builds up a list of the IP addresses it has assigned to each MAC address. Most DHCP servers give the ability for MAC address reservation, meaning whenever the DHCP server sees that device, it always assigns it the same defined IP.

Leasing

Part of the DHCP protocol, is "leasing". This is the amount of time a DHCP server allocates a device an IP and subnet. Typically, this is automatically renewed by the DHCP server and the device remains on the same IP address it was previously, if the DHCP server sees the device is still online. The lease can also be requested to be renewed by the device.

Automatic Private IP Addressing (APIPA)

Sometimes, you may see a device on a network, with an IP of 169.254.x.x. If you do, this device has assigned itself a "Link Local" IP address, and means it is expecting to receive an IP address and subnet from a DHCP server, but hasn't.

ZerOS Network Settings

Every Ethernet protocol on ZerOS, will have its own network settings available to it. This is because ZerOS creates virtual network interfaces for each protocol in use on the console, meaning the console isn't limited to just one set of network settings.



Every protocol can be configured to use either the console's DHCP address, or to use a static IP address.

DHCP

When DHCP is chosen for a network protocol, that protocol will use the IP, Subnet Mask and Router addresses assigned to the console from a DHCP server on the network. If there is no DHCP server on the network, do not use this option. When DHCP is enabled, a "Renew Lease" button will appear. Pressing this will send a request to the DHCP server, which will issue your console with a new lease for the lease duration configured on your DHCP server.

To find the IP address a DHCP server has assigned your console, tap Z -> System Information -> Network Overview.

[The console's "Desk Name" set in Settings will be used as the DHCP label in a DHCP server's client list](#)

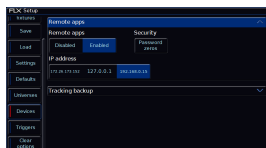
[See the DHCP section for more information](#)

Static

When you choose "Static IP Address", a IP, Subnet, and Router field will become available, allowing you to manually configure the protocol's network settings.

[See the IP addressing section for more information](#)

Phantom ZerOS



If using Phantom ZerOS, the network settings for each protocol will show you the available IP addresses of each NIC (network interface controller) of your PC. For example, the Ethernet port's IP, and your laptop's Wi-Fi IP. You will also see an IP of 127.0.0.1. This is your PC's loopback IP, used to allow Phantom ZerOS to communicate with other software packages on the PC, such as visualisation software.

[To find out how to configure your PC's Ethernet IP, click here.](#)

To find the console's Ethernet MAC address, tap Z -> System Information -> Network Overview.

Connecting to Capture

Capture is a visualisation software package, that allows you to emulate fixtures in a venue, so you can pre-program your show when away from the real venue.

There is an example Capture project you can download free of charge. You can control this Capture project with your console, or Phantom ZerOS, which is ideal for learning how to use ZerOS.

[Click here to find out more about Capture](#)

[Click here to download the "Dockhouse" Capture Visualisation files](#)

Once downloaded, extract/unzip the "Dockhouse" download, and open the unzipped folder.

Within the folder will be the following items:

- .app - this is the Capture Presentation file you can run on a Mac
- .exe - this is the Capture Presentation file you can run on a Windows PC
- .bin - this file must be in the same directory as the .exe

Then, you will need to download the ZerOS show file to allow you to control the "Dockhouse" Capture visualisation file:

[Click here to download the ZerOS Show File](#)

The ZerOS Show file will allow you to control the "Dockhouse" Capture file, from either a physical ZerOS console such as FLX, or Phantom ZerOS.

[Click here to download a dedicated show file for FLX S consoles](#)

Using Phantom ZerOS to control the Capture files on the same PC

It is possible to control Capture visualisation from Phantom ZerOS running on the same PC. Using the CIP protocol to control your Capture visualisation file, there is no need for a Phantom ZerOS unlock dongle. To output Art-Net or sACN from Phantom ZerOS, an unlock dongle is required.

To control the venues from Phantom ZerOS, first copy the required ZerOS show file (.zos) to your Phantom local drive on your PC. [For information on configuring your Phantom Local Drive, click here.](#)

Then run Phantom ZerOS as your chosen Desk Type. After loading, open the Monitor 1 window (or LCD on FLX S24), and then tap the Insert key on your PC. This will take you into Setup. Choose **Load** from the left hand side, and then choose your ZerOS show file required to control your chosen visualisation file. The show file was created using a FLX console, and so if you are using a different console type, you will receive warnings to inform you some information may not be loaded.

After loading the show file, tap Insert again to take you into Setup, and then choose **Universes**. Under the CIP settings within the Universes tab, ensure that the CIP IP is set to use **127.0.0.1**. This is the loopback IP address of your PC, allowing Phantom ZerOS to control Capture. There is no need for any other network settings (such as Art-Net or sACN) to be enabled. Then tap Insert again to save and close.

Then, run the Capture visualisation file.

Using Phantom ZerOS, you will then start to control the lights in your virtual venue in Capture. When fixtures are selected in either program, they will automatically be selected on the other software package too. In Capture, selected fixtures are highlighted in red.

Controlling the Capture files running on a PC from a real console

By connecting your console to your PC over Ethernet, it is possible to control the Capture visualisation file. You can do this by directly connecting your console and laptop with a single Ethernet cable, or you can connect them together as part of a larger network.

Firstly, copy the ZerOS show file you have downloaded to a USB stick. Then plug this into your ZerOS console. On your ZerOS console, tap **Setup** -> **Load**, and choose the show file to load in. The show file was created using a FLX console, and so if you are using a different console type, you will receive warnings to inform you some information may not be loaded.

If you wish to connect your ZerOS console and PC directly using a standard Ethernet cable, you will need to change the IP address of your PC to be able to communicate with your console.

The ZerOS show files use CITP to communicate to Capture. They have been preconfigured with the CITP IP address of 10.1.1.88, and a subnet of 255.0.0.0.

To save reconfiguring both your PC and console, you can therefore change your PC's IP address to be within range of the CITP IP of the console, for example, you could use the following IP on your PC:

IP Address: 10.1.1.10
Subnet Mask: 255.0.0.0

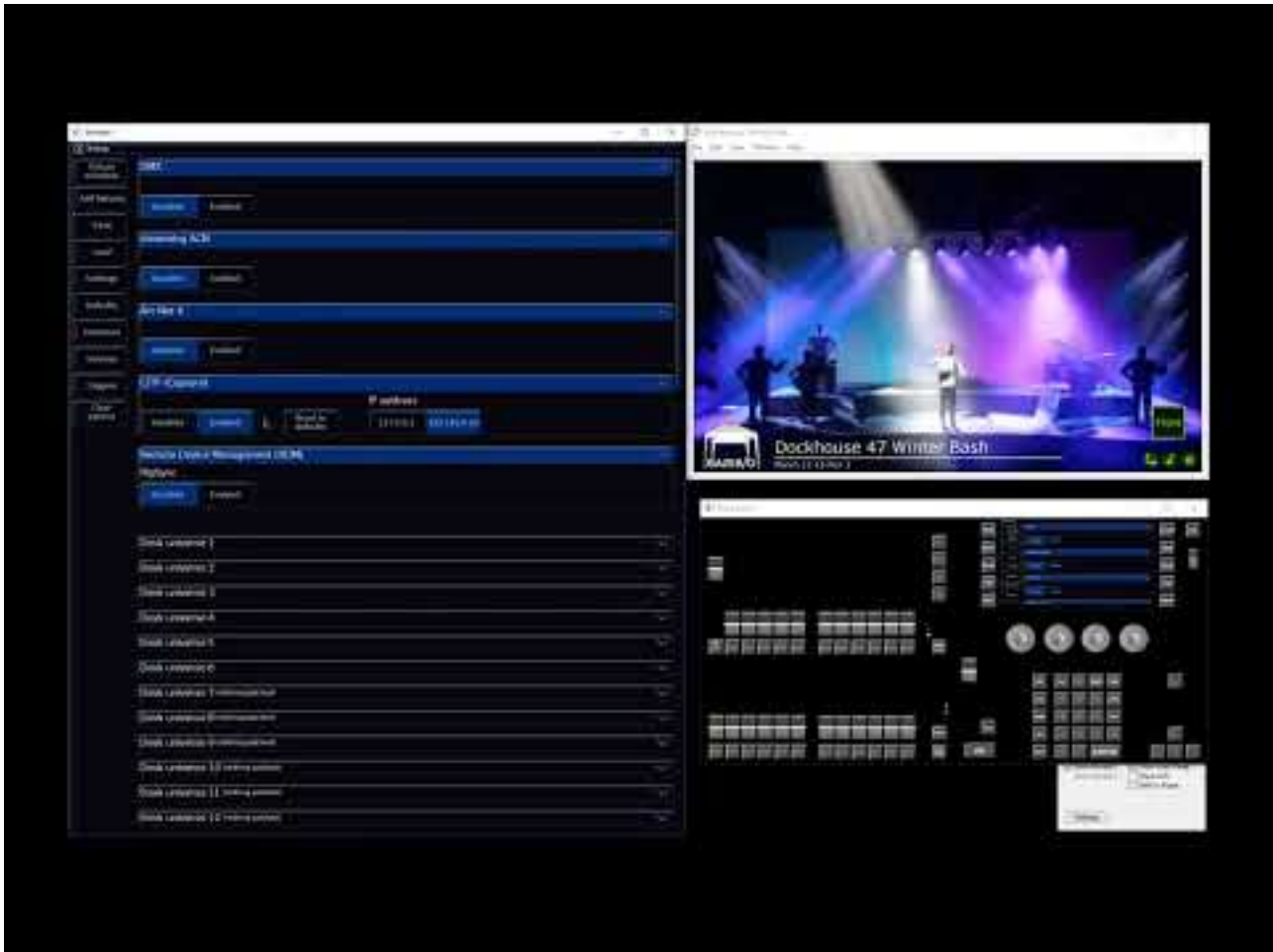
Then, run the Capture visualisation file.

You should find you are controlling your virtual venue in Capture from your ZerOS console. When fixtures are selected in either program, they will automatically be selected on the other system too. In Capture, selected fixtures are highlighted in red.

If you are having difficulty, you may need to configure your Windows Firewall settings. To do this tap the Windows Key (Start), and type "Allow an app through Windows Firewall". Windows should find the relevant Control Panel article, for you to press Enter to go to. Then click "Change Settings" from the top, and if your Capture file is not listed, click "Allow another app". If it is listed, ensure it is ticked to have permission. If you are still having difficulty, try running the Capture visualisation as administrator.

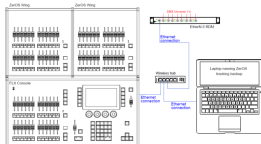
[To find out how to configure your PC's Ethernet IP, click here.](#)

Watch the ZerOS & Capture training session here...



<https://youtu.be/2Bp31AOcqNo>

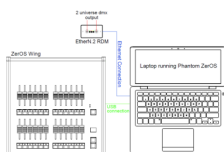
Example Systems



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

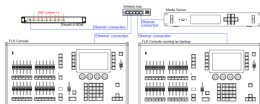
An Ethernet switch connects the console to a laptop running Phantom ZeroOS with an Unlock Dongle. This backs up every key press and can automatically take over so you can continue exactly where you were. Using a wireless router would allow mobile devices to be connected too.

An EtherN.8 RDM is connected to this system to convert Art-Net or sACN to DMX (EtherN.8 has been superseded by the [Gateway 8 Ethernet to DMX gateway](#)). The eight outputs can be individually configured to output any of the four universes.



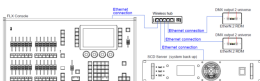
This system shows a laptop running Phantom ZerOS with an Unlock Dongle. The console is connected to an EtherN.2 RDM to output two universes of DMX. EtherN.2 has been superseded by the [Gateway 4 Ethernet to DMX gateway](#).

Gateway 4 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.



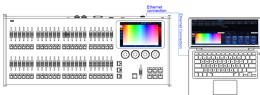
This system shows another tracking backup system, this time with two consoles staying in-sync. These could be physically next to each other, or in different areas of a venue. An EtherN.8 RDM is being used to convert to DMX, but any other Art-Net or sACN gateways, such as Gateway 8, could be used too.

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. EtherN.2 has been superseded by the Gateway 4 Ethernet to DMX gateway.



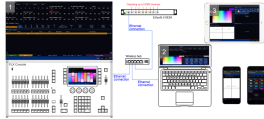
In this example, FLX S48 is connected to a laptop over Ethernet running ZerOS Remote Monitor, allowing for not only a remote desktop, but remote control of FLX S48. The laptop could be next to FLX S48, or elsewhere in the venue. It could be connected to the network over WiFi, to allow for a wireless remote. If the laptop/PC had a touchscreen, this could be used rather than a mouse/keyboard. Multiple instances of the ZerOS Remote Monitor software may be run on the laptop/PC, allowing for multiple desktops to be viewed at once.

In this example FLX S48 currently doesn't have a physical monitor connected from the DVI output, as everything can be seen from the internal touchscreen or remote monitors.



In this example, FLX S24 is connected to 2 laptops running ZerOS Remote Monitor, allowing for multiple external desktops, and remote control of FLX S24 from different locations. The laptops are connected via a wireless router over Ethernet, however could also be connected over WiFi.

The wireless router allows for other devices, such as smart phones and tablets, to also be connected to the FLX S24 wirelessly. ZerOS Remote & Monitor apps are free for both Android & iOS devices, and allow for remote control, and extra external desktops.



In this example, as well as the built-in internal touchscreen, FLX has 3 monitors connected, plus 2 remotes. An HD DVI touchscreen is connected behind the console, which can view any desktop. A laptop is connected to FLX over Ethernet, via a wireless router, and is running ZerOS Remote Monitor, to allow it to view any desktop. Wirelessly, an iPad is connected (Android tablets also supported), running the ZerOS Monitor app, viewing a different desktop. This allows for the desktop to be viewed anywhere in the venue with a Wi-Fi connection. An additional 2 smart phones (iOS & Android) are also connected to the network wirelessly, running the ZerOS Remote app for remote control. There is no limit to the number of remote monitors that may be connected simultaneously.

Using the Remote Apps

To use the Remote apps, you must connect your device such as your phone, tablet or laptop to the same network as your console. Your device will then be able to remotely control the console, and you will be able to view various windows remotely.

Build your network

The simplest way of doing this, is using a single Ethernet cable (for example CAT5 or CAT5e patch cable) between your console and a standard wireless router, like the one you may find at home.

The Zero 88 team use [NetGear N300](#) wireless routers, however any should work with your console. Ensure you plug the CAT5/5e cable into one of the "Ethernet" ports of the router.

Do not connect your console to a network that has Internet access. ZerOS consoles should be used on dedicated show networks.

Enable the Remote on your console

After doing this, you can enable the remote connection on your console. To do this tap

Setup -> **Devices** , and enable the remote.

By default Security will be enabled. The Remote password can be changed, or removed. For the simplest setup, under the Remote IP address options, choose **DHCP** . This means the router will assign the console and remote device an IP address automatically, to ensure they can talk to each other. If you wish to input a static IP address, manually enter a static IP address.

[For more information on the Remote settings on your console, click here.](#)

Get the app

Once you have done this you will need to download the ZerOS app onto your device.

If you're on an iOS device...

- [Click here to go to the App store to download the Remote app](#)
- [Click here to go to the App store to download the Monitor app](#)

If you're on an Android device...

- [Click here to go to the Google Play store to download the Remote app](#)
- [Click here to go to the Google Play store to download the Monitor app](#)

If you're on PC...

- [Click here to download ZerOS Monitor for Windows.](#)

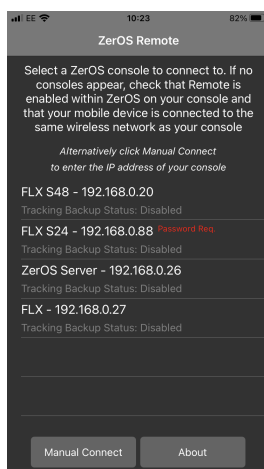
Connect your device to the same network as your console

After doing this, you can then connect your device to the wireless router's Wi-Fi network. If the wireless router is in its default setting, the network name (SSID) and password should be found on the bottom of the router somewhere.

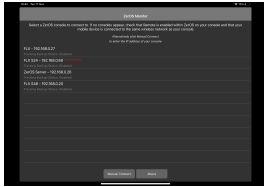
On your device, tap the Settings app -> Wi-Fi -> Choose the Wireless router from the list of available networks. You will then need to enter your router's password (Network Key).

Open the app

When you have connected your device to the router and enabled the Remote on the console, open the ZerOS Remote or ZerOS Monitor app on your device. Your console should appear in the list.

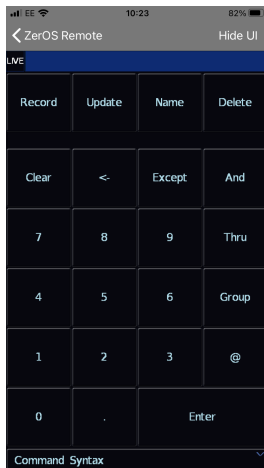


This picture shows the ZerOS Remote app on iPhone, with detected consoles shown in the list.

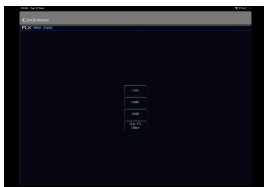


This picture shows the ZerOS Monitor app on iPad, with detected consoles shown in the list.

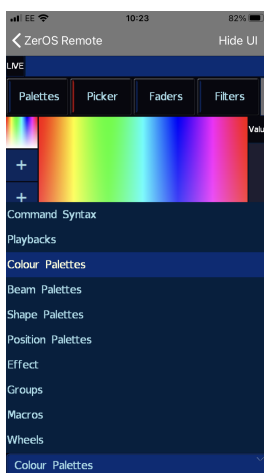
You can then click on your console to connect. If your console has a password, you can then enter this to connect to your console. By default the password is "zeros" however you can change this on the console, or disable the password.



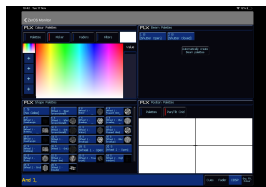
When you connect to a console with the ZerOS Remote app, you will be presented with a Syntax pad that you can use to control your console.



When you connect to a console with the ZerOS Monitor app, you can then choose which of the console's desktops you wish to view.



Using the ZerOS Remote app, you can then use the page chooser at the bottom of the app, to view any window on the console, including remotely controlling the encoder wheels.

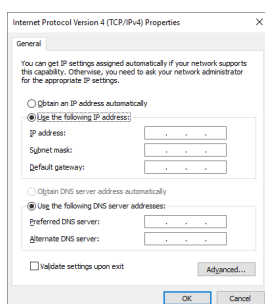


When connected to your console with the Monitor app, you can choose which desktop you view using the desktop chooser bottom right of the display. Every Monitor can be viewing a different desktops, allowing you to easily add multiple touchscreen displays to your console.

When running the ZerOS Monitor app on Windows 10, keyboard shortcuts are available to remotely control the console.

[Click here to find out more about keyboard shortcuts.](#)

Windows IP Configuration



To set the IP address of a PC as per Windows 10:

- Right click Start, and choose "Network Connections", to open Settings
- Under "Change your network settings", click on "Change adapter options" to open Control Panel
- Right click on "Ethernet" and click "Properties" to open the Ethernet Properties
- Listed under "This connection uses the following items", double click "Internet Protocol Version 4 (TCP/IPv4)", to open the IPv4 Properties
- Click "Use the following IP Address"
- Type in the static IP and subnet.
- A Default Gateway is not required
- Click OK.

Wireshark

Wireshark is a software tool for Mac/PC, that allows you to analyse and record the data packets the Mac/PC can see travelling around the network, to be able to diagnose network issues.

Wireshark is free, and can be downloaded from here: <https://www.wireshark.org/>

1. When you open Wireshark, you'll need to select which connection you wish to capture (wired, wireless, Bluetooth etc). Graphs next to each connection display the network traffic on that connection
2. Once you've selected a network, click the blue Shark Fin (first icon in the toolbar, says "Start CapturingPackets" when you hover over it).
3. You will now be capturing network packets. If you have a specific problem when something happens (for example a device comes online, or you try to connect to something), make sure you do this whilst in the middle of capturing.
4. Once done, press the red stop button (second icon on the toolbar, says "Stop Capturing Packets" when you hover over it).
5. If required, you can then save the capture.

Software Updates

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. It is strongly recommended to always be running the latest release of ZerOS.

[Click here to head to the ZerOS page to download the latest version of ZerOS.](#)

Installation instructions are included in the release notes, also available from the ZerOS page above.

Please familiarise yourself with these update instructions before proceeding. Instructions must be followed accurately and in order. Deviations or omissions could render the desk unusable and require it to be returned to the factory for recovery.

If any difficulties are encountered at any point, or you are in doubt on any of the instructions below, then do not proceed any further with the update and contact Zero 88 for assistance.

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. When performing a software update it is important to ensure that the power supply to your desk is stable and reliable. Power loss during a software update can render your desk unusable.

[Click here for information on installing ZerOS](#)

[\(onto consoles currently running ZerOS 7.8.3 or later\)](#)

[Click here for information on how to find your current software version](#)

[If your console is running ZerOS 7.8.2.39 or earlier, click here to find out how to get your console up to date](#)

On ZerOS Server, the current software version is displayed on the front display when the "Software" LED is illuminated.

ZerOS USB Creator

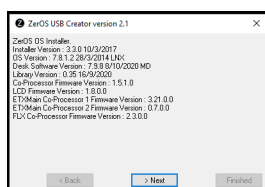
[This process should only be used to recover your console, or to install software from an early version of software. To perform a normal software update, click here.](#)

If you are currently running ZerOS 7.8.2.39 or earlier, ZerOS can be updated by creating a bootable USB drive using the ZerOS USB Creator. This can also be used to recover consoles that have experienced an error during the software update process.

This process cannot be used on FLX S consoles.

[Firstly, click here to download the latest version of ZerOS.](#)

Once downloaded, extract/unzip the software, and then run the ZerOS software application (.exe) (NOT Phantom ZerOS) on a Windows PC (preferably with admin rights) to create a bootable USB Memory Stick. You will be presented with the screen below:



To perform the update, you will need a USB Memory Stick, which will be erased and formatted as part of the process. Make sure you first backup any data on the USB Memory Stick that you wish to keep. Insert a USB Memory Stick into your Windows PC and then click "> Next".

Then follow the on screen instructions of the ZerOS USB Creator. After a few minutes, the install creator will instruct you to remove the USB Memory Stick, which now contains the update for the desk.

- Remove the USB Memory Stick from your PC and insert it in one of the console's rear USB ports
- Power on the desk and the desk will automatically boot into the software update application. It is recommended that you have a monitor, keyboard and mouse connected to the desk to perform this update, but not required on FLX.
- Press the [Install ZerOS] button on the monitor and the software will be installed
- Once the update is complete, you will be taken back to the "Install" screen
- Switch the console off, and remove the USB Memory Stick
- Reboot the console, and you will boot into the newly installed software

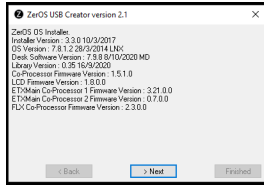
[Some types of USB Memory Stick may not be bootable by the desk. If you experience any difficulties, click here.](#)

MBR

We occasionally hear from users who are struggling to upgrade their ZerOS consoles via a bootable USB stick.

Bootable USB devices are notoriously difficult to identify - some USB memory sticks are natively bootable, others take a little configuration, whilst some cannot be made to boot.

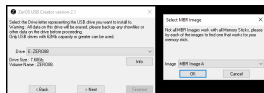
If your ZerOS console is failing to boot into the ZerOS Installer on the USB drive, try the steps below:



Run the ZerOS USB Creator for Windows, and click Next.



When you're on the Select Device screen, push and hold SHIFT whilst clicking the Next button. The USB install maker will ask you to select OK to confirm you wish to set the Master Boot Record. Note that this can render some USB sticks unusable, so only use this if you have a dedicated stick for software upgrades.



Select an MBR Image (start with A, if that doesn't work, try B)

Push OK and your stick will be formatted - the tool will then prompt you to remove and reinsert the stick.

After this, try running through the normal upgrade procedure and the stick should work as expected.

[If you're trying to update your Orb console and still experiencing difficulties, click here.](#)

Technical Information

Click your console to view the technical information...

- [FLX S24](#)
- [FLX S48](#)
- [FLX](#)
- [ZerOS Server](#)

FLX & ZerOS Server

Mains Inlet

FLX & ZerOS Server are fitted with a Neutrik PowerCON TRUE1 (NAC3MPX) mains inlet on the back panel, and power on/off switch.

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.

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

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)
- USB Desk Lights

Zero 88 cannot be responsible for damage caused to FLX by plugging in devices which break the Universal Serial Bus standard.

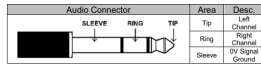
Ethernet

FLX & ZerOS Server is fitted with a Neutrik etherCON RJ45 Ethernet port and is capable of supporting various Ethernet protocols.



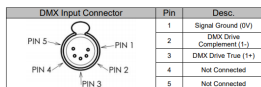
Kensington Lock

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.



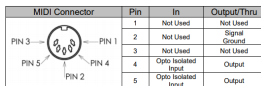
DMX output

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



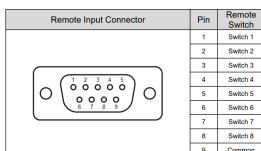
Video output

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



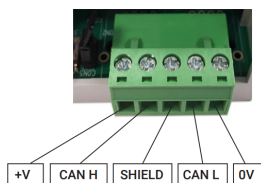
MIDI

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



Remote input

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



CAN

A phoenix connector is provided to connect to the CAN network.

FLX S24 & FLX S48

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. [For more information click here.](#)

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)

Zero 88 cannot be responsible for damage caused to FLX S by plugging in devices which break the Universal Serial Bus standard.

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.

DMX output

Two female Neutrik XLR connectors are provided for DMX Out, DMX In, or Vision.Net In. By default, port 1 outputs universe 1, and port 2 outputs universe 2. If FLX S is only licenced for 1 universe, both ports output universe 1.



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.



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?
- Check 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. Ensure the address and mode on the fixture matches what you've configured on the console.
- Setup > Universes has been correctly configured.
- For FLX users, the green DMX1 and DMX2 LEDs are flickering.
- For FLX S users, if you have a 2 universe console, by default port 1 is universe 1, and port 2 is universe 2.
- Some fixtures require the lamp to be “lamped on”. If this is required, a “Macros” tab will be displayed along the top of the screen when the fixture is selected on FLX S, and on FLX you will be able to press the Macros key. Automatically creating macros may generate a Lamp On macro, for you to use to send 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 at full?
- Is Black Out 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?
- If you tap Z/Shift -> System Information -> System Text, scroll through the text - do you see any errors?

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.
- Try using the Startup Tool. [Click here for more information.](#)

Test Mode



If you boot your console with the Setup key held down, this will boot you into Test Mode.

Test Mode will display a virtual Front Panel of your console. Moving faders, and pressing buttons will be highlighted on the virtual front panel, for you to check faders, buttons and encoders are registering correctly.

Pressing keys will light the LED in that button.

For consoles with 7-segment displays, these will cycle to ensure all parts are displaying correctly.

To exit Test Mode, restart the console. To do this switch the console off and on again.

Reporting a problem

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

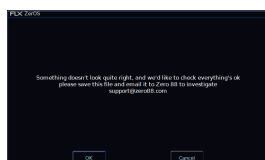
- The console's current software version
- A copy of the current showfile
- Details of what you were doing at the time, or which playback / palette etc is affected.
- If the console has crashed or frozen, the console will offer you a debug file the next time you turn it on.

Support requests can be submitted 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/zeros



In the unlikely event you experience a software issue with ZerOS, upon booting your console, or whilst using the console, you may receive this message.

This message is nothing to worry about, however ZerOS has found something that doesn't look right. If you have a USB stick to hand, please click OK, and then choose to save the debug file (.zdb) to your USB stick.

This debug file contains important information about the behaviour of your desk, and what caused the software issue. Providing this file to the Zero 88 support team can help us to improve the console's performance to ensure that the crashes do not occur in future software releases.

At the next available opportunity, please insert the USB memory stick into your computer and email the file to support@zero88.com with a little information about what you were doing when the issue occurred.

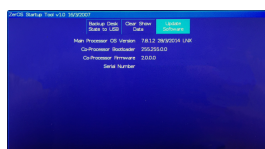
The file written to your memory stick is a .zdb file (ZerOS DeBug) and will have the date and time in the file. You can rename it to something you think is more useful if you wish.

By sending us the file, you'll be helping to improve ZerOS for every user, so thank you!

ZerOS Startup Tool

In the unlikely event your ZerOS console fails to boot, there is a recovery method using the Startup Tool.

Plug in a USB keyboard, and turn your console on. Immediately keep tapping the F1 key.



The Startup Tool screen should then display.

The first thing to do, is remove the current show file on the console. This may have corrupted, and be causing the console to fail to boot.

If you need the current show, first plug in a USB stick, and then click `Backup Desk State to USB` .

Then click `Clear Show Data` , and restart your console.

If you reboot the console and it still doesn't finish booting, switch off the console, and boot into Startup Tool again by tapping the F1 key during boot. Then perform a fresh software install, which should recover the console.

[Click here to head to the ZerOS page to download the latest version of ZerOS.](#)

Once downloaded, extract/unzip the software to the root of a USB stick, and plug into the console.

Then choose `Update Software` in the Startup tool. This will give you a warning, where you can click OK. You will then be able to select a software file (.exe) from a USB stick to reinstall the software. Again this will remove the show file.

Maintenance

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

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 touchscreen

The internal touchscreen can be cleaned with standard screen cleaning wipes designed for computer screens, tablets and smart phones.

Cleaning the faders

A can of compressed air can be used to clear out 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 your console was 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 Mechanical Information. If this environment is exceeded, it is likely that damage will occur to your console.

Internal battery (FLX & ZerOS Server 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.

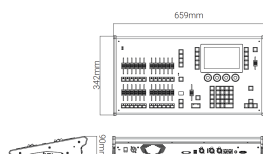
Please contact a Zero 88 support agent for details on servicing the console.

Mechanical

Mechanical Information for...

- [FLX](#)
- [FLX S48](#)
- [FLX S24](#)
- [ZerOS Server](#)
- [ZerOS Wing](#)

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

FLX S48



Dimensions

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

Weight

5.5 kg

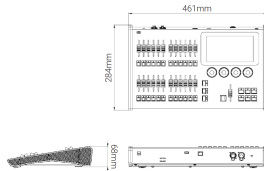
Operating temperature range

+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

ZerOS Server



Dimensions

43.6mm (H) x 482.6mm (W) x 226.5mm (D)

Weight

3.8kg

Operating temperature range

+5 to +40 °C

Humidity

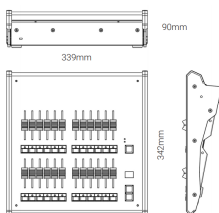
5% to 95% non-condensing

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.

ZerOS Wing



Dimensions

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

Weight

3.8 kg

Operating temperature range

+5 to +40 °C

Humidity

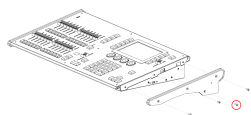
5% to 95% non-condensing

Always observe the operating environment information. If this environment is exceeded, it is likely that damage will occur to your console.

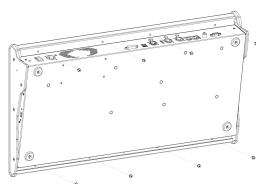
FLX Access Instructions

The diagrams below detail the screws that need to be removed to open FLX consoles for access.

- No user serviceable parts inside
- FLX consoles should only be opened by a suitably qualified person
- Opening FLX consoles within 3 years of manufacture will void warranty
- Disconnect mains prior to opening



Remove the lowest single screw from either side (circled). The sides do not need to be completely removed to gain access.



The 4 screws running along the bottom and 4 screws running along the top of the underside of the console need to be removed. To remove flip console upside down onto a soft surface.

Ribbon cables link the front panel and base. Carefully open the console, to avoid damaging cables and connectors.

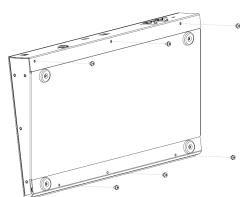
FLX S Access Instructions

The diagrams below detail the screws that need to be removed to open FLX S24 and FLX S48 consoles for access.

- No user serviceable parts inside
- FLX S consoles should only be opened by a suitably qualified person
- Opening FLX S consoles within 3 years of manufacture will void warranty
- Disconnect power prior to opening



Remove all screws from either side of the console, and take off the black plastic sides.



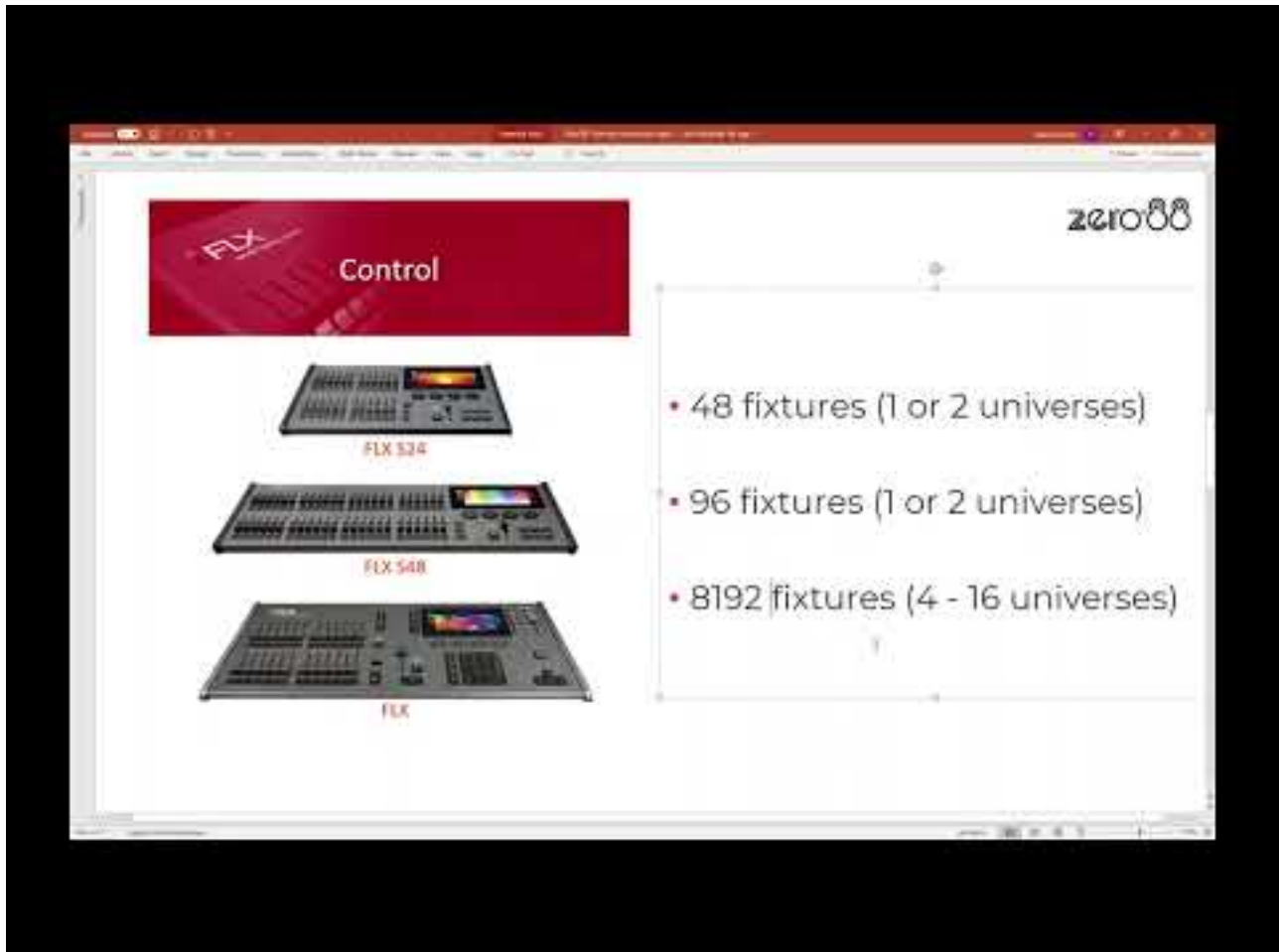
Next, remove the screws on the diagonals of the XLR sockets on the rear of the console.

The screws running along the bottom and screws running along the top of the underside of the console can then be removed. To remove flip the console upside down onto a soft surface, taking care of the faders.

Training

There are extensive training options available for consoles in the FLX series.

To learn everything you need to know to get up and running with your console, watch this training video...



<https://youtu.be/KjZ0r-blwvs>

[Click here to register for an upcoming "live" online training session](#)

[Got a question about training? Click here to email training@zero88.com](mailto:training@zero88.com)

There's a huge number of training videos and webinars on our YouTube channel...

[ZerOS Consoles Software Training Playlist](#)

[FLX S Console Training Playlist](#)

[Simplifying Jargon](#)

Support

At Vari-Lite, we pride ourselves in providing unrivalled support to our customers, on both current and legacy products.

Support

[For general questions and technical support, click here to email support@zero88.com](mailto:support@zero88.com)

Fixture Support

[If you need to control a fixture that is currently missing from your console's library, click here.](#)

Forum

The Support Forum is an active forum, where you can ask questions and chat with the Vari-Lite team along with Zero 88 users who regularly help one another.

Before posting it may be worth searching the forum for your query - someone else may have had the same question!

[Click here to search the Support Forum](#)

[Click here to head to the Support Forum](#)

