






# FLX S24 & FLX S48

## User Manual



Version 1

Correct as per ZerOS Version 7.9.3

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

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# Introduction

## FLX S24 & FLX S48

FLX S consoles are easy to learn and simple to use - delivering all the features you need at an affordable price. We sincerely hope that your new FLX S will bring you years of trouble-free service. We take great care to build in reliability and serviceability at every stage of our development and production processes.



## ZerOS (Operating Software)

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

### Phantom ZerOS (offline editor)

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

Phantom ZerOS can also be unlocked to output Art-Net or sACN with the addition of the “Phantom ZerOS Unlock Dongle”.

Phantom ZerOS can be downloaded from the Zero 88 website.

## This manual

This manual describes the operation of the FLX S lighting Console. For detailed information on each function, the manual has been divided into chapters - one for each major area of the console. Throughout this manual the following conventions are used:

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

**Record**, **Update**.

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

*Next*, *Picker*.

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

## Getting started...

### Turning the console on

After plugging in all the relevant cables to the rear of the console (power, DMX and possibly USB devices or, on FLX S48, a monitor), turn on the power supply and FLX S will power up automatically.

## Navigating the touchscreen

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



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



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



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



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



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

## RigSync

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”).

## Guidance (help)

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

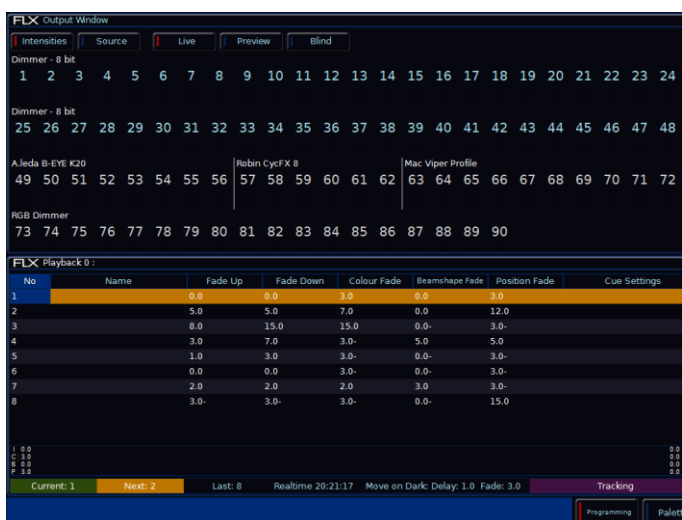
## External Display

FLX S48 includes an optional external DVI-D monitor.

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

### “Programming” desktop

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



“Programming” desktop on the external display

### “Palettes” desktop

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



“Palettes” desktop on the external display

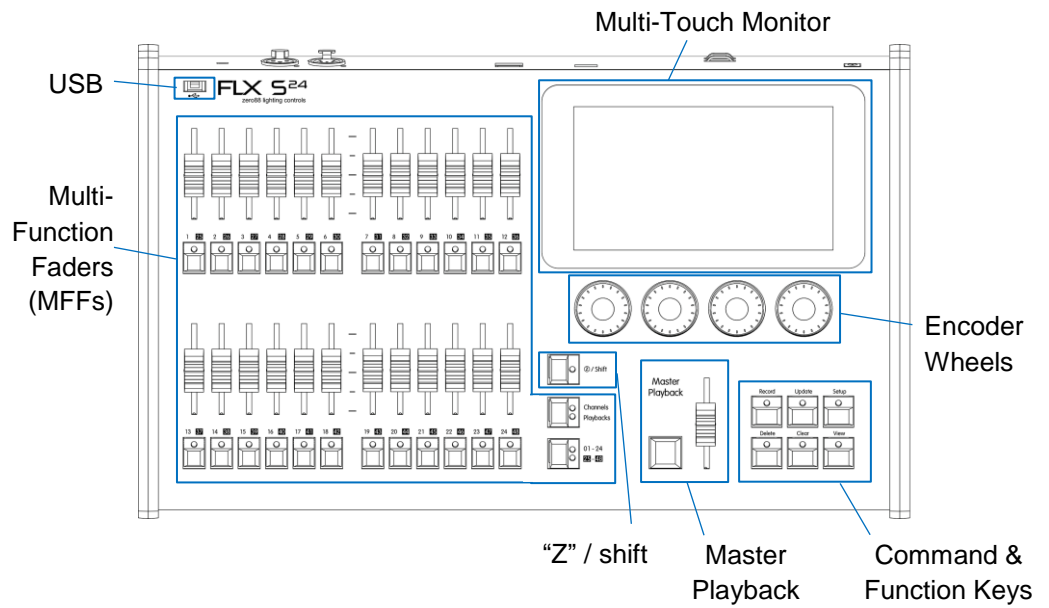
### Using FLX S48 without an External Display

FLX S48 can be used without the need of an external display. The console will automatically detect that an external monitor is not present and display these windows on the internal display instead.

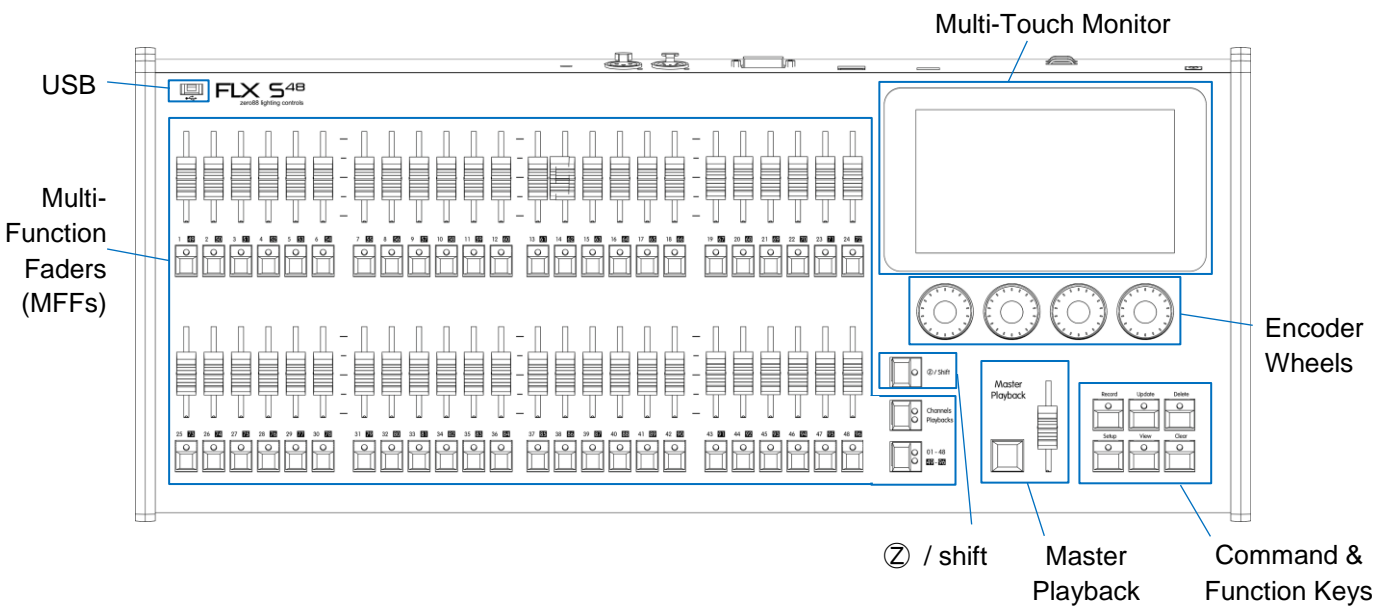
### Touch Scrolling

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

## Front panel – FLX S24



## Front panel – FLXS 48



## Multi-Function Faders (MFFs)

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

### Channels

When set to “Channels”, the faders directly control each light (or “fixture”) in the rig (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. FLX S consoles support double the number of fixtures as there are faders. The Page button can be used to switch the faders between fixtures (see below).

### Playbacks (or cues, stacks & submasters)

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 S consoles support double the number of playbacks as there are faders, plus the “Master Playback”. Traditionally, playbacks with a single cue have often been referred to as “submasters” whereas playbacks with multiple cues have often been referred to as “cue stacks”. We simply call them all playbacks.

### Page

The page button allows you to switch between faders 1 – 24 and faders 25 – 48 on FLX S24, or faders 1 – 48 and faders 49 – 96 on FLX S48. Switching between “Channels” and “Playbacks” will automatically change the page to the page you had previously selected when in that function.

### Master Playback

For many shows, especially theatrical, a single playback is often used with a long list of pre-recorded cues. For these situations, an additional “Master Playback” is provided with a quieter “soft” Play / GO button and Level fader.

## Command keys & function keys

FLX S includes dedicated keys for commands **Record**, **Update** and **Delete**, and the functions **Setup**, **View**, and **Clear**. As well as performing functions themselves, functionality of other buttons may be changed when pressed at the same time.

### 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.

### ⌘ / Shift key

⌘ places a range of quick access settings & functions on the internal display and encoder wheels. Holding ⌘ acts as “Shift”, changing the functionality of other buttons when pressed simultaneously.

### 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)

# Controlling Intensities

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

## Multi-Functional Faders (MFFs)

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

When set to “Channels”, the 24 (48) MFFs directly control each light (or “fixture”) in the rig (this is often referred to as “Channel per Fader”). Each fixture, no matter what it is, will have a single “Channel Number”, and so will take up a single channel fader. The **Page** button can be used to switch between channels (two pages of 24 channels on the FLX S24, and two pages of 48 channels on the FLX S48). Grey outline boxes in the Output Window show which set of channels are currently being controlled on the MFFs.

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

## Encoder wheels

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).

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.

## Commands

Pressing the **Z** button displays a number pad which can be used to type commands. For more information, see the chapter entitled “Z key”.

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

## Groups window



The Group window is displayed on the internal display when the **Group** button is pressed.

Groups can be selected and deselected directly within this window.

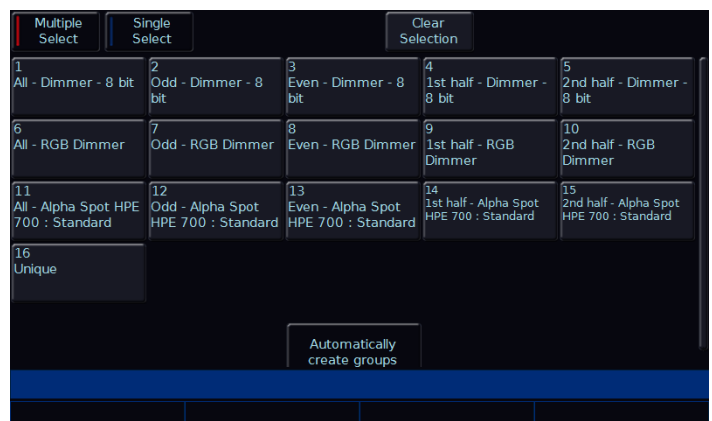
When groups are selected, they will be highlighted in the Groups window. Selecting “All – Dimmers” will also highlight “Odd – Dimmers”, “Even – Dimmers” etc, as by selecting “All – Dimmers” you are selecting channels within all these groups.

## Automatic groups

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

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

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



Groups window after “Automatically create groups” has been selected.



## Recording groups

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

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

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

As well as the selection and the intensities, groups record the order the fixtures were selected in. This is useful when offsetting effects across selections of fixtures.

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

## Using groups

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. FLX S will keep adding to the selection until another command is entered (like changing the intensity, or selecting a palette). After that, those channels will remain selected until you press on another group, which will start the selection again. The previous channels being deselected can be avoided by typing "and" first, and then selecting another group.

Intensity Groups can be recalled by 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%).



Groups window with various fixtures current selected highlighted in blue

## Referencing intensities

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

## Naming groups

Groups can be named by 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.

## Updating groups

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

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

## 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.

# Controlling Attributes

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

## Select a fixture(s)

Fixtures are automatically selected when the channel faders are moved. The selection can be changed by using the buttons under the faders (MFFs must be in “channel” mode for this to work) or by using the commands described on the previous page (accessed via the  button, just press  after typing the last channel, in place of typing  ...).

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

## Choosing an attribute

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

Once a fixture, or group of fixtures, have been selected, the relevant attributes will appear along the top of the touchscreen, to the right of the five icons. Selecting one will open that attribute’s window on the internal display, and put the attribute’s parameters onto the four encoder wheels ready to be controlled.

## Encoder wheels

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

Remember that each fixture will have a different range of parameters available, depending on its feature set. Consult the fixture’s operating manual for details. If the fixture has more than four parameters in the attribute, pressing the attribute tab again brings more controls onto the encoder wheels.

The sensitivity, mode and behaviour of the encoder wheels can be changed in Setup. (See “Peripheral Settings (encoder wheel settings etc)” on page 34 and “

Attribute Settings (Colour, Beamshape, Position)” on page 35 for more information).

## Central encoder button

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



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

# Palettes

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

A palette stores all the values of a fixture (or group of fixtures) required to create a particular look 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. FLX S can automatically create palettes if required.

## Palette Windows

Each set of palettes has its own palette window. This is opened automatically when you press the appropriate attribute tab (*Position*, *Colour*, *Beam* or *Effects*).

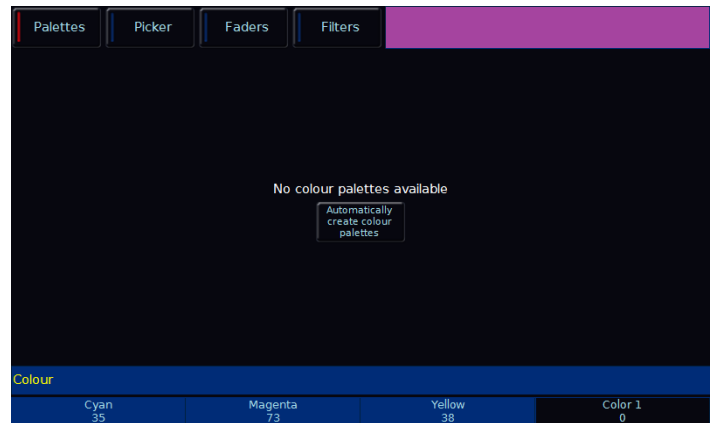
The palette window contains a soft button for each of the 48 or 96 palettes. Each soft button contains a palette number and a name.

On FLX S48, palettes can also be displayed on the external monitor by pressing “Palettes” in the bottom right corner of the external monitor, or pressing **Shift** and **VIEW** together.

## Automatic palettes

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

Automatic palettes are created based on the fixtures you have patched, so it’s recommended to fully patch your console before choosing “Automatically create palettes”.



Palettes window without any palettes, offering to automatically create some.

## Recording Palettes

To record a colour palette, set up the fixtures as required (all red for example) and whilst viewing the colour window, press **Record** followed by *touching an empty palette*.

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

## 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.

## Referencing palettes

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

## Naming Palettes

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

## Updating Palettes

To update a palette it is often easiest to activate the palette first by selecting your fixtures and touching the palette.

Now, make the changes you want, and then press **Update** followed by *touching the relative 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.

## Deleting Palettes

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

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

When deleting a palette, any references to the palette in programmed cues will be replaced with “hard values” before deleting it. This ensures cues are not changed.

# Colour

## Palettes

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

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



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

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

## Picker (Colour Picker & Image Picker)

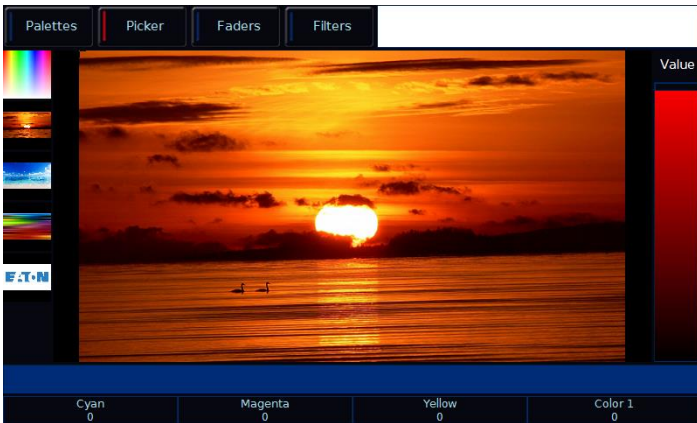
The “Colour Picker” tab will also appear along the top, which displays a colour picker (shown to the right), allowing you to select a colour for use in colour mixing (CMY/RGB) fixtures. Just touch the picker using the built in touch screen, and the colour of the selected fixture will be set to the colour pressed. Along the left of the Picker screen will be 4 pre-loaded images that you can also pick colours from.

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



“Colour Picker” screen

It’s possible to replace the colour picker with a photograph or image, allowing you to select colours from that. This is useful when wanting to use the colours of a companies’ logo, or wanting to recreate the colours from a particular image you’ve photographed. Press the “+” symbol along the left hand side of the picker to open the “Load file” window which will display all the images on the external USB drive.



“Image Picker” screen with four images already loaded in

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

**Multi-Touch on the picker**

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

**Mood boards by Lee Filters**

Clicking the “Mood boards by Lee Filters” tab along the top shows a window which collates colours together in “moods”. Selecting a mood will give a brief description of

where the colours might be used, and gives a selection of several colours that work well together for that mood. Some moods have more than one selection of colours, such as “Moonlight” which has “Realistic” & “Romantic” selections.

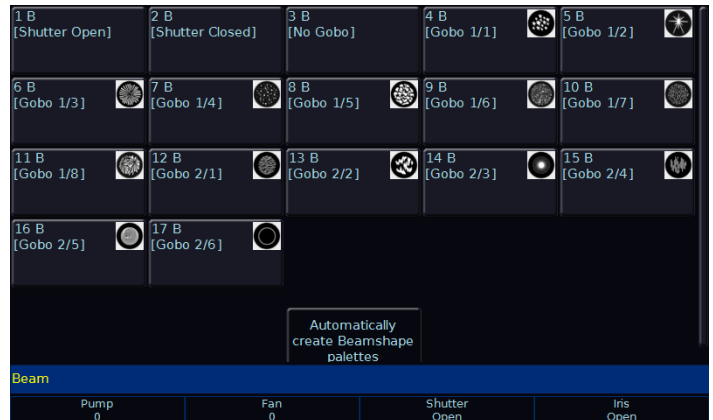


“Mood boards by Lee Filters”

**Beam**

**Palettes**

The beam auto palettes generated by the desk are based on the gobo wheel and shutter parameters of the fixtures in the schedule. An auto palette is generated for each Gobo present on each gobo wheel. “No Gobo” is an auto palette that sends all the “Gobo” parameters to their default values. Shutter will be given two auto palettes (Shutter Open and Shutter Closed).



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

# Position

## Palettes

The desk generates a single Home Position palette which sets the Pan and Tilt parameters to a value of 50%. (For more information on palettes, see “Palette Windows” on page 11)

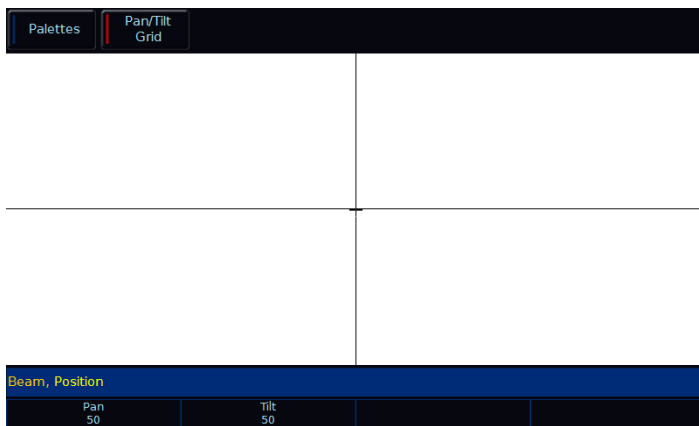


“Position Palettes” window after “Automatically create position palettes” has been selected.

## Pan/Tilt Grid

The Pan/Tilt grid gives you a touch 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.



“Pan / Tilt Grid” in the position window

## Multi-Touch on the P/T Grid

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

# Effects

Effects are different than the other four attributes, in that they do not directly control features and parameters of the fixtures patched. Instead, effects are used to manipulate parameters to create effects such as “Circle”, “Figure 8” and “Rainbow”. This is achieved by applying various mathematical functions (sine, cosine, ramp etc) to the outputs of different fixture parameters and adjusting the size, speed and offset values. Using this, a wide range of movement and other effects can be generated quickly and easily. Effects can affect any parameter, from any attribute, and can also control multiple parameters from multiple attributes.

## Palettes

The desk generates a number of standard effects, as shown below, by clicking the “Automatically create effect palettes” button.



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

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

(For more information on palettes, see “Palette Windows” on page 11)

## Speed, Size, Offset and Rotation Encoders

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

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

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

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

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

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

Effect parameters are not automatically fanned across fixtures. Should fanning of an effect parameter be required, use the Offset buttons along the top of the Effect window.

# Cues & Playbacks

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

## Playbacks

Each playback can store a single cue, or multiple cues. The FLX S24 has 49 playbacks and the FLX S48 has 97. Both can store a total of 10,000 cues.

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

The buttons below the faders are “Go” buttons when several cues are recorded onto the Playbacks. If a single cue is recorded on a Playback, the button acts as a “Flash” function. This can be configured in the Playback Setup window (see chapter entitled “Playback Settings”).

Once you have set up a scene that you like, you can then record that onto a cue. Cues can be recorded into any of the playbacks, or the “Master Playback”. On FLX S48, if you are using an external monitor when dealing with cues, we suggest viewing the “Programmers” desktop. If you do not have an external monitor, or are using the FLX S24, the two windows discussed below (“MFF Window” and “Playback Window”) will appear on the internal monitor when you press **View**. Pressing **View** again will switch between the two windows. Alternatively you can use the two icons on the top left of the screen:



“Cue List” window and “Playback Window” icons.

## Master Playback

For many shows, especially theatrical, a single playback is often used with a long list of pre-recorded cues. For these situations, an additional “Master Playback” is provided. There’s nothing different about the Master Playback compared to the other playbacks, apart from the quieter **▶** (play/go) button, a fader for convenience and the playback doesn’t change function when “Channels/Playbacks” is pressed.

## Multi-Function fader window

The Multi-Function Fader window shows the current status of the 24 or 48 built-in faders.

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

When the MFF faders are set to Playbacks, this window displays the Playback’s number, name, current intensity, current & next cue and the playback raise (u) & lower (d) time. By default, pressing one of the buttons will open the Playback’s Settings window for quick access. However this functionality can be changed in **Setup** > **System Settings** to match the physical button of the playback (Flash, Solo, Go, Tap Tempo etc), or alternatively to act as an on-screen fader. This allows playbacks to be controlled on a touch screen or tablet when viewing this window.

## Playback window

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

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

## Naming playbacks

Playbacks that have cues recorded into them can be named. Empty playbacks cannot be named. These names appear in the Multi-Function Faders window. To name a playback, hold the **Setup** button and then press the playback you wish to name using the buttons under the faders. This will open the Playback Settings window, which includes an option to name the playback.

## Copying playbacks

To copy one playback to another playback, press the **⌘** key to open the “Z Window”. In here, press the **Copy** button to open the Copy Window. Now press **Playback** and then type the number of the playback you wish to copy in the “from” field, and the number of the playback you wish to copy it to in the “to” field. Instead of pressing **Playback** and typing the playback number, you can also select the playback using the Playback button. This will automatically move onto the next field.

## Deleting playbacks

To delete a playback (and all the cues within that playback), press the **Delete** button, and then select the playback you wish to delete using the buttons under the



faders. A popup will appear to confirm this action. Deleting Playbacks cannot be undone.

### Advanced Playbacks

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

### Playback Settings

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

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



Playback Setup window – General tab

### General

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

#### Intensity Mixing

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

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

75% on another active playback, it will output at 75%. As that playback is pulled down, the intensity will reduce to 50%, but stay at 50% as that becomes the highest value for that fixture.

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

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

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

#### Fader Function

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

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

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

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

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

#### Fader Controls...

This allows you to force a parameter to follow the movement of the fader for its crossfade, rather than

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

### Button Function

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

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

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

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

### Stack Name

This allows you to name a Playback.

the button changes to *Revert from Chase*, and additional options appear in the chase tab, split into six parts as detailed below.

### Chase Direction

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

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

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

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

Random – The steps are output in a random order.

### Intensity

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

### Attribute fade percentages

Individual fade percentages can be set for each attribute.

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

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

### Chase Speed

The Speed option determines how fast the chase runs.

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

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




Playback Setup window – Chase tab

### Chase

It is possible to convert a whole playback into a chase, which makes the playback run automatically in sequence. This is done by choosing *Turn into Chase* within the “chase” tab of Playback Setup. Once converted to a chase,

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

Alternately, "Use Global BPM" can be selected. This allows multiple chases to all use the same BPM. The Global BPM speed can be controlled by pressing the  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 option determines how many times the chase will run after being triggered.

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

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

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

### Trigger / Release Level

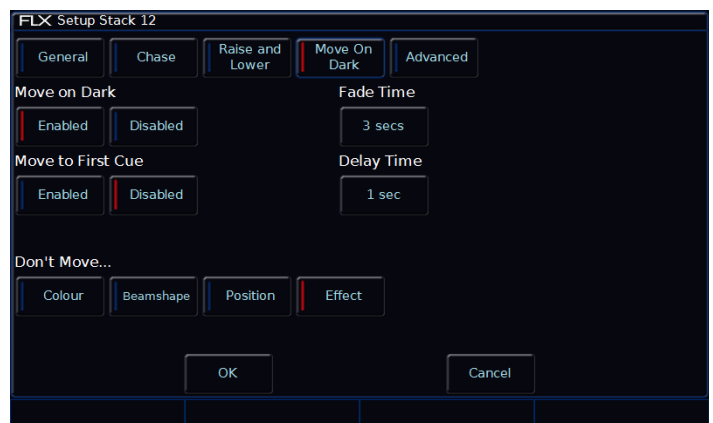
The level at which the playback is triggered or released, in %. If set to 10%, the playback will not be triggered until the physical fader is at 10%.

### Raise Time

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

### Lower Time

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



Playback Setup window – Move on Dark tab

### Move on Dark

The various options are described below:

#### Move on Dark

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

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

#### Move to First Cue

This option is used when there are no more cues later in the playback for the fixture to Move on Dark to. If enabled, when fixtures go dark for the last time in the



Playback Setup window – Raise and Lower tab

### Raise and Lower

The various options are described below:

#### Trigger on Raise

When the playback fader is raised, the first cue is activated.

#### Release on Lower

When the playback fader is lowered, the stack is released.

playback, they will move to the first cue they are used in. When disabled, they the fixtures go dark for the last time in the playback, they will not move.

### Fade Time

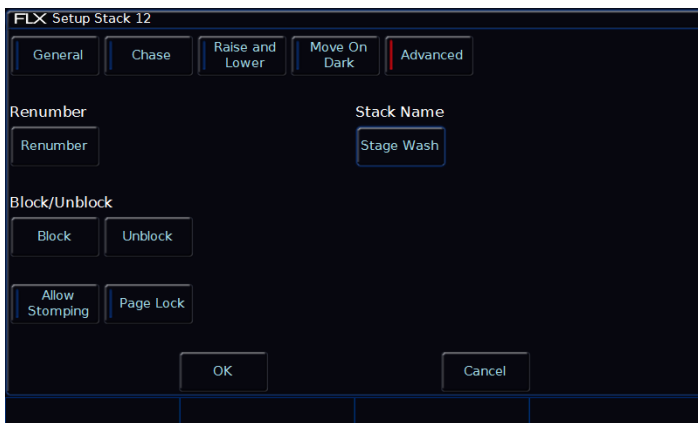
The time with which FLX S fades the attributes that move on dark.

### Delay Time

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

### Don't Move Colour / Beamshape / Position / Effect

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



Playback Setup window – Advanced tab

## Cues

### Recording cues

Once you have set up a look that you like, by selecting fixtures and adjusting their parameters as described in the previous chapters, you can then record that state into a cue. To see the cues being recorded, it is recommended that the Playback Window is displayed. To record a cue, press **Record** and then press the **Go** of the Playback you wish to record the Cue into (for example, the Master Playback Go button).

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

“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. (See “Z key” for more info).

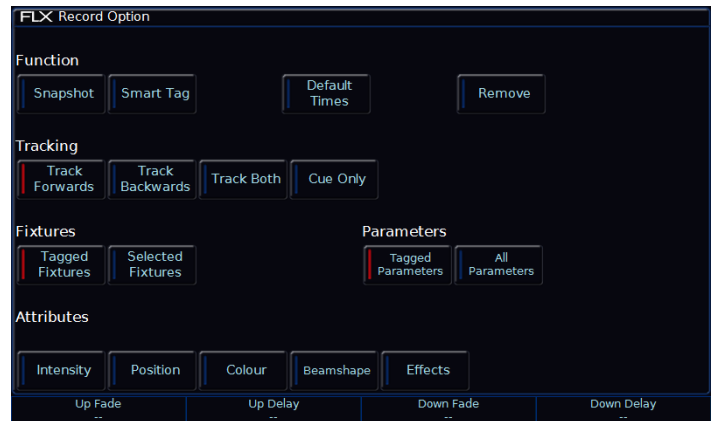
After recording a cue, one of three things will happen:

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

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

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

*Please note: FLX S can be operated as a tracking console. This means that if a parameter is programmed in one cue, it will track through all subsequent cues until it is programmed to do something else. If you program playbacks sequentially, you shouldn't have to worry about tracking, as long as you ensure that you tag any parameters you wish to be recorded in the cue you are working on.*



Record Window

### Record Window

When you press **Record**, the Record Window opens on the external monitor of FLX S48. To open the Record Window on the internal monitor of either console, press and hold the **Record** button, rather than just tapping it. You can change where and when the Record Window opens by going into **Setup**, **System Settings** and changing the **Show Record & Update Window** setting.

Within the Record Window are the following options:

#### Fade Times

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

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

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

To add fade times when recording a cue, use the encoder wheels. When you press **Record** during the record process, “Up Fade”, “Up Delay”, “Down Fade” and “Down Delay” will be shown on the encoder wheels. Use the encoder wheels to change these fade times, or press the middle button on the encoder wheel to type in a fade time.

#### Snapshot

Snap Shot will store a value for every single parameter of every single fixture in the cue, ensuring that the lighting state you see is exactly what is recorded, and that the cue can't be altered accidentally in the future when other cues are

updated / deleted / inserted (this is sometimes called a “Block Cue” or “Blocked Cue”).

Alternatively, pressing **[Shift]** & **[Record]** together will automatically record the cue as a Snap Shot.

### Smart Tag

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

### Tracking options & Cue Only

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

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

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

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

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

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

### Fixture, Attribute & Parameter Filters

These options filter which values are and aren’t stored into cue. First, “Fixtures” define which fixtures are to be recorded. **[Tagged Fixtures]** will store information for all fixtures with a value “tagged” (value in the programmer) whereas **[Select Fixtures]** will only store values for the currently selected fixtures.

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

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

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

### Remove

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

### Adjusting fade times

Once a cue has been programmed, its times can be adjusted in a similar format to a spreadsheet on a computer, with each time being in a separate “cell”. Choose the time you wish to change by touching it and adjust the fade time on the encoders. Alternatively, click the middle button of the encoder to type a specific fade time.

### Naming cues

Naming cues can be helpful in remembering what changes, or when the cue happens. Double touch/click the “Name” cell in the Playback Window and an onscreen keyboard will be displayed to name the cue. Alternatively, use an external keyboard to type a cue name.

### Updating cues

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

Once the cue is outputting, make the changes required (using the MFFs, encoder wheels or touchscreen). To record the changes to the current cue, press **Update** and then press the relevant **GO/Play** button for the cue you wish to update (such as the Master Playback button).

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

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

### Copying Cues

To copy one cue to another cue, press the **Z** key to open the “Z Window”. In here, press the **Copy** button to open the Copy Window. Ensure **Cue** is selected in the window (it will be by default) and then type the number of the cue you wish to copy in the “from” field, and the number of the cue you wish to copy it to in the “to” field.

To copy a cue to or from an alternative playback, press the playback after typing the cue number. Doing this moves onto the next field automatically. For example, to Copy Cue 7 from Playback 15 to cue 25 in playback 18, type **7** in the “from” field followed by **Playback button 15**, and then type **25** in the “to” field, followed by **Playback button 18**.

### Deleting Cues

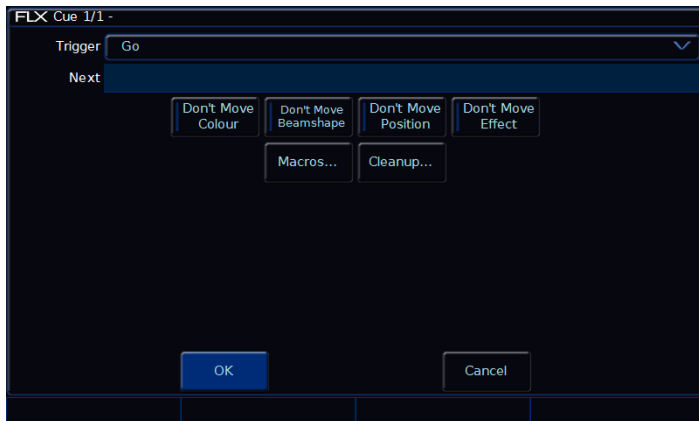
To delete a cue, press the **Delete** button, press **Z**, and then type the cue number you wish to delete (for example **15**), and then press the Playback button which contains the cue you wish to delete (for example, the Master Playback). To delete multiple cues, the “thru” button can be used (for example **15 Thru 20**).

To delete all cues within a playback, see “Deleting playbacks” on page 16.

Deleting a cue cannot be undone.

## Cue Settings

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



Cue Setup window

### Trigger (Go, Auto, Timecode etc)

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

#### GO

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

#### Auto (with previous cue)

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

#### Auto (after previous cue)

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

### Next cue

“Next cue” is the cue number which automatically gets selected after this cue is executed. This functionality is very useful if a scene is “cut” from the show – you can tell FLX S to skip the cues in that scene and jump straight to a

different cue. If this field is empty, FLX S will automatically select cues sequentially.

### Don’t Move on Dark settings

This option allows you to disable a specific attribute from moving in dark during this specific cue. For example, you may not want colour scrollers changing during a very quiet scene, so during that scene “Don’t Move Colour” can be selected. For more information about this, see “Move on Dark” on page “19”.

### Macros

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

To do this, press the “Add” button next to either of the two options. This will open a new window which displays all the Playbacks. Select the Playback you wish to trigger. This will add it into the previous window. You can repeat this to trigger multiple playbacks at the same time. To remove a playback you’ve added, simply select it in this window. Once finished, select the **OK** button.

### Playing back cues

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

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

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

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

You can change which cue is next by tapping a cue. The cue will go yellow, and become active when **Go** is pressed.

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

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



### Jumping to a cue (Go To cue)

To jump to a specific cue, simply scroll to in on the touchscreen and touch it so it's selected in yellow and then press the Playback's **Go** button.

### Snapping to a cue (Ignoring fade times)

To snap to a cue (for example, during a programming session when you want to alter a cue without having to wait for the cue fade to complete), hold **Shift** whilst pressing the **Go** button. This will snap to the cue, rather than using the fade times. Doing this also won't allow Auto Triggers to work (useful to jump to a cue without automatically moving onto the next cue). (If this doesn't work, settings within the Playback Setup window must have changed – see page 17 for more information).

### Using the pause key

If at any time you wish to pause a cue while it is running, you can use the pause function. Pause is an option that can be chosen within the Playback Setup window (see page 17 or more info). Often, users will set Pause to be the “shifted” function of the playback button, which can be set as a default option so you don't need to change every playback – see page 38 for more info.

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

To continue running the playback, press the **Go** key.

### Releasing playbacks

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

To release all the playbacks, hold Clear and press the **Fader Funct.** button. This will release the MFFs (not Playback 0). To release Playback 0, hold **Clear** and press the **Go** button of the Master Playback.

## Macros

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

### Macro Window

The Macro window is displayed on the internal display when the **Macro** tab is pressed along the top of the touchscreen. This will only be shown if Macros are available for the currently selected fixtures. Macros can be selected directly within this window.

### Automatic fixture macros

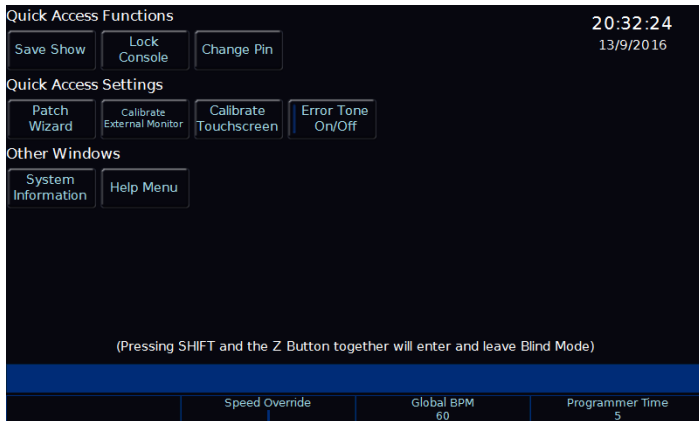
The FLX S can generate a number of Fixture Macros based upon the fixture types patched. To create the automatic macros, view the Macros window (by pressing **Macro**) and choose **Automatically create macros**.



Macro window after “Automatically create macros” has been selected.

## Ⓩ Key

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



“Z” button

### Save Show

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

### Lock Console

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

### Calibrate (FLX S48 only)

This is a quick access to calibration (page 34).

### System Information

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

### Guidance

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

### Encoder Wheels

On the encoder wheels are four additional options:

### Intensity

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

### Speed Override

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

### Global BPM

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

### Programmer Time

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

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

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

### Command syntax

Pressing the Ⓩ button displays a number pad which can be used to type commands. To control the intensity of a fixture(s) via the numeric keypad, commands must be typed like this:

... [Channel No(s)] [ @ ] [Intensity %] [Enter] ...

Examples of valid commands are below:

... 1 @ 1 0 0 Enter ...

This sets the intensity of channel 1 to 100%.

... 2 And 3 @ 7 5 Enter ...

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

... 5 Thru 1 0 @ 5 0 Enter ...

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

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

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

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

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

... 1 Thru 3 And 7 Thru 9 @ 2 5 Enter ...

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

... 1 And 7 Thru 1 2 Except 9 @ 5 Enter ...

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

There are also some shortcuts available:

... 1 @ @ ...

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

... 1 @ . ...

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

... Enter Enter @ . ...

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

## Patching – introduction

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”).

If your fixtures do not support RDM, the DMX Patch (or “patching”) is a required process where ZerOS is told all about the devices, known as “fixtures”, being used in your lighting rig (see “Fixtures” on page 28). From this information, ZerOS will be able to provide you the controls required on-screen (and on the fixture wheels) to control all the functions, known as “parameters”, of these fixtures (see “Parameters” on page 28).

### Fixtures

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

### Parameters

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

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

### Attributes

Parameters are grouped together into three attributes for easy access and control. These attributes are called “*Colour*”, “*Beam*”, and “*Position*”.

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

### Zero 88 Fixture library

ZerOS includes the Zero 88 Fixture Library. This is a library which contains information for around 6000 fixtures, including how they work, what parameters they have, what their default values are etc. During the patching process, you tell ZerOS the Make and Model of the fixtures being used, and ZerOS finds those fixtures in the Zero 88 Fixture Library to learn all about them. The Zero 88 fixture library is regularly updated, and can be downloaded from [zero88.com/software/library](http://zero88.com/software/library).

### User fixture types

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

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

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

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

## DMX – introduction

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

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

To understand DMX, you must understand “DMX addresses” and “DMX universes”:

### DMX channels (and DMX start address)

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

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

For example, if a fixture has 14 parameters, it will take up 14 DMX channels. If that fixture has a “DMX start address” of 101, it will 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 system may look like this:

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

## DMX universes

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

The FLX S lighting console supports one universe (512 channels) as standard, or can be upgraded to control up to two “universes” (or up to 1024 DMX channels) when upgraded. These two universes can be sent out over the two DMX outputs (see “DMX Outputs” on page 37), or can be distributed over an Ethernet network using either “Art-Net” (page 41) or “Streaming ACN” (page 42).

### 16 bit channels

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

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

### Composite fixtures

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

# Setup

To enter Setup, press the **Setup** key on the front panel. Whilst within Setup, the LED in the **Setup** key will be lit. Navigate through Setup using the column of options on the left hand side of the screen. Each item in this list has a section of the chapter below. To exit Setup, press the **Setup** key again.

## Fixture schedule

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

Each fixture on the desk has its own fixture name and number. The number is how it will be referred to during programming and on-screen, and the name is used as a description to ease identification. These two fields can be changed by simply touching the appropriate cell.

It is recommended that you take some time thinking about numbering your fixtures. It is useful to renumber your fixtures to something logical and unique, as this will be how each fixture will then be referenced during programming and playback.

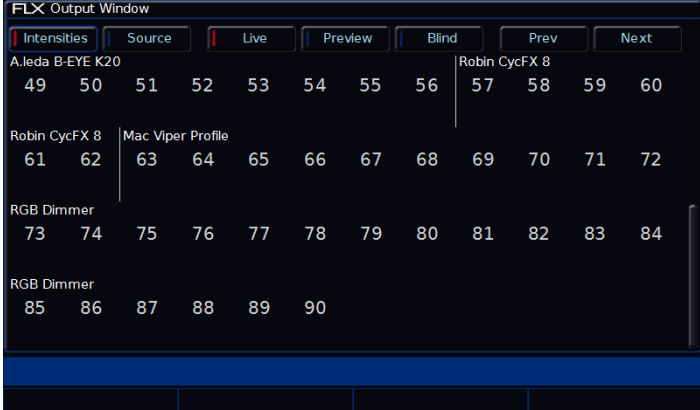
To renumber multiple fixtures at the same time, select the fixtures as detailed earlier, and then select the column header button which is labelled "Ch #". This will open an onscreen numberpad. When you edit this value, the fixtures selected will be renumbered sequentially in the order they were selected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

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

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

Fixture names are shown in the Output Window, as shown below. When sequential names are identical, the name is only displayed once per row. A vertical line splits up fixtures with different names. Multiple names can be edited at the same time by selecting the fixtures and selecting the

column header button which is labelled "Change all Names".



The screenshot shows the 'FLX Output Window' interface. At the top, there are several tabs: 'Intensities', 'Source', 'Live', 'Preview', 'Blind', 'Prev', and 'Next'. Below the tabs is a grid of fixture information. The grid is organized into rows and columns. The first row shows 'A.leda B-EYE K20' with fixture numbers 49 through 60. The second row shows 'Robin CycFX 8' and 'Mac Viper Profile' with fixture numbers 61 through 72. The third row shows 'RGB Dimmer' with fixture numbers 73 through 84. The fourth row shows 'RGB Dimmer' with fixture numbers 85 through 90. A vertical line is visible between columns 56 and 57, separating fixtures with different names.

*Fixture names and numbers being displayed in the Output Window*

## Alignment (inverting and swapping pan & tilt)

If your fixtures have Pan and Tilt control, ZerOS is capable of making adjustments to your fixtures to take into account their rigging position.

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

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

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

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

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

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

### Changing fixture type (fixture swapout)

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

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



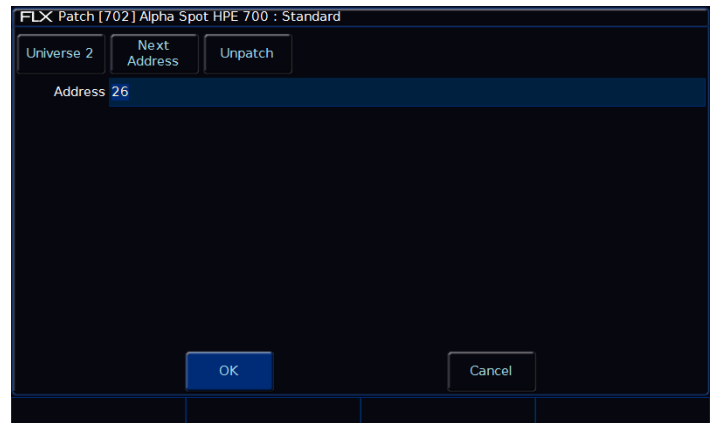
Replace fixture type popup window

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

### DMX address (patch, repatch and unpatch)

The Address column allows you to add, change or remove the DMX start address of each fixture. The DMX start address of each fixture will be displayed in this column. If a fixture does not currently have a DMX start address, the cell will be left blank.

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



Patch window

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

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

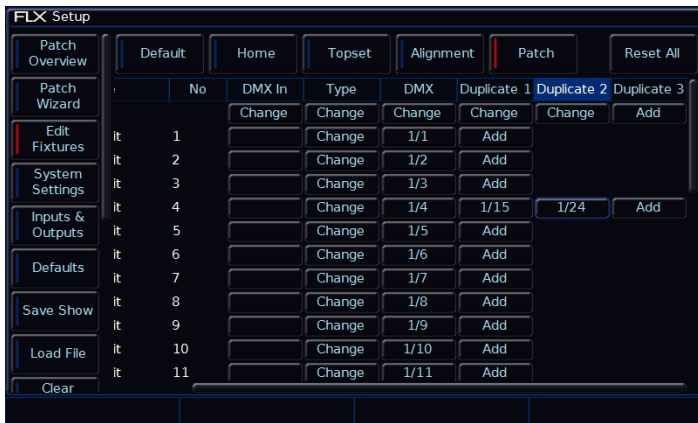
Alternatively, in this window you can press the **Unpatch** button. A confirmation popup window will be displayed. Select the **Yes** button to confirm the operation.

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

### Add as additional address

**Using this** button instead of simply "OK", it is possible to patch a fixture to more than one DMX address in one or more universes. These additional patch addresses are known as duplicates.

When duplicates are patched, additional rows are added to the Fixture Schedule table (one row per duplicate address) as shown in the following example.



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.

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

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

### Multi-part fixtures

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

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



Patch screen within Edit Fixtures displaying multi-part fixtures

### DMX In

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

### Deleting fixtures

Deleting fixtures is a permanent change to the show file and should not be carried out without intention. There is no undo function, so exercise caution when using this function. To delete a fixture, select the fixtures using the MFF buttons or “Patch Groups” along the bottom, and then press the **Delete** button on the front panel.



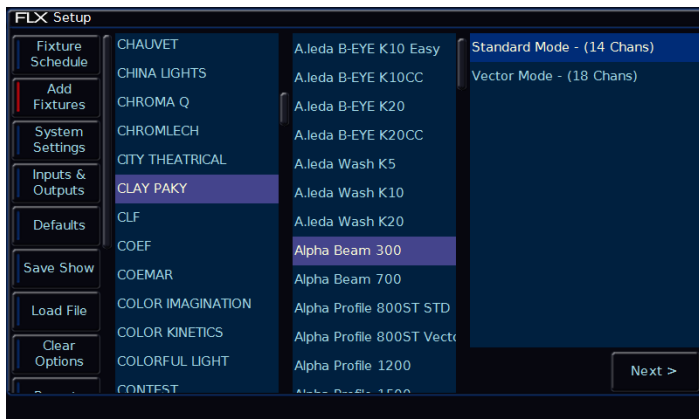
## Add fixtures

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

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

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

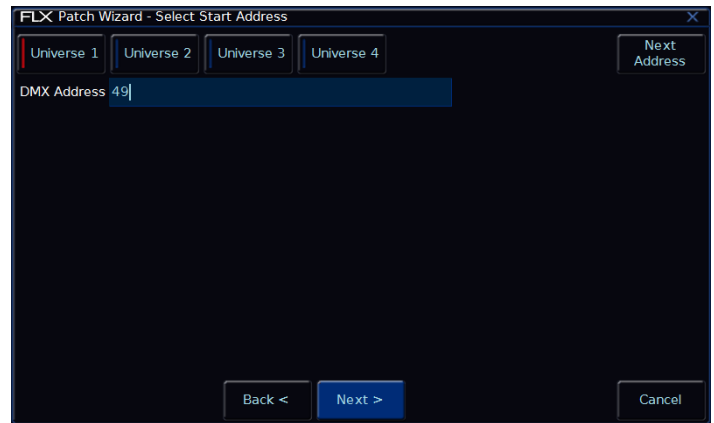
*The first option in the list of Manufactures is <Generic Fixtures>. This contains generic profiles for fixtures such as “RGB”, “RGBWA”, “Video 1ch” and “Dimmer + Scroller”.*



Selecting a manufacture, fixture and mode

Once the manufacture, fixture and mode has been selected, press the **Next** button to move on and select the quantity, fixture number and DMX address. These will be automatically pre-populated, so if you have not yet set a DMX address on the fixtures themselves, the desk will have already calculated a DMX address for you based on the existing patch. It is important here to ensure that the correct DMX universe is selected.

The fixture number is the number you will refer to the fixture as within the desk software, and defines where that fixture will be located on the faders. Enter the number and press **Finish**.



Setting the DMX address

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

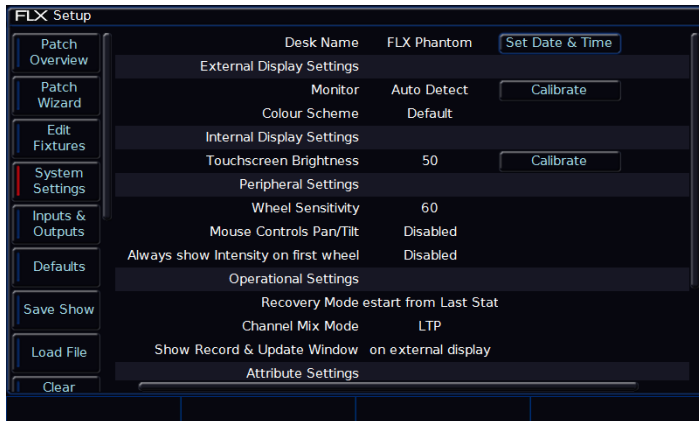
You can repeat this process for every type of fixtures you have.

## Multi-part fixtures

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

## System Settings

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



The “System Settings” window

### Desk Name

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

### External Display Settings (FLX S48 only)

FLX S48 supports one external monitor, plugged into the “DVI-D” connector on the rear of the console. This monitor can also be touchscreen if desired, which also plug into one of the USB connectors with a second cable.

FLX S48 will automatically detect if the external monitor is present, and the best resolution to use for that monitor.

To manually change if a monitor is present or not, change “Monitor” to “Enabled” or “Disabled” (by default, this is set to “Auto Detect”). This will change what’s displayed on the internal monitor – see “Using FLX S48 without an External Display” on page 5 for more information.

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

displayed in the same place you touch the monitor. Press **[Enter]** to confirm and return to System Settings.

*A number of external touchscreens are supported by FLX S48. Although we will endeavour to add support for other screens where possible, we make no guarantees about this since the drivers may not be available in the correct format for the desk operating system. If you want us to add support for a different screen, then we may ask you to loan us the screen (including the drivers CD that came with it) for a short time for testing. Please contact Zero 88 for details.*

### Internal Display Settings

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

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

### Peripheral Settings (encoder wheel settings etc)

Wheel Sensitivity can be changed under “Attribute Settings” within each Attribute. “Wheel Sensitivity” allows you to change the sensitivity of the four encoder wheels. The setting is a value between 0% and 100%, with 100% being the most sensitive. Recommended use is between 50% and 60%.

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

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

### Operational Settings

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

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

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

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

“When held” means the windows will only be displayed when the **Record** or **Update** buttons are held for around half a second.

“On internal display” means the windows will be shown on the internal display as soon as the **Record** or **Update** buttons are pressed.

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

“On both displays” means the windows will appear on both displays as soon as the **Record** or **Update** buttons are pressed.

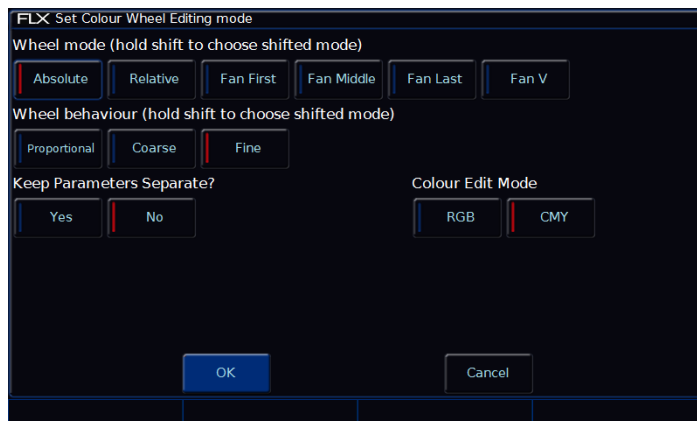
“MFF Window Playback button action” defines what happens when you press a Playback Button in the MFF window. By default this opens the Playback’s Setup Window, but it can instead match the physical button action (for example Flash or Tap Tempo), or set a Fader Level.

“Auto Select Channel on Fader Movement” automatically selects a channel when a channel fader is moved. This can be disabled if you wish.

### Attribute Settings (Colour, Beamshape, Position)

These options allow you to change various settings for each attribute. The same windows can also be opened outside of the Setup Window, by pressing **Setup** and the attribute tab together.

For example, **Setup** + **Colour** together will open the Attribute Settings for colour, as shown below.



The “Attribute Settings” window for the Colour attribute

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

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

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

- “Fan Middle” will fan from the middle fixture, so the middle fixture’s parameter doesn’t change, the first half of the fixtures will change in one direction (again, scaling as you move away from the middle fixture), and the second half of the fixtures will change in the other direction.
- “Fan Last” fans the change you make across all the selected fixtures, so the last fixture’s parameter doesn’t change, the first fixture’s parameter changes as expected, and all the fixtures in-between will scale between these two values.
- “Fan V” is similar to “Fan Middle”, but the second half of the fixtures change in the same direction as the first half, rather than the opposite direction.

“Wheel Behaviour” changes how responsive rotating the encoder is.

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

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

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

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

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

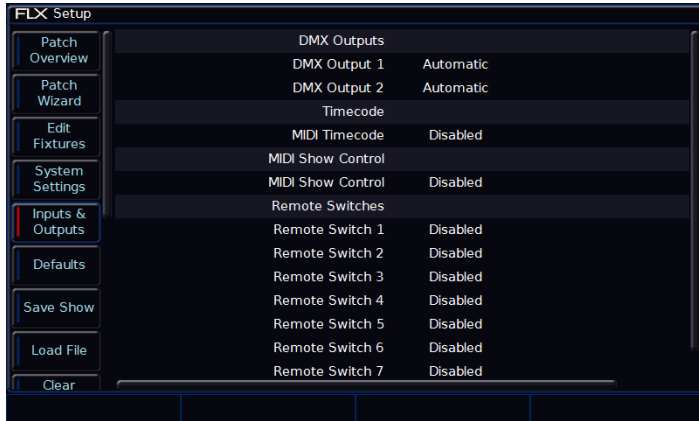
## Tracking Options

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

“Disabled” means that cues are programmed with a full 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.

## Inputs & Outputs

Inputs and Outputs within the Setup menu allows you to manage the DMX Output of the FLX S. This screen does not cover networking, which is covered in other areas within Setup.



The "Inputs & Outputs" window

## DMX Outputs

FLX S has two DMX Outputs on the rear of the console. By default, these both output Universe 1, unless FLX S has been upgraded to 2 universes. Each of the outputs can be mapped to either of the DMX Universes. For example, on smaller rigs you may choose both outputs to be the same Universe 1 so it doesn't matter which output you plug your rig into. The default setting is "Automatic", which means if something is patched on Universe 1 it will be outputted on DMX Output 1, and if something is patched on Universe 2, it would be outputted on DMX Output 2 (if upgraded).

## Defaults

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



The "Defaults" screen within Setup

## Default Times

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

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

## Playback Defaults

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. For more information about the options available, see “

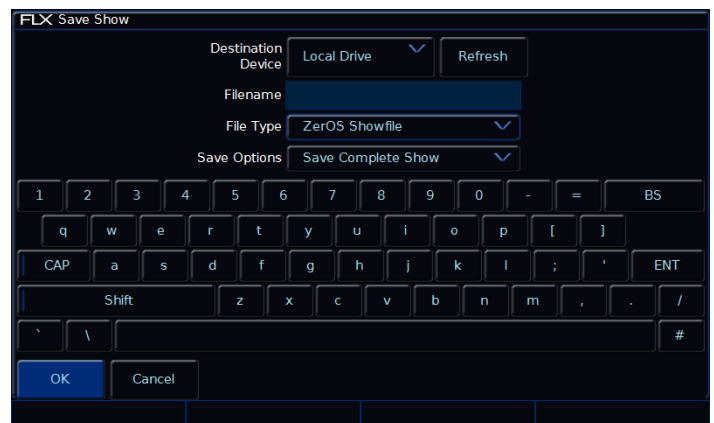
Playback Settings” on page 17.

## Save Show

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

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

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



The “Save Show” popup window

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

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

## File Types

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

## ZerOS Showfile

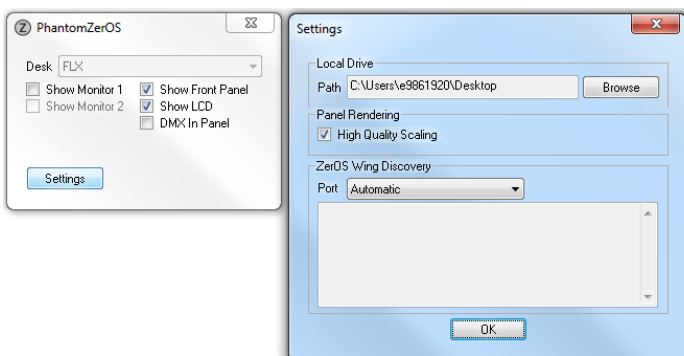
This is the default option, and should be used in most circumstances. These can be loaded back into the console or loaded onto any other console running ZerOS (for ultimate compatibility, it is suggested that both consoles are running the same software version). When selecting “ZerOS Showfile”, you are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

## Comma Separated Values (.csv)

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

## Phantom ZerOS

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



## Load File

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

### ZerOS Showfiles

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

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

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

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

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

### ASCII Showfiles

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

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

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

## User Fixture Types

User Fixture Types are files created when a required fixture is not included within the Zero 88 Fixture Library. These files are loaded into the console using the same method as detailed within “ZerOS Showfiles”. Once loaded, a confirmation will appear saying “x Fixture Types loaded” (x being the number of fixtures included within the single file). These will be loaded into the main library, ready to be patched in the usual way. (See “User fixture types” on page 28 for more information).

## Zero 88 Fixture Library

The Zero 88 Fixture Library contains a library of thousands of fixtures you may wish to use with FLX S. This library is regularly updated, and can be downloaded free of charge from the Zero 88 website. These files are loaded into the console using the same method as detailed within “ZerOS Showfiles”. Once loaded, the new library will not take effect until the console has been restarted (which can be done straight away, or at a more convenient time later). (See “Zero 88 Fixture library” on page 28 for more information).

## Installing new software

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

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

## Clear Options

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



The “Clear Options” section of Setup

## Clearing specific areas of the console

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

- Colour Palettes
- Beamshape Palettes
- Position Palettes
- Effect Palettes
- Macros
- Groups
- Playbacks

## Clear User Fixture Types

A separate option, that is not included within “Clear All”, is “Clear User Files”. This removes all User Fixture Types from the internal library. Although this removes user fixture types from the console, any fixtures being used within a specific showfile are stored within that showfile itself. (See “User fixture types” on page 28 for more information).

## Reset Desk / Factory Reset

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



## Remote (mobile apps)

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

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

"ZerOS Monitor" is designed to work as a "remote monitor", just like the physical touch screen monitor you can plug into the back of the FLX S48. Whatever you can do on that monitor, you can do with this app. Whatever you can't do on that monitor, you can't do on this app! Although this app can work on any screen, it's not really designed for a smartphone sized screen.

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

**NOTE – FLX S should not be connected to the Internet**

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

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

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

## Art-Net

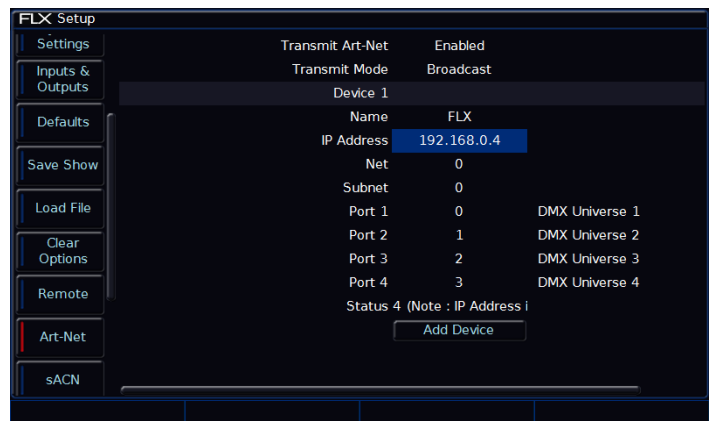
Art-Net is a lighting protocol which sends DMX data over Ethernet. The protocol allows for multiple DMX universes to be sent over a single Ethernet cable. The FLX S console can output up to 1 universes of DMX data via Art-Net, or 2 universes if upgraded.

**NOTE – FLX S should not be connected to the Internet**

For more in-depth information about Art-Net, please visit the dedicated website at [art-net.org.uk](http://art-net.org.uk)

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

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



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

### Transmit Art-Net

This option enables or disables Art-Net transmission.

### Transmit Mode

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

### “Devices”

Art-Net is outputted in blocks of four Art-Net “ports” (equivalent of DMX Universes). These blocks are called “Devices”. For more, click **Add Device** at the bottom. A **Remove** button will appear next to each device if you wish to remove them.

Within each Device, there are the following options:

#### Name

This allows you to give each device an independent name

#### Network Switch

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

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

#### Net

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

#### Subnet

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

#### Port 1 – 4

This allows each of the four device ports to be allocated a separate Art-Net port, or be disabled. This port must be matched with the Art-Net receiving device. The DMX Universes can be linked to the Art-Net ports.

### Streaming ACN (sACN)

Streaming ACN is another lighting protocol which sends DMX data over Ethernet. The protocol allows for multiple DMX universes to be sent over a single Ethernet cable. The FLX S console can output 1 universe of DMX data via sACN, or up to 2 universes upgraded. The protocol is approved by ANSI and ESTA as the standard for DMX over Ethernet and allows ZerOS to communicate with a multitude of sACN enabled devices already available from a range of manufactures.

**NOTE – FLX S should not be connected to the Internet**



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

### Transmit sACN

This option enables or disables sACN transmission.

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

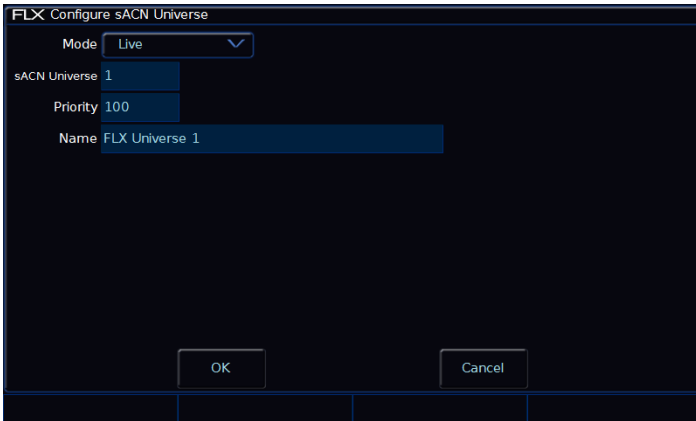
### IP Address & Subnet Mask

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

### UUID

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

Choose **Configure** to make changes to the sACN universes. This will open the following window.



The “Configure sACN Universe” options window

**Mode**

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

**sACN Universe**

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

**Priority**

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

**Name**

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

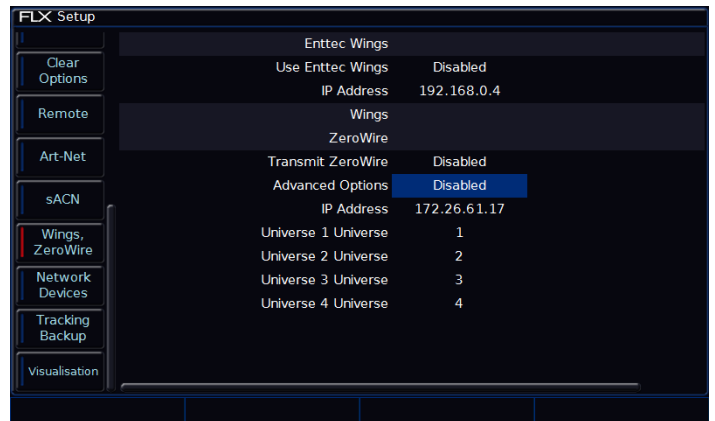
**Wings and ZeroWire**

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

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

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

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



The Wings and ZeroWire section of Setup

**Network devices**

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

*For more in-depth information about Art-Net and Art-Net devices, please visit the dedicated website at [art-net.org.uk](http://art-net.org.uk)*

## Visualisation

3<sup>rd</sup> Party visualisation packages allow you to preview your lighting through a 3D emulator when you don't have access to the venue. Most accept Art-Net or streaming ACN directly (see pages 41 and 42 respectively), but FLX S also includes specific support for Capture, WYSIWYG and Light Converse, detailed below.

### Capture

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

*For more information on Capture, please visit their website at [capturesweden.com](http://capturesweden.com)*

### Light Converse

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

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

*For more information on Light Converse, please visit their website at [lightconverse.net](http://lightconverse.net)*

## WYSIWYG

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

### WYSIWYG Installation

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

### WYSIWYG Usage

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

*For more information on WYSIWYG, please visit their website at [castlighting.com](http://castlighting.com)*

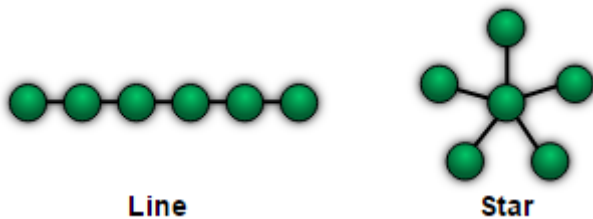
## Networking Basics

### Ethernet basics

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

**NOTE – FLX S should not be connected to the Internet**

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



### IP Addresses

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

### Subnet Masks

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

### Switch vs Crossover

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

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

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

### DHCP

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

## Technical Information

### Power supply

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

12V DC; MAX 1.25A, 15W

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

### USB ports

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

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

### Ethernet

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

**NOTE – FLX S should not be connected to the Internet**

### Kensington Lock

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



### DMX output

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

### Video output

1 x DVI-D connector, on FLX S48 only

## Troubleshooting

### 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?
- If the fixtures do not support RDM, they must be added (or “patched”) manually – see the manual for full details.
- If you have upgraded your FLX S, ensure the DMX cable is plugged into the correct output
- Some fixtures require the lamp to be “lamped on”. If this is required, a “Macros” tab will be displayed along to top of the screen when the fixture is selected. Selecting macros will display a “Lamp On” command.

### External Touch Screen not responding?

On 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.
- External Touch Screen require calibration by going to Setup > System Settings > Calibrate

### Remote App not connecting?

If the remote apps are not connecting to the console, check one of the following things:

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

### Console does not start correctly?

In this situation, follow these steps:

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

## Basic maintenance

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

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

### Cleaning the surface

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

### Cleaning the faders

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

### Transportation & storage

Care should be taken when transporting FLX S. Flight cases are available (listed under “accessories” on the first page of this guide) for the transportation of FLX S – the cardboard box which FLX S is supplied in is intended only for one or two journeys, and should not be relied upon to keep the console safe for prolonged use.

### Operating environments

Always observe the operating environment information in the main FLX S manual. If this environment is exceeded, it is likely that damage will occur to your FLX S. To download the full manual, please visit [zero88.com](http://zero88.com)

## Reporting a problem

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

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

Support requests can be submitted through our support forum at [zero88.com/forum](http://zero88.com/forum) or via email to [support@zero88.com](mailto:support@zero88.com)

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

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

If you suspect that your problem is software related, please always check that you are running the latest software version. This can be found at [zero88.com/software](http://zero88.com/software)

## Mechanical information

### Dimensions

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

### Weight

7.5 kg

### Operating temperature range

+5 to +40 °C

### Humidity

5% to 95% non-condensing