



ORB SERIES OPERATING MANUAL

zero[®]88



ORB SERIES

ORB SERIES OPERATING MANUAL

If a portable or temporary three phase mains supply is used to power this desk, we recommend that the desk mains plug is removed before connecting or disconnecting the supply. Serious damage will occur if the desk is connected across two phases.

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

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause unacceptable interference in which case the user will be required to correct the interference at the operators expense.

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Introduction

Introduction

This Manual

This manual describes the operation of the ORB lighting desks. This chapter contains an overview of the capabilities and controls of the ORB series.

The Quick Start Tutorial chapter is designed to get you up and running with the desk, but is not a substitute for the whole manual. For more detail on each function, this manual is divided into chapters, one for each major area of control.

As the ORB is a powerful lighting desk which can be set up in many different ways, experience is the best way of fully learning the desk. Through time you will develop your own operating style.

Throughout this manual the following conventions are used:

References to front panel controls, buttons and lights appear in capital letters, for example:

GRAND MASTER, COLOUR, <UDK3>.

Soft buttons which appear on the monitor are displayed as follows:

[Desk Setup], [Values].

Syntax keys which appear on the LCD screen above the main keypad are displayed as follows:

{Knockout}, {Close}, {Merge}.

The ORB Series

The ORB series of lighting control desks come from a heritage of control system development which spans almost 15 years. The software base, ZerOS, is also featured on the Frog 2 and Leap Frog 48 & 96 ranges. The hardware combines the latest in high tech embedded processing with powerful, ergonomic control interfaces.

The ORB features a traditional theatrical layout, including ten playback faders capable of functioning as playbacks or submasters. This console is ideal for users who wish to playback in a traditional theatrical format, with a pre-built cue stack.

The ORB XF replaces these ten playback faders with 60 Multi Function Faders which can function as Channels, Submasters or Playbacks. This console is more suited to users who require flexibility in playback and a simpler programming approach.

The following section is a summary of the main functions of the ORB series of lighting desks.

Graphical Interface

The desk operates a graphical interface which is provided by up to two external monitors.

All the setup, programming, playback and output information is displayed graphically on the monitor screens.

The desk provides two XGA outputs on the rear panel of the desk. The monitors are used extensively to display information and shortcut buttons.

Two touch screens can be connected to the desk via VGA and USB ports as an option to provide you with easier input facilities.

Keys on the front panel enable quick and direct access to the various monitor screens.

Cursor keys and an internal trackball on the front panel allow you to move around the monitor. These functions can optionally be mimicked using a USB keyboard and mouse.

Command Line

The primary method of programming the ORB series is via a command line, which is displayed on the monitors. Commands can be entered using the front panel keys, control wheels, external keyboard or by clicking on objects with the mouse or trackball. Each command must be actioned by the ENTER key.

Above the command line is a Suggested Commands bar which indicates the next available keys in your command syntax.

Control Channels

The desks have 2048 channels of control. These can be assigned and patched as any number of Fixtures, across the 4 DMX universes on the desk.

Fixtures

Every device controlled by ORB is known as a Fixture. Fixtures can be a simple generic dimmer channel, or a complex DMX device such as a colour scroller, moving mirror or moving head (eg VL3000, MAC 700). Any item controllable via a DMX signal can be assigned as a fixture on the ORB series.

In the ORB series, dimmer channels are a simple fixture with one parameter. Moving heads, moving mirrors, LED and Video systems controlled by DMX are fixtures with multiple parameters.

Within the Fixture Library, the ORB series is told which channels control which parameters of the fixture. These are then grouped into Position, Colour and Beamshape.

Fixtures can be given a user defined name and number, for ease of reference.

Fixtures can be patched to any of the DMX output channels (1 – 512) on any of the DMX universes (1 – 4).

Fixture parameters can be manipulated from within the Output Window, from where they can be added to cues, palettes, submasters, User Defined Keys, or macros.

Cues, Cue Stacks and Playbacks

The desk allows you to record cues, for use in any of the 1000 user programmable cue stacks. Each cue can have a number, name, trigger, a wait time (auto cues) and a set of delay and fade times. It is possible to give each parameter of each fixture their own individual fade and delay times in each cue.

The desk provides 10 playbacks, which can be switched between 100 pages.

Groups

The desks provide 1000 user definable groups. Automatic groups for each fixture type in the schedule can be generated from the Setup area, if required.

Palettes

The desks provide 1000 user programmable palettes for each of the four attributes (Colour, Beamshape, Position and Effects).

User Definable Keys (UDKs)

The desks provide 20 pages of 10 User Definable Keys. The User Definable Keys may be assigned to Groups, Fixtures, Palettes, Effects, Cues, or channel data.

Introduction

Multi Function Faders (MFFs)

The ORB XF is equipped with 60 Multi Function Faders. These can be used in one of three ways –

- Faders 1 – 40 can be used as Channels or Submasters
- Faders 41-60 can be used as Channels, Submasters or Playbacks

In each of these modes there are various settings to define the behaviour of these faders. These functions are detailed later in this manual.

Submasters

Submasters are scenes stored onto faders. These are played back by raising the fader, and are removed from the output by lowering the fader.

The ORB provides 20 pages of upto 60 Submasters. The submasters may be played back via DMX In or by converting the Playback Masters into Submaster mode.

The ORB XF provides 20 pages of upto 60 Submasters which are mapped to the Multi Function Faders.

Output Processing on the ORB Series

The ORB series has two distinct channel types: **Intensity** channels and **Attribute** channels (Colour, Beam and Position).

The main difference is that Intensity channels can be flashed, are mixed with their source's Master Fader and the GRAND MASTER, and can have distinct Fade Up and Down times.

When you play back a cue, park a channel, or manually manipulate a channel in the programmer, you give ownership of the channel to that specific area of the desk.

When a channel is owned, the programmed value (or series of values, if it is defined as a chase or effect) is output. However, the previous owner(s) are not forgotten, and go into a history list.

When an item is released, it loses its places in the history, whether it currently owns them or not. The most recent owner in the history will then regain ownership, and hence control the output of that channel.

If a channel is not owned by any source, then it will output zero for an Intensity channel, or its default value for an Attribute channel.

You can toggle a Source View for the Output Window by using the syntax `VIEW {Source}`. This will show you where the values are coming from.

Front Panel Controls

ORB

This section of the manual describes the controls and displays on the front panel of the ORB desk. The front panel controls have been divided into the following sections:

Introduction

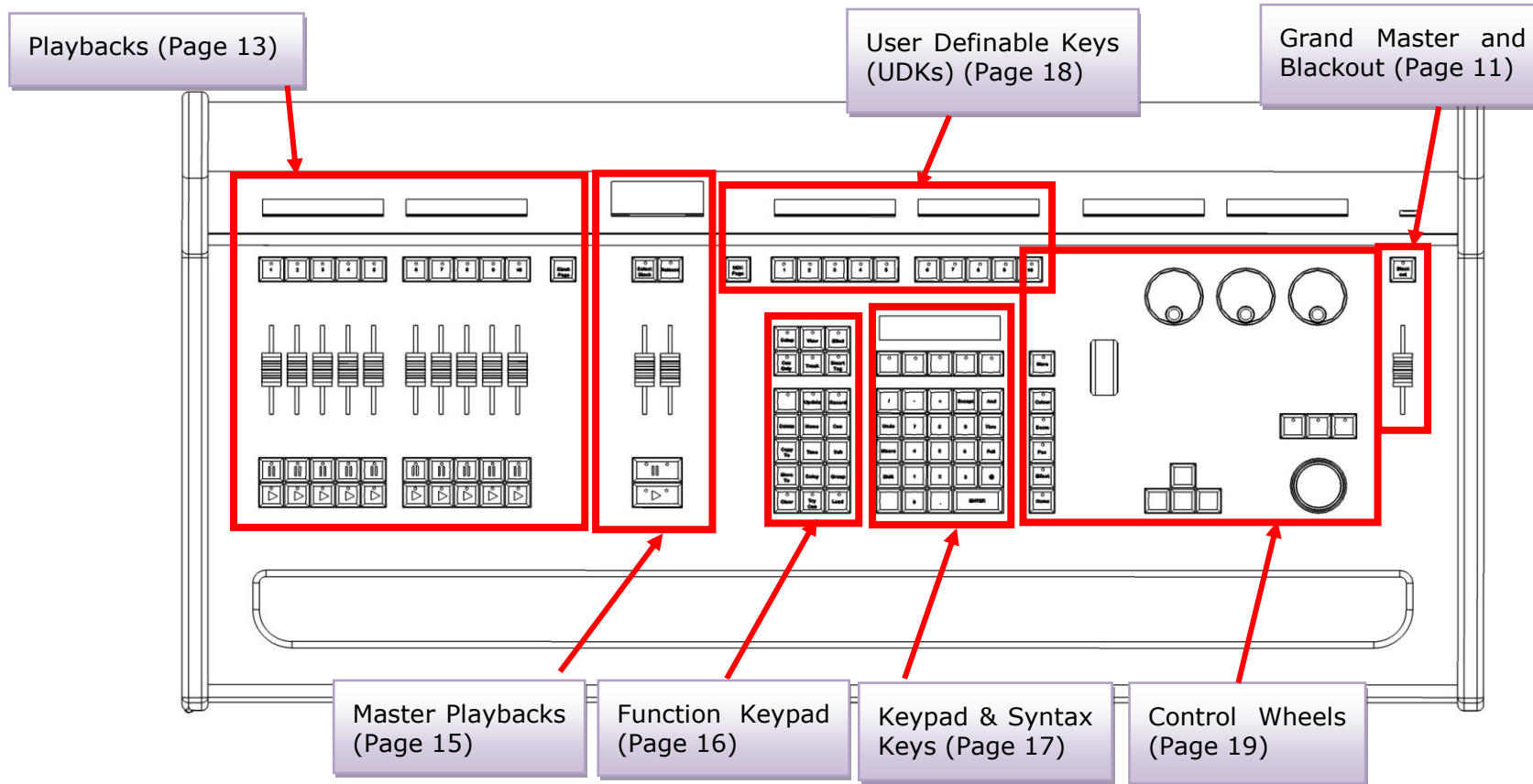


Figure 1 - Front Panel Controls

ORB XF

This section of the manual describes the controls and displays on the front panel of the ORB XF desk. The front panel controls have been divided into the following sections:

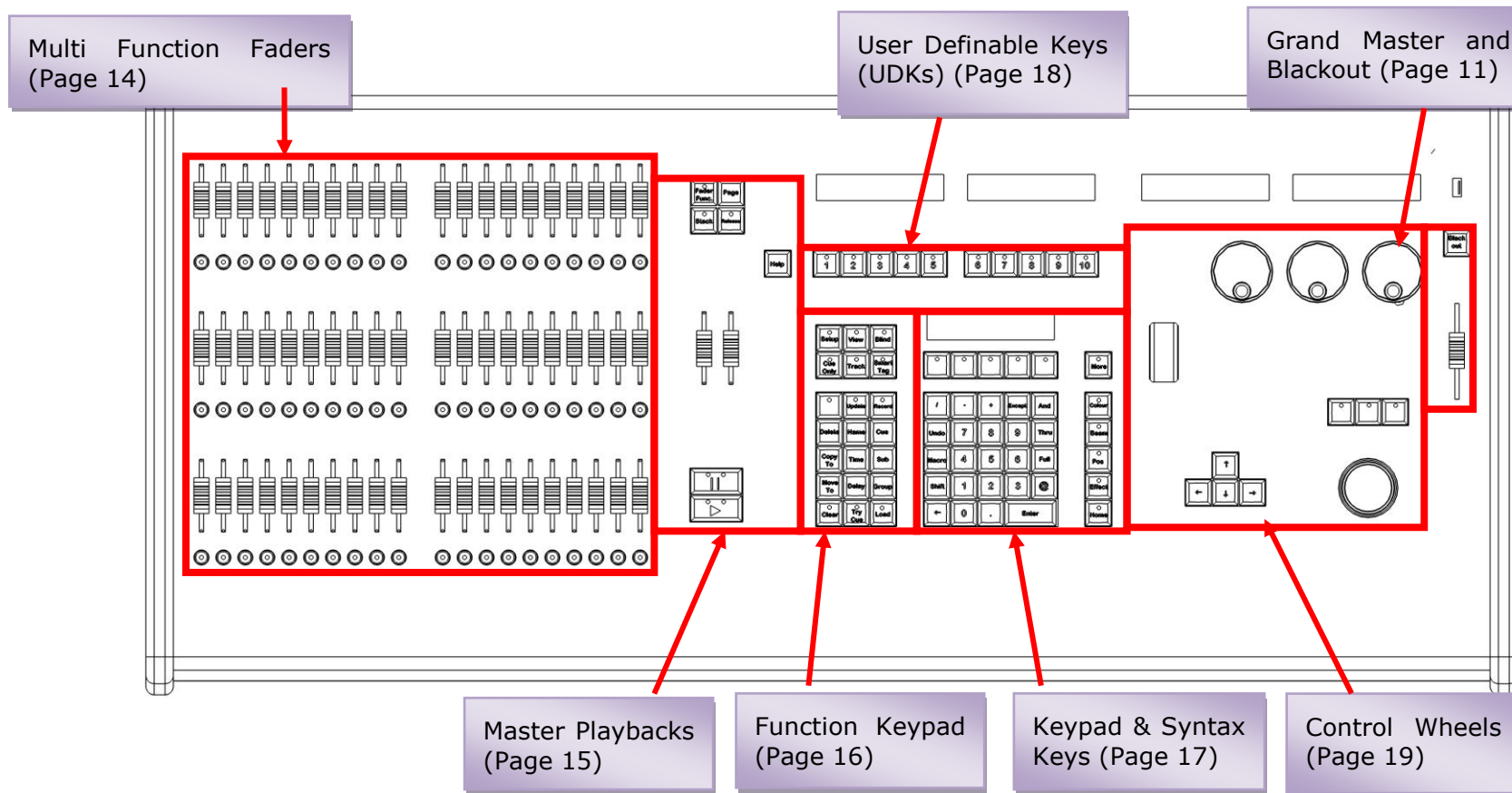


Figure 2 - Front Panel Controls

Grand Master and Blackout

Introduction

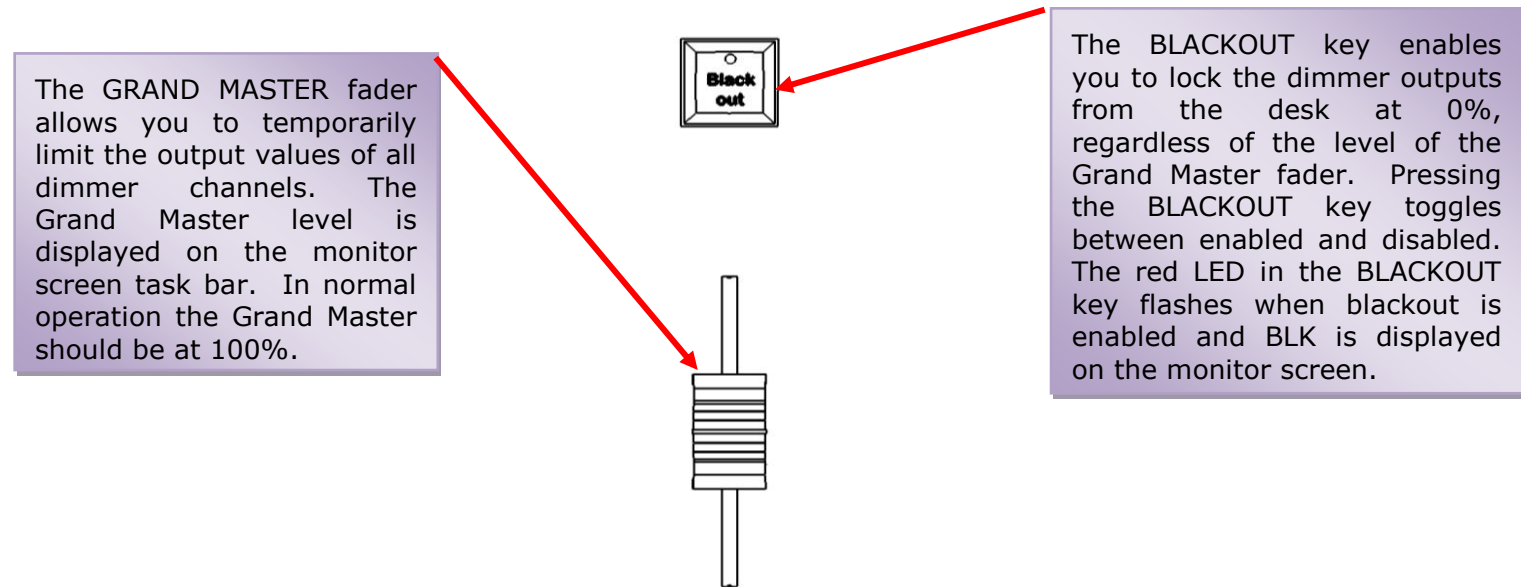


Figure 3 - Grand Master & Blackout

Playbacks - ORB

Playbacks are used as the main programming and playback area of ORB. These playbacks can function in one of two ways – as Cue Lists (also known as Cue Stacks), or as Submasters.

The ORB has 10 playbacks, which can be paged between Page 1 and Page 100. Each page contains a new set of 10 playbacks, giving a total of 1000 playbacks available for programming.

Each playback has a number of controls available:

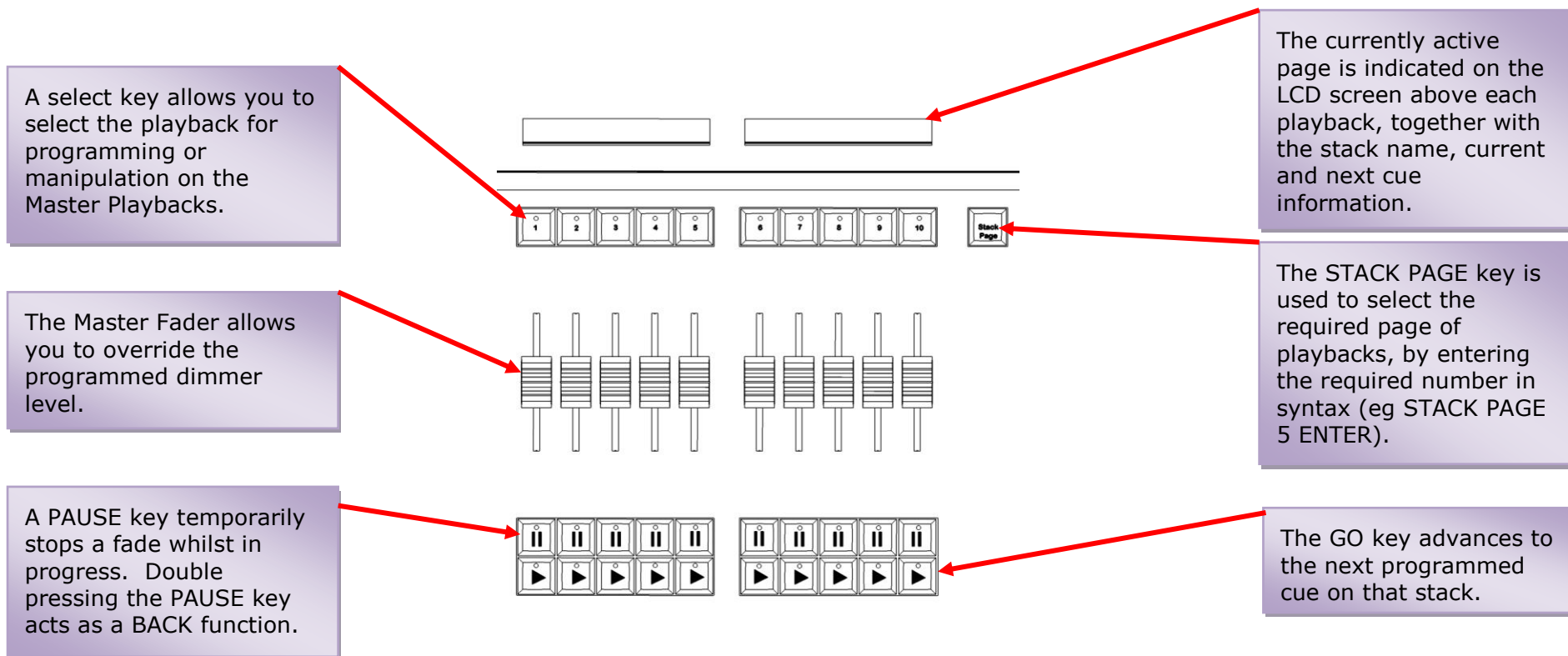


Figure 4 - Playbacks

A number of additional controls are available for releasing cue stacks and activating cue stacks on the Master Playback. These are detailed in later sections.

Introduction

Multi Function Faders – ORB XF

Multi Function Faders are used as the main programming and playback area of the ORBxf. These faders can function in one of three ways – as Channels (Dimmers), Submasters (Scenes) or Cue Stacks (Playbacks).

The ORB XF has 60 MFFs, which can be paged to access all the channels, submasters and cue stacks on the desk.

Each MFF has a number of controls available:

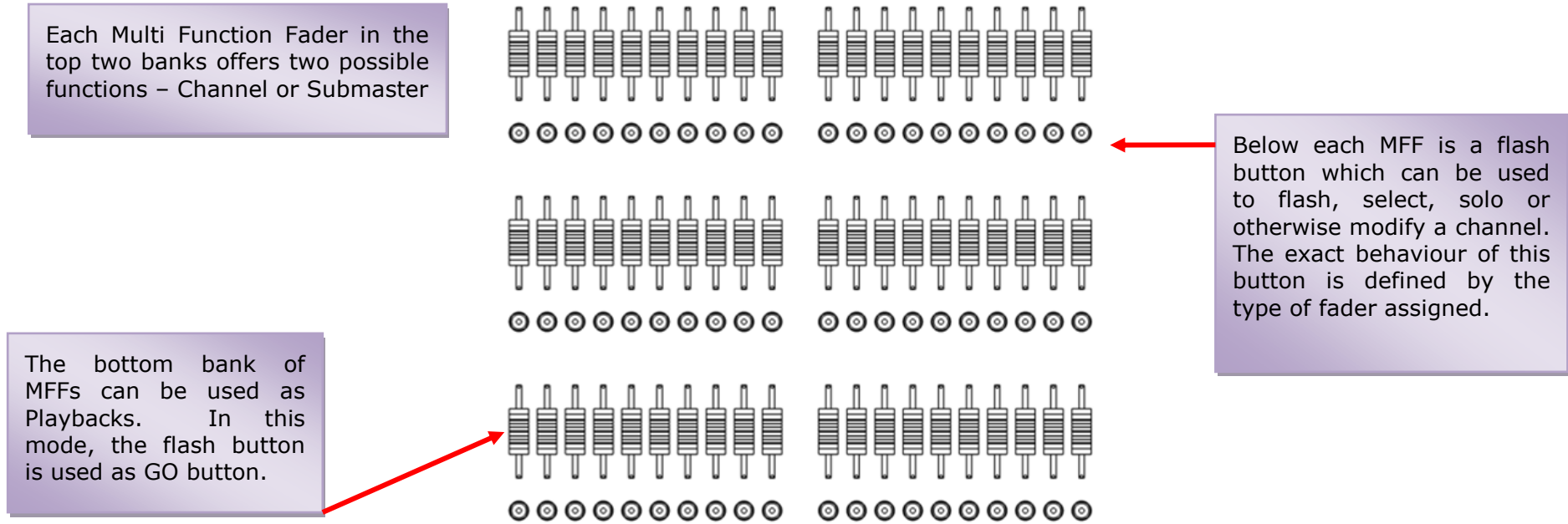


Figure 5 - MFFs

Master Playbacks

The master playbacks allow you to control a selected playback using more advanced playback control.:

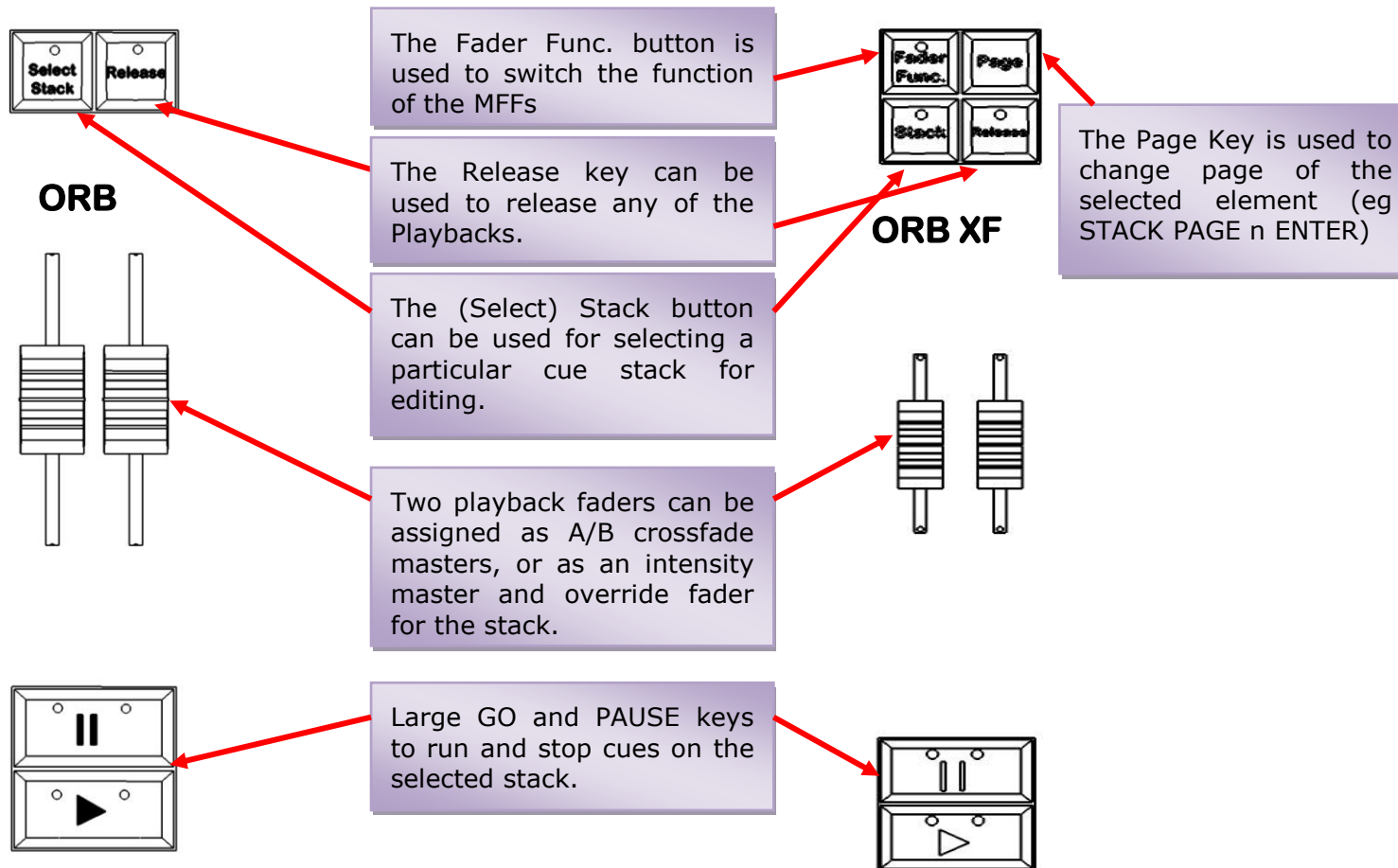


Figure 6 - Master Playbacks

Introduction

Function Keypad

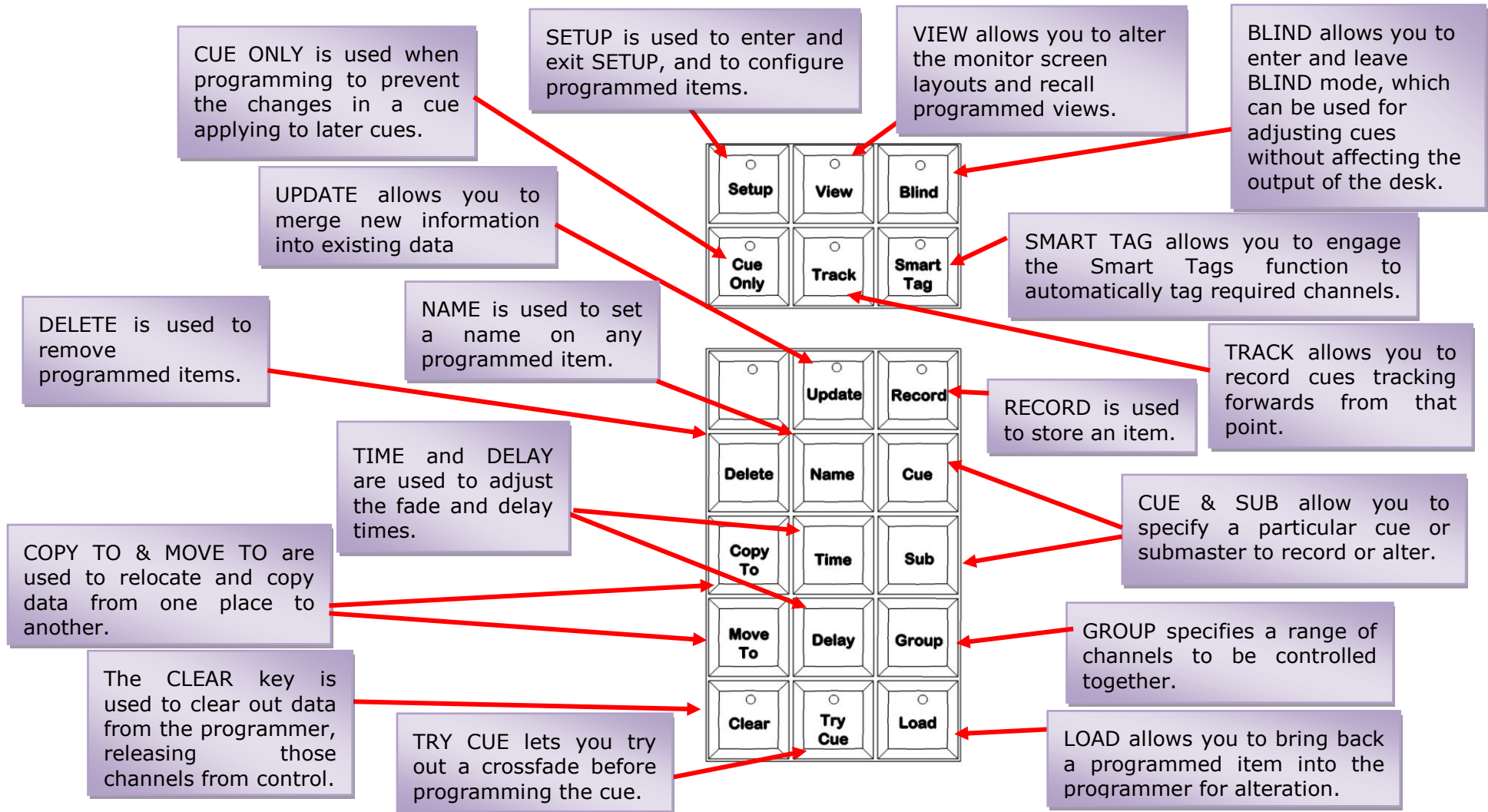


Figure 7 - Function Keypad

Keypads & Syntax Keys

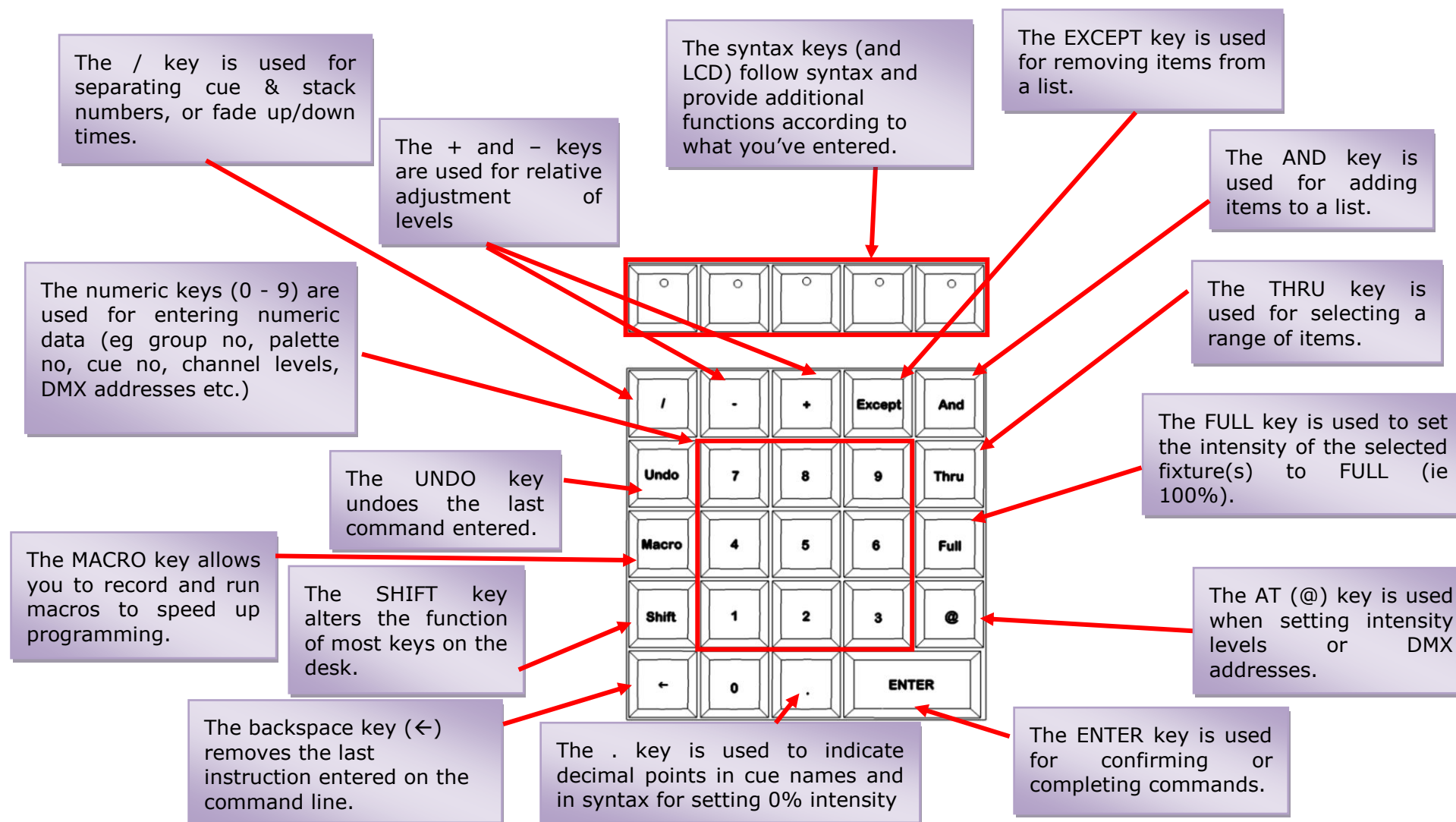


Figure 8 - Keypads & Syntax Keys

Introduction

User Definable Keys (UDKs)

In addition to playbacks, the ORB Series features 10 User Definable Keys (UDKs) which can be assigned to many different functions.

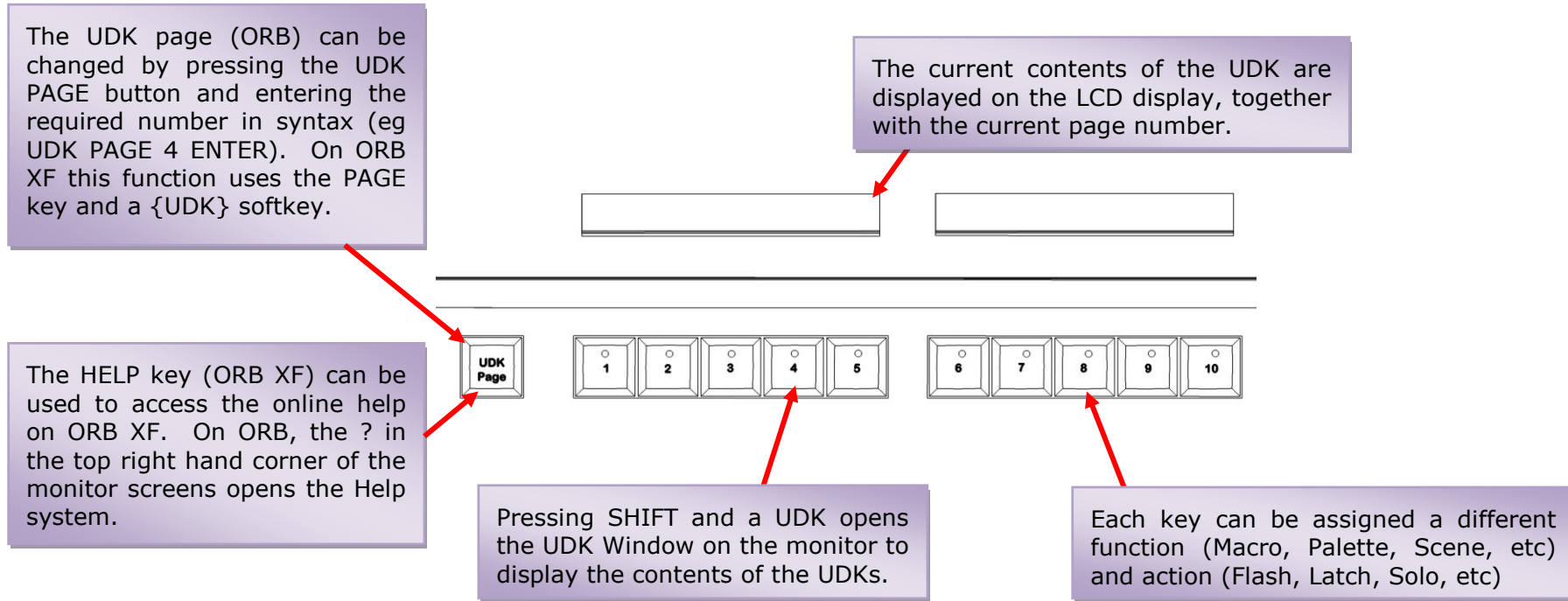


Figure 9 – User Defineable Keys (UDKs)

Attribute & Cursor Keys and Control Wheels

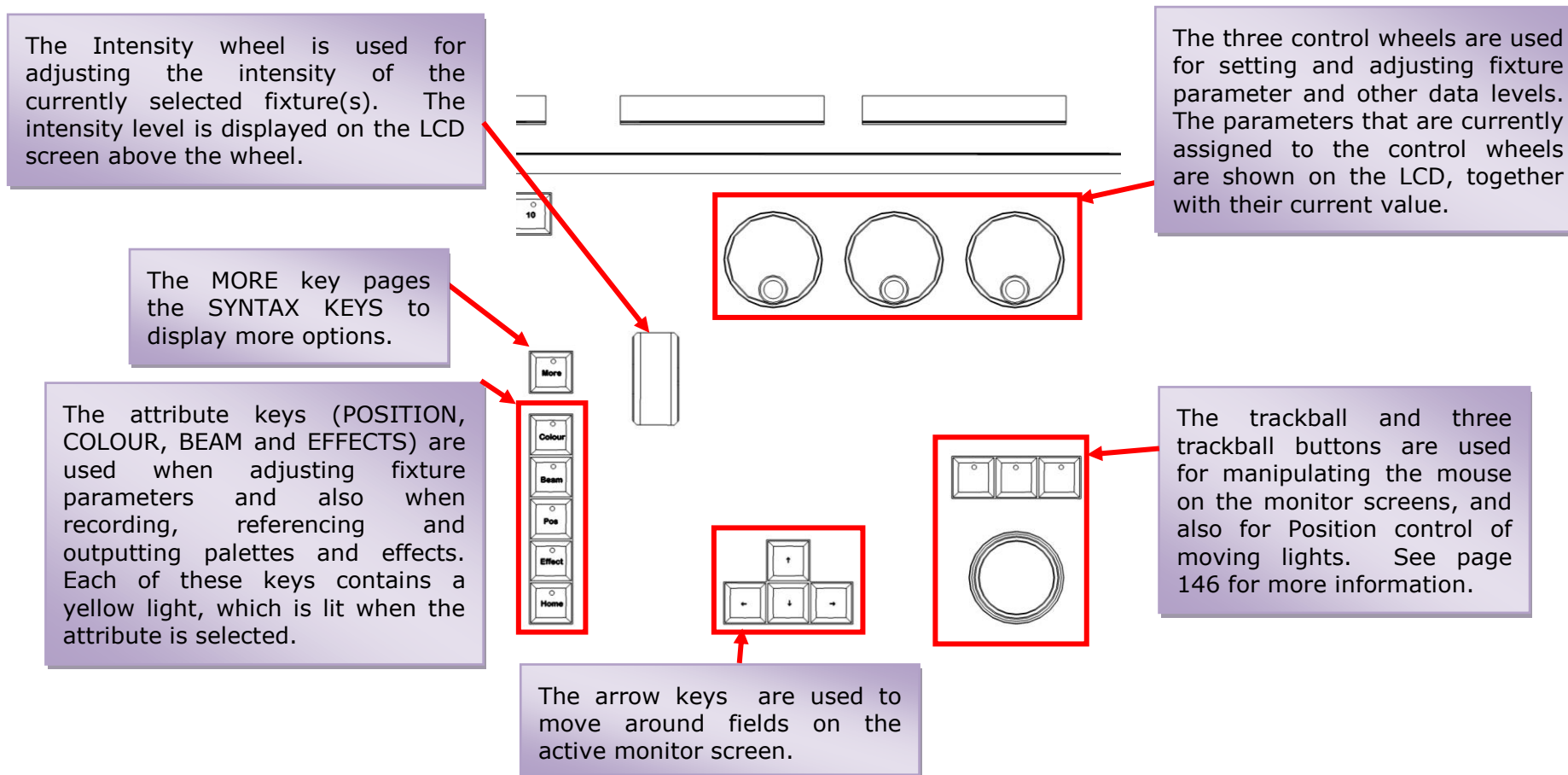


Figure 10 – Attribute & Cursor Keys & Control Wheels

Quick Start Tutorial

Quick Start Tutorial

Getting Started

Prior to powering up the desk, it is essential to attach all the peripherals you require. The desk has support for a USB Keyboard and Mouse, two XGA monitors (or touch screens) and a desk light on 3 pin XLR. These should be connected before powering up, as subsequent connection could result in software or hardware malfunctions.

Once you've connected all the peripherals you require, power on the desk using the switch on the rear panel. If you see no immediate response, check you have the power switch set to ON, and that the IEC lead is firmly attached to the power inlet.

When you power on the desk, the desk will run through its power up routine and after a short while you will be presented with the desk software in its default configuration.

Setting Up the Desk

Before you start programming cues etc, you will need to set up the desk.

The desk comes with a default patch of channels - on ORB, 1 to 96 are assigned to DMX addresses 1 to 96 on DMX universe 1 as standard Dimmer fixtures. On ORB XF, 1 to 240 are assigned to 1 to 240 on DMX universe 1. If this situation matches (or surpasses) your installation then you can skip ahead from this section.

Press the SETUP key to display the Setup Window on Monitor 1.

Setup is intended to give you access to the core settings for the ORB. As such, you shouldn't need to enter the Setup area during a show. It is, however also used for saving and loading of show files,

so during programming you may wish to enter Setup occasionally to take a backup.

Adding Fixtures

Once in the Setup screen, the first task you need to perform is to assign the fixtures in your rig to the desk's fixture schedule.

Press the [Patch Wizard] button on the monitor using the trackball, using the left click button above the ball. The Patch Wizard will appear and guide you through adding some fixtures.

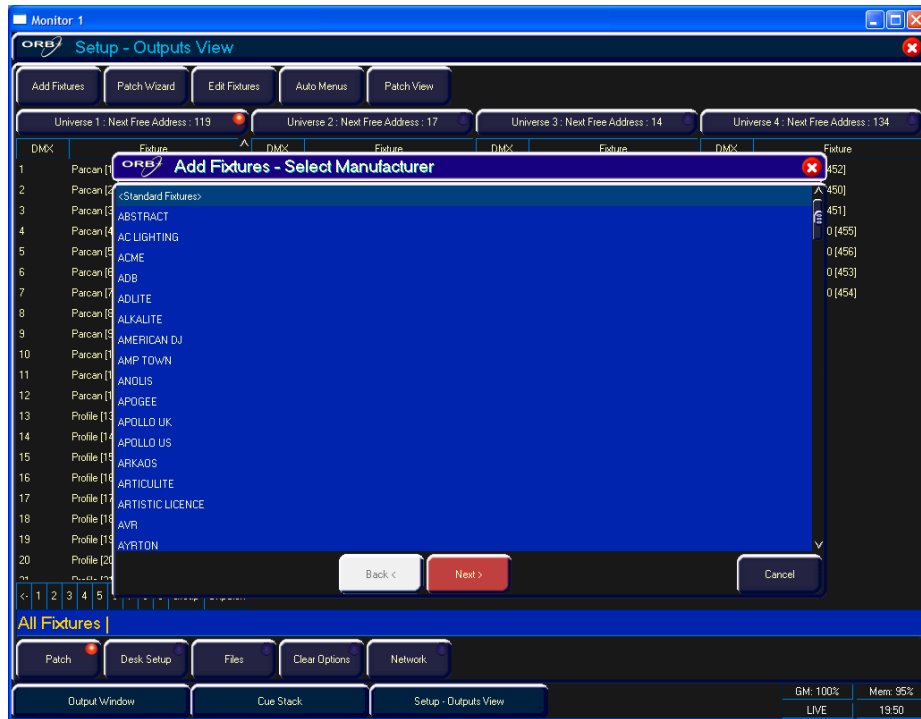


Figure 11 – Patch Wizard (Step 1 – Manufacturer Selection)

First the wizard allows you to select the fixture manufacturer.

Scroll down or use the cursor keys to select the required manufacturer (eg MARTIN). If you have a keyboard connected, you can press the M key to jump straight to manufacturers beginning with M.

Press the [Next] button (or ENTER on the keypad) to move to the next step.

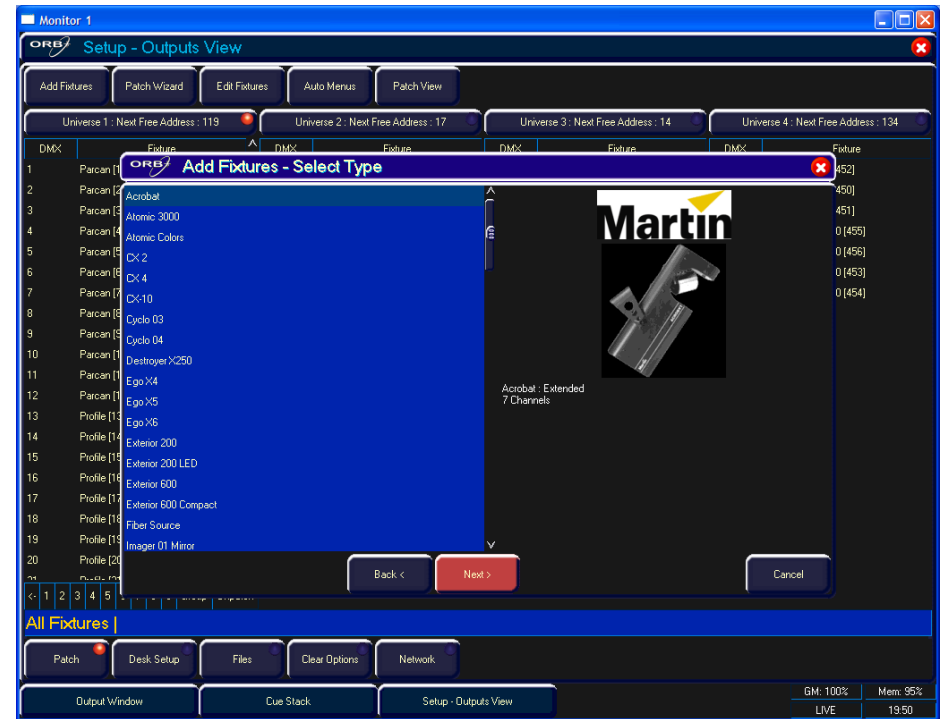


Figure 12 – Patch Wizard (Step 2 – Fixture Selection)

Scroll down or use the cursor keys to select the required fixture type (eg MAC 700 Profile).

Note – Fixture Types

If the fixture type you require is not in the fixture library stored on the desk you can import the fixture type – see Setup chapter for full details.

Press the [Next] button to select the fixture Mode. It is important that the mode set here matches the mode set on the fixture itself – if in doubt, consult the fixture operating manual for full details.

Quick Start Tutorial

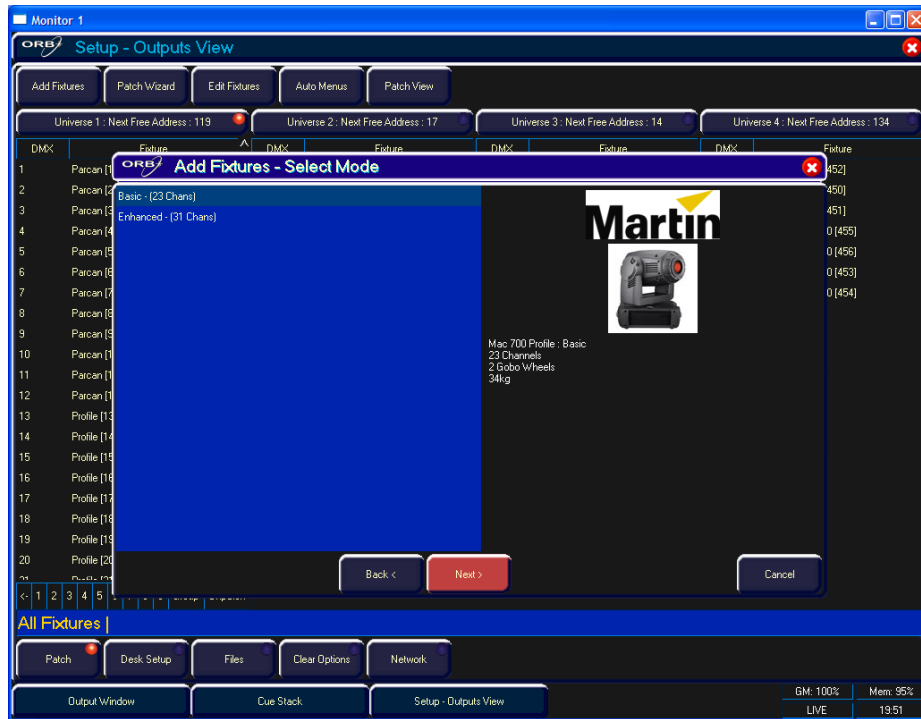


Figure 13 – Patch Wizard (Step 3 – Mode Selection)

Once the Mode has been selected, press the [Next] button to move on and enter the DMX address for the fixture. If you have not yet set this on the fixtures themselves, press the [Next Address] button and the desk will calculate a DMX address for you based on the existing patch information.

It is important here to ensure that the DMX universe is correctly selected.

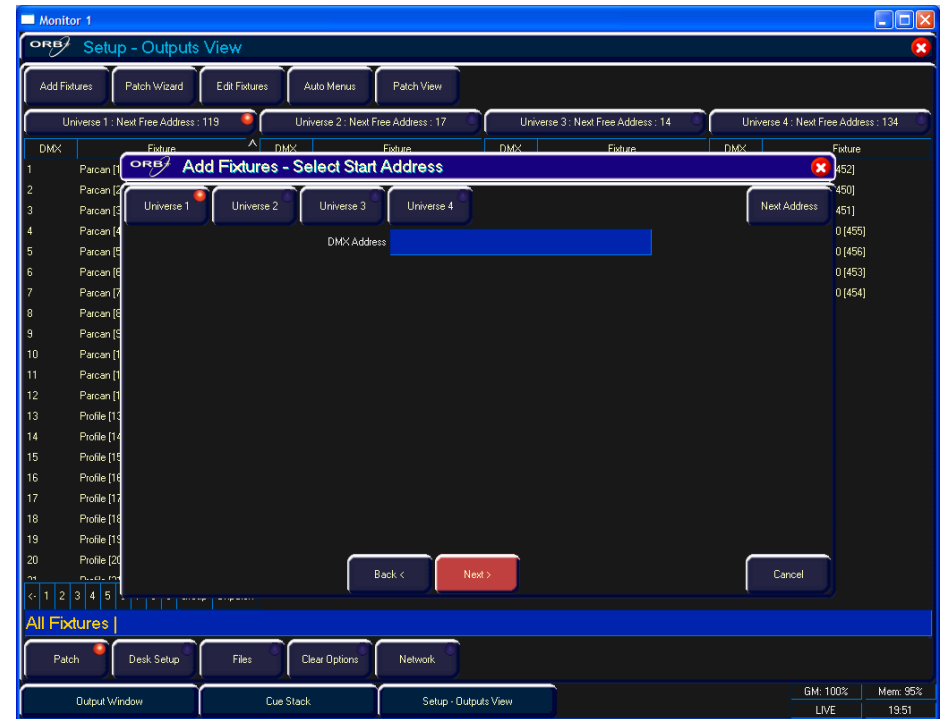


Figure 14 – Patch Wizard (Step 4 – DMX Address entry)

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

The final step in the Patch Wizard is to assign a fixture number to the fixtures. The fixture number is the number you will refer to the fixture as within the desk software. Enter the number and press [Finish].

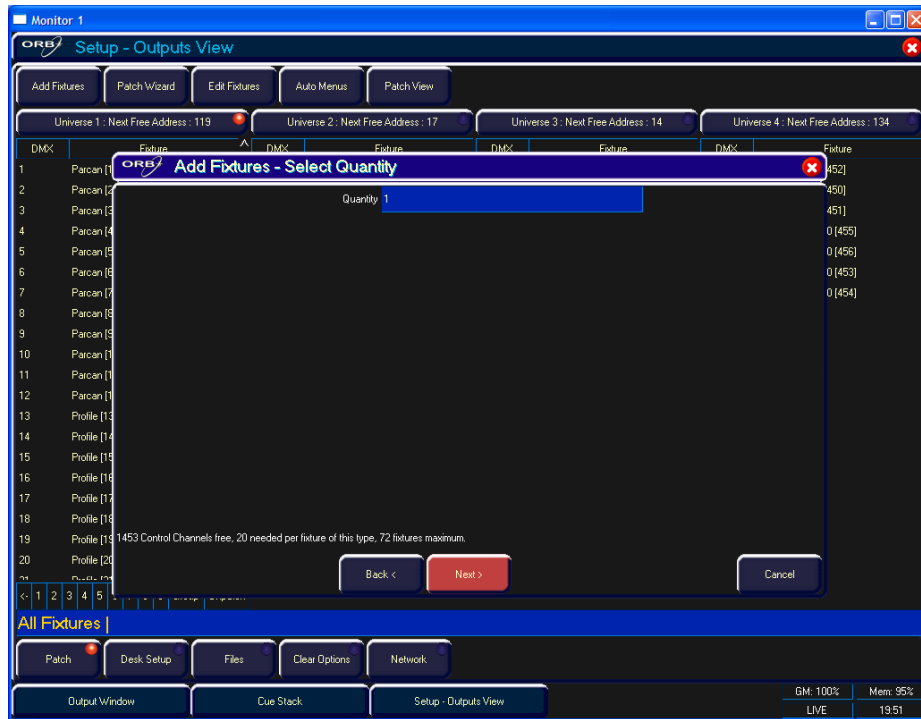


Figure 15 – Patch Wizard (Step 4 – Quantity)

The Patch Wizard is now complete and your fixtures have been assigned. If everything has gone according to plan, the fixtures should now have moved to their Home positions.

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

Exiting Setup

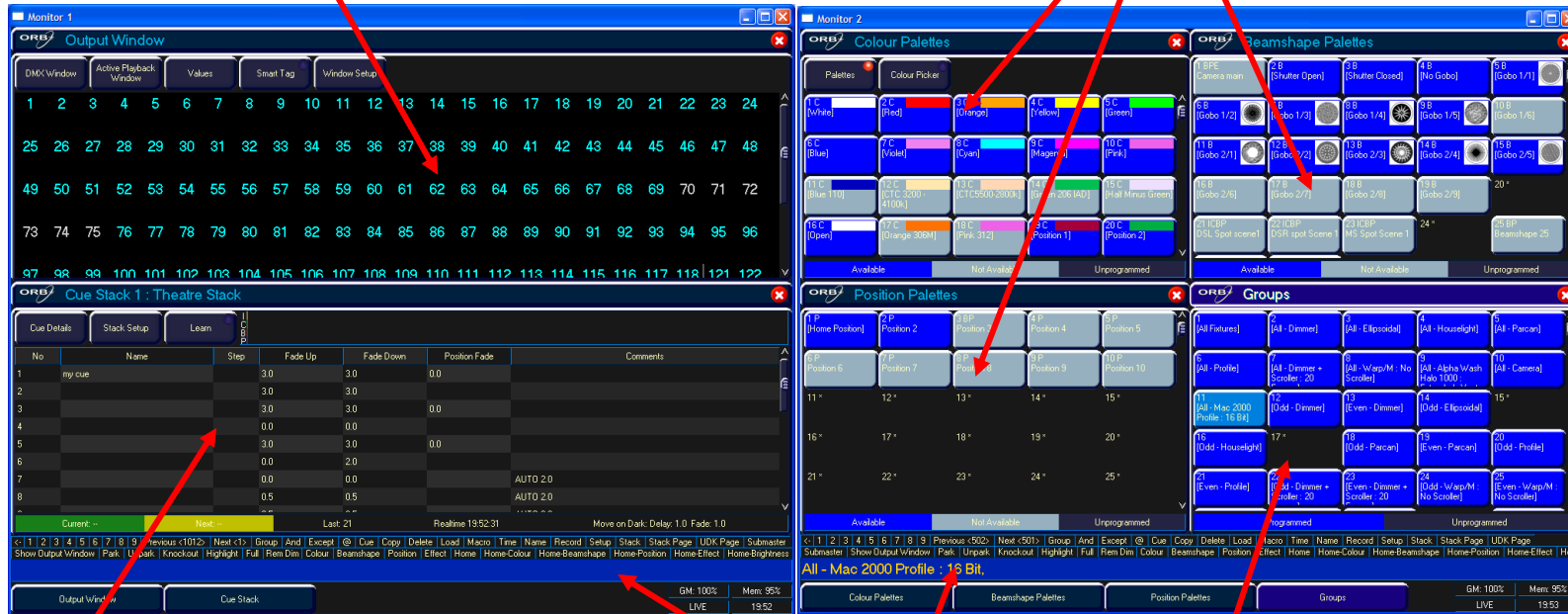
Once you have finished making changes to the setup, press the [SETUP] button leave Setup. The indicator light will go out to inform you that you have exited Setup mode.

Quick Start Tutorial

The main user interface

The Output Window is central to the operation of the ORB series. It is recommended that the Output Window is displayed on one of the monitor screens when programming cues, palettes, UDKs etc. The colour coding also helps to see what direction a channel has faded.

The palette windows show the various recorded palettes and can be clicked to access a palette.



The cue stack window shows the selected cue stack and all the cues which that stack contains.

The command line shows the commands you've entered on both monitors.

The group window shows groups of all your fixtures.

Figure 16 - Main User Interface

Controlling Dimmers

The intensity parameter of fixture(s) can be controlled by entering commands directly via the numeric keypad or by using the corresponding control wheel.

Intensity levels can be set for a single fixture or a number of fixtures using the following syntax:

1 @ N ENTER

This sets the intensity output of fixture 1 to N %.

1 FULL ENTER

This sets the intensity output of fixture 1 to 100 %.

2 AND 3 @ N ENTER

This sets the intensity output of fixtures 2 and 3 to N %.

2 AND 3 FULL ENTER

This sets the intensity output of fixtures 2 and 3 to 100 %.

5 THRU 10 @ N ENTER

This sets the intensity output of fixtures 5 to 10 to N %.

5 THRU 10 EXCEPT 7 @ {wheel}

This sets the intensity of fixtures 5,6,8,9,10 to the level on the wheel

5 THRU 10 FULL ENTER

sets the intensity output of fixtures 5 to 10 to 100 %.

Using the Control Wheel

The Intensity channel of a fixture can also be adjusted by control wheel.

First select the fixture(s) required as described above and then use the intensity wheel to adjust the level.

The output value is shown on the LCD screen above the corresponding control wheel.

Using the MFFs (ORB XF only)

The Intensity channel of a fixture can also be adjusted by using the MFFs on ORB XF.

First ensure that the MFFs are running in Channel mode – this is indicated by the LED in Fader Func. being lit Green. If the MFFs aren't in Channel mode, press Fader Func., then select {Channels} {1-60} on the Syntax LCD.

With the MFFs in the correct mode, channels can be adjusted by moving the appropriate fader. If a channel already has a level, for example set through syntax, then you must 'grab' the level by moving the fader up to the present value. Once that value is grabbed, the MFF gains control.

Tip – No Intensity Output ?

If the intensity output levels do not change when you send any of the above commands to a fixture, or adjust the intensity level using the wheel, check that the GRAND MASTER fader is at full and the BLACKOUT button is off. If the selected fixture(s) have a Shutter parameter, check that the shutter is open. Check that Highlight is not active by holding SHIFT and pressing HOME. For more troubleshooting tips, see page 159.

Quick Start Tutorial

Controlling Fixtures

Fixtures on the ORB series are considered to be any multi-channel device, such as a moving light, LED, lamp with a scroller, etc. These must be patched before they can be controlled.

Selecting Fixtures

Fixtures are selected numerically using the number assigned to them during the Patch Wizard. Type the fixture number(s) followed by ENTER to select those fixtures. Fixtures are also selected if an intensity command (above) is entered.

Homing the Fixtures

If you are unsure which fixture is which, the easiest way to see which fixtures in the rig you are controlling is to 'home' them. This will set their position (Pan and Tilt) to 50%, the dimmer to 100% with an open white beam (no gobos or effects). The home values can be customised in the Edit Fixtures menu in Setup.

After selecting a fixture, press the HOME key. This will send the fixtures to its 'home' values and automatically tags the fixture parameters for programming.

Controlling Fixture Parameters

Each fixture type has its own set of parameters (intensity, color, gobo, pan, tilt etc. as defined in the fixture library) which are classified or grouped together in different attributes (Position, Colour, Beam).

Once a fixture, or group of fixtures has been selected, the attribute buttons and control wheels can be used to adjust the parameter output levels as required.

Controlling Colour, Beamshape and Position Parameters

The colour, beamshape and position parameters of the selected fixture(s) are controlled using the control wheels. First select the required fixture(s) and then press one of the attribute keys (POSITION, COLOUR or BEAM).

The corresponding parameters for the fixture are assigned to the control wheels and are indicated on the LCD above the wheels.

In the example below, COLOUR has been selected and the fixture parameters Cyan, Magenta and Yellow are assigned to the three control wheels.

If the fixture has more than three controllable parameters for the selected attribute, pressing the attribute key selects the next group of parameters.

Tagging Parameters

On the ORB series, fixture parameters must be 'tagged' for them to be recorded when programming cues, palettes and UDK's.

The tag status of each fixture parameter is indicated on the LCD screen and in the Output Window by its background colour – dark background indicates that the parameter is untagged; bright background indicates that the parameter is tagged.

If a parameter's value is changed by a command (moving the control wheel or directly in the Output Window) it will be tagged automatically.

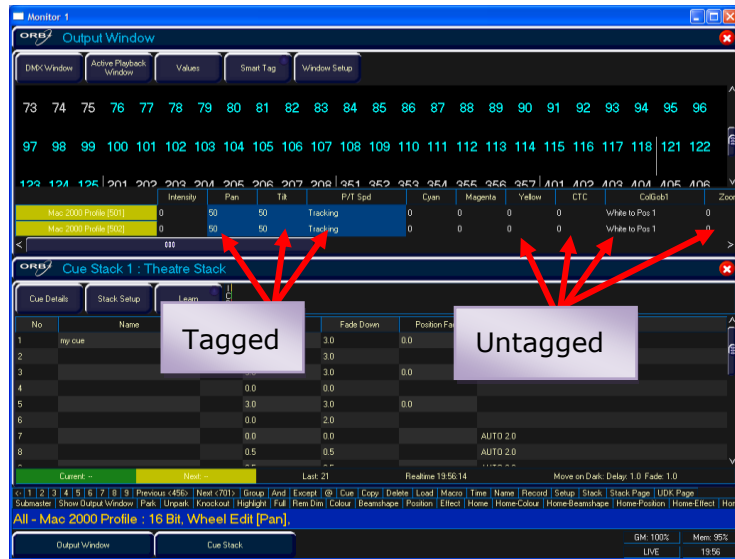


Figure 17 – Output Window (Tagged & Untagged channels)

It is also possible to tag and untag fixture parameters manually by holding down CLEAR and moving a fixture wheel, then releasing CLEAR.

Only tagged channels will be recorded when storing a cue, palette, UDK, etc. This gives the capability of separating your programming between multiple UDKs, cue stacks, submasters, etc.

Cues

Once you have set up a scene that you like you can then record that into a cue.

Selecting a Cue Stack

Cues can be programmed into any of the 1000 user programmable cue stacks.

On an ORB, press the SELECT button above the cue stack you wish to program in. The LED in the SELECT button illuminates to indicate that it is the active cue stack.

On an ORB XF, enter the syntax STACK n ENTER.

Recording a Cue

To record a cue, simply enter the command:

RECORD CUE n ENTER

Where N is the number of the cue you wish to record. As you have not specified any fade times or names, the desk will enter the default values for the cue, and the cue will be recorded.

After recording a cue, the command line is cleared, the fixtures remain selected but the parameters are untagged.

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

As you become more experienced with the desk, you will find the most efficient way of programming your cues – for more methods, see Page 99).

Note – Record Options Window

When you press the RECORD key the Record Options Window is displayed. This window allows you to adjust what data is recorded,

Quick Start Tutorial

as required – see the Programming chapter (Page 89) for further details.

Adjusting Fade and Delay Times

As well as the actual output levels recorded in the cue, each fixture parameter also has it's own fade and delay times.

Default fade and delay times for Intensity, Colour, Beamshape and Position are defined in Desk Setup, and can be adjusted if required, prior to programming cues.

Once a cue has been programmed, its times can be adjusted by using syntax:

```
CUE n TIME x DELAY y {Fade} COLOUR z ENTER
```

Any adjusted fade times display on the monitor in the Cue Stack window, which can also be manipulated using the cursor keys and ENTER button in a similar format to a spreadsheet on a computer.

Naming Cues

Each cue can have a name stored alongside the cue data. Enter the following syntax command :

```
CUE n NAME {your name} ENTER
```

Playing Back Cues

Before playing back the programmed cues in a cue stack, it is important to clear the programmer by pressing the CLEAR button. This removes any unrecorded commands and sends fixtures to their default values, with the exception of the intensity, which is kept at 0%.

To play back the cues in a cue stack in sequence first select the required page of playbacks.

Press the GO button for the selected playback, and raise the master fader to full. These commands can be executed in either order, as sometimes a manual fade is desirable.

Pressing the GO button will trigger the start of fades on all parameters, but the intensity channels are mixed with the master fader.

To output the next memory in the stack, simply press the GO button again. The desk will continue down the cue list, one cue at a time. Once the end of the cue stack is reached, the first cue will be selected as the next memory, resulting in a loop.

Once you have finished playing back cues, it is important to release the cue stack. This returns all of the affected fixtures to their default values, or to the value they were at before the cue stack was executed.

Select the cue stack, using the SELECT button, then press the RELEASE key.

Updating Cues

In order to update a cue, the first thing to do is to ensure that the cue is outputting. If it is not outputting, enter the syntax:

```
CUE n GO
```

Once the cue is outputting, make any changes using command syntax, fixture wheels and palettes as required.

To record the changes to the cue, press the UPDATE key. The Update Options window will appear.

Select the cue number you wish to update in that window and press OK. The cue will inherit the new information and the update will be complete.

Tracking

There are two operating modes that the ORB series supports – Tracking or Non Tracking mode. 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. For a full explanation of each of these options, see page 131).

Selecting Cue Only forces the update only to affect the cue you are updating.

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.



Figure 18 – Update Options Window

Palettes

The ORB series has four sets of 1000 palettes.

A palette is a programming tool which allows you to define the values required in a fixture or group of fixtures to create a particular affect on stage. For example, a palette can be stored for the colour Red which details the DMX values required for each moving light 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.



Figure 19 – Palette Windows

Quick Start Tutorial

Recording Palettes

Programming a palette is simple and very similar to recording a cue.

Set up the fixture outputs as required, ensuring that the correct parameters are tagged. To record the data as a colour palette, enter the following command:

```
RECORD COLOUR n ENTER
```

To record the data as a beamshape, position or effects palette, simply replace the COLOUR part of the above command with BEAM, POSITION or EFFECTS.

Palette Windows

Each set of palettes has its own palette window. These palette windows are displayed on Monitor 2 by default.

The palette window contains a soft button for each of the 1000 palettes. These buttons can be clicked to access a palette. Unprogrammed palettes are indicated by a * next to the number.

Naming Palettes

As well as containing channel data, a palette can have a name associated with it. To assign a name to a palette enter the command:

```
COLOUR n NAME {your name} ENTER
```

These names are displayed in the palette windows and in the command line when a palette is accessed.

Outputting Palettes

The act of outputting a palette causes the selected fixtures to move to the value stored within that palette.

To apply or output a palette, first select a fixture or group of fixtures

Enter the command COLOUR n ENTER

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

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

If the fixture data in the programmer is then recorded into a cue, submaster or UDK, the desk will record the palette reference rather than the actual parameter value. This is especially useful for touring shows when using positions, to save updating each cue individually.

Automatic Palettes

In Setup, there is an option to generate a set of automatic palettes based on the fixture types in the schedule. The desk generates palettes for a range of useful things based upon your current patch.

To create the automatic groups, first enter SETUP, press the [Auto Menus] soft key on the monitor, select the [Create Auto Palettes] option, then exit Setup.

User Definable Keys (UDK)

The desk provides 10 user definable keys, which can be paged 20 times to give 200 programmable locations.

The user definable keys may be assigned to Groups, Individual Fixtures, Palettes, Cues, or channel data.

Assigning User Definable Keys

In this quick start guide we will just look at recording channel data to a UDK. For details of all the other items that can be assigned to UDK's see the UDK chapter (Page 114).

Set up the fixture outputs as required, ensuring that the correct parameters are tagged. To record the data to a User Defined Key, enter the following command:

```
RECORD <UDK>
```

Outputting User Definable Keys

The data assigned to a UDK is output by pressing the UDK on the front panel or by clicking on the soft button in the User Defined Keys Window on the monitor.

The action of the UDK can be set to either Flash or Latch in the User Definable Keys Setup Window – see UDK section of manual (Page 114) for more information.

Groups

As well as palettes, the ORB provides 1000 user definable Groups.

Groups are most commonly used when selecting fixtures and programming data to be recorded in cues, palettes etc. Groups can also be assigned to User Definable Keys (UDKs).

Automatic Groups

In Setup, there is an option to generate a set of automatic groups based on the fixture types in the schedule. The desk generates a group for each of the types of fixtures you have, plus 'odd' and 'even' groups for each different fixture type in the schedule.

To create the automatic groups, first enter SETUP, press the [Auto Menus] soft key on the touch screen, select the [Create Auto Groups] option, then exit Setup.

User Defined Groups

You can create your own groups of fixtures, eg Floor MAC 700's, FOH MAC 700's etc.

Simply select the fixtures that you wish to be in the group and then enter the command:

```
RECORD GROUP n ENTER
```

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Group Window

The Group Window is displayed by default in the bottom right hand corner of Monitor 2 on ORB. To display it on ORB XF, hold down SHIFT and press GROUP. This window allows you to click and select any of the programmed groups automatically.



Figure 20 – Group Window (bottom right)

Multi Function Faders (ORBxf only)

The ORBxf features 60 Multi Function Faders, which operate in three modes. MFFs can be switched by using the Fader Func. key.

In Channel Mode, all 60 faders function as controls for the dimmers of patched fixtures. This is indicated by the MFF window being dark blue.



Figure 21 - MFF Window (Channel Mode)

In Submaster Mode, all 60 faders function as submasters. This is indicated by the MFF window being light red:

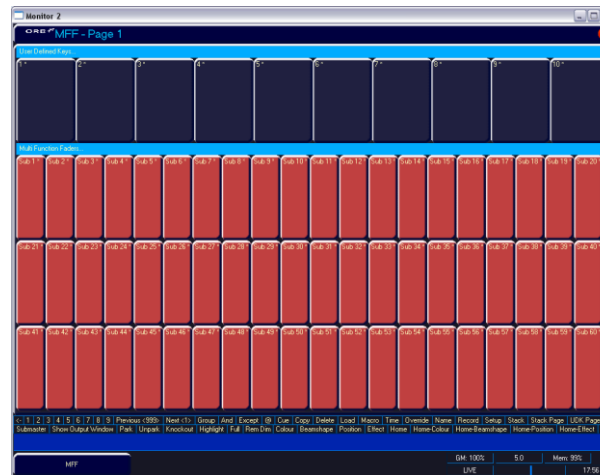


Figure 22 - MFF Window (Submaster Mode)

In Playback Mode, the bottom 20 faders convert into playbacks (cue stacks). In this mode the flash button acts as a GO button. This is indicated by these twenty faders turning green. It is possible to mix Playback mode with either Channel Mode or Submaster Mode – simply switch to the preferred mode first, then change to Playbacks.



Figure 23 - MFF Window (Playback Mode)

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To change mode, simply use the syntax:

```
FADER FUNC. {Channels} {1-60}
```

```
FADER FUNC {Submasters}
```

Or

```
FADER FUNC. {Playbacks}
```

Submasters

The ORB series supports upto 60 submasters, which can be paged 20 times to give upto 1200 programmable locations for scenes stored onto faders. On ORB, submasters can be accessed either by altering the mode of the playbacks, or by using another DMX enabled desk and using DMX-In. On ORBxf, the submasters can be activated on the MFFs.

To convert a playback into a submaster on ORB:

Hold SETUP and press the SELECT key above the playback.

In the popup window, select <Submaster>

Press OK.

To activate submasters on MFFs on ORBxf, enter the syntax:

```
FADER FUNC. {SUBMASTERS} ENTER
```

Recording Submasters

Before recording a submaster, ensure that you have the number of submasters per page defined as you require it. This setting is found in Desk Setup / Inputs.

To record a submaster, first set up the fixture outputs as required, ensuring that the correct parameters are tagged. To record the data to a submaster, enter the following command:

```
RECORD SUB n ENTER
```

To record to a specific page, enter:

```
RECORD SUB m / n ENTER
```

It is also possible to record a submaster by pressing the FLASH or GO key underneath it – eg:

```
RECORD <FLASH> (on ORBxf, when the MFFs are in Submaster mode)
```

```
RECORD <GO> (on ORB, when the playback is in Submaster mode)
```

You can view programmed submasters in the Submasters window, by holding SHIFT and pressing SUB.

Replaying Submasters

In this quick start guide we will just look at using the on-board controls. For details relating to DMX In submasters, see the Submasters chapter of the full manual (page 118).

Ensure you have converted the Playback into a Submaster (ORB) or activated the MFF Submasters function (ORBxf).

Raising the submaster fader will activate the submaster controls – the intensity will be relative to the level of the fader and the attributes will trigger at 5%.

Lowering the submaster will remove the submaster from the outputs, and release any attributes.

Paging Submasters

To change the page of the submasters, enter the syntax:

```
SUB {Page} n ENTER
```

When you change page, the submasters which are currently active stay active on the previous page until you take the fader down. Once released from a previous page, the submasters become available on the new page. This is known as Page Holdover.

Saving Shows

The ORB will save the show automatically to its internal memory at regular intervals.

External backups of the show data can be made to a USB Storage Device (eg the memory stick included with your ORB).

- Saving the show is done in Setup mode, so first press SETUP
- Press the [Files] key on the monitor.
- Press the [Save Show] key to enter the Save Show screen.
- Press the Destination Device key to select the required device.
- 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 an external keyboard or the numeric keypad on the desk.
- Press the [OK] key.
- After a few seconds, the show will be saved.
- Press SETUP to exit Setup mode.

Saving the show takes all of the available information in the desk, including monitor configurations, setup options, patch, cue and palette data and stores it all into a single file on your destination device. This file can then be reloaded at a later date to return the desk to the same state as it was in when you saved it.

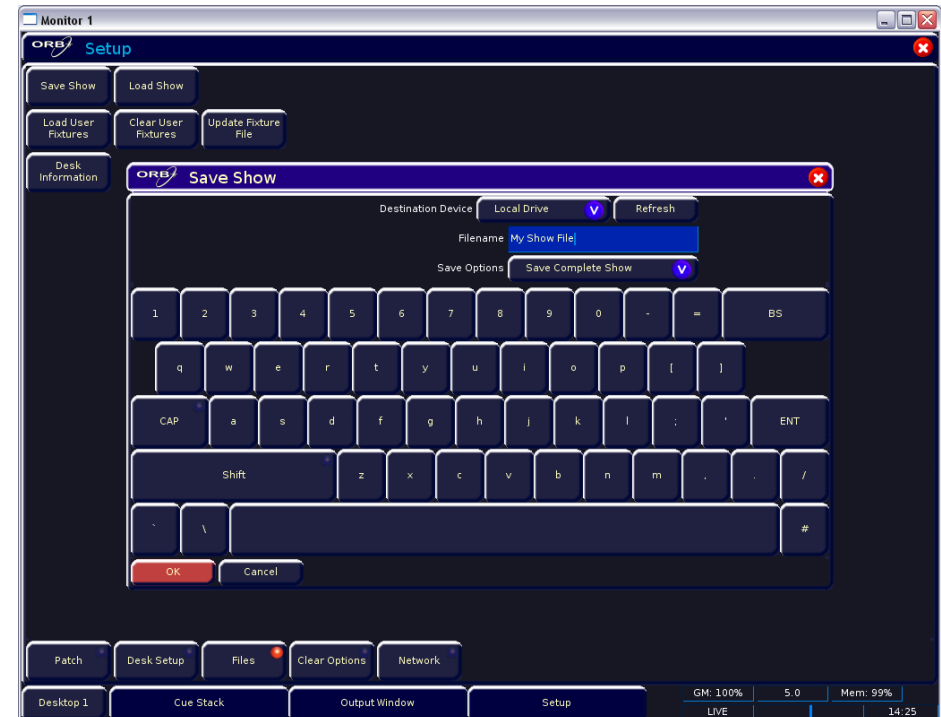


Figure 24 – Save Show

Quick Start Tutorial

Loading Shows

Shows can be loaded onto the ORB from a USB Storage Device.

- Loading shows is done from within SETUP, so first press SETUP to enter Setup.
- Insert or connect the storage medium containing the show.
- Press the [Files] key on the monitor.
- Press the [Load Show] key to enter the Load Show screen.
- Press the Source Device key to select the required device.
- A list of show files on the currently selected storage device appears on the touch screen.
- Select the show file you wish to load using the cursor keys.
- Press [OK] key to load the show.
- The desk will load the show into its memory and you will be returned to the home screen.

Loading a show brings back the desk to the same settings that were defined when the show was stored – Patch information, Cue Information, UDKs, Submasters, Palettes, Groups, Macros, Desk Setup and Network settings will all be restored.

This ends the quick start tutorial. Please take time to experiment with the desk, as the best way of learning the power of the console is through exploring. In the next section of the manual, we will go into a lot more detail about each section of the desk. Consider this a reference section, which can be referred to when needed whilst learning and programming the consoles.

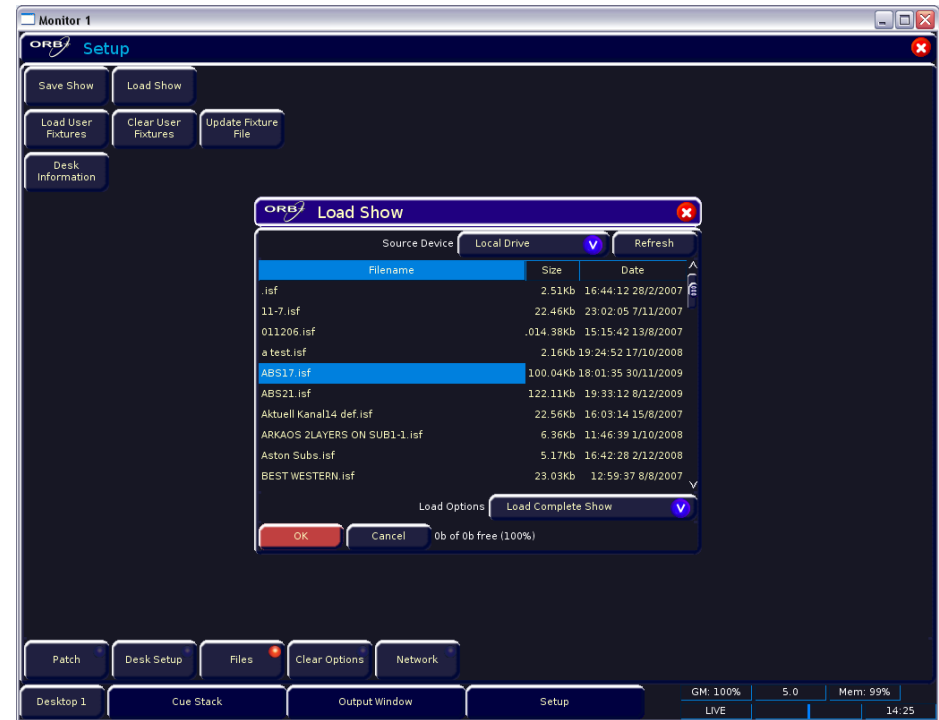


Figure 25 - Load Show

Setup

In Setup the ORB provides functions for configuring the desk - assigning, patching and editing fixtures, saving and loading shows, clearing show data, resetting the desk etc.

Press the SETUP key to display the **Setup Window** on the monitor. The following Setup options are displayed:

Files - this allows you to load and save shows, update fixture libraries and view desk information. (Page 67)

Desk Setup - this allows you to configure behaviour, default times and other hardware settings. (Page 56)

Patch - this allows you to configure which fixtures are assigned to the desk. (Page 38)



Clear Options allows you to delete parts of the programming from a single button. (Page 71)

Network enables the various Ethernet protocols through which ORB can communicate with other pieces of equipment. (Page 72)

Figure 26 - Setup Tabs

To select any of the other Setup options, click on the corresponding button in the Setup Window on the monitor.

To exit Setup from any of the various Setup options, close the screen that is currently displayed using the [Close] button in the top right hand corner of the screen.

Setup

Patch

The purpose of the Patch area of Setup is to configure the dimmers (channels) and fixtures which are connected to the desk, which allows ZerOS to provide optimum controls for these devices.

The default state of the console gives you a quantity of dimmer channels patched 1:1 on DMX universe 1. This means that if your rig contains 96 dimmers (ORB) or 240 dimmers (ORB XF) or less and no other fixtures (moving lights, LED fittings, colour scrollers, etc) then the desk is ready to go and you can skip this section of the manual.

What is a fixture?

Generally speaking a fixture is any DMX controlled device which requires more than one DMX channel to control all the functions available. For example, a haze machine which offers control over pump and fan functions separately would be considered a fixture, as would a moving light which has pan, tilt, colour and gobo controls.

In order to provide optimum control of these fixtures and any additional dimmers, the desk must know several pieces of information about the fixture, namely:

- The Manufacturer of each fixture type (eg Martin)
- The Model name for each type (eg Mac 250 Entour)
- The Mode of the fixture (eg Enhanced Mode)
- The DMX universe the fixture is connected to (eg 1)
- The DMX address the fixture is set to (eg 101)

From this information the console will be able to link the fixture to one from it's internal library, and provide you the controls required on-screen and on the fixture wheels to control all the functions of this device.

It may be useful to collate this information into a spreadsheet (or more likely, scribbled onto the lighting plan) before commencing the

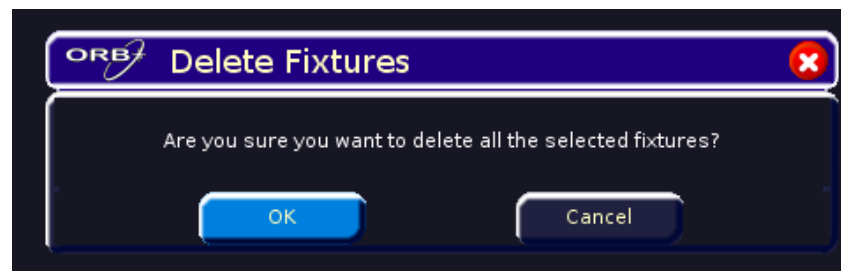
patch on the desk, as incorrectly entered data can result in the rig being unusable.

Deleting Fixtures

As the default patch of the ORB series takes up 96 or 240 dimmer channels, it may be desirable to first delete the default patch.

To do this, enter the syntax 1 THRU 96 DELETE

ZerOS will ask if you are sure you want to delete the fixtures, and then once confirmed, the fixtures will be deleted from the desk. This removes any existing programming for these fixtures, so please double check that you are sure before continuing.



If you choose not to delete fixtures, you may end up with duplicate fixtures using the same fixture number. This is undesirable, as it can cause confusion when programming.

Adding Fixtures

Once this information is collated, you can use one of two methods to add fixtures onto the desk.

It is possible to add fixtures using the Patch Wizard, or via Add Fixtures. Using Add Fixtures provides maximum control of the patch process, whereas the Patch Wizard is ideal for getting up and running quickly. Either process has the same end result, however you may find that one method is preferable to your operating style.

Add Fixtures

The first method of adding fixtures is through Add Fixtures. This allows you to detail to the desk how many of each type of fixture are contained within the rig.

Press the [Add Fixtures] button on the monitor. The Fixture Schedule Window will appear. The left hand column in this window allows you to select the fixture manufacturer from those contained within the internal fixture library.

Scroll down or use the cursor keys to select the required manufacturer (eg Martin). It is possible to press the "M" key on an external keyboard to automatically jump to manufacturers beginning with M.



Figure 27 – Add Fixtures

Press the right arrow key to move the cursor to the fixture list in the right hand column.

Scroll down or use the cursor keys to select the required fixture type (eg Mac 250 Entour).

Here we are detailing the quantity of fixtures found within the whole rig, so press the ENTER key, enter the quantity of the fixture required using the numeric keypad (eg 4), then press ENTER. The desk then loads that number of fixtures into its memory and the remaining control channel count will be reduced to indicate that these channels are now allocated.

If required, you can repeat the above procedure for all the other types of fixtures in your rig.

When you have finished adding all the fixtures you require to the schedule, press the [OK] button in the top right.. The monitor returns to the Patch screen.

User Fixture Types

If during the Add Fixtures process you discover that the manufacturer or fixture type you are looking for isn't listed, you will require a User Fixture Type.

User Fixture Types can be created using the Fixture Tools utility which is located on the Utilities CD provided with the desk. A guide to creating User Fixture Types is also located on the CD.

Once a User Fixture Type has been obtained or created, to load it into ORB you should press the [User Fixture] button in the Fixture Schedule window.

The desk will offer you a drop down menu listing all the storage devices detected on the USB ports. Select the drive which corresponds to the device you have stored the fixture type on.

A list of user fixture type files found on the drive will then be displayed and you can select the required file using the cursor keys or trackball.

Setup

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.

Selecting a user fixture type and specifying the number of that type in the fixture schedule is carried out in the same way as for any of the normal fixture types already present in the fixture library on the desk.

User Fixture Types which have been loaded onto the desk are displayed in the Fixture Schedule Window in the same way as normal fixture types in the fixture library. They are displayed in the correct place based on the alphabetical sorting of manufacturer and fixture type and are distinguished by having a green background, for example:

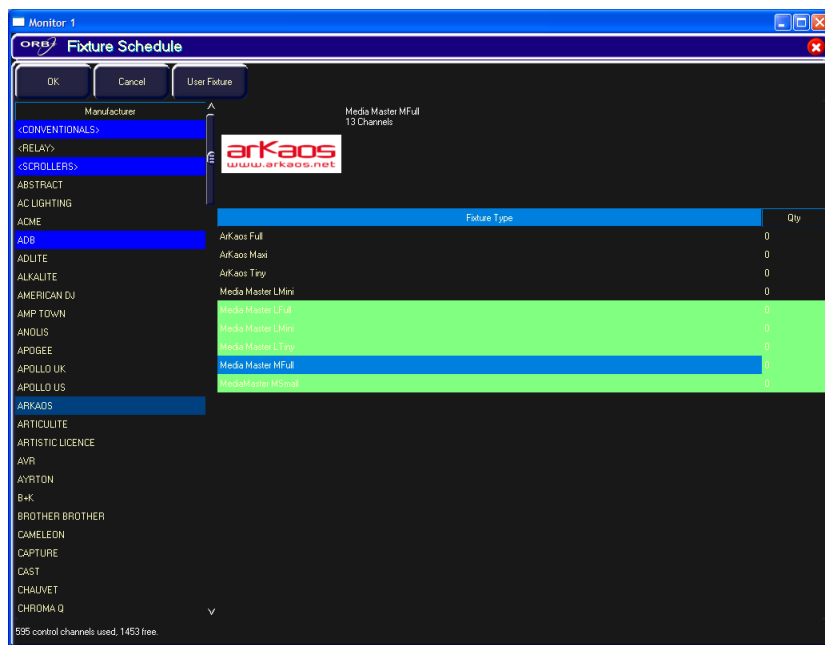


Figure 28 – User Fixture Types

Patching Fixtures

After adding the fixtures into the desk, the next step is to patch the fixtures to the DMX outputs. Patching a fixture is the act of defining on the desk which DMX channels the fixture has been set to. Fixtures can be patched individually or in groups. Until a fixture is patched, it will be impossible to control it on ORB, as the desk has no information as to where within the 2048 possible channels the data is to be sent.

DMX addresses

The DMX signal transmitted from your desk carries 512 channels of information down each 'universe'. Fixtures plugged into this universe must have a DMX address set on them in order for the desk to be able to control them.

A DMX address is the range of channels which a fixture has been configured to respond to. This can be a single channel (for example, a dimmer or colour scroller) or a large range (for example a moving light). Depending on the particular equipment you are connecting, 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.

If a fixture is using a range of DMX addresses then no other fixture in the rig should be set to use these addresses as this will cause problems configuring the desk to communicate with the fixtures effectively.

A typical DMX addressing system may work like this:

1 – 96 – Dimmers 1 – 96

97 – 100 – Empty

101 – 115 – Fixture 1 (14 channels)

116 – 129 – Fixture 2 (14 channels)

129 – 143 – Fixture 3 (14 channels)

144 – 157 – Fixture 4 (14 channels)

etc

DMX universes

The ORB series have four 'universes' of DMX output, numbered 1 to 4. Each of these universes carries a different set of 512 channels of data, giving a total of 2048 possible channels outputting from the desk.

There is a 5 pin XLR output for each universe, located on the rear of the desk. Each DMX universe can also be output over Ethernet, using various communication methods.

Using the Desk Setup / Outputs settings (Page 61) it is possible to configure which DMX universe is transmitted from each of the DMX outputs, so if the behaviour of your fixtures isn't as you would expect, please check these settings.

It is critical that you patch the fixtures to the correct DMX universe to correspond with the cable which they are connected to.

Patching Fixtures

To patch fixtures at a specified DMX start address, enter the fixture number, press the @ key, enter the DMX start address and then press the ENTER key. For example:

```
1 @ 274 ENTER
```

This will result in the specified fixture being patched to the first DMX universe at address 274.

Note: *If you have more than one fixture with a number of 1, this patch will patch all of these fixtures together starting with the first alphabetically by manufacturer (eg Dimmer #1 at 274, then AlphaSpot 300 HPE #1 at 275, then Mac 700 #1 at 307, etc). To prevent this confusion, it is recommended to first edit the fixture number using the Edit Fixtures screen before commencing patching using this method. For how to do this, see page 49.*

Patching Fixtures to a Specified Universe

Fixtures can also be patched to a specified universe by including the universe number in the command. For example, to patch the fixtures to universe 3 starting at DMX address 101, enter the following command:

```
n @ 3/101 ENTER
```

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

Setup

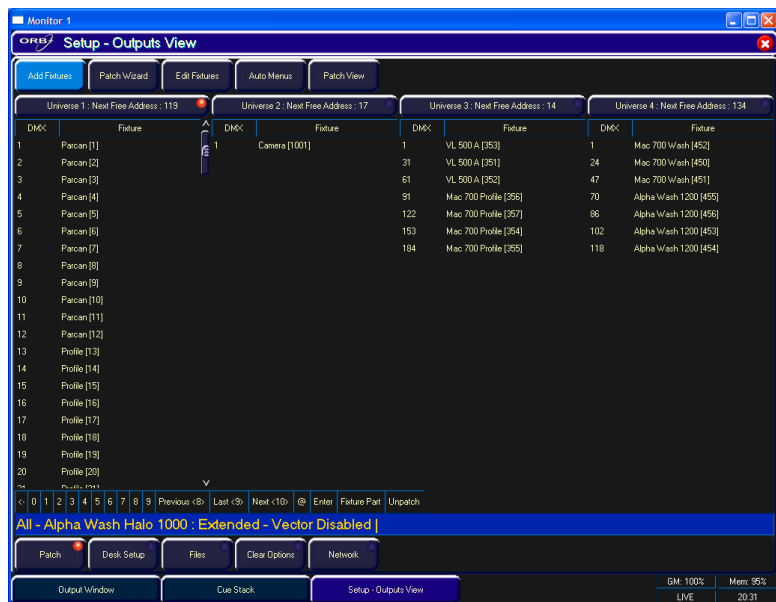


Figure 29 – Patch Screen, Output View

Patching 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.

The {Fixture Part} button on the syntax keys is used when patching the non intensity part of the composite fixture. This syntax key only appears where it is possible to be used, so if {Fixture Part} does not appear then your fixture will not require composite patching. If the fixture does require composite patching, follow these steps:

Type in the command: 1 THRU 6 @ 101 ENTER

This will patch the intensities of the six fixtures to DMX channels 101-106 on the currently selected DMX universe. The intensity parameter requires a single DMX channel.

Type in the command: 1 THRU 6 {Fixture Part} 107 ENTER

This will patch the remaining parameters of the six fixtures to the current DMX universe starting at address 107 on the currently selected universe..

Unpatching Fixtures

Unpatching a fixture removes that fixtures information from the DMX output, effectively disabling that fixture (although it may still be manipulated, programmed and adjusted on the desk, no data will be output to it).

The {Unpatch} key appears on the syntax keys when in Patch mode. The behaviour of the Unpatch function is dependant upon which Patch View is active at the time. For full information on Patch Views, see page 44.

To unpatch a selection of fixtures from a specified universe (Outputs or Channels view) or all universes (Fixtures view):

1 THRU 5 {Unpatch}

To unpatch an instance of a fixture from a specified universe (Outputs or Channels view) or all universes (Fixtures view):

1 @ <address> {Unpatch}

To unpatch an instance of a fixture from a specified universe and address (all views):

1 @ <universe>/<address> {Unpatch}

To unpatch a fixture at a specified address:

{Unpatch} <universe>/<address>

To unpatch all fixtures in a universe:

{Unpatch} <universe> ENTER

Deleting Fixtures

As well as unpatching fixtures, it is possible to Delete Fixtures from the desk instead. **Deleting fixtures is a permanent change to the show file and should not be carried out without intention. There is no UNDO function so exercise caution when using this function.**

To delete a fixture, use the syntax:

n DELETE

Or

m THRU n DELETE

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

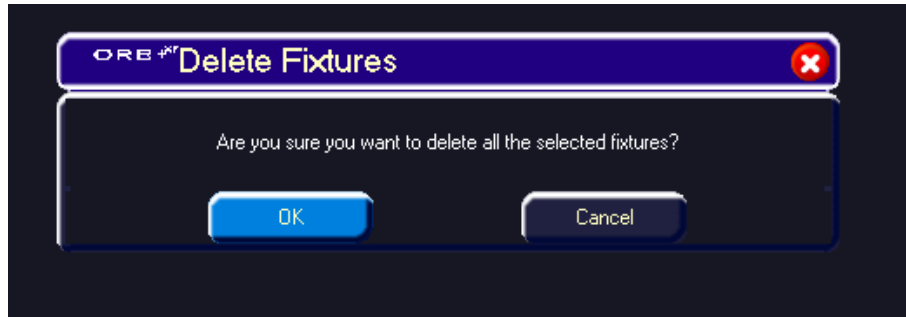


Figure 30 - Deleting Fixtures

If you wish to start with a clean show file in order to patch a completely custom rig into the console, you may wish to initially delete the default patch using this method.

Patching a Group of Fixtures

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

Press the GROUP key, then select the group numerically. Press the @ key, enter the DMX start address and then press the ENTER key. For example:

GROUP n @ 1 ENTER

This will patch the entire group starting at DMX address 1 on the selected DMX universe and increasing sequentially until the whole group has been patched or the universe is full.

Direct DMX Control

When patching it is often a requirement to be able to directly control the DMX outputs from the console, to test a lantern before you patch it for example.

To do this, use the {DMX} softkey, for example:

{DMX} xyz @ nnn ENTER

This provides direct control over the DMX output, and can be used across all 4 DMX universes by specifying the universe like this:

{DMX} u / xyz @ nnn ENTER

To undo these changes and revert back to the outputting data, press the CLEAR key.

Setup

Patch Views

The Patch Window can display the patch data in three different views on the monitor (Outputs, Fixtures and Channels). The default view is the Outputs view (see below).

Press the [Patch View] key in the Patch Window and then select [Outputs], [Fixtures] or [Channels] from the drop down menu. The different patch views are described in the sections below.

Outputs View

This is the default patch view and displays the DMX start address for each fixture for each DMX universe. The 4 universes are displayed vertically with each fixture listed according to its outputs.

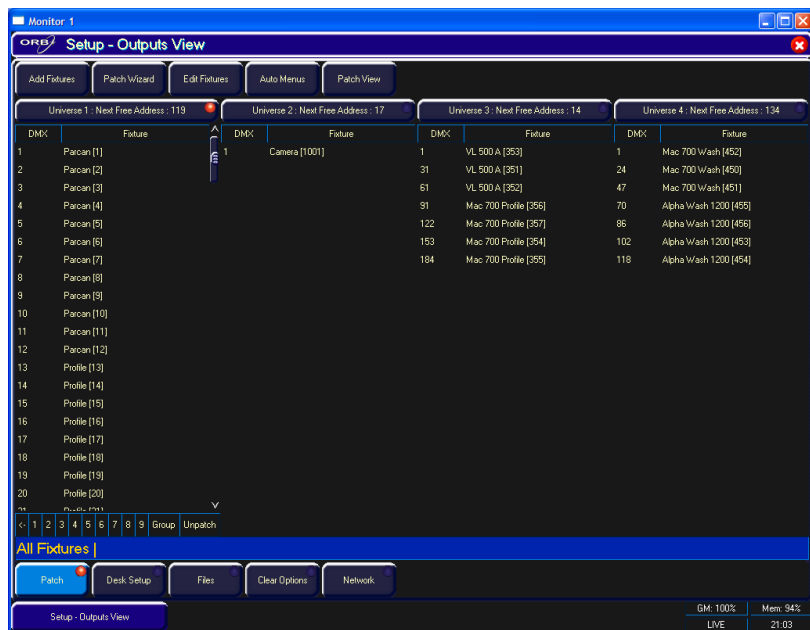


Figure 31 – Outputs View

Fixtures View

This patch view lists all the fixtures in the schedule together with their alignment data and DMX patch address(es).

The fixtures are listed in group order. Alignment data is only displayed if it has been changed from the defaults. Patch addresses are displayed in the format universe/address in normal addressing mode or simply the address in absolute addressing mode.

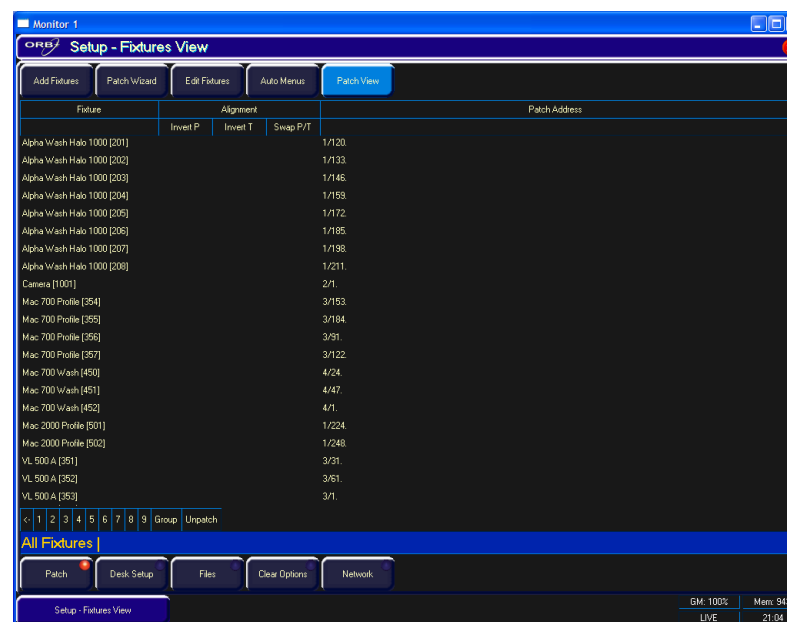


Figure 32 – Fixtures View

Channel View

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

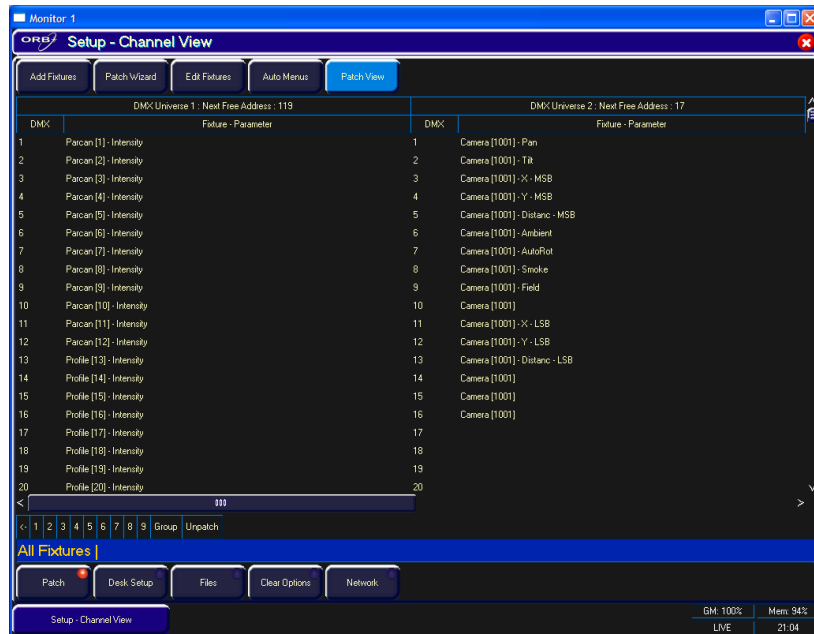


Figure 33 – Channel View

16-bit channels

The DMX protocol defines each of the 512 channels as an 8-bit level between 0 and 255. 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 so two channels are linked together to create a 16-bit channel.

These channels are paired together internally and processed as a signal control channel. When output, the Least Significant Byte (Fine channel) is faded between 0 and 255, then returned to 0 as the Most Significant Byte (Course) 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.

In Channel View, the acronyms MSB and LSB are used to describe Most Significant Byte (Course) and Least Significant Byte (Fine) channels of 16-bit parameters.

Setup

Patch Wizard

The Patch Wizard guides you through the entire patching process, and is a faster way of getting a simple patch up and running than using Add Fixtures and Patching through syntax. However, the Patch Wizard makes the assumption that your rig has been patched sequentially and can be slower for complicated patch entry.

To use the Patch Wizard, press the [Patch Wizard] button on the monitor. The Patch Wizard will appear and guide you through adding some fixtures.

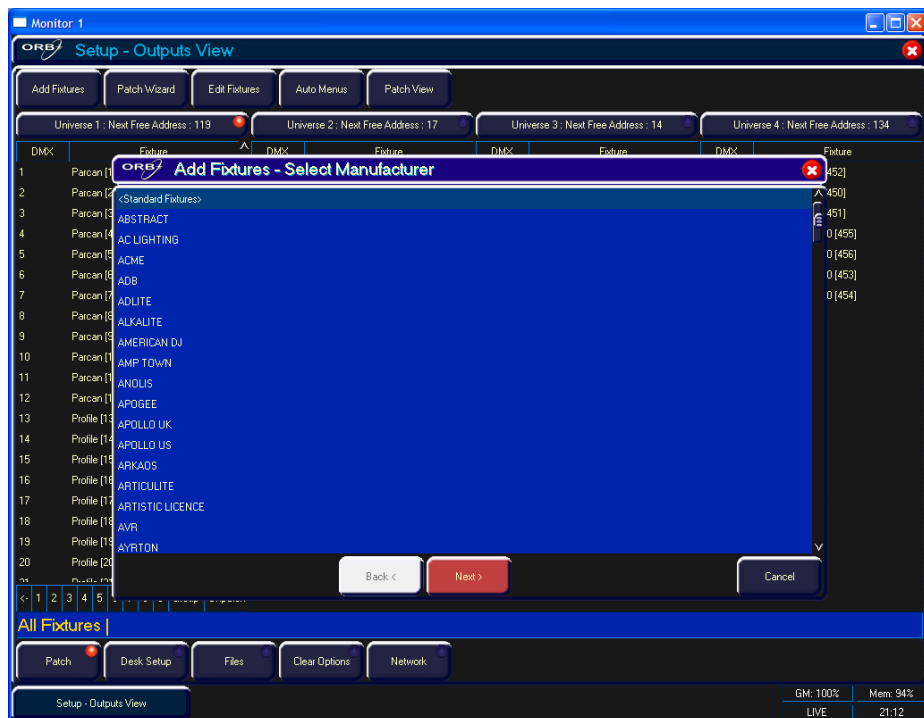


Figure 34 – Patch Wizard (Step 1 – Manufacturer Selection)

First the wizard allows you to select the fixture manufacturer.

Scroll down or use the cursor keys to select the required manufacturer (eg MARTIN). If you have a keyboard connected, you can press the M key to jump straight to manufacturers beginning with M.

Standard Dimmers can be patched using the <Standard Fixtures> type, which is also where you will find fixtures such as RGB Dimmers (for LEDs), Scrollers and Relays.

Press the [Next] button to move to the next step.

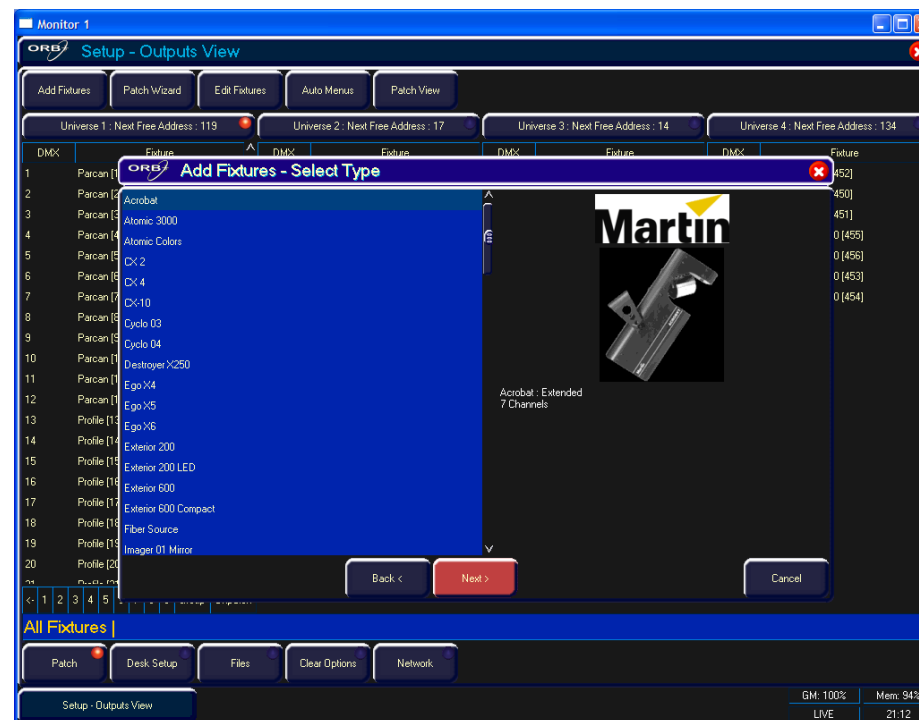


Figure 35 – Patch Wizard (Step 2 – Fixture Selection)

Scroll down or use the cursor keys to select the required fixture type (eg MAC 700 Profile).

Press the [Next] button to select the fixture Mode. It is important that the mode set here matches the mode on the fixture itself – if in doubt, consult the fixture operating manual for full details.

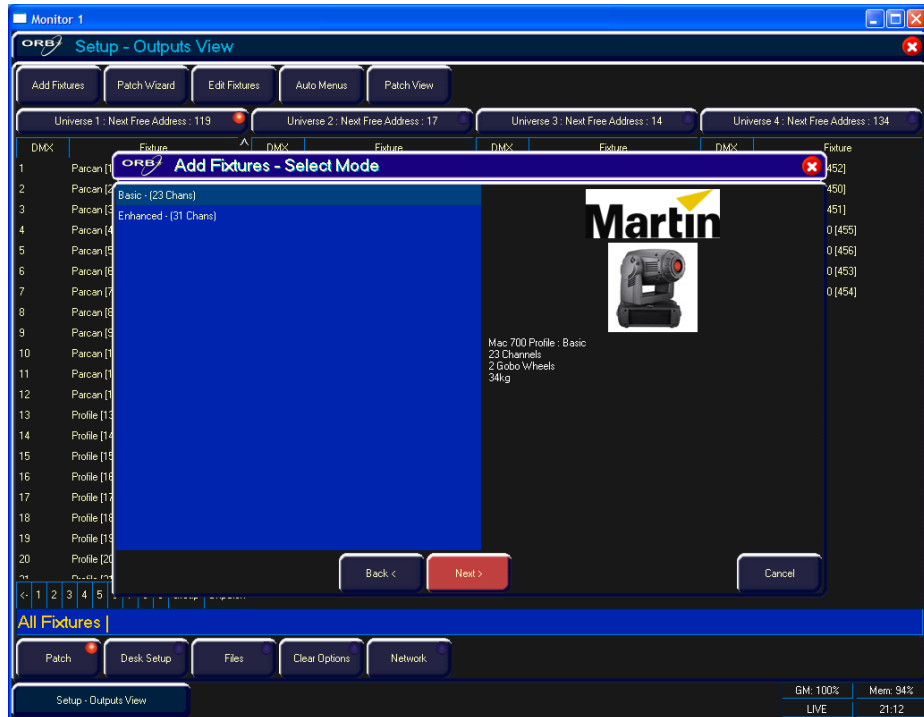


Figure 36 – Patch Wizard (Step 3 – Mode Selection)

Once the Mode has been selected, press the [Next] button to move on and enter the DMX address for the fixture. If you have not yet set this on the fixtures themselves, press the [Next Address] button and the desk will calculate a DMX address for you based on the existing patch information.

It is important here to ensure that the DMX universe is correctly selected.

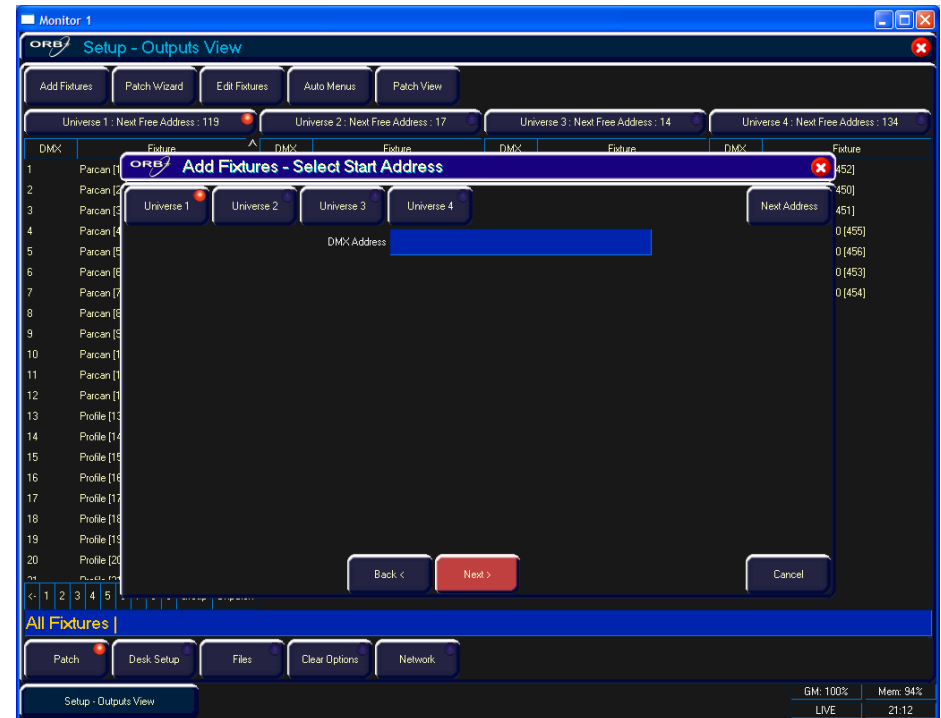


Figure 37 – Patch Wizard (Step 4 – DMX Address entry)

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

Setup

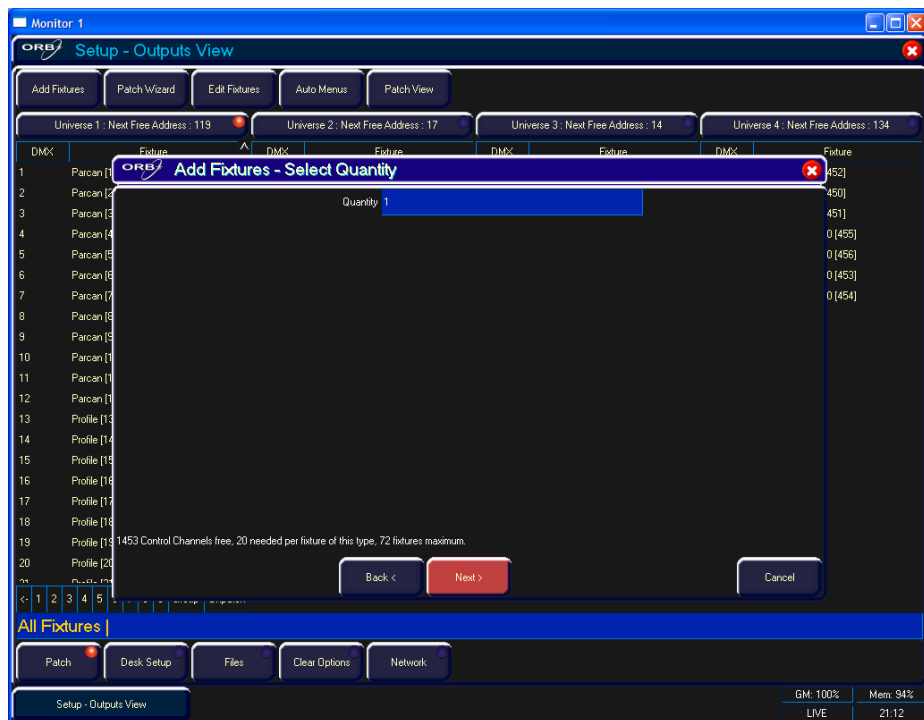


Figure 38 – Patch Wizard (Step 4 – Quantity)

The final step in the Patch Wizard is to assign a fixture number to the fixtures. The fixture number is the number you will refer to the fixture as within the desk software. It is recommended that you take some time thinking about numbering your fixtures. Enter the number and press [Finish].

The Patch Wizard is now complete and your fixtures have been assigned. If everything has gone according to plan, the fixtures should now have moved to their Home positions.

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

Editing Fixtures

Edit Fixtures allows you to carry out various functions relating to the fixtures assigned to the desk, including :

- Name individual fixtures
- Assign user fixture numbers
- Edit fixture parameter Default (release) values
- Edit fixture parameter Home values
- Edit fixture parameter Topset values
- Adjust the Pan and Tilt alignment of fixtures
- Patch Functions

The behaviour of each of these functions is described in this chapter.

To enter Edit Fixtures, press the [Edit Fixtures] button on the monitor. The Edit Fixtures screen is then displayed.

To make changes to a particular fixture or a group of fixtures, first select the fixture group by pressing the GROUP button repeatedly until the required group is displayed in the title bar. All the fixtures in this group are now displayed in the Edit Fixtures window.

Press the [Default], [Home], [Topset] etc button to display the required data. Use the cursor keys to move to the individual field to edit or use the ALL row to select the value for all fixtures in the group. Press ENTER to enter the field, adjust the value as required, then press the ENTER key.

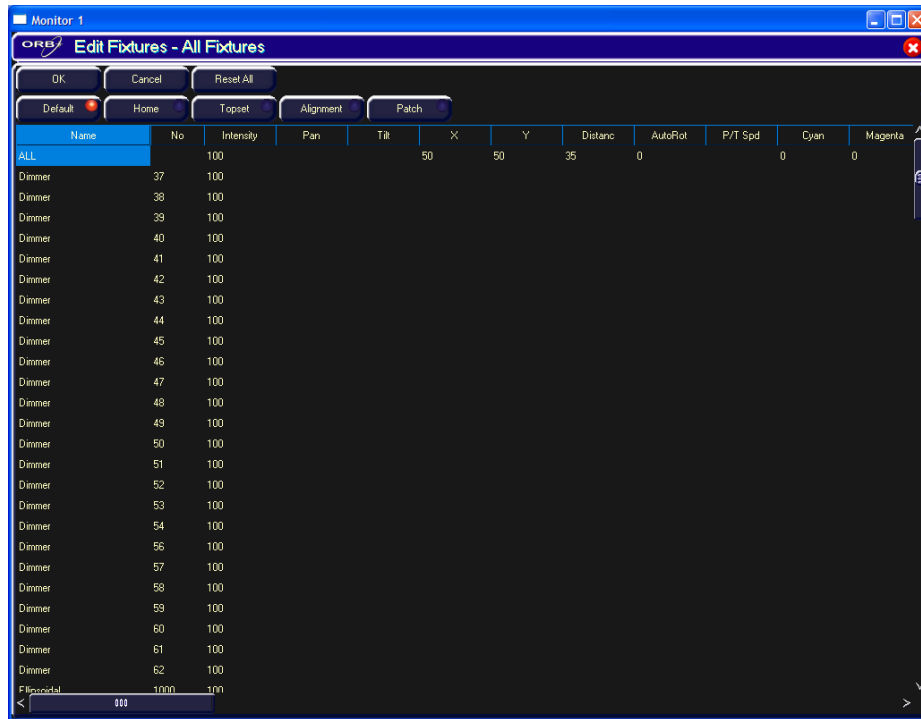


Figure 39 - Edit Fixtures

Once all changes have been made, press the [OK] key to return to the Patch screen.

If you make a mistake in Edit Fixtures, or simply wish to revert to the original values from the fixture library then press the [Reset All] key. If you wish to cancel all editing of the fixtures, press the [Cancel] key.

Fixture Numbers

Each fixture on the desk has its own fixture number, which is the number it will be referred to during programming and on-screen.

Initially, these fixture numbers are set to increase sequentially starting from 1 within their type, eg Dimmers 1 - 48, MAC 700s 1 - 20, MAC 2000s 1 - 20, etc. If you have used the Patch Wizard then you will have already altered these numbers as part of the process. If, however, you have used Add Fixtures then you can alter these numbers if required.

It is recommended that you take some time thinking about numbering your fixtures. It is useful to renumber your fixtures to something logical and unique, as this will be how each fixture will then be referenced during programming and playback. A fairly common numbering system is to prefix each fixture type with a unique number, so for example:

Dimmers 1 - 48 remain as fixture numbers 1 - 48.

MAC 700's 1 - 20 become fixture numbers 701 - 720.

MAC 2000's 1 - 20 become fixture numbers 201 - 220.

To renumber a complete group of fixtures, the ALL row can be used.

Use the arrow keys to move the cursor to the ALL row and No column and then press the ENTER key. Enter the fixture number for the first fixture in the group and press ENTER.

Example: Select the MAC 700 group and enter 501 in the ALL row and No column. The MAC 700 fixtures will be renumbered 701, 702, 703 etc.

Setup

Notes – Fixture Numbers

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

If you have patched using the Patch Wizard then the Fixture Numbers will automatically have been set as part of the patch process. If you have used Add Fixtures then you will need to define a unique number for the fixture.

Naming Fixtures

The Fixture name defaults to the fixture type (eg MAC 700). Fixtures can be renamed by the user, if required (eg Stage Left MAC 700, Centre Stage MAC 700, Stage Right MAC 700).

Use the arrow keys to move the cursor to Name column and then press the ENTER key. Enter the name of the fixture using the external keyboard, then press ENTER.

Editing Default, Home & Topset Values

The Default values for fixture parameters are the values that are output when the fixture is released.

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

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

The initial values for all of these settings are initially taken from the fixture profile data stored in the fixture library in the desk. They are set to values that will produce an open white beam (no gobos or effects) at a central position (Pan and Tilt at 50%).

These values can be edited on an individual fixture or group basis as required.

First, select the required tab (Default, Home or Topset).

Now, use the arrow keys to move to the required column of the selected fixture and then press the ENTER key.

Enter the required value using the external keyboard or numeric keypad on the front panel of the desk, then press ENTER.

Aligning Fixtures

The ORB desk is capable of making adjustments to your fixtures to take into account their rigging position.

Inverting Pan and Tilt

It is possible to invert Pan and Tilt independently for each fixture. This can be particularly useful if you've rigged Front of House fixtures the opposite way around to those onstage.

Use the arrow keys to move the cursor to the Invert P or Invert T column of the required fixture and then press the ENTER key. Use the left and right arrow keys to toggle between the values Yes and No. Select the required value and then press the ENTER key

Now any adjustments you make to the parameter you changed will be inverted in the DMX outputs, making all your fixtures move in the same direction relative to the wheels.

Swapping Pan and Tilt

If a fixture is rigged on its side, you may also wish to Swap the Pan and Tilt parameters. In this function, any values defined for Pan will be output on the Tilt channel(s), and any values defined for Tilt will be output on the Pan channel(s).

Use the arrow keys to move the cursor to the P/T Swap column of the required fixture and then press the ENTER key. Use the left and right arrow keys to toggle between the values Yes and No. Select the required value and then press the ENTER key.

Patch Functions

The Patch functions under Edit Fixtures allow you to patch, repatch and unpatch selected fixtures. This functionality is provided in addition to the command line patching detailed elsewhere in this chapter. Using this window, 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.

Select the fixture(s) to be edited. Click on the [Patch] button in the Edit Fixtures Window.

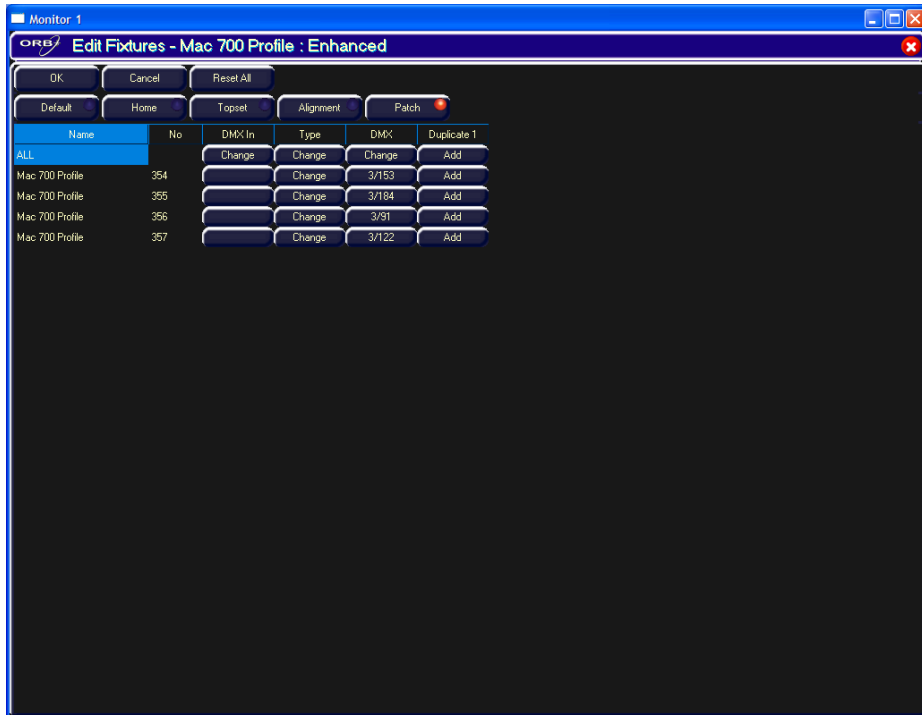


Figure 40 - Edit Fixtures (Patch)

The patch table shows the DMX-In assignment (if assigned) and the DMX address(es) that each of the selected fixtures are currently patched to. If a fixture has not yet been patched to the DMX output then the corresponding DMX column will show 'Add'. In the example above – Fixture numbers 101 to 105 are patched to DMX universe 2 address 1, 13, 25, 37 and 49 respectively.

Patching Fixtures

Move the cursor to the DMX column for the required fixture and press the ENTER key. A Patch Fixture(s) popup window is displayed on the monitor screen, for example:

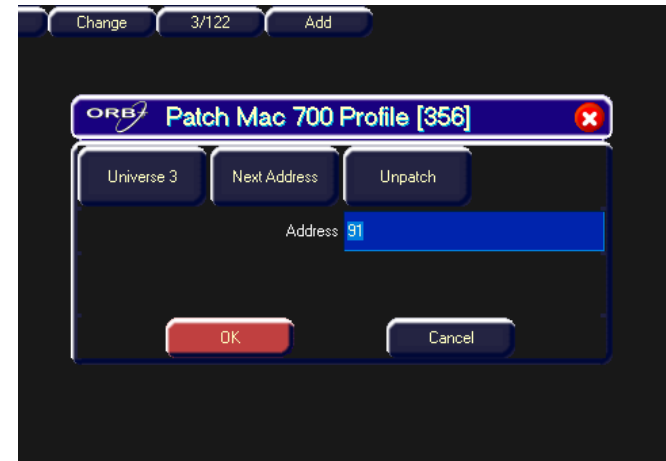


Figure 41 - Edit Fixtures (Repatching)

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 patch address in the selected universe.

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

Setup

Repatching Fixtures

Move the cursor to the DMX or Duplicate n column for the required fixture and press the ENTER key. The Patch Fixture popup window is displayed on the monitor screen with the current patch address in the DMX Address field

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 patch address in the selected universe.

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

Unpatching Fixtures

Move the cursor to the DMX or Duplicate n column for the required fixture and press the ENTER key. The Patch Fixture(s) popup window will be displayed on the monitor screen with the current patch address in the DMX Address field.

Press the [Unpatch] button. A confirmation popup window will be displayed. Select the [Yes] button to confirm the operation.

Adding Duplicates

Move the cursor to the Duplicate 1 column for the required fixture and press the ENTER key. The Patch Fixture popup window is displayed on the monitor screen.

Select the required Universe by clicking on the [Universe] button and selecting the universe from the drop down menu.

Enter the required DMX address in the Address field provided or press the [Next Address] button to automatically pick up the next available patch address in the selected universe.

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

To patch further duplicates for the selected fixture move the cursor to the Duplicate 2 Column, Duplicate 3 column etc and repeat the above procedure.

When duplicates are patched for the selected fixture(s) additional columns are added to the Edit Fixtures table (one column per duplicate address) as shown in the following example:



Figure 42 - Edit Fixtures (Duplicates)

Multi-Part Fixtures

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

There is an additional column (Part) which shows the part name of the multi-part fixture and a [Fixture Part] button that selects which part of the fixture is displayed on the screen (eg All Parts, Lamp, Scroll).



Figure 43 - Edit Fixtures (Multi Part fixtures)

DMX In Field

It is possible to assign a DMX-In address to any fixture on ORB. The DMX-In field in the patch table shows the DMX In address which is currently assigned to the fixture.

The DMX In channel is used to control the brightness (intensity) parameter of the fixture, and is mixed LTP with the level on the desk so you can grab and alter the level of a channel in such a way as you would expect on a generic fader based desk.

Clicking on an entry in the DMX In column allows you to change the DMX In address assigned to the corresponding fixture.

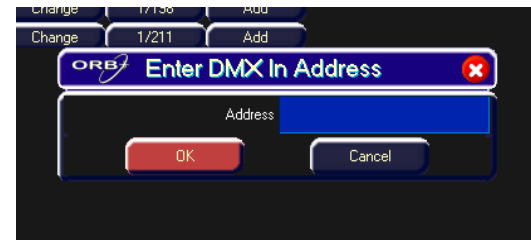


Figure 44 - Entering a DMX In Address

Changing Fixture Type (Fixture Swapout)

This patch function allows you to swap one fixture type for another. This function allows for a complete swap-out of fixtures from one type to another. The desk will attempt to clone the programmed data for the swapped fixture(s) in Cues, UDKs, Submasters and Palettes as far as possible.

Parameters in the new fixture type that were not present in the original fixture type are left unprogrammed.

Select the fixture(s) to be changed. Go to the [Type] column in the window.

Select the [Change] button for the required fixture or the [Change] button in the ALL row to change the type of all the selected fixtures.

Select the Manufacturer, Fixture Type and Mode (if applicable) using the popup window on the monitor and confirm the change type operation.

Setup

Auto Menus

This Setup option generates automatic items based on the fixture schedule.

Auto Groups

This function generates a group for each of the types of fixture, plus 'odd' and 'even' groups for each different fixture type in the desk.

Press the [Auto Menus] key on monitor in the Patch tab.

Select the [Create Auto Groups] option from the drop down menu.

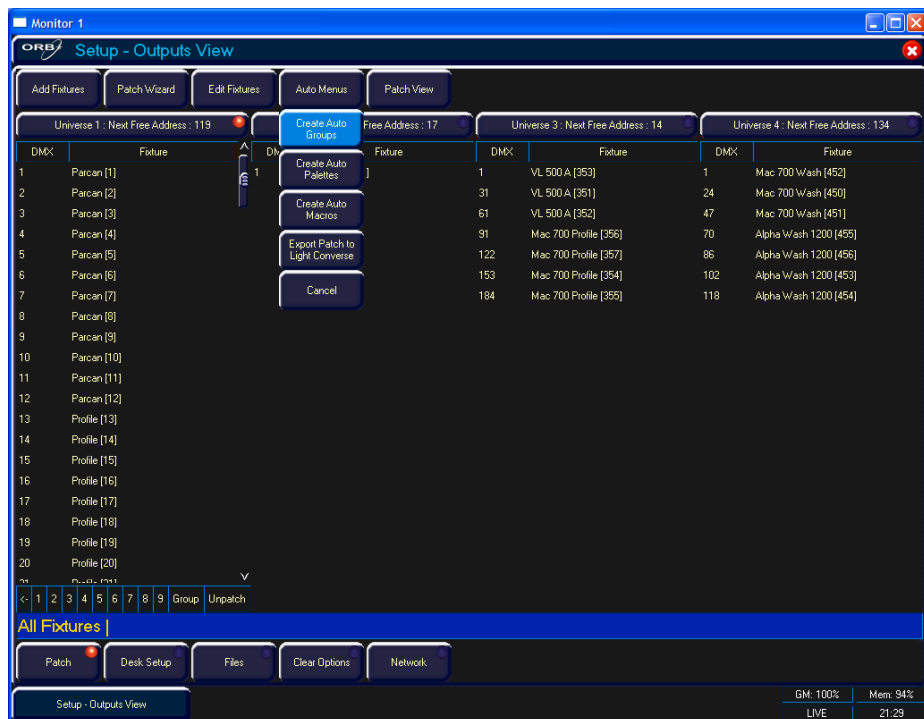


Figure 45- Creating Auto Groups

Auto Palettes

When the [Create Auto Palettes] option is confirmed the desk generates a number of colour, beamshape and position palettes for each moving fixture type in the fixture schedule and a number of standard effects palettes, as described below.

Colour Palettes

The desk provides the following standard colour palettes: White, Red, Orange, Yellow, Green, Blue, Violet, Cyan, Magenta and Pink.

Fixtures with colour wheel(s) - 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 generates an auto palette for those which are within a certain tolerance of the standard colour.

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.

Fixtures with CMY or RGB colour mixing - The desk generates auto palettes for all of the standard colours listed above.

Beamshape Palettes

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

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

No Gobo - This auto palette sends all the 'Gobo' parameters to their default values.

Shutter - Two auto palettes (Shutter Open and Shutter Closed).

Position Palettes

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

Effects Palettes

The desk generates a number of standard effects (see Effects chapter for details).

Auto Macros

When the [Create Auto Macros] option is confirmed the desk generates a number macros based upon the fixture types patched. These macros often include Lamp On, Lamp Off and Reset commands.

Setup

Desk Setup

The Desk Setup function allows you to configure or customise the settings on the desk to your own requirements. The Desk Setup function is divided into a number of different sections which are accessed by pressing the corresponding soft button on the monitor.

The screenshot shows the 'Setup' window on a monitor. At the top, there are tabs for 'Displays', 'Peripheral', 'Inputs', 'Outputs', 'Behaviour', and 'Defaults'. Below these are 'Lock' and 'Event Monitor' buttons. The main area displays settings for 'Monitor Display 1 Enabled', 'Monitor Display 2 Enabled', 'Colour Scheme', 'Screen Timeout (mins)', 'LCD Brightness', 'LCD Contrast', 'Desk Lamp Brightness', 'Monitor 1 Calibration', 'Monitor 2 Calibration', and 'LCD Font Size'. At the bottom, there are buttons for 'Patch', 'Desk Setup', 'Files', 'Clear Options', and 'Network'. A status bar at the very bottom shows 'GM: 100%', '5.0', 'Mem: 99%', 'LIVE', and '18:07'.

Displays - Indicate which monitors are connected; adjust the screen timeout, brightness and contrast; calibrate touch screens; adjust desk lamp brightness.

Peripheral - Adjust the sensitivity of the wheels on the desk

Inputs - Set up SMPTE and MIDI Timecode; CAN; Set Time; Set Date. Assign Remote Switches & DMX Inputs

Outputs - Configure DMX universes to DMX output sockets.

Defaults - Set up the default behaviour of each programmable area, including delay and fade times for each attribute (Intensity, Colour, Beamshape, Position).

Behaviour - Keep parameters separate options; Confirm Overwrites.

Lock - Lock the console to prevent changes happening.

Event Monitor - Let's you monitor front panel events, for debugging.

Figure 46 - Desk Setup

Displays

Press the [Displays] button on the monitor, and then choose the required option from the monitor. The options are detailed below:

The screenshot shows the 'Monitor 1' setup window with the following settings:

Monitor Display 1 Enabled	Yes
Monitor Display 2 Enabled	Yes
Colour Scheme	Default
Screen Timeout (mins)	20 (0 = Disabled)
LCD Brightness	Medium
LCD Contrast	50
Desk Lamp Brightness	50
Monitor 1 Calibration	Calibrate
Monitor 2 Calibration	Calibrate
LCD Font Size	Large

Callout boxes provide the following descriptions:

- Monitor Display 1 Enabled - Yes or No.** (Points to 'Monitor Display 1 Enabled')
- Monitor Display 2 Enabled - Yes or No.** (Points to 'Monitor Display 2 Enabled')
- Colour Scheme -** allows you to pick which colour scheme to use. (Points to 'Colour Scheme')
- Monitor Calibration -** Activates touchscreen calibration for each monitor. (Points to 'Monitor 1 Calibration' and 'Monitor 2 Calibration')
- Screen Timeout -** Sets the time till the monitors and LCDs go into power save mode. (Points to 'Screen Timeout (mins)')
- LCD Brightness & Contrast -** Sets the brightness and contrast for the LCDs on the front panel. This can also be set by holding down SETUP and moving the wheels. (Points to 'LCD Brightness' and 'LCD Contrast')
- LCD Font Size -** Sets the font size the LCD displays use. (Points to 'LCD Font Size')

Figure 47 - Desk Setup / Displays

Setup

Touchscreens

A number of external touchscreens are supported by the ORB. These screens connect into the desk using the USB connection. Screens with a serial connection will not work via a USB-Serial converter. The screen needs to have a direct USB connection. It is recommended only to purchase one of the known working screens from the list below, for use with your ORB.

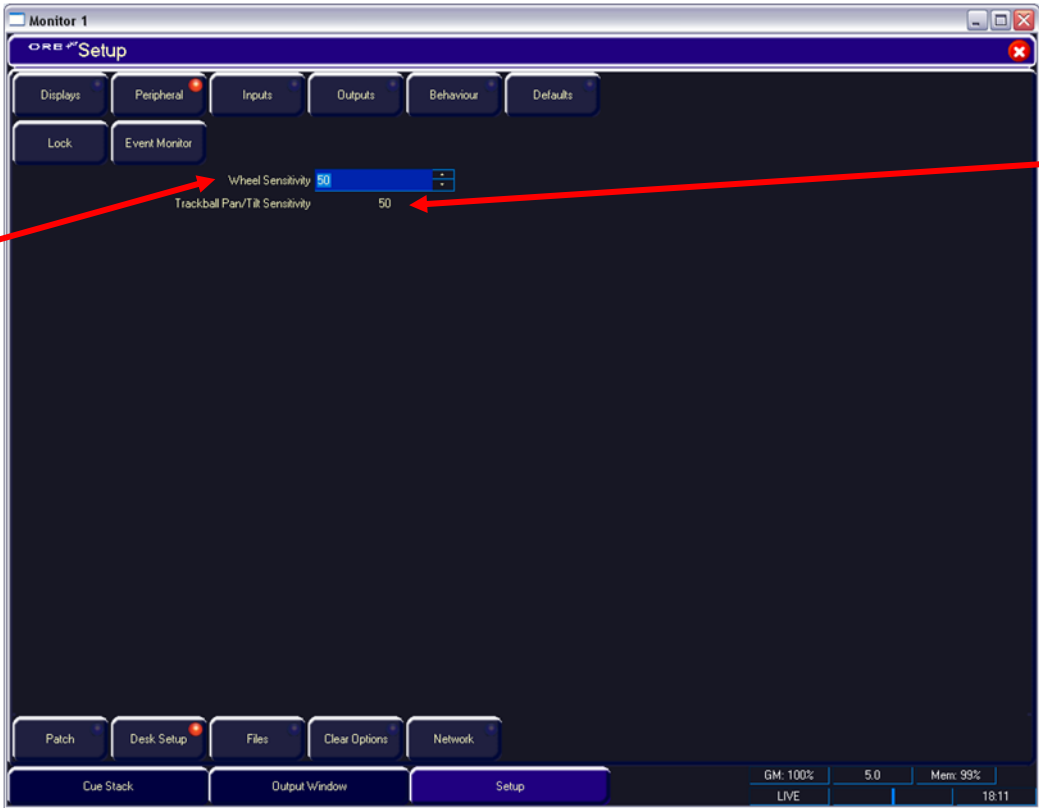
Currently known working (tested and confirmed) ZerOS version 5.4.0	Currently assumed working (driver support provided, no reports)		Not yet working
3M Microtouch M150 3M Microtouch M170 ELO ET1746L LG L1730SF LG L1530SF iPure Solarism LM1731BT Iiyama T1531SR	ELO Touch (most) 3M PCT touch screens Cando dual touch panel eGalax dual-touch panel MosArt dual-touch panels N-Trig touch screen Quanta Optical Touch dual-touch panels Stantum multitouch panel eGalax, eTurboTouch CT-410/510/700 PanJit 3M/Microtouch EX II series ITM eTurboTouch (non-eGalax compatible) Gunze AHL61 DMC TSC-10/25 IRTOUCHSYSTEMS/UNITOP	IdealTEK URTC1000 GeneralTouch Touchscreen GoTop Super_Q2/GogoPen/PenPower tablet JASTEC/DigiTech DTR-02U USB touch controller e2i Touchscreen controller (e.g. from Mimo 740) Zytronic controller ET&T TC5UH touchscreen controller NEXIO/iNexio device Sahara TouchIT-213 touchscreen TSC2007 based touchscreens TPS6507x based touchscreens	Solarism LM1730S ELO Touch <u>Acoustic Pulse Recognition (APR)</u> screens Firebox Displays

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.

Peripheral

Press the [Peripheral] key on the monitor. The various options are shown on the monitor.

Wheel Sensitivity – Adjusts the sensitivity of the control wheels. 0% is least sensitive, 100% is most.



Trackball Pan/Tilt Sensitivity – Adjusts the sensitivity of the pan and tilt controls when using the trackball. 0% is least sensitive, 100% is most.

Figure 48 - Desk Setup / Peripheral

Setup

Inputs

Press the [Inputs] key on the monitor. The various options are shown on the monitor.

The screenshot shows the 'Inputs' menu in the ORB Setup software. The menu items are: SMPTE Timecode (Disabled), MIDI Timecode (Disabled), CAN (Disabled), CAN Chnlinet, Date/Time (with Set Time and Set Date buttons), Remote Switches (Remote Switch 1-6, all Disabled), and Submasters (Maximum Submasters per page: 10, Submaster 1-7 DMX In Address: 0). Red arrows point from callout boxes to these specific menu items.

SMPTE Timecode – The frame rate of the SMPTE timecode being fed to the desk, in fps.

MIDI Timecode – The frame rate of the MIDI timecode being fed to the desk, in fps.

Set Time - Press the [Set Time] key on the monitor. The Set Time Window is displayed. Enter the correct time in the field provided and then confirm by selecting the [OK] button.

Set Date - Press the [Set Date] key on the monitor. The Set Date Window is displayed. Enter the correct Day, Month and Year in the fields provided and then confirm by selecting the [OK] button.

CAN – Not yet implemented in software

Remote Switches - Each of the six remote switches can be configured to Disabled, Go to Cue or Macro. If the action field is set to Go to Cue or Macro, then an additional field is displayed allowing you to enter the stack/cue or macro number as appropriate.

Submasters Per Page – The number of submasters you require on each page. Defaults to 10.

Submaster DMX Address – The DMX –IN address you will use to control each submaster.

Figure 49 - Desk Setup / Inputs

Outputs

Press the [Outputs] key on the monitor. The various options are shown on the monitor:

- **DMX Output 1**
 - **DMX Output 2**
 - **DMX Output 3**
 - **DMX Output 4**
- Each DMX Output Universe can be mapped to a different Data Universe. The default setting is a 1:1 mapping.

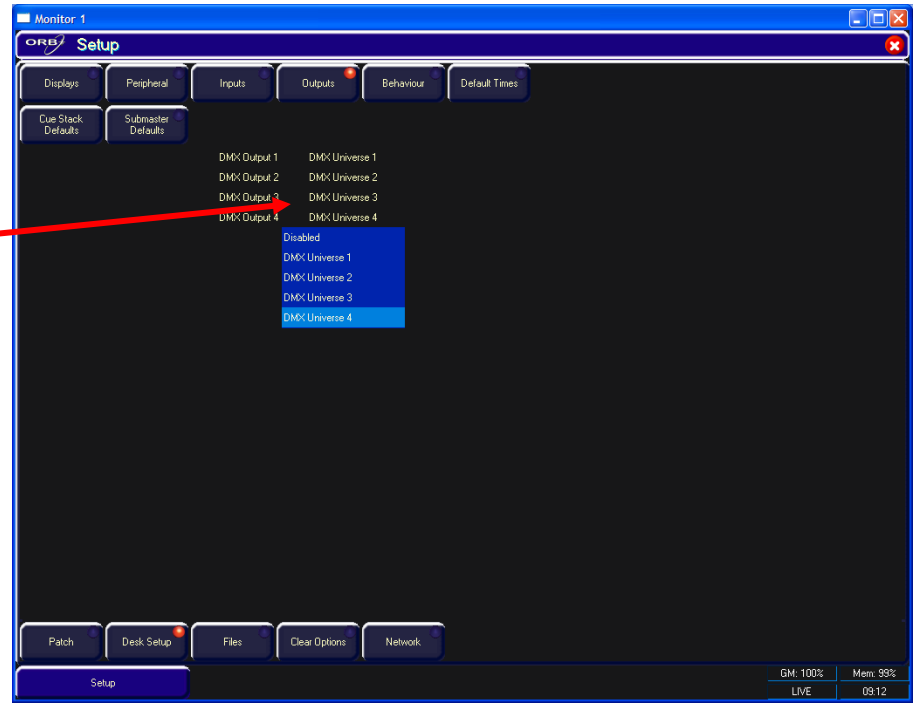
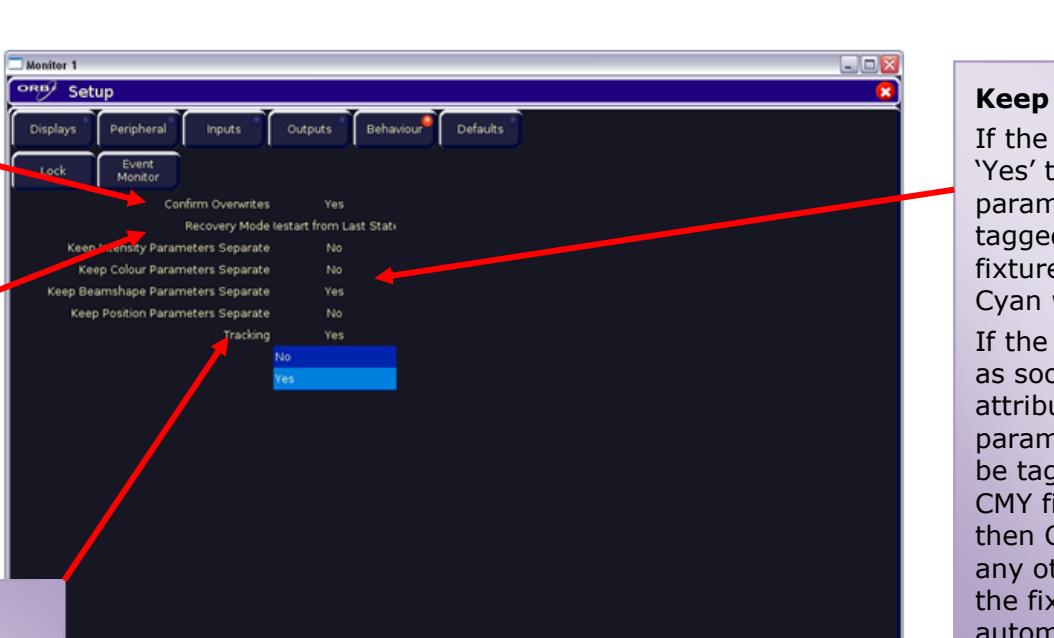


Figure 50 - Desk Setup / Outputs

Setup

Behaviour

Press the [Behaviour] button on the monitor. The various options are shown:



The screenshot shows the 'Behaviour' tab in the ORB Setup window. The settings are as follows:

Option	Value
Confirm Overwrites	Yes
Recovery Mode (start from Last State)	No
Keep Identity Parameters Separate	No
Keep Colour Parameters Separate	No
Keep Beamshape Parameters Separate	Yes
Keep Position Parameters Separate	No
Tracking	Yes

Confirm Overwrites - When this option is set to 'Yes' a confirmation window will appear on the monitor when overwriting a cue, palette, effect, macro etc.

Recovery Mode - This setting defines how the desk behaves when powered up - Restart from Last State or Blackout.

Tracking - This option defines the behaviour of the desk when recording cues. With Tracking set to Yes, cues are programmed to contain the changes required. With Tracking set to no, cues are programmed with full captures of the stage output.

Keep Parameters Separate - If the options above are set to 'Yes' then each individual parameter in that attribute will be tagged separately (eg in a CMY fixture, if Cyan is adjusted, only Cyan will be tagged). If the attribute is set to 'No' then as soon as one parameter in that attribute is adjusted, all the parameters in that attribute will be tagged automatically (eg in a CMY fixture, if Cyan is adjusted, then Cyan, Magenta, Yellow and any other colour parameter for the fixture will be tagged automatically).

Figure 51 - Desk Setup / Behaviour

Default Times

Press the [Default Times] key on the monitor. The various options are shown:

Intensity Fade / Delay – Separate times for channels fading Up and those fading Down.

Colour Fade / Delay – The times that colour channels use when programmed into cues or UDKs

Beamshape Fade / Delay – The times that beamshape channels use when programmed into cues or UDKs

Position Fade / Delay – The times that position channels use when programmed into cues or UDKs

Channel – Individual channel timing, used in creating complex cues

Cue – Default fade time used for a simple cue

Submaster – Default fade time used for a simple submaster. Submasters do not support delay times.

Channel – Individual channel timing, used in creating complex cues

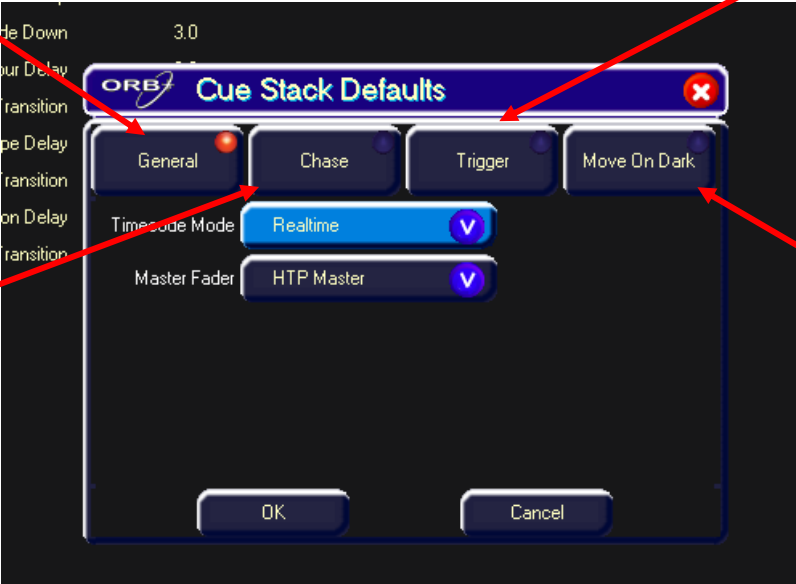
	Channel	Cue	Submaster	UDK
Intensity Delay	0.0	0.0		
Intensity Fade	3.0	3.0	0.0	0.0
Colour Delay	0.0	0.0		
Colour Fade	0.0	0.0	3.0	3.0
Beamshape Delay	0.0	0.0		
Beamshape Fade	0.0	0.0	3.0	3.0
Position Delay	0.0	0.0		
Position Fade	0.0	0.0	3.0	3.0

Figure 52 - Desk Setup / Default Times

Setup

Cue Stack Defaults

Press the [Cue Stack Defaults] button. The various options are shown on the monitor under four main sections (General, Chase, Trigger and Move on Dark):



The screenshot shows the 'ORB Cue Stack Defaults' dialog box with four tabs: General, Chase, Trigger, and Move On Dark. The 'General' tab is selected. The 'Timecode Mode' is set to 'Realtime' and the 'Master Fader' is set to 'HTP Master'. The dialog has 'OK' and 'Cancel' buttons at the bottom.

General Options:
Timecode – Default Timecode setting
Master Fader – Default Master Fader mode

Chase Options:
Chase Drive – Default Drive for a stack turned into a chase
Chase Direction – Default Direction for a stack turned into a chase
Chase Speed – Default Speed
Chase Fade – Default Fade %
Chase Shots – Default # of Shots

Trigger Options:
Trigger on Raise – Default Trigger on Raise setting
Trigger Level – Default Level

Move on Dark Options:
Move on Dark – Default Enabled or Disabled
Delay – Default Delay time

Figure 53 - Desk Setup / Cue Stack Defaults

Submaster Options

The image shows two screenshots of the ORB software interface. The top screenshot is the 'Submaster Options' dialog box, which includes the following settings: Flash Mode (Flash), Mix Mode (HTP), Trigger Level Mode (%), Trigger Level (5), and Release (Yes). A 'Submaster Controls...' button is also present. The bottom screenshot shows the 'Submaster Controls' dialog box with buttons for 'Colour', 'Beamshape', 'Position', and 'Effect'. Red arrows point from callout boxes to these specific settings.

Flash Mode
The action of the flash button beneath the submaster.

Mix Mode
The behaviour of the fader – HTP is Highest Takes Precedence, LTP is Latest Takes Precedence.

Trigger Level
This sets the point at which the submaster triggers off the change to any attributes, in % or DMX.

Release
This option defines whether a submaster releases control of its channels when the fader reaches zero.

Submaster Controls...
This option sets what the physical movement of the submaster fader controls – each attribute can be enabled or disabled. When disabled the attributes will trigger at the trigger level. When enabled, the attributes will crossfade relative to the fader movement.

Figure 54 - Desk Setup / Submaster Options

Setup

Lock Functions

Press the [Lock] key on the touch screen. A drop down menu is displayed on the touch screen. The menu options are summarised below:

- **Lock All** – This option locks all the functionality on the desk. It will not be possible to do anything on the desk until it is unlocked using the current lock code.
- **Change PIN** – This option allows the user to change the lock code (PIN) for the desk. The lock code (PIN) is a four digit number (0000 – 9999). The lock code can be entered via the numeric keypad on the front panel, or external keyboard. The default lock code for the desk is 0000.
- **Cancel** – Closes the menu.

If you forget the lock code for your ORB, please contact Zero 88 Technical Support for assistance and have the desk's serial number to hand. You may be asked some questions to verify your identity and ensure that you have a genuine reason to unlock a desk without knowing its lock code.

Files

This section of Setup allows you to save and load show files and to load or clear User Fixtures (UFTs). Each section of the Files menu is accessed through a button on the monitor.

Saving Shows

To save a copy of your show, you first need a storage media. The ORB is supplied with a 1GB USB flash memory stick, although other storage media may be used with the console. Connect your media to the USB port on the desk (any port will do). If using an external floppy drive, remember to insert a floppy disk into the drive.

Press the [Files] button on the monitor.

Press the [Save Show] button on the monitor. The Save Show window is displayed:

- Select the desired storage device by pressing the [Destination Device] key. This cycles through all the available devices; select the one you require. If the drive doesn't appear in the list, press [Refresh] after a couple of seconds.
- Select the Filename field and enter a name for the show file. This name will be used as the file name on the destination device, so ensure it is unique and easily identifiable.
- Select the [Save Complete Show] box and toggle it until it displays the option you require. The ORB allows you to save just the Setup, the Setup and Palettes, or the Complete show.
- Press the [OK] button to save the show.



Figure 55 - Save Show

Setup

Loading Shows

To load a show, connect the storage media to the USB port on the desk (any port).

If you're using an external floppy drive, remember to insert the floppy disk into the drive.

Press the [Files], then [Load Show]. The Load Show Window is displayed:



Figure 56 - Load Show

Select the storage device by pressing on the [Source Device] toggle box. This will cycle through all the available devices, so select the one you require.

Select the required show from the list of available shows displayed.

Select the [Load Complete Show] box and toggle it until it displays the option you require. The ORB allows you to load just the Setup, the Setup and Palettes, or the Complete show.

Press the [OK] button to load the show.

Note – Loading Shows

Loading a show file will clear any existing show data from the desk so ensure that you have backed up your previous show before you load another one onto the desk.

Loading User Fixture Types

The desk provides a method for loading fixture types which are not in the fixture library stored on the desk, ie user fixture types which are stored on a memory stick.

Press the [Load User Fixtures] key in files.

Select the Source Device (Removable Device) as required. A list of UFT files found on the source device is displayed on screen.

Select the required file using the cursor keys or using the trackball and clicking.

Select the [OK] button.

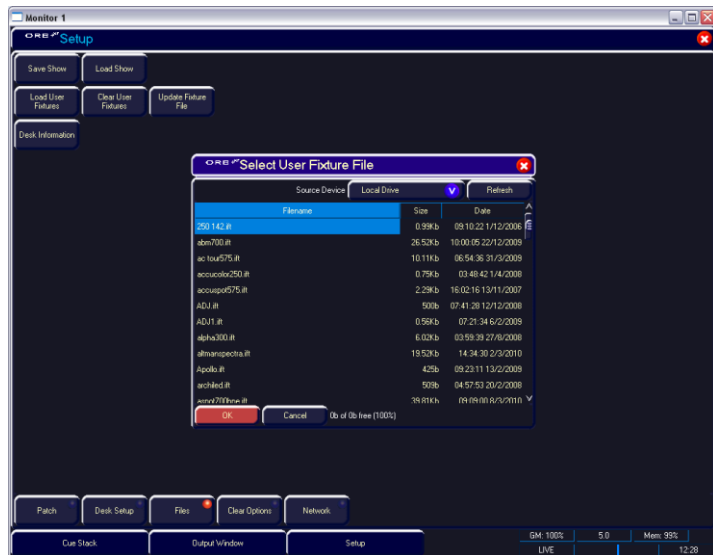


Figure 57 - Loading a user fixture

All the fixture types contained in the selected UFT file are loaded and effectively added to the fixture library on the desk.

Selecting a user fixture type and setting the number of that type in the fixture schedule is performed in the same way as for any of the normal fixture types already present in the fixture library on the desk.

User Fixture Types which have been loaded onto the desk are displayed in the Fixture Schedule Window in the same way as fixture types in the fixture library. They appear in the schedule based on the alphabetical sorting of manufacturer and fixture type and are distinguished by having a green background, for example:

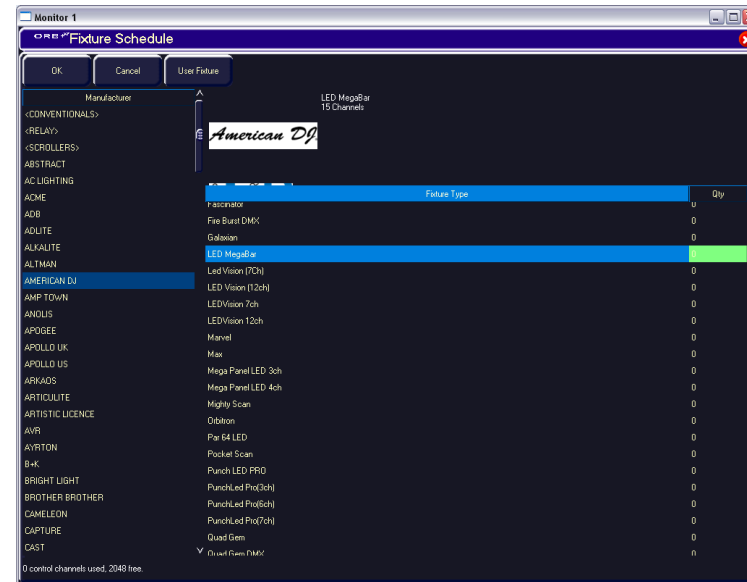


Figure 58 – User Fixture Types in Add Fixtures

Setup

Clearing User Fixture Types

The desk provides a method for clearing all the user fixture types which have been loaded onto the desk.

Press the [Clear User Fixtures] button on the monitor. A confirmation window is displayed.

Press the [Yes] button to clear the user fixtures which have been loaded on the desk.

Update Fixture File

The desk software includes the latest fixture library release at the time the software was released. From time to time a new software release is made. This option allows you to update the Fixture Library file on the desk.

Insert a memory stick containing the Fixture Library file into one of the USB ports on the desk.

- Press SETUP
- Press the [Files] button
- Press the [Update Fixture File] button.
- The desk searches for the update file on the memory stick.
- Follow the instructions shown on the monitor to complete the update.

Desk Information

When the [Desk Information] key is selected a screen is displayed containing information on the various software, firmware and BIOS installed in the desk as follows:

- Hardware Platform
- Slave 1 Bootloader
- Slave 1 Firmware
- Slave 2 Bootloader
- Slave 2 Firmware
- Motherboard BIOS
- NVR Location
- OS Version
- Software Version
- Serial Number
- Fixture Library
- Current Show
- Flash Size

If any versions are displayed in **RED** in the Desk Information screen, this indicates that the versions are out of date. Please contact a Zero 88 service agent for advice on updating these software versions.

When reporting any problems to Zero 88, please include all of the information displayed within the Desk Information screen.

Clear Options

This option allows the user to clear (delete) various components of a show (eg palettes), the whole show, or reset the desk back to factory defaults.

Press the [Clear Options] key on the Setup screen. The various clear options and other functions are displayed on the monitor as shown below:

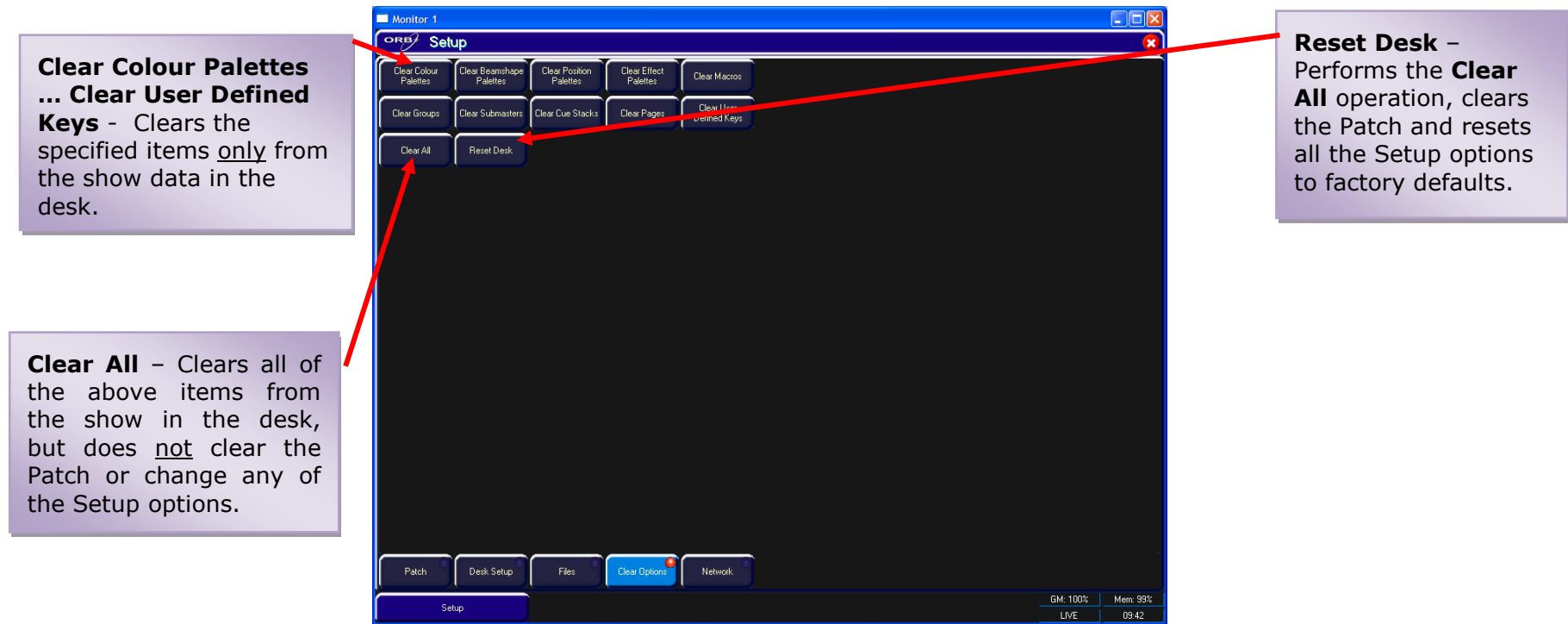


Figure 59 - Clear Options

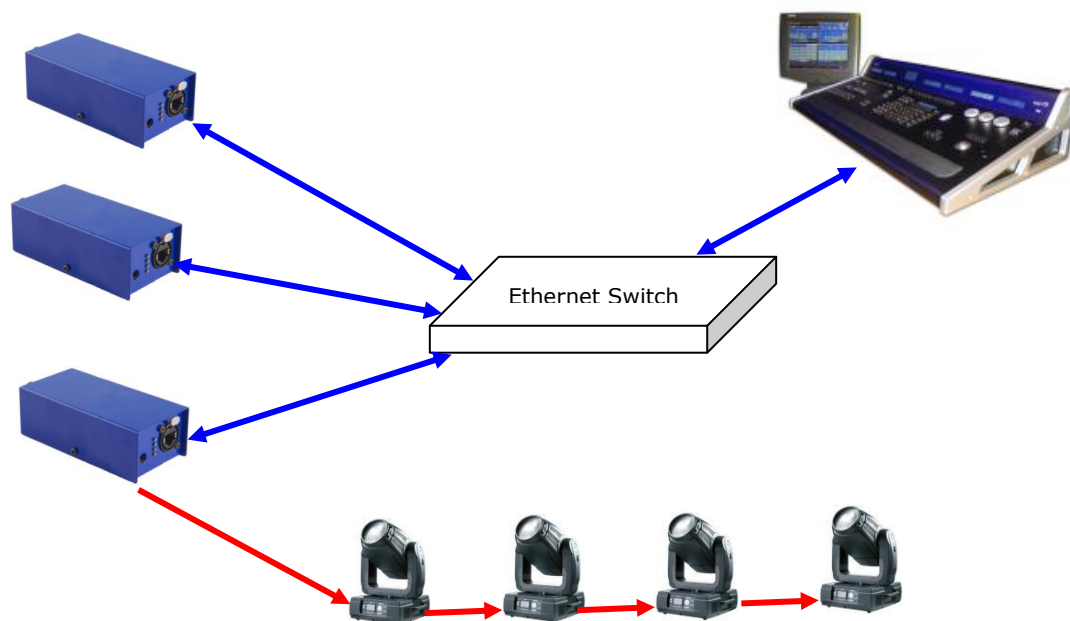
Setup

Network

The ORB supports various Ethernet communication protocols, for connecting to visualisation tools, PDA remote controls, etc. Details of these protocols are found in this section:

Ethernet Basics

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



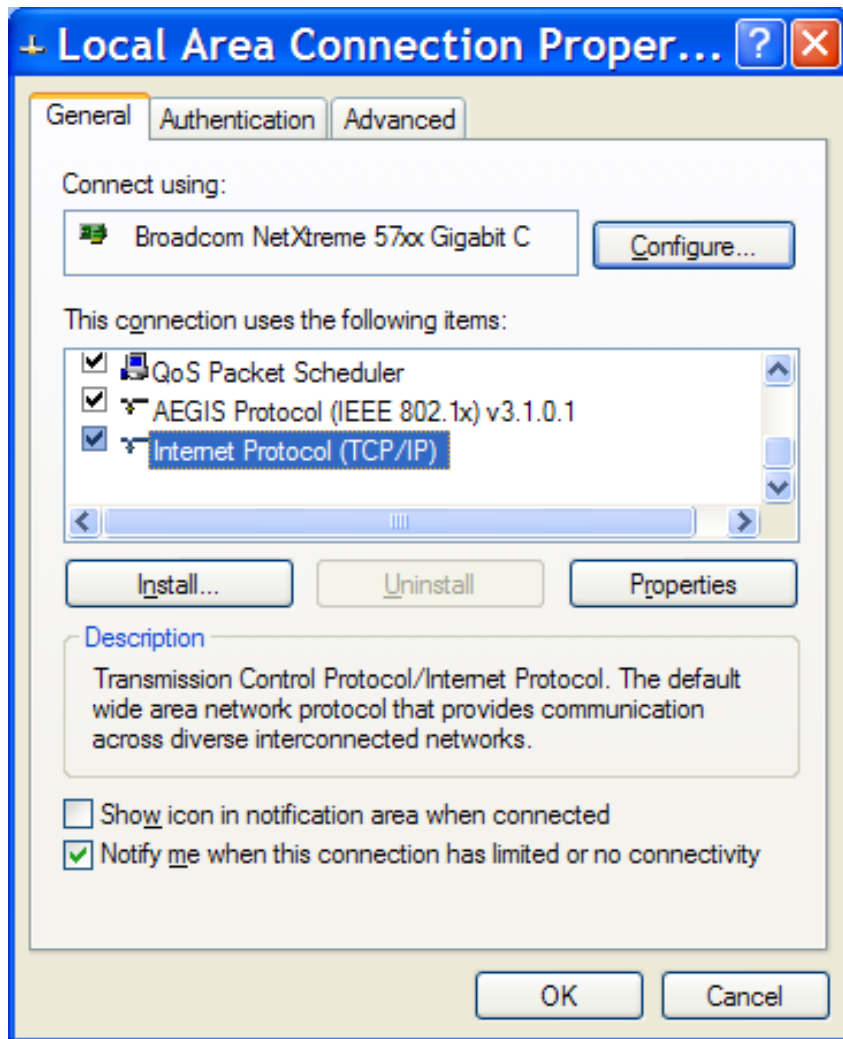
IP Addresses

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

Subnet Masks

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

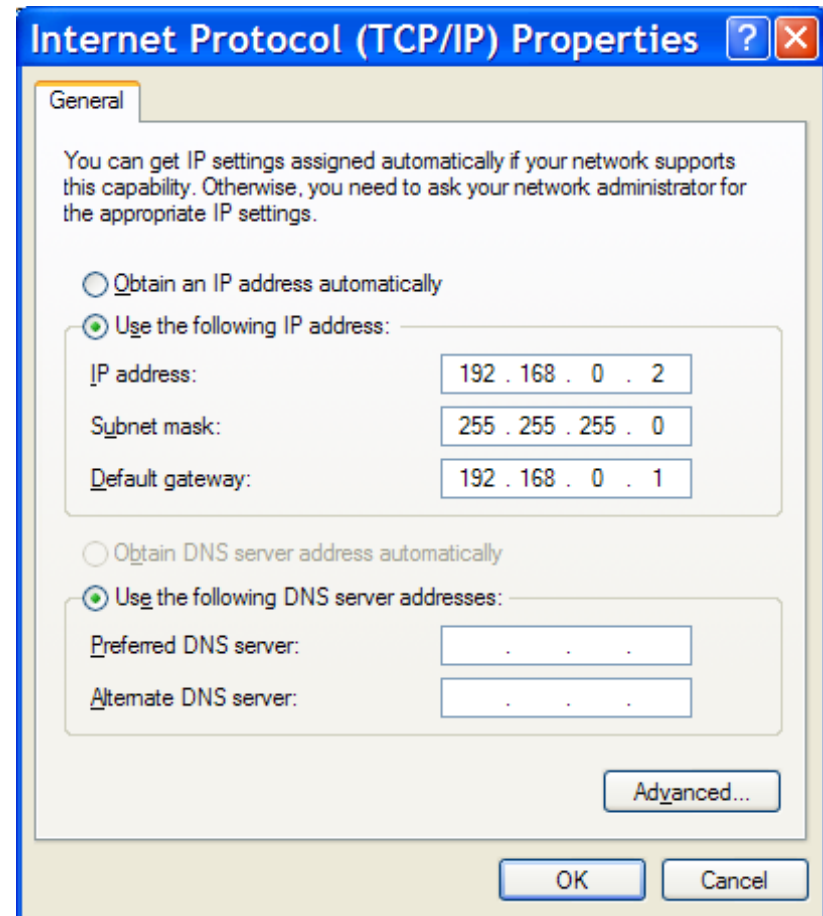
Changing an IP Address



IP address of a PC, first select Start, Connect To, Show All Connections...

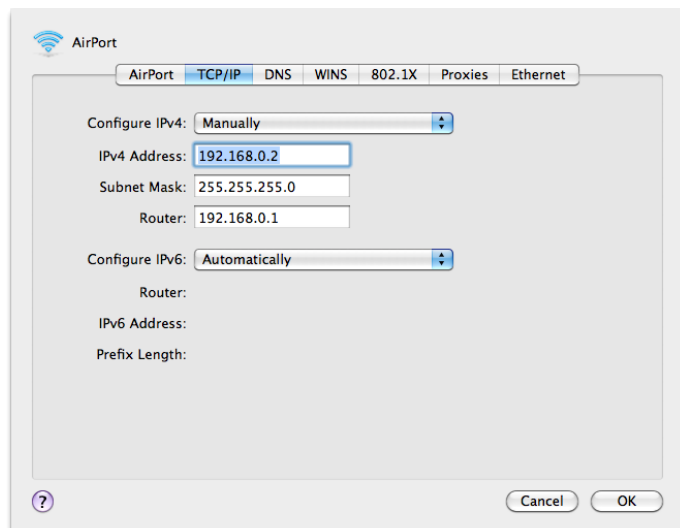
Find the connection for the Network Adaptor you want to use (usually "Local Area Connection") and right click on it, selecting "Properties".

Select the "Internet Protocol (TCP/IP)" and press Properties. Enter the required IP address settings in the popup window and select OK.



Setup

In Mac OS X, to set an IP address, first click the Apple (top left hand corner) and then select System Preferences. Choose Network, and then click Advanced.



Switch vs Crossover

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

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

Via a crossover cable – the desk and connected device are connected together directly via a crossed network cable.

This system is ideal for visualisation PCs as it negates the need for an additional box in the middle, however this system has its drawbacks – it is not possible to use DHCP configuration, and it is not possible to connect more than one device in this manner.

DHCP

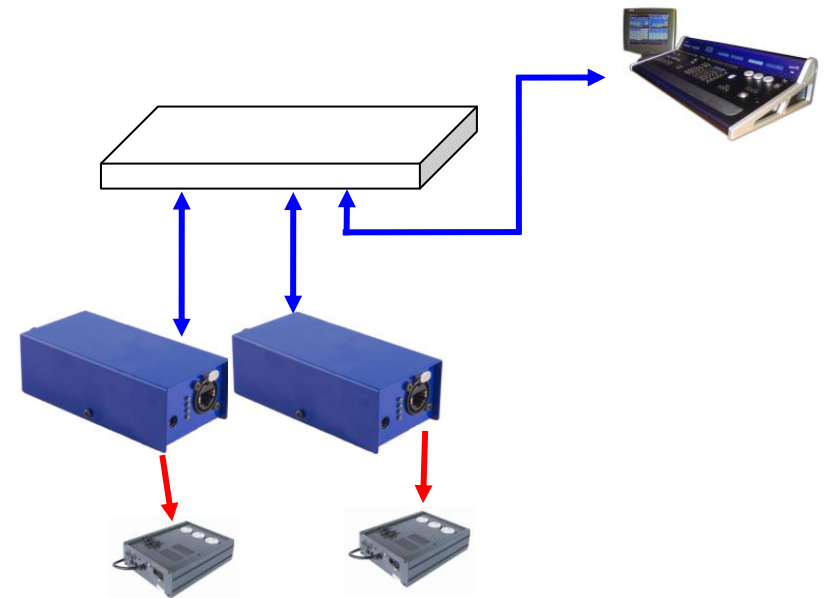
DHCP is a protocol used by Ethernet enabled devices to dynamically allocate an IP address to devices on the network. In order to use this system, a DHCP host must exist on the network. Some Ethernet Switches offer DHCP capabilities, as do Wireless Routers. It is important that you ensure that there is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

Art-Net

Art-Net is a lighting protocol which sends DMX data over Ethernet. The standard allows for multiple DMX universes to be sent over a single Ethernet cable. The ZerOS consoles can output upto 4 universes of DMX data via Art-Net.

Each Art-Net device needs an IP address starting with a 2.x.x.x or a 10.x.x.x, and this setting 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 "1 Universe Ethernet Box" by Cooper Controls. The system will look something like this:

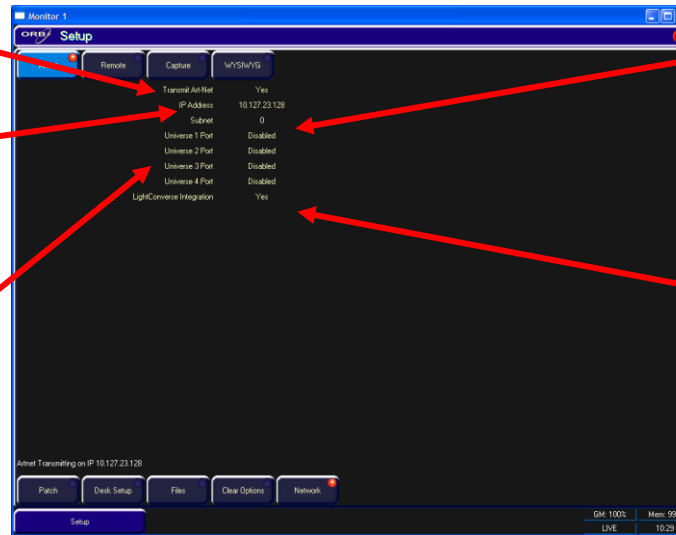


Setup

Transmit Art-Net - Enables or Disables ArtNet transmission.

Network Switch - 2 or 10. ArtNet allows two separate network IP ranges.

Each port can be allocated a separate port, or be disabled. This port must be matched with the Art-Net receiving device (Light Converse, etc).



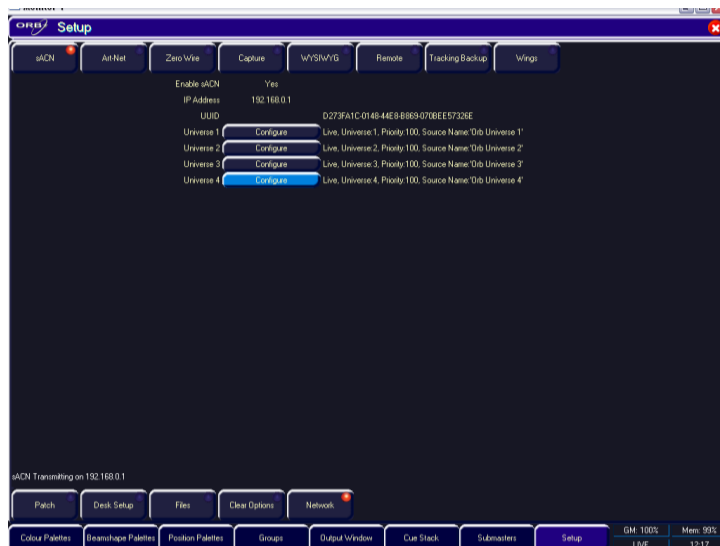
Subnet - The y number in the 2.x.y.z IP range. Used for multiple Art-Net networks on a single network.

Light Converse Integration - Allows additional functionality to be used with Light Converse (eg bi-directional patching, fixture selection etc.)

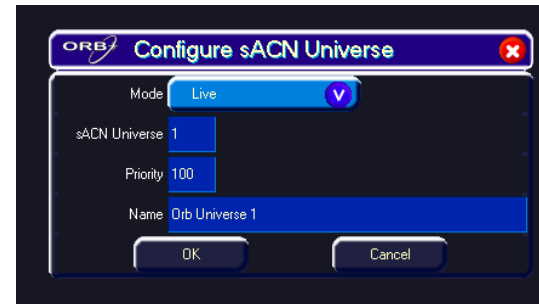
sACN (ANSI-E1.31)

All ZerOS consoles running version 5.4.0 or higher can now output the new Streaming ACN standard for DMX over Ethernet transport. This standard is approved by ANSI and ESTA as the new DMX over Ethernet standard and allows ZerOS to communicate with a multitude of sACN enabled devices already out there.

In Setup, choose the Network tab and then select sACN:



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



Each sACN universe can be either "Live" or "Preview" output – the Preview output option although configurable is not implemented in ZerOS as of version 5.4.0.

sACN allocates a universe number to each DMX universe, which must be set the same on the transmitting device (ZerOS console) and the receiving device (the DMX output box, or fixture, etc). In addition, each universe can be defined a Priority level (0-200) – sACN receptive devices will automatically listen for the highest priority number received and respond to that signal. In this way, multiple consoles can be running on a network at the same time and can automatically take over from one another – a function used in our tracking backup software.

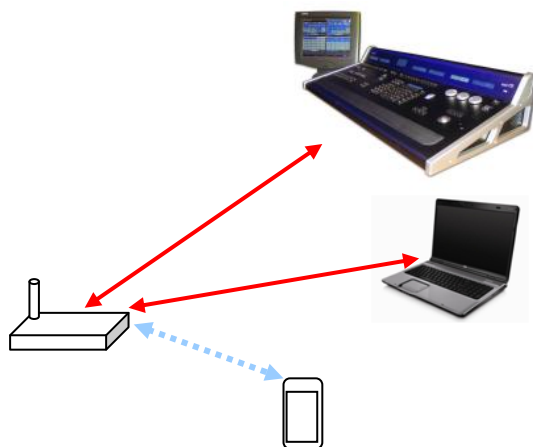
Each sACN universe can also have a unique name associated with it, which can be entered from a USB keyboard. This functionality allows you to identify which universe is coming from which console on a larger networked system.

Setup

Remote

ZerOS Remote offers the ability to remotely control various areas of the desk. The remote device can be a PC (running Microsoft Windows), a Windows Mobile, or an Apple iPhone / iPad / iPod Touch to enable remote control of the console via a wireless network.

The ideal setup for this system is as follows:



The console is connected to a Wireless Router via an Ethernet connection. If a handheld device is to be used, the Wireless Router is then configured to enable wireless communication via a standard wireless network connection, and the Palmtop Computer (PDA) connects to this wirelessly. As long as the console IP address and the PDA IP address are able to see each other, the system should automatically setup and configure.

With a PC connected to the network with the desk and the PDA, load up an internet browser and type in <http://192.168.0.1/> (or the configuration IP address of the router, if different) into the address bar and hit GO.

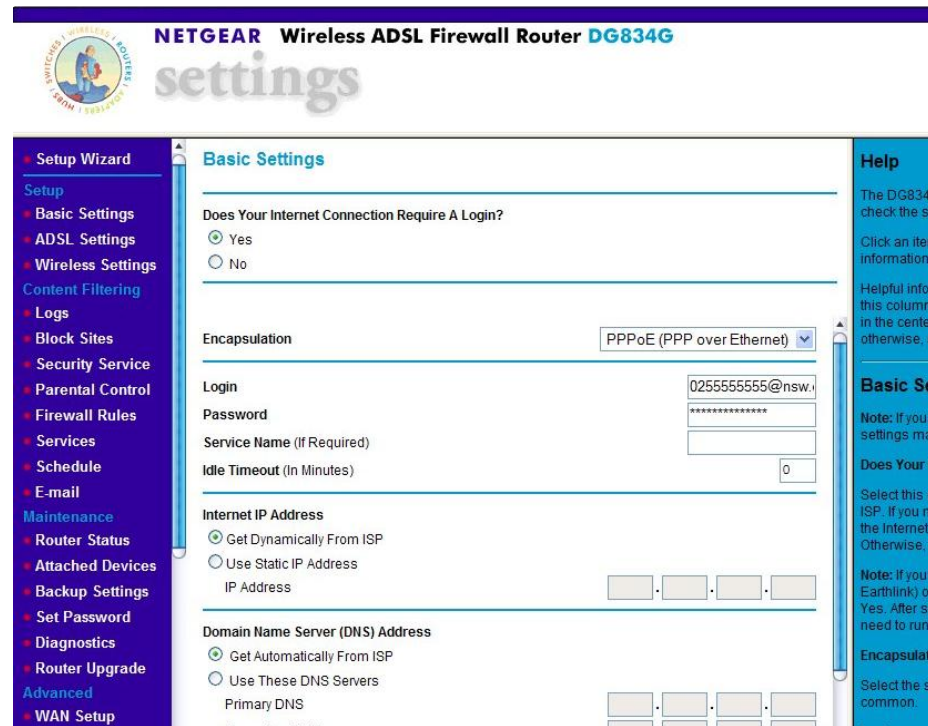


Figure 60 - Netgear Router Configuration

At this point you will be prompted for a user name and password, which will be detailed in the user manual for the router.

Once connected to the router, look for settings which relate to the wireless connection and to DHCP. Ensure that DHCP is enabled and that the wireless is active. Setup a name for the wireless network which you'll recognise (we use "Zero 88") and choose a wireless channel. If required, security can be added. Once settings have been changed, click the Save Option and then the Reboot Router option to ensure that the settings are stored.

Ensure that the remote device has activated the wireless connection (this is normally done through some sort of connection manager). The first time you enable wireless in an area, the PDA will search for

all available wireless networks and will ask you if you want to connect to any it finds. At this stage, you should see the Zero 88 network listed. Select it and choose connect (if you added security, you'll need to enter these details here).

Once the PDA is connected and the desk is connected, on the desk go to Setup / Network / Remote. Choose Enabled Remote - Yes, and Use DHCP Address - Yes. Again, enable security if you like (this security is simply a password the remote will prompt you for before connecting).

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 PDA connected to the wireless network, you should be able to start the ZerOS Remote program on the device and the desk should be detected. Press on the Desk name and click the connect button.

For full information on the Remote, see the Remote chapter in this manual (Page 131).

Tracking Backup

It is possible to connect ZerOS consoles together, or a console and an offline editor, to create a master and backup system. This tracking backup option is ideal for show-critical scenarios where a backup solution must be provided. For this purpose Phantom ZerOS can be considered to be a fully functioning console, with the presence of a ZerOS Unlock Dongle.

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

Setup

Light Converse (<http://www.lightconverse.net>)



The Light Converse visualiser uses Art-Net to communicate with the desk software, hence the presence of the visualisation configuration settings in the Art-Net tab of Network Setup. The rules of Art-Net (above) apply when configuring a Light Converse setup.

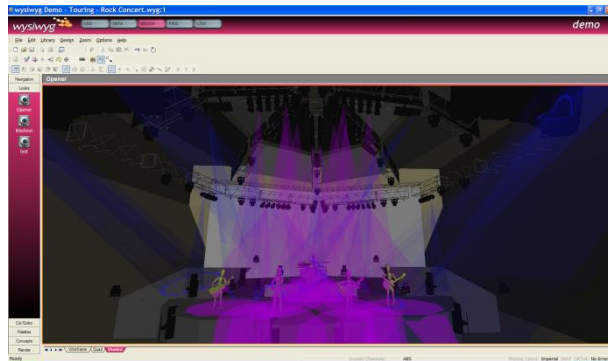
Light Converse integration requires a Zero 88 Light Converse USB dongle. Once active, the system allows bidirectional control of fixtures, selection and patching via the Ethernet connection.

Capture (CITP) (<http://www.capturesweden.com>)



Capture 2005 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.

WYSIWYG (<http://www.castlighting.com>)

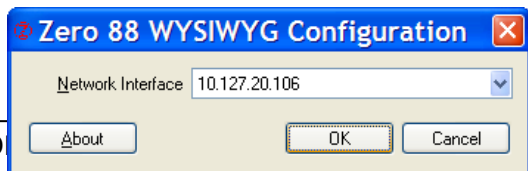


WYSIWYG Requirements

- A current (Release 21 or greater) installation of WYSIWYG Perform
- The Zero 88 consoles file (provided on the Cast website)
- The Zero 88 WYSIWYG Driver (provided on the Zero 88 website, or on the CD with the desk)
- An Ethernet connection to your Zero 88 console

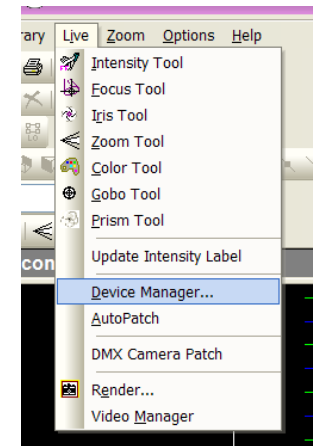
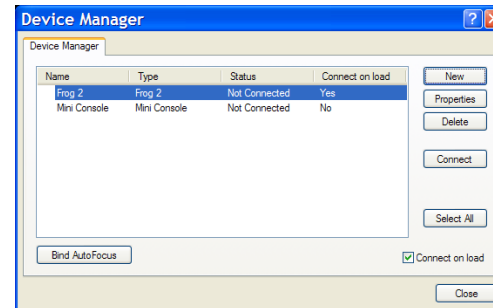
WYSIWYG Installation

- 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)
- Run the Zero 88 WYSIWYG Driver installation tool
- Once the driver is installed, run the tool
- Select the network interface you wish to connect WYSIWYG with (the IP address is shown)
- Choose OK



WYSIWYG Usage

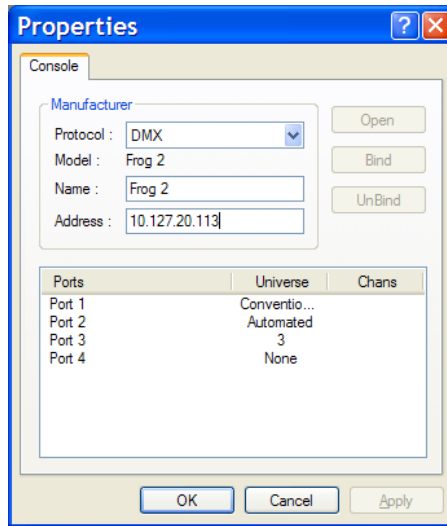
- Start WYSIWYG & load your show file
- Patch your fixtures to Universes in WYSIWYG
- In the LIVE tab, select LIVE, Device Manager
- In Device Manager, select New and locate the Zero 88 console you are connecting to



- 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.



Setup



- In the Device Manager, click CONNECT and the console should connect. You can now use WYSIWYG to visualise your show.
- When you have finished using it, click DISCONNECT in the Device Manager.

Zero Wire

Zero Wire DMX is a wireless DMX transmission system from Zero 88. The system can be output directly from the console via the [Network] options in Setup, 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 Output Window

The Output Window is central to the programming functionality on the ORB desk. It is recommended (but not mandatory) that the Output Window is displayed on one of the monitor screens when programming cues, palettes etc. To display the Output Window, press the {Show Output Window} syntax key.

The **Output Window** displays the outputs which are coming from all areas of the desk (Programmer, Cue Stacks or UDK's). The outputs can be viewed as DMX values, Percentage values or

are tagged have a bright background, untagged parameters have a dark background. This is the Normal view of the Output Window.

Values – allows you to select between values, fade, delay and source views

Window Setup – allows you to customise the window to your requirements.

Fixture names

Channel information – colour coded

- Blue – Fading Up
- Green – Fading Down
- Red – In Programmer
- Orange – In Programmer but untagged
- Yellow Background – Selected
- Red Background – Parked
- White – From a Cue
- Yellow – From a UDK / Sub

Selected Channels

Selected fixture information. One row for each fixture, one column for each parameter. Gobo previews appear here.

Channel	Intensity	Pan	Tilt	P/T Spd	Color 1	Shutter	Gobo1<>	G1 <>	Focus
Mac-250 Entou1 (101)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (102)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (103)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (104)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (105)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (106)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (107)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50
Mac-250 Entou1 (108)	100	50	50	0	Continuous Scrol	Shutter Open	<input type="radio"/> Gobo 1 Indexing	0	50

parameter Details, and can show Values, Fade or Delay times per channel.

Output Window – Values View

In the Output Window, when the [Values] option is selected, the fixtures and their parameter values are shown. The currently selected fixtures are highlighted in yellow. Fixture parameters which

Output Window - Fade View

When the [Fade] option is selected, the fade times of the fixture parameters are displayed in the Output Window, and the fixture wheels can be used to adjust the fade time of their relevant parameters.

The Output Window

Output Window - Delay View

When the [Delay] option is selected, the delay times of the fixture parameters are displayed in the Output Window. Like Fade view, the fixture wheels can be used to adjust the timing of a parameter.

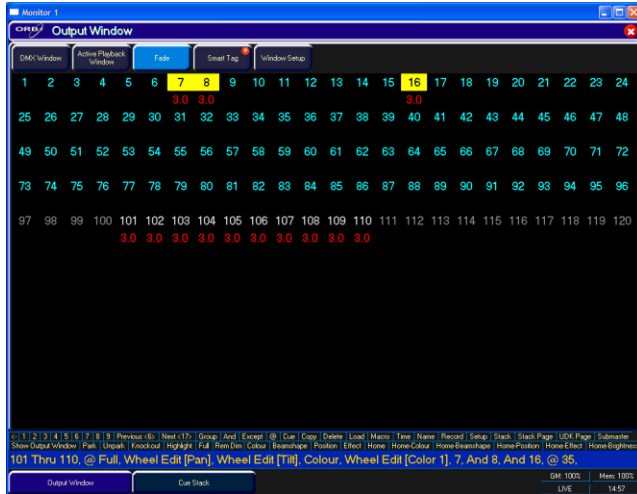


Figure 61 - Output Window Fade View

Output Window – Source View

When the [Source] option is selected, the Output Window displays the source of the output data rather than the actual output values as follows:

- **P** Programmer
- **C S/C** Cue (Stack Number / Cue Number)
- **SX/Y** Submaster (Page Number / Submaster)
- **UDK p/n** User Defined Key (Page / Number)
- **PARKED** The fixture has been parked
- **D** Default value of the parameter

Output Window – Window Setup

Pressing the Window Setup button opens a popup window which allows you to adjust the Output Window configuration.



Figure 62 - Output Window Setup

Details (%)

When the [Details (%)] soft button is selected a drop down menu is displayed with the following options:

- **Percent** – When this option is selected all the fixture parameter values are displayed as percentages (ie 0 – 100% for both 8 bit and 16 bit parameters).
- **DMX** - When this option is selected all the fixture parameter values are displayed as DMX values (ie 0 - 255 for 8 bit parameters or 0 - 65535 for 16 bit parameters).
- **Details (%)** – When this option is selected the fixture parameter values will be displayed as the parameter detail names (eg Red, Gobo 1) where they are defined in the fixture data. If parameter details are not defined, the window will show the actual numerical values in %.
- **Details (DMX)** – When this option is selected the fixture parameter values will be displayed as the parameter detail names (eg Red, Gobo 1) where they are defined in the fixture data. If parameter details are not defined, the window will show the actual numerical values in DMX (0-255 or 0 – 65535).

Hide Unpatched

The Hide Unpatched option allows you to hide any non-outputting channels. This cleans up the output view but may hide information you require if you are offline programming a show before patching the desk. Gaps in numbers are indicated by a vertical line between their channel numbers.

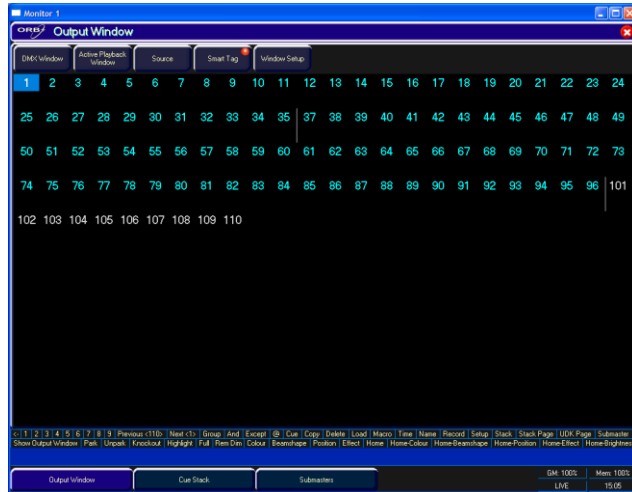


Figure 63 - Output Window (Hide Unpatched)

Channel / Fixture / Intensity Views

There are three different views of the Output Window (Channel, Fixture and Intensity). Click on the [Channel] button and select the required view from the drop down menu.

Fixture view is useful for moving light heavy rigs as it details all of the moving light parameters all of the time, whereas Channel View only shows the selected fixtures parameters.

Programming

Programming

This section of the manual covers the basic functionality of programming which involves selecting fixtures, adjusting one or more of their parameters to the required values, and then recording the information into a cue, palette, effect or UDK.

Selecting Fixtures

Before fixtures can be controlled by the desk they need to be selected. Selected fixtures are shown with Yellow backgrounds in the Output window.

To select an individual fixture or a number of fixtures, type in their fixture numbers followed by ENTER, for example:

- 1 ENTER (selects fixture 1)
- 2 AND 3 ENTER (selects fixtures 2 and 3)
- 5 THRU 10 ENTER (selects fixtures 5,6,7,8,9, and 10)

For example, if the MAC 700's have been given fixture numbers 701 - 720, then the following commands could be used:

- 701 ENTER (selects the first MAC 700 fixture)
- 702 AND 703 ENTER (selects the second and third MAC 700)
- 711 THRU 720 ENTER (selects the last 10 MAC 700 fixtures)

Alternatively, you can use the syntax keys to select the next or previous fixture respectively.

On the ORB XF, channels can also be selected by using the SHIFT key with the flash button below the Multi Function Faders - in Channel Mode this will result in the fixtures from those faders being selected.

Controlling Intensity Parameters

The intensity (or brightness) parameter of the selected fixture(s) can be controlled by entering commands directly via the numeric keypad or by using the control wheel.

Intensity levels can be set for a complete group of fixtures using the following commands:

GROUP n @ m ENTER
(sets the intensity output to m %)

Intensity levels can also be set for a single fixture or a number of fixtures within a group. First select the group and then use any of the following commands:

- 1 @ N ENTER
(sets the intensity output of fixture 1 to N %)
- 1 FULL ENTER
(sets the intensity output of fixture 1 to 100 %)
- 1 @.
(sets the intensity output of fixture 1 to 0%)
- 2 AND 3 @ N ENTER
(sets the intensity output of fixtures 2 and 3 to N %)
- 2 AND 3 FULL ENTER
(sets the intensity output of fixtures 2 and 3 to 100 %)
- 5 THRU 10 @ N ENTER
(sets the intensity output of fixtures 5 to 10 to N %)
- 5 THRU 10 FULL ENTER
(sets the intensity output of fixtures 5 to 10 to 100 %)

On the ORB XF, channels can also be displayed and manipulated on the Multi Function Faders. Use the syntax:

FADER FUNC. {Channels} {1-60} ENTER
(this will select channels 1-60 on faders 1-60)

Once channels are displayed on the faders, moving the faders to the channels current value will 'grab' the channel, and then subsequent movement will adjust the channels level in the program window.

The Intensity channel of a fixture can also be controlled using the intensity wheel.

Use the control wheel to adjust the intensity level as required. The output value is shown on the LCD screen above the wheel. Note that intensity adjustment on the wheel is relative by default which means that if a range of fixtures are selected with different original values, the movement of the wheel will be applied to each fixture individually (eg each fixture will increase or decrease by a percentage from its original value).

Note – Intensity on the Wheel

The Intensity wheel will always control the selected fixtures intensity.

Note – No Intensity Output ?

If the intensity output levels do not change when you send one of the above commands to a fixture, or adjust the intensity level using the wheel, check that the GRAND MASTER fader is at full and the BLACKOUT button is off. If the selected fixture(s) have a Shutter parameter, check that the shutter is open.

Some fixtures also have control of the lamp remotely – try sending the Lamp On macro command to the fixture, if supported.

Controlling Fixture Parameters

Each fixture type has it's own set of parameters (intensity, colour, gobo, pan, tilt etc.) which are classified or grouped together in different attributes (Position, Colour, Beam). This information is defined in the fixture library.

Once a fixture, or group of fixtures has been selected, the attribute buttons and control wheels can be used to adjust the parameter output levels as required.

Controlling Colour Parameters

The colour parameters of the selected fixture(s) are controlled using the control wheels.

First select the required fixture(s) and then press the COLOUR key.

The colour parameters for the fixture are assigned to the control wheels and are indicated on the LCD screen above the wheels.

If the fixture has more than three controllable parameters for the selected attribute, pressing the COLOUR key again will select the next group of parameters.

Wherever possible the desk will group similar parameters together (eg Cyan, Magenta and Yellow will appear together on the wheels).

Adjustment of colour is by default an Absolute adjustment.

Controlling Beamshape Parameters

The beamshape parameters of the selected fixture(s) are controlled using the control wheels.

First select the required fixture(s) and then press the BEAM key.

The beamshape parameters for the fixture are assigned to the control wheels and are indicated on the LCD screen above the wheels.

If the fixture has more than three controllable parameters for the selected attribute, pressing the BEAM key will select the next group of parameters.

Adjustment of beamshape is by default an Absolute adjustment.

Programming

Controlling Position Parameters

The position parameters of the selected fixture(s) are controlled using the control wheels.

First select the required fixture(s) and then press the POS key.

The position parameters for the fixture are assigned to the control wheels and are indicated on the LCD screen above the wheels.

If the fixture has more than three controllable parameters for the selected attribute, pressing the POS key will select the next group of parameters.

Adjustment of position is by default an Absolute adjustment.

Tagging Parameters

On the ORB desk, fixture parameters must be 'tagged' for them to be recorded when programming cues, submasters, palettes and UDK's.

The tag status of each fixture parameter is indicated on the LCD screen and in the Output Window by it's background colour as follows: dark background = untagged; bright background = tagged.

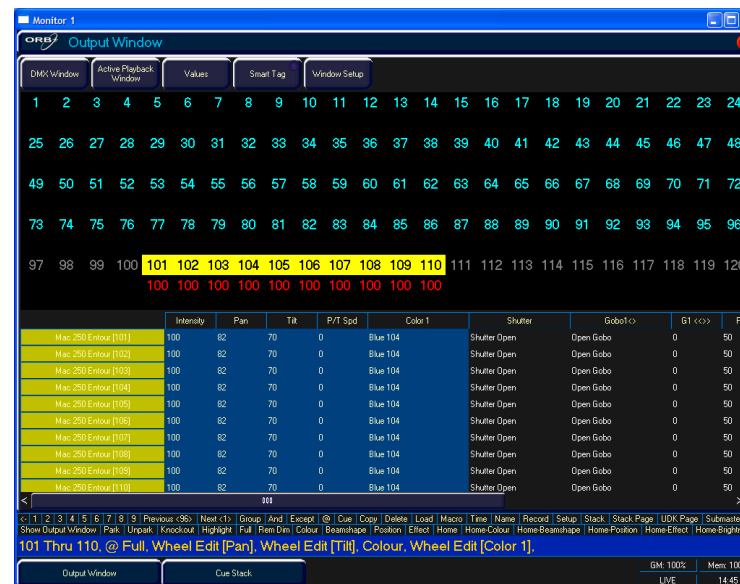


Figure 64 - Output Window showing tagged channels

If a parameter's value is changed by a command, moving the control wheel or directly in the Output Window, it will be tagged automatically.

You can also tag and untag fixture parameters manually by holding down CLEAR and moving a wheel.

Smart Tags

There is a [Smart Tag] button displayed in the Output Window and on the front panel of the desk:



Figure 65 - Smart Tag button

In normal desk operation, only those channels which are tagged in the programmer will be recorded into the cue, submaster, UDK or palette.

Smart Tags remove the need for you to work out which channels should or shouldn't be tagged in a state. As such, they can be used to build states using submasters and other playback elements.

When the RECORD key is pressed the state on stage is what will be recorded, regardless of whether or not a dimmer channel or fixture parameter is tagged in the programmer.

Put simply, with Smart Tags enabled, you no longer have to think about Tracking. The desk will insert whatever tracking is required to make your show work - including ignoring fixtures whose intensity is set to 0% to enable Move on Dark to fully function.

To switch on Smart Tags – click on the [Smart Tag] button in the Output Window, or press the SMART TAG button on the front panel.

Use Smart Tags in combination with Cue Only to create inserted cues that don't affect the rest of the cue stack, for example an added blackout in the middle of a scene.

The Command Line

All commands (selection commands, intensity commands, wheel movements, manual tagging etc) are recorded and displayed on the command line, found at the bottom of the monitor.

The commands may be undone, one at a time using the backspace key (←) on the numeric keypad. Each press of the backspace key undoes one command until you reach the original group selection command.



Figure 66 - Command Line

Above the Command Line on the monitor is the Suggested Commands bar, which follows your syntax commands and shows you the buttons which can be pressed next in your syntax. These command buttons either exist on the front panel or syntax keys, or are hidden shortcut commands (eg Rem Dim, which is SHIFT and FULL)

Basic Record Commands

Once a scene is set up in the programmer as you require it, it can be recorded to a cue using the following syntax:

RECORD CUE n ENTER
(Records cue N in the selected cue stack)

RECORD SUB n ENTER
(Records submaster N on the current page)

RECORD x/y ENTER
(Records cue Y on cue stack x)

RECORD SUB x/y ENTER
(Records submaster Y on page X)

By following this simple record logic, you can program most simple items. The syntax also follows through for palettes and groups:

Programming

RECORD COLOUR n ENTER

(Records the colour parameters to the specified palette)

RECORD GROUP n ENTER

(Records the selected channels into a group)

RECORD <UDK>

(Records the outputting data onto a UDK)

RECORD <MFF FLASH>

(Records the outputting data onto a MFF submaster)

For full details about recording and playback of each programmable element, see the relevant pages later in the manual.

After Programming

After programming it is critical that you CLEAR the programmer before playback. Any remaining parameters trapped into the programmer will affect your outputs and what you see will not be as you programmed it until such a time as you clear the programmer.

Double press the CLEAR button and then replay your cues or submasters as required.

Clear

As soon as any changes are made to the outputs in the programmer, the LED in the CLEAR key is lit, to indicate that fixture parameters have been changed.

Pressing the CLEAR key once clears all the commands in the command line except for the fixture selection.

Pressing the CLEAR key a second time clears the fixture selection from the programmer.

It is important to clear your programmer before playing back your show to ensure that what you have programmed is what you see on the outputs.

Updating

Update Options Window

After setting up data in the programmer and pressing the UPDATE key, **or** after loading an item (cue, palette, submaster or UDK) into the programmer, adjusting parameter values or times and pressing the UPDATE key, the **Update Options Window** is displayed on the touch screen and both monitor screens.

The **Update Options Window** contains a number of soft keys that allow you to select what, how and where the information will be updated. This window is very similar in both style and operation to the Record Options Window. Example:

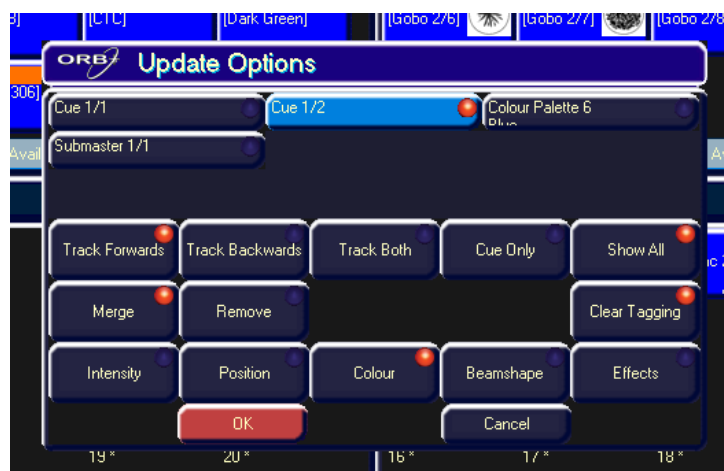


Figure 67 - Update Options

Source Options

The top section of the window contains one or more source option buttons. There is a soft button for each source that may be updated by the user. Each source may be independently selected or deselected by pressing the soft button. When a source is not selected the button is grey. When a source is selected the button is green.

In the case where an item (cue, palette, submaster or UDK) has been loaded into the programmer, parameter values or times adjusted and the UPDATE key pressed, the **Update Options Window** contains the loaded item as the only source option. This option is automatically selected.

Show All Button

By default, the source options displayed in the Update Options Window are restricted to those items that have channels affected by the changes made in the programmer.

If the [Show All] button is selected, **all** the currently outputting sources, regardless of channel ownership will be displayed, allowing you to update items that did not previously have control of the updated channels in the programmer.

Tracking Options

Below the source options section there is a row of buttons containing the tracking options [Track Forward], [Track Backward], [Track Both] and [Cue Only]. These options are only applicable and accessible when a cue (or cues) are selected.

These four options are mutually exclusive, with the default option being [Track Forward]. When an option is selected the button turns

Updating

green. The tracking options work in the same way as they do in the **Record Options Window** (page 132).

Merge and Remove Options

These two buttons allow you to merge or remove the specified data in the programmer from existing cues, palettes or UDKs. These two buttons are mutually exclusive.

If [Merge] is active, the data will be merged into the selected cue, palette, submaster or UDK.

If [Remove] is active, the data will be removed from the selected cue, palette, submaster or UDK.

Clear Tagging

This button determines what happens to the parameters in the programmer after the update operation is performed.

If the [Clear Tagging] button is active then the parameters will be untagged after the update operation.

If the [Clear Tagging] button is inactive then the parameters will remain tagged after the update operation.

Attribute Selection Bar

The Attribute Selection Bar indicates which parameters will be recorded for each of the different attributes (Intensity, Position, Colour, Beamshape and Effects).

When the Update Options Window is displayed - the attribute selection bar initially shows red (tagged) for each attribute in which one or more parameters of that attribute are tagged in the programmer and grey (none) for those attributes where no parameters are tagged.

Pressing each of the soft buttons cycles round the three options for that attribute. The current option is indicated by the background colour of the button as follows:

Grey = No Parameters; Green = Tagged Parameters; Red
= All Parameters.

OK and Cancel Buttons

Press the [OK] button to update the selected source options.

Press the [Cancel] button to close the Update Options Window without updating any items.

Syntax

It is possible to control the update options window using syntax - by entering syntax the window will automatically select the options you specify. For example:

UPDATE CUE 2 ENTER - will update cue 2 with the relevant data

UPDATE COLOUR 6 ENTER - will update colour 6 with modified colour data

Groups

The ORB provides 1000 user definable Groups. Groups are most commonly used when selecting fixtures and programming data to be recorded in cues, palettes etc. Groups can also be assigned to User Definable Keys (UDK).

What are Groups?

Groups on ORB are lists of channels which are similar in some way, and are commonly used for speeding up programming. For example, groups may be created for the Warm generic wash, all Front of House moving lights, all On Stage Moving Lights, etc. Having groups created before commencing programming of cues speeds up the creation of the cues as instead of having to remember a list of channels, you only have to remember one group number.

Automatic Groups

In Setup, there is an option to generate a set of automatic groups based on the fixture types in the schedule. The desk generates a group for each of the Master Groups, plus 'odd' and 'even' groups for each different fixture type in the schedule.

To create the automatic groups, first enter SETUP, then press the [Auto Menus] button and select the [Create Autogroups] option, then exit Setup.

Automatic Groups are referenced by Group Number and appear in the Group Window.

User Defined Groups

In addition to the Automatic Groups, you can also create your own groups of fixtures, eg Floor MACs, Left Stage Movers etc. User

defined groups can be all of the same fixture type or any combination of fixture types.

Simply select the fixtures that you wish to be in the group and then enter the command:

```
RECORD GROUP n ENTER
```

```
RECORD {click on a group in the Group Window}
```

The specified group will then be stored.

Naming Groups

Each group can have a name associated with it – this name is then displayed in the Group window and command line when accessing groups.

To set the name of a user defined group, select the required group from the Group Window and press the NAME key or enter one of the following commands:

```
GROUP n NAME {your name} ENTER
```

```
NAME GROUP n ENTER
```

Type in the name of the group using the external keyboard and then press ENTER.

Copying Groups

To create a copy of a group, enter the following command:

```
GROUP n COPY TO p ENTER
```

This will create a copy of the original group (n) at location (p) which you can use or modify as required.

Programming

Moving Groups

If you need to re-order your groups, you can Move a group from one location to another. Enter the following command:

GROUP n MOVE TO p ENTER

Deleting Groups

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

GROUP n DELETE

DELETE GROUP n ENTER

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.

Group Window

The Group Window appears on Monitor 2 in the bottom right by default.

To display the Group Window on the monitor, hold down the SHIFT key and then press the GROUP key:

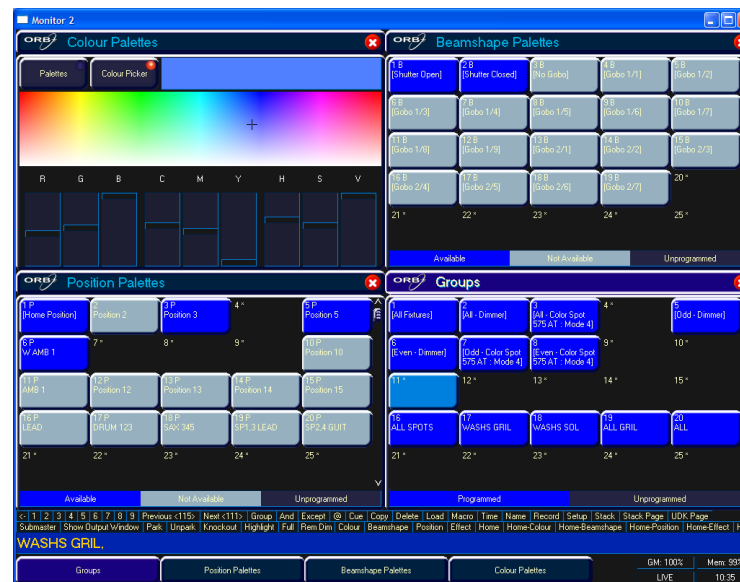


Figure 68 – Group Window

The Group Window contains a soft button for each of the 1000 groups. Each soft button contains the following data: Group Number (1-1000) and name, if defined.

Unprogrammed groups are indicated by a '*' next to the group number.

Group Submasters

Group Submasters are groups stored onto a submaster. They can be used to program scenes, as moving a group submaster triggers its contents to go into the program window.

For more information on Group Submasters, see page 122.

Palettes

The ORB desk provides you with four sets of 1000 palettes. The palettes are stored under the nominal headings of Position, Beam, Colour and Effects.

Palettes may contain any combination of Intensity, Colour, Beamshape, Position or Effects parameters. For example, a colour palette may include intensity and colour, a beamshape palette could include beamshape and position etc.

What are Palettes?

Palettes on ORB are small pieces of information which define to the desk how to create a particular look on stage. For example, palettes may be created for colours Blue, Red and Yellow, positions Downstage Left, Centre Stage and Upstage Right, and beamshapes Gobo 3, Prism In, Rotation, etc. Having palettes created before commencing programming of cues speeds up the creation of the cues as instead of having to continuously move the fixture wheels to adjust parameters, you only have to enter the palette reference.

Recording Palettes

Programming a palette is simple and similar to recording a cue. Set up the fixture outputs as required, ensuring that the correct fixture parameters are tagged, and then enter the following command:

```
RECORD COLOUR n ENTER
```

To record the fixture data as a beamshape, position or effects palette, simply replace the COLOUR part of the command with BEAM, POSITION or EFFECTS respectively.

Hints on Recording Palettes

If you wish to record attributes, other than the default one for the type of palette being recorded, then select the required attributes

on the Record Options Window on the monitor before pressing the ENTER key.

When creating Position palettes, use Highlight (SHIFT + HOME) key to grab a fixture in open white. Set the position as required, then turn the Highlight off before recording the palette. This way you won't have to untag the intensity of each fixture.

Naming Palettes

Palettes can be named, either as a separate operation or as part of the recording process, by entering one of the following commands:

```
COLOUR n NAME {your name} ENTER
```

```
NAME COLOUR n ENTER {your name} ENTER
```

```
RECORD COLOUR n NAME {your name} ENTER
```

Outputting Palettes

Select a fixture or group of fixtures and then enter one of the following commands:

```
COLOUR n ENTER
```

Snaps the outputs to the programmed palette values.

```
COLOUR n TIME x ENTER
```

Fades the outputs in X seconds.

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.

If the fixture data in the programmer is then recorded into a cue or UDK, the desk will record the palette reference number rather than the actual parameter values.

Palettes

Updating Palettes

It is possible to update palettes in several ways. The first option is to load that palette back into the programmer. Enter the syntax:

```
LOAD COLOUR n ENTER
```

Now make the changes to the palette as required (by adjusting parameters as required) and then press UPDATE. The Update Options window will appear:

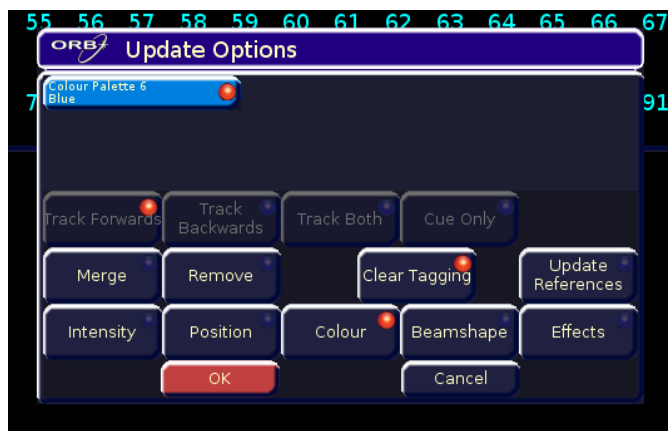


Figure 69 - Update Options

The palette you loaded will automatically be selected, so you just need to press OK to complete the edit.

The other option for updating palettes is to do the update without first loading the palette. When you press UPDATE you will be offered a number of sources – select the one you wish to update and press OK.

Copying Palettes

To copy a palette from one location to another, enter one of the following commands:

```
COLOUR n COPY TO p ENTER  
BEAM n COPY TO p ENTER  
POSITION n COPY TO p ENTER  
EFFECTS n COPY TO p ENTER
```

As all palettes have the same data structure and may contain fixture parameter data from any combination of attributes, it is also possible to copy a palette from one attribute to another, for example:

```
COLOUR 2 COPY TO BEAM 5 ENTER
```

Moving Palettes

To Move a palette from one location to another, enter one of the following commands:

```
COLOUR n MOVE TO p ENTER  
BEAM n MOVE TO p ENTER  
POSITION n MOVE TO p ENTER  
EFFECTS n MOVE TO p ENTER
```

When a palette is moved to a new location, any cues that referenced the original palette will now reference the new location of the palette.

As all palettes have the same data structure and may contain fixture parameter data from any combination of attributes, it is also possible to move a palette from one attribute to another, for example:

```
COLOUR 2 MOVE TO BEAM 5 ENTER
```

Deleting Palettes

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

```
COLOUR n DELETE  
DELETE COLOUR n ENTER  
BEAM n DELETE
```


DELETE BEAM n ENTER

POSITION n DELETE

DELETE POSITION n ENTER

To delete a range of palettes, enter the following command:

DELETE COLOUR a THRU b ENTER

When a palette is deleted, any cues that previously referenced the palette are updated to contain the actual values that were stored in the palette.

Palette Windows

Each set of palettes has it's own palette window. To display one of the palette windows on the monitor, hold down the SHIFT key and then press the appropriate attribute key (POSITION, COLOUR, BEAM or EFFECTS).

The palette window contains a soft button for each of the 1000 palettes. Each soft button contains the following information:

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

The Palette Windows appear on Monitor 2 by default, with the exception of the EFFECTS Palettes window which must be opened if required.



Figure 70 –Palette Windows (Monitor 2)

Pan/Tilt Grid

The Position Palettes window doubles as the Pan/Tilt grid for adjusting position of moving lights on screen. Press the Pan/Tilt Grid button to show the grid.

Palettes

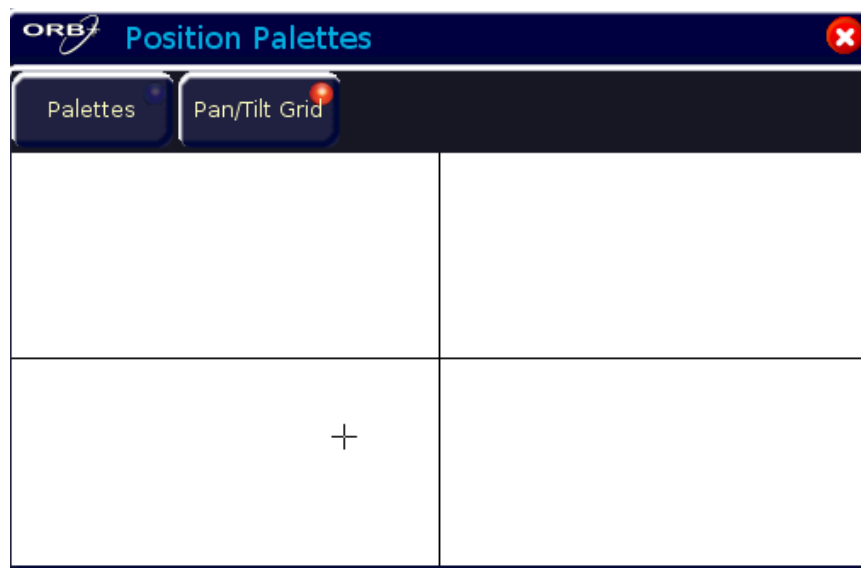


Figure 71 - Pan/Tilt Grid

The + in the grid represents the current Pan/Tilt values for the fixture selected. If multiple fixtures are selected, multiple +s can be shown.

Clicking (or touching on a touchscreen/remote monitor) will set the Pan and Tilt of the selected fixture to the value pressed.

Colour Picker

The Colour Palettes window doubles as a colour picker, allowing you to select a colour from the on-screen display for use in colour mixing (CMY/RGB) fixtures. Press the Colour Picker button in the Colour Palettes window to select the colour picker. Once displayed, the + indicates the current colour values for the selected fixture. If multiple fixtures are selected, multiple +s will be displayed.



Clicking in the Colour Picker (or touching on a touchscreen/remote monitor) will set the Colour of the selected fixture to the value pressed, Moving the on-screen sliders will adjust their levels accordingly.

Cues, Stacks and Pages

The ORB provides a total of 1000 user programmable **Cue Stacks**.

Each of these 1000 cue stacks, can be programmed with up to 999 cues.

An entire Cue Stack can be converted to run as a Chase, if required.

There are 100 pages of playbacks available. Each page contains 10 playbacks.

The 100 pages of playbacks are automatically assigned to the 1000 cue stacks in numerical order (ie Page 1 contains cue stacks 1 – 10, Page 2 has cue stacks 11 – 20, up to Page 100 which has cue stacks 991 – 1000).

Cues

The **Cue** is the basic element for storing fixture parameter levels and times, which can then be played back via a number of different mechanisms.

Cues are recorded into memory stacks (or stacks) and may also be assigned to User Defined Keys (UDK) as required.

A cue may be numbered from 1 – 999. You can also insert up to 99 cues between each whole cue number (eg 1.1, 1.2, 1.3 ... 1.99 may be inserted between cues 1 and 2).

Cues are referenced by their stack number and cue number separated by a '/' (eg 1/1 is stack 1 cue 1, 2/3 is stack 2 cue 3, 23/12 is stack 23 cue 12).

Cues can be triggered by a number of different methods (GO button, automatically after a specified wait time, Real Time, SMPTE Time, MIDI Time, CD Time or macro).

Cues may contain macros which are run automatically when the cue is triggered.

Cues may also be named, edited, copied, removed and deleted.

Programming 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 **Cue Stack Window** is displayed on one of the monitor screens. See page 102 for more information.

Selecting a Cue Stack

Cues on the ORB can be programmed into any of the 1000 cue stacks.

Select the required page using the STACK PAGE button, eg STACK PAGE 1 ENTER.

Press the Stack SELECT button (1-10) above the cue stack you wish to program. The LED in the SELECT button is lit to indicate that it is the active cue stack, and the Cue Stack Window changes to show the cues programmed in that stack.

Recording a Cue

Having selected a cue stack into which to program your cues, as described above, ensure that your stage look is correct and all the required fixture parameters have been tagged.

Cues, Stacks & Pages

To record the tagged parameters into the next available cue on the selected cue stack, simply enter the following command:

RECORD ENTER

To name the cue at the time of recording simply enter the command:

RECORD SET <enter name of cue> ENTER

If you wish to record the fixture data to a particular cue in the selected stack, rather than the next available cue, then enter the following command:

RECORD (CUE) N ENTER (N = Cue Number, CUE is optional)

If you wish to record the fixture data to a particular cue stack and cue number, rather than the next available cue on the selected stack, then enter the following command:

RECORD S/C ENTER (S = Stack No, C = Cue Number)

After recording a cue, the command line is cleared, the fixture parameters are automatically untagged, but the fixtures remain selected.

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

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

Note – Programming Cues

The ORB desk operates primarily 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 cue stacks sequentially, you shouldn't have to worry too much about tracking, as long as you ensure that you tag any parameters you wish to be recorded in the cue you are working on. For more information on Tracking, see page 132.

Naming Cues

Enter the command CUE n NAME or NAME CUE s/c ENTER. The Edit Cue Name popup is displayed on the touch screen (see below). Type in the required name using the external or on-screen keyboard and then press the [OK] button to complete.

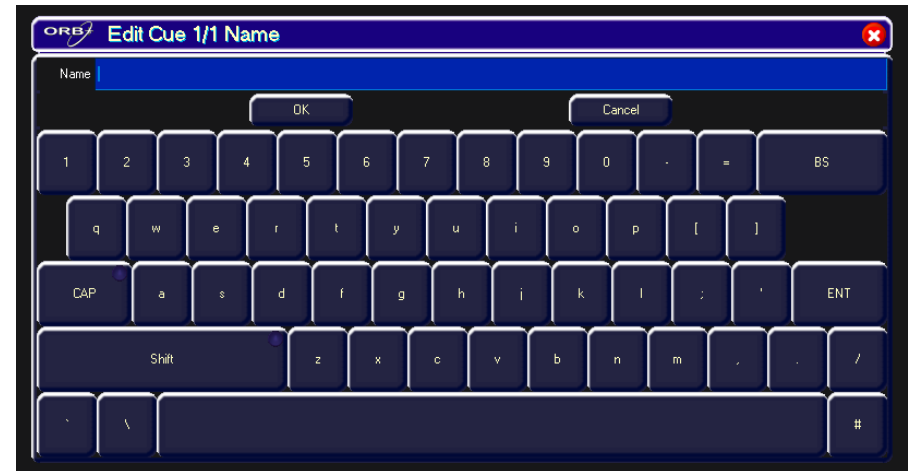


Figure 72 - Naming Cues

It is also possible to name a cue at the same time as it is being recorded by entering the following command: RECORD CUE n NAME

Editing Cue Output Levels

In order to edit a cue you first need to load it into the programmer, by entering the following command:

LOAD CUE n ENTER

This loads the cue into the programmer and outputs the programmed DMX values. You can then select fixtures and make changes to the parameter output levels as necessary, in the same way as when recording the cue initially (see earlier).

To record the changes to the same cue press the UPDATE key.

The Update Options Window is displayed – see page 91 for more details.

Editing Cue Fade and Delay Times

Editing fade times and delay times is carried out in the same way as editing the cue output levels, ie load the cue into the programmer, adjust the times as necessary, then record the data back into the cue using the UPDATE key – see previous section.

The fade and delay times can also be globally edited from the **Cue Stack Window**. Select the fade up, fade down, or attribute fade field in the window, press the ENTER key, enter the required time(s) and then press ENTER to complete.

Fade Time Commands – Recording Cues

When recording a cue - fade times can be specified in the command syntax for all fixture parameters, individual attributes or combinations of attributes as follows:

RECORD (CUE) S/C TIME X ENTER	Sets the fade times for all fixture parameters to X seconds.
RECORD (CUE) S/C TIME U/D ENTER	Sets the intensity fade up and fade down times to U and D seconds respectively.
RECORD (CUE) S/C TIME COLOUR X ENTER	Sets the fade times for all colour parameters to X seconds.
RECORD (CUE) S/C TIME BEAM X ENTER	Sets the fade times for all beamshape parameters to X seconds.
RECORD (CUE) S/C TIME POSITION X ENTER	Sets the fade times for all position parameters to X seconds.
RECORD (CUE) S/C TIME U/D COLOUR X BEAM Y POSITION Z ENTER	Sets the intensity fade up and fade down times to U and D, the colour fade times to X, the beamshape fade times to Y and the position fade times to Z.

Fade Time Commands – Editing Cues

The following commands can be used to globally edit the fade times of parameters in existing cues:

S/C TIME X ENTER	Sets the fade times for all fixture parameters to X seconds.
S/C TIME U/D ENTER	Sets the intensity fade up and fade down times to U and D seconds respectively.
S/C TIME COLOUR X ENTER	Sets the fade times for all colour parameters to X seconds
S/C TIME BEAM X ENTER	Sets the fade times for all beamshape parameters to X seconds.
S/C TIME POSITION X ENTER	Sets the fade times for all position parameters to X seconds.
S/C TIME U/D COLOUR X BEAM Y POSITION Z ENTER	Sets the intensity fade up and fade down times to U and D, the colour fade times to X, the beamshape fade times to Y and the position fade times to Z.

Note – Fade and Delay Times

The fade and delay times for all parameters programmed in a cue can also be globally edited from the Cue Stack Window.

Delay times can be entered into the above syntaxes after the word TIME.

Editing Cue Triggers

By default, programmed cues have a GO button trigger. Cues can also be triggered automatically or at a specified start time (Real Time, SMPTE, or MIDI time).

The cue trigger and the wait time or start time, as appropriate, are displayed in the Comments column in the **Cue Stack Window**.

Cue Triggers can be set either through command syntax, or through the Cue Setup Window.

With command syntax, enter:

CUE n TIME {TRIGGER} {SMPTE} 00.00.00.00 ENTER

Cues, Stacks & Pages

CUE n TIME {TRIGGER} {MIDI} 00.00.00.00 ENTER

CUE n TIME {TRIGGER} {AUTO} 5 ENTER

CUE n TIME {TRIGGER} {RealTime} 12:34:56 ENTER

CUE n TIME {TRIGGER} {GO} ENTER

Through the Cue Setup window, navigate to the comments column of the Cue Stack window and select the cue required, then press ENTER or double click the field. The Cue Setup window appears:

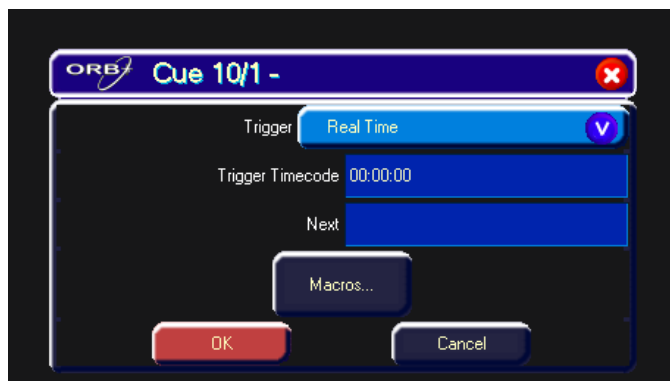


Figure 73 - Cue Setup Window

The Trigger can then be selected from the dropdown box, and the Trigger Timecode specified below.

Changing the Next Cue

In the Cue Setup Window it is possible to define the Next cue. This is the cue number which gets selected after that cue is executed. This functionality is very useful if a scene is 'cut' from the show – you can tell the ORB to skip the cues in that scene and jump straight to the next cue.

Open the Cue Setup Window (by clicking in the Comments column of the Cue Stack Window) and set the "Next" memory to the required number.



Figure 74 - Next Cue

Adding Macros to Cues

The desk provides a number of in-built macros relating to the control of cues and cue stacks. These macros are used as commands to allow a cue to trigger another event elsewhere on the console (see Macros chapter, page 128, for full details).

Macro commands are entered as a text string in the Macro column of the Cue Stack Window as follows:

Move the cursor to the Comments column of the required cue and press the ENTER key (or double click in the column).

Press the [MACROS...] softkey and in the popup window, enter any required trigger macros.

The syntax for the various in-built macros is defined in the Macros section of the manual.

Multiple macro commands can be entered using the colon as a delimiter, for example, G2:S3:C4.

The Cue Stack Window

The Cue Stack Window appears on Monitor 1 by default, however it can be opened manually by pressing SHIFT and CUE:

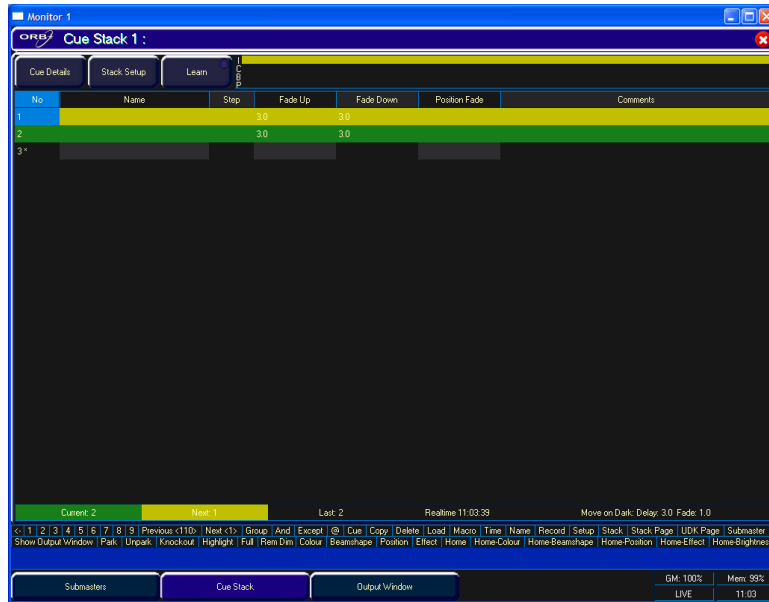


Figure 75 - Cue Stack Window

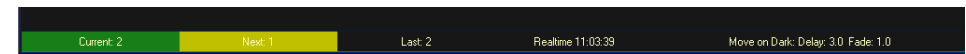
The Cue Stack Window shows the contents of an individual Cue Stack. The cue stack number and name (if defined) are displayed in the header. The cues programmed in the cue stack are listed in numerical order.

For each cue in the stack the following information is displayed:

- Cue Number
- Name (if defined)
- Fade Up - The fade up (and delay up) intensity times for the cue.
- Fade Down - The fade down (and delay down) intensity times for the cue.
- Colour/Beamshape/Position Fade - The fade (and delay) times for each of the attributes (only the last selected attribute is displayed)
- Comments - any special settings about the cue (triggers, macros, etc)

Once the Cue Stack Window is displayed on the monitor screen, selecting a different cue stack using the stack SELECT keys on the front panel.

An information bar at the bottom of the Cue Stack Window shows the Current, Next and Last cue numbers, and the Timecode, framerate (if applicable) and the move on dark settings, eg:



It is possible to open multiple copies of the cue stack window by using the syntax VIEW STACK n ENTER.

Cue Details Button

Pressing the Cue Details button displays the **Preview Cue Window** for the selected cue on the monitor screen:

Cues, Stacks & Pages

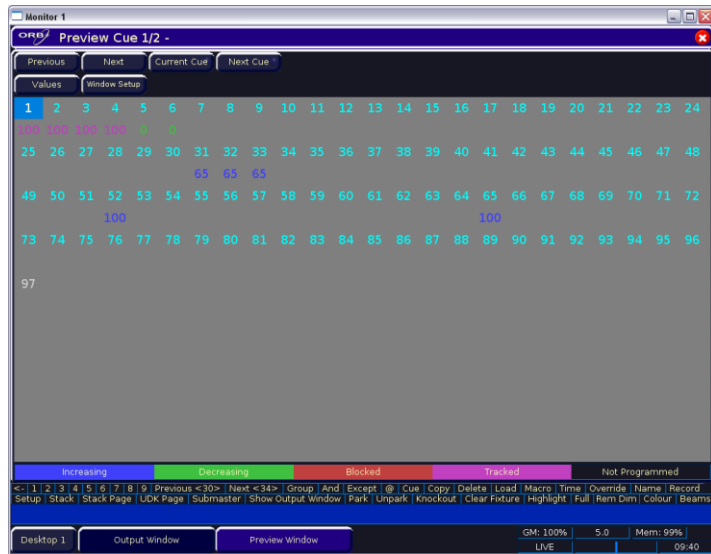


Figure 76 - Preview Cue Window

The **Preview Cue Window** shows what is programmed into the specified cue on a fixture by fixture basis. It is the same format as the **Output Window** and shows the parameter values, fade and delay times for each fixture parameter that is recorded in the cue.

Stack Setup Button

Pressing this soft button is the equivalent of entering the command `SELECT STACK N SETUP` and displays the **Cue Stack Setup Window** on the monitor. The Cue Stack Setup Window shows the control parameters for the individual cue stack:

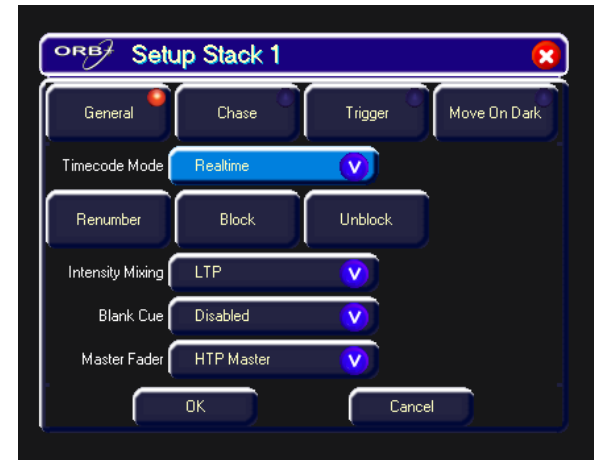


Figure 77 - Stack Setup Window

Learn Button

Pressing the [Learn] button in the Cue Stack Window sets the cue stack into learn mode.

When the desk is in learn mode the text "LEARN" on a light blue background is displayed in the LIVE/BLIND/MACRO box on the touch screen and monitor screens.

The GO button for the playback is used to set the timings for each of the cues in the cue stack as follows:

- The first press of the GO button sets the first memory to a 'GO' trigger.
- Each subsequent press of the GO button sets the time from the last GO as the wait time for the cue.
- Once the stack has been completed, learn mode is disabled.

To stop the stack from learning at a time other than after the last cue, simply press the [Learn] button.

Playing Back Cues

Before playing back the programmed cues in a cue stack, it is important to clear the programmer by pressing the CLEAR button. This clears out any unrecorded commands and sends the fixtures to their default values, with the exception of the intensity parameters, which are kept at 0%.

Selecting the Cue Stack

Select the required page of playbacks using the STACK PAGE button in syntax (eg STACK PAGE 1 ENTER), then press the Stack SELECT button above the cue stack you wish to play back. The LED in the SELECT button is lit to indicate that it is the active cue stack.

On ORB XF, cue stacks are selected using syntax – STACK n ENTER. The selected cue stack is indicated in the cue stack window (SHIFT+CUE).

Selecting Cues

Use the cursor keys to select a cue or enter one of the following commands:

CUE N ENTER selects cue N as the next cue on all stacks that are selected and running.

CUE S/C ENTER selects cue C on stack S provided that stack S is running.

Outputting Cues

To play back the cues in a cue stack in sequence:

Raise the stack master fader to full. Press the GO button for the selected playback.

To output the next cue in the cue stack, simply press the GO button again.

To output a specific cue in the cue stack, use the cursor keys to select the next cue in the **Cue Stack Window** (indicated with the yellow highlight bar), then press the GO button or enter the following command: S/C ENTER.

Other commands to trigger a specific cue are as follows:

CUE N GO triggers cue N on the stack associated with the local GO button pressed.

CUE N MASTER GO triggers cue N on the selected stack(s) and so can be used to trigger off multiple cues if you select multiple stacks (using SHIFT and the SELECT keys).

To snap to the next cue in the cue stack (ie ignore all timing information in the cue) hold down the SHIFT key and press the GO button.

The red LED in the GO button is on when the stack is outputting and flashes when the outputs are fading between cues.

Using the Pause Key

If at any time you wish to pause the cue stack when it is running, press the PAUSE key below the playback master fader.

After the initial press of the PAUSE key, subsequent presses will step backwards through the cue stack using the current cue fade times.

To continue running the cue stack, press the GO key.

Holding down SHIFT and pressing the PAUSE key will snap to the previous cue.

Playing Back Several Cue Stacks

To play back more than one cue stack at the same time - select the required cue stacks by holding down the SHIFT key and pressing the Stack SELECT buttons above all the stacks you wish to play back. The red lights in the SELECT keys indicate the selected stacks.

Cues, Stacks & Pages

To play back all the selected stacks at the same time, press the MASTER GO key.

To snap to the next cue in each of the selected the cue stacks (ie ignore all timing information in the cue) hold down the SHIFT key and press the MASTER GO button.

Releasing the Cue Stack

Once you've finished playing back cues, it is important to release the cue stack(s). This returns all of the affected fixture parameters to their default values, or to the value they were at before the cue stack was executed.

Select the cue stack, using the Stack SELECT button, then press the RELEASE key.

If you wish to release several stacks at the same time, select them by holding down the SHIFT key and pressing the Stack SELECT button above all the stacks you wish to release, then press the RELEASE key.

To release all cue stacks – hold down the SHIFT key and press the RELEASE key.

Master Playback Functions

To place a cue stack on the master playback so that it can be triggered using the PLAYBACK MASTER controls on the front panel enter the command: SELECT STACK N ENTER, or press SELECT STACK and the SELECT button you wish to select.

The stack(s) on the master playback can be released by specifying the stack number(s) in the release command, eg SELECT STACK 2 RELEASE..

The command SHIFT RELEASE releases all cue stacks on the virtual playbacks as well as those on the physical playbacks.

Copying Cues

To copy a cue to another cue in the same cue stack or a different cue stack enter the following command:

s1/c1 COPY TO s2/c2 ENTER (copies stack S1 cue C1 to stack S2 cue C2).

To copy a range of cues to another location enter the following command:

s1/c1 THRU c2 COPY S2/c3 (copies stack S1 cues C1 through to C2 to stack S2).

When copying bear in mind that only the tracking changes stored within that cue will be copied. To copy the outputting state of a cue, do the following:

- Output the cue (using normal playback methods)
- Turn ON the SMART TAGS function
- RECORD the cue using normal record syntax
- Turn OFF the SMART TAGS function

Using this method the Smart Tags function will copy the outputting values into the cue required, setting any tags required at the output stage.

Moving Cues

To Move a cue to another cue in the same cue stack or a different cue stack enter the following command:

s1/c1 MOVE TO s2/c2 ENTER
(Moves stack S1 cue C1 to stack S2 cue C2).

To move a range of cues to another location enter the following command:

s1/c1 THRU c2 MOVE TO s2/c3
(Moves stack S1 cues C1 through to C2 to stack S2).

Deleting Cues

To delete a single cue enter the command:

S/C DELETE or DELETE S/C ENTER.

To delete a range of cues enter the following command:

DELETE S/C1 THRU C2 ENTER.

Note – Deleting Cues

Since the ORB desk is a tracking based console, deleting a cue from a cue stack could possibly affect other cues in that stack. Think carefully about whether you need to make any changes to subsequent cues in order to maintain the state(s) required.

Cue Stacks

The ORB desk provides 1000 user programmable cue stacks.

A programmed cue stack contains one or more programmed cues.

The 1000 cue stacks are assigned to the 100 pages of playbacks.

Cue stacks can be setup, named, copied, moved and deleted.

Cue Stack Directory Window

To display the **Cue Stack Directory Window** on the monitor hold down the SHIFT key and press the SELECT STACK key:



Figure 78 – Cue Stack Directory

Each of the 1000 cue stacks has a soft button in the window. Each of these buttons shows the cue stack number, program status (* = unprogrammed), playback page and fader reference (eg Pg 2 Pb 3) and name, if defined. The window is colour coded to make identification of programmed stacks and chases easier.

A cue stack can be selected by clicking on the soft button with the mouse or by selecting it using the cursor keys and pressing ENTER. The Playback changes to the appropriate page and the LED in the corresponding stack SELECT button is lit.

Naming Cue Stacks

To assign a name to a cue stack enter either of the following commands:

SELECT STACK N NAME

NAME SELECT STACK N ENTER

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NAME <STACK SELECT BUTTON>.

Type in the required name using the external keyboard and then press the ENTER button to complete.

Copying Cue Stacks

To copy a cue stack from one location to another enter the following command:

STACK N COPY TO P ENTER (copies stack N to stack P).

Moving Cue Stacks

To move a cue stack to another location enter the following command:

STACK n MOVE TO p ENTER (Moves stack n to stack p).

Deleting Cue Stacks

To delete a single cue stack enter either of the following commands:

STACK N DELETE or DELETE STACK N ENTER.

To delete several cue stacks or a range of cue stacks enter the following commands:

DELETE STACK A AND B ENTER

DELETE STACK A THRU N ENTER

Cue Stack Setup Window

The control parameters for an individual cue stack are adjusted via the **Cue Stack Setup Window**. To display the Cue Stack Setup Window, press the [Stack Setup] key in the Cue Stack Window or enter the command: SELECT STACK N SETUP.



Figure 79 - Cue Stack Setup Window

General Options

Select the [General] button in the Cue Stack Setup Window. The various options are described below:

Timecode Mode

Select the Timecode field. Use the left or right arrow keys or the soft key on the touch screen to select the required Timecode (Real Time, SMPTE, MIDI or CD) as required.

Renumber

This option allows the user to renumber all the programmed cues in the cue stack.

Press the [Renumber] soft key. This brings up the Renumber Cues dialogue box

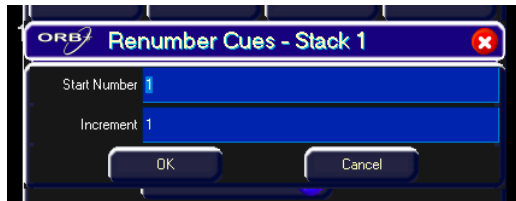


Figure 80 - Renumber Cues

Enter the required Start Number and Increment in the fields provided and then select the [OK] button in the window.

Block

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

Block	Cue 1	Cue 2	Cue 3	Cue 4	Cue 5	Cue 6	Cue 7	Cue 8
Before	Red	*	*	Green	*	Blue	*	*
After	Red	Red	Red	Green	Green	Blue	Blue	Blue

Unblock

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

Unblock	Cue 1	Cue 2	Cue 3	Cue 4	Cue 5	Cue 6	Cue 7	Cue 8
Before	Red	Red	Red	Green	Green	Blue	Blue	Blue
After	Red	*	*	Green	*	Blue	*	*

Intensity Mixing

This option determines whether the intensity parameters programmed in the cues are mixed HTP (highest takes precedence) or LTP (latest takes precedence).

Blank Cue

It is possible to insert a Blank Cue at the beginning of a cue stack by setting the Blank Cue option to Enabled in the Cue Stack Setup Window.

A Blank Cue is the same as the first programmed cue in the cue stack, but with all the fixture intensity parameters set to zero. A blank cue is referred to as Cue 0 (zero).

Cues, Stacks & Pages

Master Fader

The operation of the playback fader for a cue stack is defined in the Cue Stack Setup Window and 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 cue stack is automatically loaded when the fader reaches either end of it's travel (0% or 100%). Moving the fader creates a dipless cross-fade between the two cues. The fader controls the HTP levels; the LTP channels are triggered when the fader is moved from the end stop and then fade according to the times in the incoming cue.
- **Manual Fader (1 Way)** - Press the GO button to activate the playback. The next cue in the cue stack is automatically loaded when the fader reaches zero. The fader controls the HTP levels; the LTP channels are triggered when the fader is moved from zero and then fade according to the times defined in the incoming cue.

Chases

It is possible to convert a whole cue stack into a chase, which makes the stack run automatically in sequence. Once converted to a chase, cue stacks can be linked together using macros. For more information on the use of macros to link cue stacks, see page 128.

Chase Options

Select the [Chase] button in the Stack Setup Window.

Turn Into Chase

To turn the cue stack into a chase - select [Turn into Chase]. Additional buttons and fields are then displayed in the window to allow you to adjust the Chase modifiers . The modifiers determine how the chase is output, what drives the chase, it's direction, speed, how it fades between steps and how many times it runs.

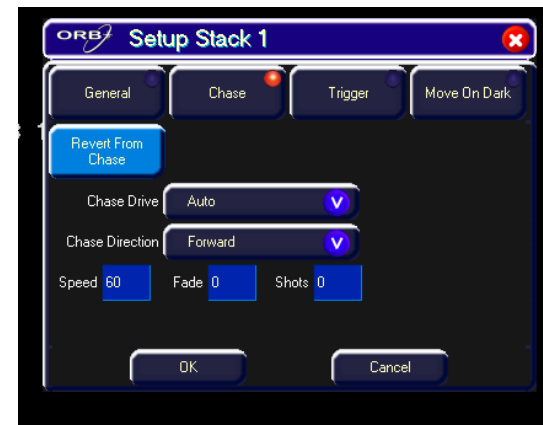


Figure 81 - Chase Options

To adjust the chase modifiers, select the required field, then choose an option or enter a numeric value, as appropriate. Press the [OK] button to complete the cue stack setup.

Drive

This modifier determines what triggers each step (cue) of the chase when it is running:

- **Auto** – The chase runs automatically at the defined Speed.
- **Bass** – Each step is triggered by a bass beat on the audio input on the desk.
- **Manual** – Each step is triggered by pressing the GO button on the front panel.
- **Beat** – Use the GO button to set or modify the beat when playing back the chase.

Direction

This modifier 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.

Speed

The Speed modifier determines how fast the chase runs (range 0 – 200 bpm).

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 a value between 1 and 200, 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 Fade modifier (see below).

Fade

The Fade modifier determines how the outputs 'fade' between the steps (cues) when the speed is set between 1 – 200 bpm.

When the Fade is set to 0% the outputs snap between each step of the chase.

When the fade is set to 100% the outputs fade continuously between each step.

When the fade is set between 0 - 100% the outputs will spend that percentage of the time fading, and the rest of the time at the programmed level for the step.

The Fade modifier affects all fixture parameters programmed in the cues.

Shots

The Shots modifier 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.

Cues, Stacks & Pages

Revert From Chase

To return a cue stack from a chase to a normal cue stack, press the [Revert From Chase] button in the Stack Setup Window.

Trigger Options

Select the [Trigger] button in the Cue Stack Setup Window:



The various options are described below:

- **Trigger on Raise** – When the playback fader is raised, the first cue is activated.
- **Trigger Level** – The level at which the cue is triggered, in %
- **Release on Lower** – When the playback fader is lowered, the stack is released.

Move on Dark Options

Select the [Move on Dark] button in the Cue Stack Setup Window.



The various options are described below:

- **Move on Dark** – When this function is enabled for the cue stack – whenever a fixture goes black (ie it's intensity falls to zero, or the shutter is closed), the desk software will look ahead in the cue stack to see what values the colour, beamshape and position parameters are next programmed at for that fixture. It will then output those values shortly after the fixture has gone black (according to the delay and fade times set in the window). When the fixture comes back on again in a later cue, the colour, gobo, position etc. will already be at their correct values and just the intensity will fade up or the shutter open.
- **Delay Time** – The time the ORB waits after a fixture reaches blackout before move on dark kicks in.
- **Fade Time** – The time with which ORB fades the attributes that move on dark.

Pages

The ORB desk provides 100 pages of playbacks; each page containing 10 playbacks.

Loading a Page onto the Playbacks

To load a page of cue stacks onto the physical playback faders do one of the following:

- Use the mouse to click on the required page in the **Page Window**.
- Select the required page in the **Page Window** with the cursor keys and press ENTER.
- Enter the command STACK PAGE N ENTER.

Once a page is loaded onto the playbacks, the relevant cue stacks will be available using the front panel controls.

Page Window

To display the **Page Window** on the monitor hold down the SHIFT key and press the STACK PAGE key:



Figure 82 - Page Window

Each of the 100 pages has a soft button in the window. Each of these buttons shows the page number, program status (* = unprogrammed) and name, if defined.

A playback page can be selected by clicking on the soft button with the mouse or by selecting it using the cursor keys and pressing ENTER, or by entering the command PAGE N ENTER.

The desk software automatically assigns the 1000 programmable cue stacks to the 100 pages of playbacks (ie page 1 has cue stacks 1 - 10, page 2 has cue stacks 11 - 20 ... page 100 has cue stacks 991 - 1000).

User Definable Keys (UDKs)

User Definable Keys (UDKs)

The ORB desk provides 20 pages of 10 **User Definable Keys** (UDKs). These keys are located above the syntax keys and can be assigned to any one of the following items:

- Group (Automatic Group or User Defined Group)
- Individual Fixture
- Palette (Colour, Beamshape, Position or Effects)
- Macro
- Cue
- Channel Data
- User Defined View

The contents of each UDK is displayed on the LCD screen above the keys, together with the current page number and any name associated with the item.

Channel Data UDK

The Channel Data UDK allows you to record fixture parameter (channel) data, with associated fade times, set up in the programmer directly onto a UDK.

To assign channel data to a UDK, first set up the fixture parameter data in the programmer, in the same way as programming a cue, ensuring that all the required fixture parameters are tagged.

Then enter the following command: `RECORD <UDK>`

Where <UDK> represents pressing the UDK on the front panel.

UDK's which have been assigned to channel data can also be named if required by entering the following command: `NAME <UDK> {your name} ENTER`

Type in the required name using the external keyboard and then press ENTER to complete. Note that only channel data UDKs can be named – all the other UDKs obtain their names directly from the item assigned to them.

The channel data is output by pressing the UDK. The channel data is released when the UDK is released. If the UDK action is set to Latch, then the outputs will fade according to the fade times programmed in the channel data.

Cue UDK

The Cue UDK is used to output the fixture data programmed in an individual cue.

To assign an individual cue from a cue stack to a UDK enter the following command:

```
(CUE) s/c RECORD <UDK>
```

```
CUE n RECORD <UDK>
```

The fixture data programmed in the cue is output by pressing the UDK. The fixture data is released when the UDK is released. If the UDK action is set to Latch, then the outputs will fade according to the fade times programmed in the cue.

The UDK Setup Window

To display the **UDK Setup Window** on the monitor, hold down the SETUP key and then press one of the User Defined Keys.

This window allows the user to adjust a number of parameters for the selected User Definable Key (UDK).

Only UDKs defined as Cues or Channel Data can have their settings altered in the UDK Setup Window.

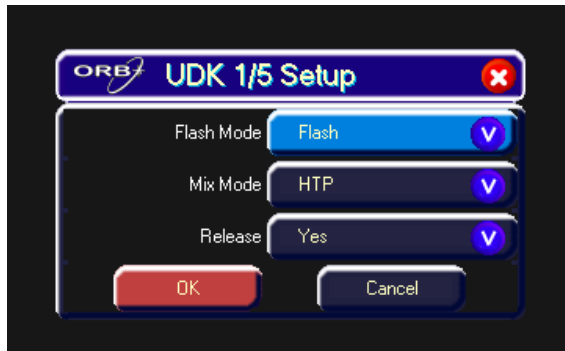


Figure 83 – UDK Setup Window

Flash Mode

If the Flash Mode is set to **Flash** - the corresponding data assigned to the UDK is output instantly on pressing the key and faded out or released instantly on releasing the key.

If the Flash Mode is set to **Latch** - The first press results in the 'on' action. The second press results in the 'off' action. Subsequent button presses will then toggle between the two states.

The light in the UDK indicates the state of the key (on or off). When the outputs are fading up or down, the LED in the UDK flashes.

Palettes are output instantly on pressing the UDK.

A Cue or Channel Data UDK uses the fade times programmed in the cue data (or from the programmer at the time of programming). The times for the cue data can be displayed and edited as required via the **Preview UDK Window** or by loading the UDK into the programmer. Note – if you edit the fade times for the cue, this will also affect the output of the cue in the relevant cue stack on the playbacks.

Mix Mode

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

Release

If the Release option is set to Yes then the fixtures will be released when the UDK is released and the intensity (brightness) data has faded to zero.

If the Release option is set to No then the fixtures will NOT be released when the UDK is released.

The fixtures being controlled by the UDK can be released by setting their values in the programmer or by triggering another LTP command from elsewhere on the console or by holding down the RELEASE key and pressing the UDK on the front panel.

Naming UDKs

UDKs defined as channel data can have a name associated with them – press NAME, then press the UDK you want to name. A popup window appears where you can enter the name, and then press OK to confirm the name.

The name of the UDK appears on the LCD screen above the key.

Other types of UDK (Cues, Macros, Groups, Palettes, etc) inherit the name associated with the source item.

Group UDK

The Group UDK is used for selecting a group. To assign a Group to a UDK, enter either of the following commands:

```
GROUP n RECORD <UDK>
```

When the UDK is pressed, the group assigned to the UDK is selected – this is equivalent to entering the syntax GROUP n ENTER in the command line.

User Definable Keys (UDKs)

Fixture UDK

The Fixture UDK is used for selecting an individual fixture. To assign a fixture to a UDK, enter either of the following commands:

n RECORD <UDK>

When the UDK is pressed, the fixture assigned to the UDK is selected.

Palette UDK

The Palette UDK can be used as an alternative method of outputting a palette for the currently selected fixtures. To assign a palette to a UDK, enter one of the following commands:

COLOUR n RECORD <UDK>

BEAM n RECORD <UDK>

POSITION n RECORD <UDK>

EFFECTS n RECORD <UDK>

The palette assigned to the UDK is applied to the selected fixtures when the UDK is pressed.

Macro UDK

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

To assign a user defined macro to a UDK enter the following command:

MACRO n RECORD <UDK>

The macro is run by pressing the UDK.

View UDK

The View UDK is used to activate the user view assigned to the UDK, providing a quick way of changing the view on screen.

To assign a view to a UDK enter the following command:

VIEW n RECORD <UDK>

The view is activated by pressing the UDK.

Changing UDK Page

The UDK Page number can be changed by using the UDK PAGE key. Enter the syntax:

UDK PAGE n ENTER

The UDKs will change to the requested page.

The UDK Window

To display the **User Definable Keys Window** on one of the monitor displays, hold down the SHIFT key and press one of the User Definable Keys:

User Definable Keys (UDKs)



Figure 84 – UDK Window

This window shows information on the current page of User Definable Keys. Each of the 10 UDK's has a button in the window. Each of these buttons shows the UDK number and information on the item assigned to the UDK (if any).

The buttons in the UDK window can be used in the same way as the front panel controls, which makes them ideal for placing on a touchscreen for fast playback.

Editing User Definable Keys

To edit a UDK enter the following command:

LOAD <UDK>.

This allows you to load the contents of the UDK into the programmer, adjust the programmed channel levels and times as

required and then save the data back into the original UDK by pressing the UPDATE key.

Note - This function only applies to UDKs which have been assigned to channel data or a cue. In the case of a cue, you effectively load the cue into the programmer, modify it and update it.

Alternatively you can use the UPDATE functionality to UPDATE a UDK through the Update Options Window. See page 91 for more information.

Deleting User Definable Keys

Individual UDK's can be deleted (cleared) by entering the following command:

DELETE <UDK>

Submasters

Submasters

The ORB series provides 20 pages of upto 60 Submasters. The number of Submasters per page is configured in the Desk Setup / Inputs area of Setup (see page 60 for more information).

Location of Submasters

ORB

The default location of a submaster is on the DMX-Input. The DMX-In socket on the rear of the desk enables you to input a full universe of DMX (512 channels) and capture these for use in controlling elements of the desk.

In the Desk Setup / Inputs (Page 60) screen you can configure a DMX-In address for each Submaster, as well as configuring the number of submasters required per page (from 0 to 30). It is important to check these settings are set correctly before commencing work on submasters.

Using Playbacks as Submasters

It is possible to convert the playbacks on the front panel of ORB to be used as submasters, on a per-fader basis.

To do this:

- Hold SETUP and press the SELECT key above a playback.
- Select the Playback Mode option.
- Select SUBMASTER.
- Press OK.

Now the playback will act as a submaster.

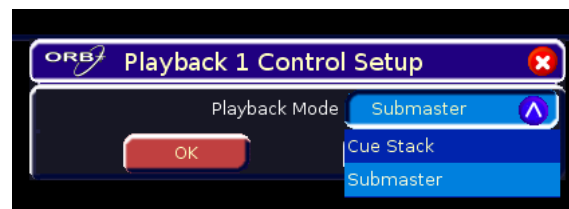


Figure 85 - Playback Setup

ORB XF

The Multi Function Faders can be switched into Submasters mode by using the syntax FADER FUNC. {Submasters} – the MFF window will indicate submasters by showing red boxes.

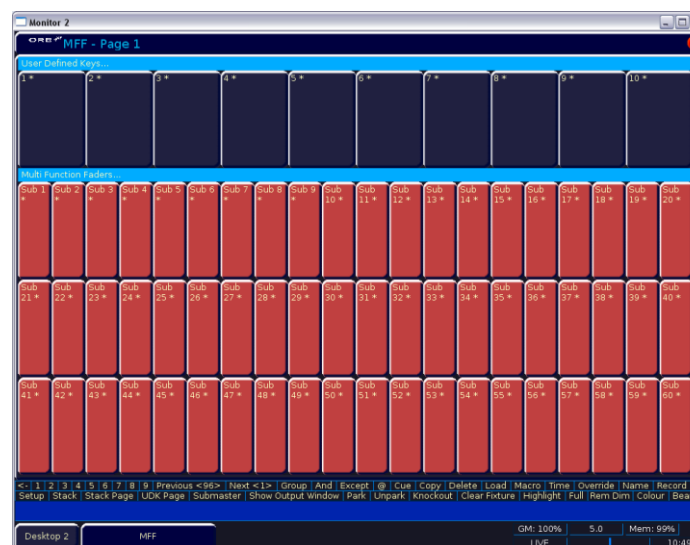


Figure 86 - MFF Window (Submasters)

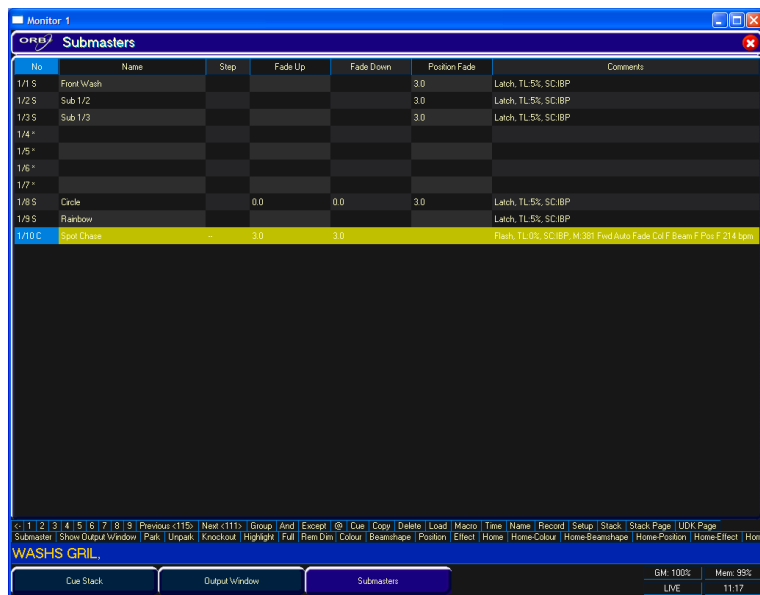
Submasters

Submaster function is also indicated by the Fader Func. button LED being lit in orange.

The Submasters Window

To display the **Submasters Window** on one of the monitor displays, hold down the SHIFT key and press SUB.

This window shows information on the current page of Submasters. Each of the subs has a row in the window. Each of these rows shows the submaster number and information on the data stored on the Sub (if any), together with fade times and any special settings.



No	Name	Step	Fade Up	Fade Down	Position Fade	Comments
1/1 S	Front Wash				3.0	Latch, TL5%, SCIBP
1/2 S	Sub 1/2				3.0	Latch, TL5%, SCIBP
1/3 S	Sub 1/3				3.0	Latch, TL5%, SCIBP
1/4 *						
1/5 *						
1/6 *						
1/7 *						
1/8 S	Cirde	0.0	0.0		3.0	Latch, TL5%, SCIBP
1/9 S	Rainbow					Latch, TL5%, SCIBP
1/10 C	Spot Chase		3.0	3.0		Flash, TL5%, SCIBP, M:381 Fwd Juko Fade Col F Beam F Pos F 214 Epm

Figure 87 – Submasters Window

Recording Submasters

The Channel Data SUB allows you to record fixture parameter (channel) data, with associated fade times, set up in the programmer directly onto a SUB.

To assign channel data to a SUB, first set up the fixture parameter data in the programmer, in the same way as programming a cue, ensuring that all the required fixture parameters are tagged.

Then enter the following command: RECORD SUB n ENTER

Submasters can also be named if required by entering the following command: SUB n NAME {your name} ENTER

It is also possible to record a submaster by using the syntax RECORD <FLASH> on ORB XF or RECORD <GO> on ORB.

Fade times on Submasters

Submasters follow the default fade time set in Desk Setup / Defaults. To change the fade time, you can use syntax:

SUB n TIME x ENTER

SUB n TIME x/y ENTER

SUB n TIME COLOUR x ENTER

It is also possible to modify the fade time by double-clicking in the fade time column of the Submasters window and typing in a new value, similar to the function of a spreadsheet program on a computer.

The third way to adjust fade times is through the submaster setup window – hold down SETUP and press the submaster flash key (or GO, on ORB). The fade times will be displayed in this window, and can be adjusted using the arrow keys and numeric keypad.

Fade times are stored as soon as they are modified, so there is no need to update or re-record submasters to store these changes.

Playing Back Submasters

Submasters are played back using the front panel or DMX-Input. Raising the fader will activate the contents, and lowering it will release and deactivate the contents.

Submasters

Submasters page-hold over which means that when you change the page, any active submasters will stay active until they are released or lowered.

The Submaster Setup Window

To display the **Submaster Setup Window** on the monitor, type the syntax SUB n SETUP

This window allows the user to adjust a number of parameters for the selected submaster.



Figure 88 – Submaster Setup Window

This window can also be displayed by clicking in the Comments column on a programmed submaster.

Flash Button Action

Note: Submaster Flash Buttons functionality only work completely when using the internal playbacks as submasters. Using DMX-input relies on the desk which is generating the incoming DMX and so certain flash type functions may not behave as expected.

If the Flash Mode is set to **Flash** - the corresponding data assigned to the SUB is output instantly on pressing the key and faded out or released instantly on releasing the key.

If the Flash Mode is set to **Latch** - The first press results in the 'on' action. The second press results in the 'off' action. Subsequent button presses will then toggle between the two states.

A Cue or Channel Data SUB uses the fade times programmed in the cue data (or from the programmer at the time of programming). The times for the cue data can be displayed and edited as required via the **Preview Submaster Window** or by loading the SUB into the programmer. Note – if you edit the fade times for the cue, this will also affect the output of the cue in the relevant cue stack on the playbacks.

LTP Trigger Level

The LTP Trigger Level is the level at which any moving light parameters will begin to be altered. This is set in percent and defaults to 5%. Note that the LTP Trigger Level is ignored if Submaster Controls... is set for a parameter.

Release

If the Release option is set to Yes then the fixtures will be released when the submaster is released and the intensity (brightness) data has faded to zero.

If the Release option is set to No then the fixtures will NOT be released when the SUB is released.

The fixtures being controlled by the Submaster can be released by setting their values in the programmer or by triggering another LTP command from elsewhere on the console or by holding down the RELEASE key and pressing the submaster flash button.

Submaster Controls...

Submaster Controls... 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 submasters which move fixtures out into the audience – as the fader moves up, the fixtures move up. Another application

commonly used is to create three submasters – one for Cyan, one for Magenta and one for Yellow.

Press the Submaster Controls... button, then select the attributes required using the on-screen buttons. Once finished the Comments column will show SC:ICBPE where ICBPE is the list of attributes the fader is controlling.



Figure 89 - Submaster Controls...

Macros...

It is possible to associate a user programmed macro with a submaster, so that when the submaster is activated (through flashing or raising the fader) the macro is triggered. Press the Macros button and then enter the macro number(s) using commas to separate the macro numbers if required.

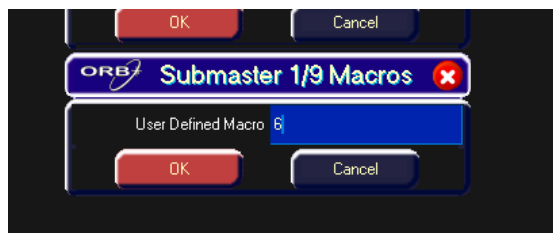


Figure 90 - Macros

Changing Submaster Page

The Submaster Page number can be changed by using the SUB PAGE key. Enter the syntax:

SUB {Page} n ENTER

The Submasters will change to the requested page.

Editing Submasters

To edit a SUB enter the following command:

LOAD SUB n ENTER

This allows you to load the contents of the submaster back into the programmer, adjust the programmed channel levels and times as required and then save the data back into the original submaster by pressing the UPDATE key.

Alternatively you can use the UPDATE functionality to UPDATE a Sub through the Update Options Window – see Page 91 for full details.

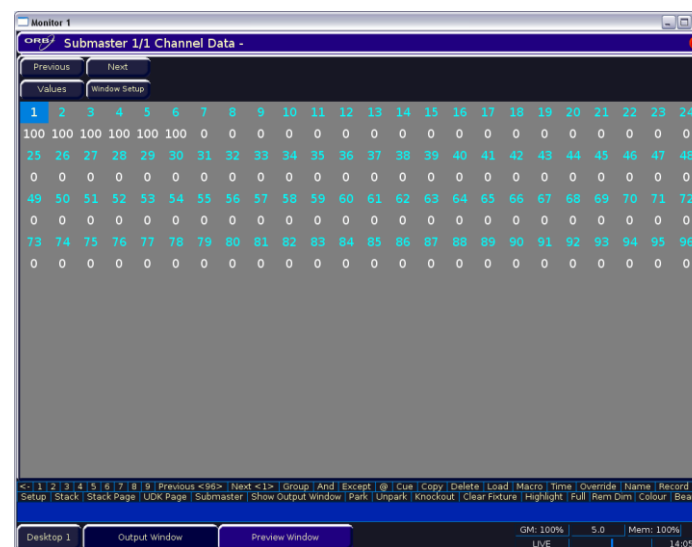


Figure 91 - Submaster Preview Window

Previewing Submasters

It is possible to preview the contents of a submaster on the monitor. To do this, enter the syntax:

Submasters

VIEW SUB n ENTER

Copying Submasters

A submaster can be copied to another location by entering:

SUB x COPY TO y ENTER

The submaster will be copied together with any names, fade times and special settings. The new copy can then be manipulated as required.

Moving Submasters

A submaster can be moved from one location to another by entering:

SUB x MOVE TO y ENTER

The submaster will change location automatically.

Deleting Submasters

Individual submasters can be deleted (cleared) by entering one of the following commands:

DELETE SUB n ENTER

DELETE SUB x / y ENTER

SUB n DELETE

DELETE <FLASH>

Special Submaster Types

There are three types of Special Submaster that can also be assigned to submaster faders. These special types do not contain channel data, but instead contain functions.

Time Fader

The time fader is used to set the internal fade time on ORB and ORB XF. This fade time can then be applied to each command line action, ideal for 'busking' shows.

To configure a Time fader, use the syntax:

TIME RECORD <FLASH> / <GO>

Once configured, the time fader will allow you to set any value between 0.0 (snap) and 11:30.0. This time is displayed in the bottom right hand corner of the monitor screen, adjacent to the Grand Master Level.

To latch the time crossfade function on and off, press the flash (or GO) button under the fader. This will enable the time lock, and the LED will light. You can also see time lock indicated by the background of the on-screen time display changing to a light blue.

To disengage this function, press the flash (or GO) button again.

Override Fader

The Override fader is used to create a global speed override of all crossfades occurring on the desk. This includes cues, chases and effects. This fader can be useful to synchronise multiple playback methods in time with music.

To define an override fader, use the syntax:

SHIFT+TIME (the word Override will appear in the command line)
RECORD <FLASH> / <GO>

Once defined, the override fader must be 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 these fades proportionally.

Group Fader

Group Faders can be used to manually control a group of lights, either as LTP, LTP Mix or Inhibitive behaviour. These faders are generally used when programming, as they negate the need to use smart tag to record the contents of that submaster into a cue (moving a group fader tags the channels in that group).

To store a group fader, use the syntax:

```
GROUP n RECORD <FLASH> / <GO>
```

The behaviour of the group fader can be defined by holding down SETUP and pushing the <FLASH> / <GO> buttons for the fader.

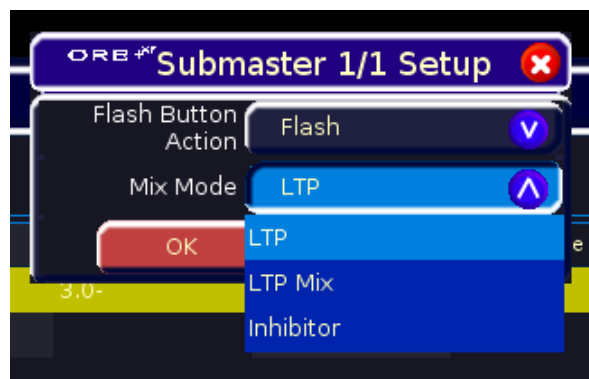


Figure 92- Submaster Setup (Group Fader)

The three Mix Modes for the fader function as follows:

- LTP Mode – moving the fader instantly sets the group to that level and tags the channels.
- LTP Mix Mode – moving the fader through the currently outputting level, grabs the channel and then adjusts it and tags the level.
- Inhibitor Mode – this sets a top level for the group, above which the channels will not go.

Effects

Effects

The ORB desk provides a powerful effects generator with a number of standard effects. By applying various mathematical functions (sine, cosine, ramp etc) to the outputs of different fixture parameters and adjusting the size, speed and offset values, a wide range of movement and other effects can be generated quickly and easily.

The Effects Palette Window

To display the **Effects Palette Window** on the monitor, hold down the SHIFT key and then press the EFFECTS key.

The Effects Palette Window contains a soft button for each of the 1000 effects palettes. Each soft button contains the following information:

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.

Auto Effects

The desk is capable of creating automatic effects. The Effects Palette Window contains these standard effects which are generated by selecting the [Create Auto Palettes] option from the [Auto Menus] option in Setup.

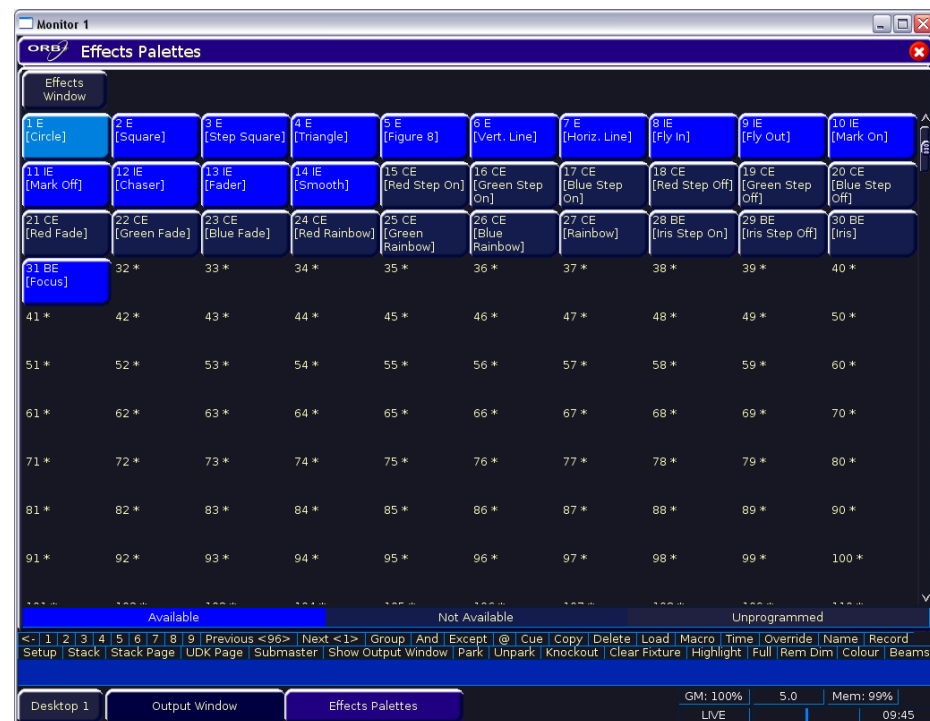


Figure 93 – Effects Palette Window

Effect Parameters on the Wheels

When the effect wheel groups are active (ie the EFFECTS LED is lit), 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.

At any time you can reload the cue into the programmer and modify the speed of all the effects in that cue by selecting the effects wheel group and moving the Speed wheel.

Note – Rotation

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.

Applying Effects

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

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

Automatic fanning of offset or any other effect parameter across fixtures is not done. Should fanning of an effect parameter be required, hold down the SHIFT key and use the control wheel to apply the selected fan function onto the wheels in the same manner as fanning any other parameter value.

Pressing the BLIND key twice synchronises the effects while programming.

The Effects Window

The **Effects Window** displays the Effect Parameters for each parameter of the selected fixture(s). To display the Effects Window on the monitor screen press the [Effects Window] soft key on the monitor when the Effects Palette Window is open. Adjusting any of the effect parameters using the control wheels is reflected in the Effects Window.

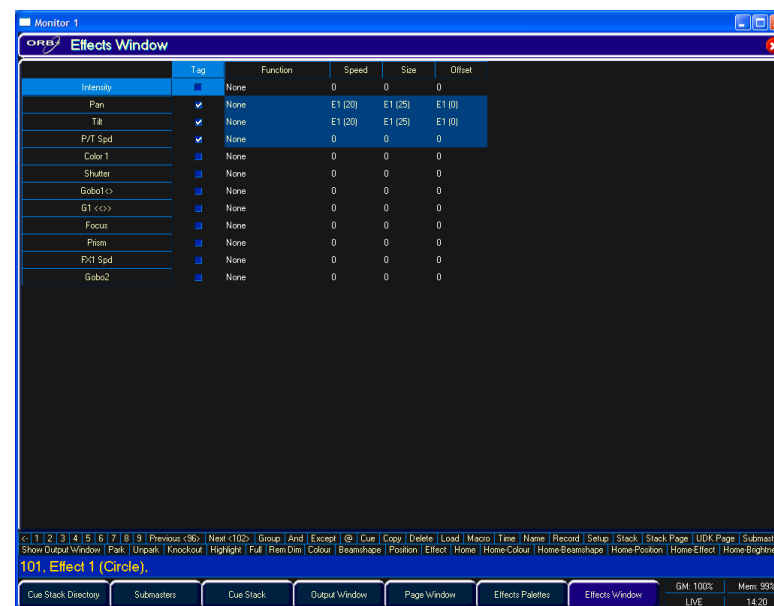


Figure 94 – Effects Window

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

To adjust an effect parameter, select the required field using the mouse or cursor keys and press the ENTER key. Use the cursor keys

Effects

to select the required Function, or enter the required numerical value for Speed, Size or Offset, then press the ENTER key.

Function – This parameter determines the mathematical function that is applied to the output value of the fixture parameter. See earlier for full list of available functions.

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

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

Offset – This parameter determines the offset into the effect when it is triggered.

Recording Effects

Programming an effect palette is similar to recording other palettes.

Set up the fixture outputs as required, ensuring that the correct fixture parameters and/or effect parameters are tagged (see note). A common method of recording an effect is to apply one of the standard effects, adjust the affect parameters as required using the wheels or Effect Window and then record this as a new effect palette.

Enter the following command:

```
RECORD EFFECTS n ENTER
```

If you wish to record other attributes (eg Colour), these should be selected on the Record Options Window on the monitor before pressing the ENTER key.

Note - Tagging – Values and Effects

For each fixture parameter there are two tag states that are recorded - one for the parameter value, and one for the set of effects parameters. Therefore, a single fixture parameter may have none, one or both tag states set allowing for nothing tagged, value

only tagged, effect parameters only tagged and both tagged. This allows you to record an effect with or without a base value for the corresponding fixture parameter.

Naming Effects

Effects can be named, either as a separate operation or as part of the recording process by entering one of the following commands:

```
EFFECTS n NAME {your name} ENTER
```

```
NAME EFFECTS n ENTER {your name} ENTER
```

```
RECORD EFFECTS n NAME {your name} ENTER
```

Applying Effects

To apply an effect (either a standard effect or a user defined effect) select a fixture or group of fixtures and then enter the following command:

```
EFFECTS n ENTER
```

If any of the selected fixtures are not actually programmed in the applied effect 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.

Copying Effects

To copy an effect palette from one location to another, enter the following command:

```
EFFECTS n COPY TO p ENTER
```

As all palettes (including effects) have the same data structure and may contain fixture parameter data from any combination of attributes, it is also possible to copy palettes from one attribute to another, for example:

```
EFFECTS 2 COPY TO BEAM 5 ENTER
```

Moving Effects

To move an effect from one location to another, enter one of the following commands:

```
EFFECTS n MOVE TO p ENTER
```

When an effect is moved to a new location, any cues that referenced the original effect palette will now reference the new location of the palette.

Deleting Effects

To delete an effect, enter one of the following commands:

```
EFFECTS n DELETE
```

```
DELETE EFFECTS n ENTER
```

To delete a range of effect palettes, enter the following command:

```
DELETE EFFECTS a THRU b ENTER
```

When an effect is deleted, any cues that previously referenced the effect are updated to contain the actual values that were stored in the effect palette.

Macros

Macros

The ORB desk provides a number of in-built macros, auto macros and 1000 user programmable macros. The user interface provides mechanisms for recording, naming, running and deleting user definable macros.

In Built Macros

In Built Macros can be associated with cues and used to trigger various behaviours when altering cue stacks.

Playback Macros

These macros are used as commands in cue stacks to allow a cue to trigger an event elsewhere on the console:

Gx	Go playback x on the current page.
Gp/f	Go playback f on Page p.
Sx	Pause playback X on the current page.
Rx	Release playback X on the current page.
PX	Change the current page to X.
Ts/c	Trigger (Go) Stack S Cue C.
Cx	Choose playback X (turn the select LED on for playback X).
Nc	Go to Cue C in the same cue stack (does NOT trigger the cue).
Ns/c	Go to Cue C in cue stack S (does NOT trigger the cue).
Mx	Triggers User Macro x.

Don't Move on Dark Macros

These macros are used to prevent parameters moving on dark for a particular cue;

DM	Don't Move on dark - All Parameters
DMB	Don't Move on dark - Beamshape Parameters
DMC	Don't Move on dark - Colour Parameters
DMP	Don't Move on dark - Position Parameters
DMBC	Don't Move on dark - Beamshape and Colour Parameters
DMBP	Don't Move on dark - Beamshape and Position Parameters
DMCP	Don't Move on dark - Colour and Position Parameters

Note - Setting and Editing the In-built Macros

Move the cursor onto the Comments field in the **Cue Stack Window** and press the ENTER key, then select Macros...

A window appears on the monitor allowing macros to be set or edited. They may also be entered via an external keyboard.

Macro commands are entered as a text string, and multiple commands can be concatenated using the colon as a delimiter, for example, "G2:S3:C4:T3/4".

The Macro Window

To display the **Macro Window** on the monitor, hold down the SHIFT key and then press the MACRO key.

Macros

The Macro Window contains a soft button for each of the 1000 user programmable macros. Each soft button contains the following information:

Macro number (1 – 1000), program status (* = unprogrammed) and name (if defined).

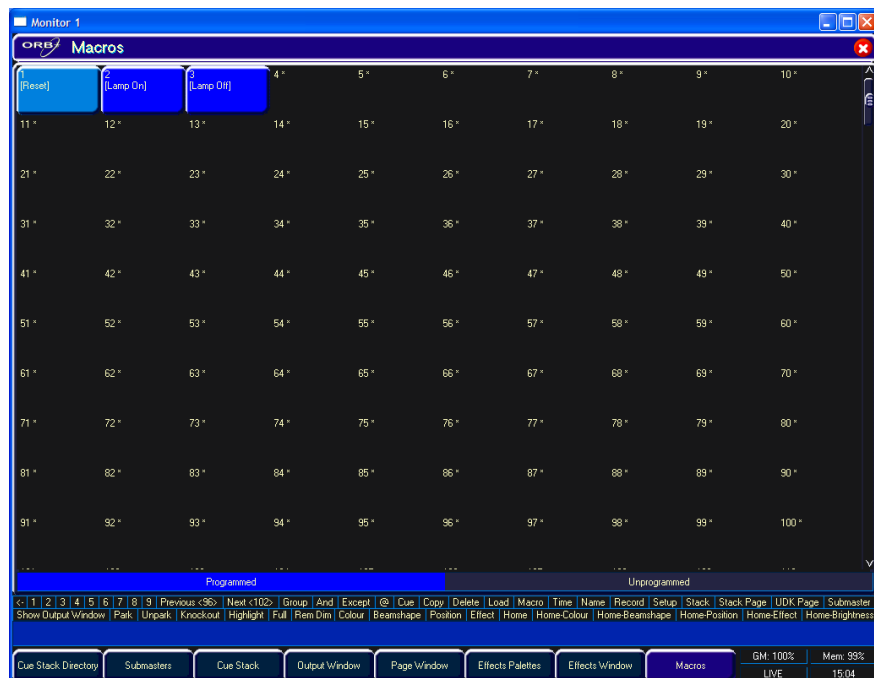


Figure 95 – Macro Window

Recording a Macro

To record a macro enter the command:

RECORD MACRO n ENTER.

Type in the series of key commands from the front panel (Note - the MACRO key cannot be recorded as part of the macro).

Press the MACRO key to complete the recording.

Note: The live/blind box on the monitors displays "MACRO" on a light background while the macro is being recorded and reverts back to its normal live/blind indication on completion of the macro recording.

Naming a Macro

Each macro can have its own name associated with it. To name a macro enter one of the following commands:

MACRO n NAME {your name} ENTER

NAME MACRO n ENTER

Running a Macro

To run a macro click on the macro in the **Macro Window** or use the cursor keys to select a macro in the Macro Window and press the ENTER key.

Macros may also be run by entering the command: MACRO n ENTER.

Copying a Macro

To copy a macro from one location to another enter the command:

MACRO n COPY TO p ENTER.

Moving a Macro

To Move a macro from one location to another enter the command:

MACRO n MOVE TO TO p ENTER.

Deleting a Macro

To delete a macro enter either of the following commands:

Macros

MACRO n DELETE

DELETE MACRO n ENTER

To delete a range of macros enter the following command:

DELETE MACRO a THRU b ENTER

Auto Macros

The ORB provides the facility to remotely control fixture parameters using automatic macros. The Macros are stored within the fixture library and allow control of fixture parameters such as Lamp On, Lamp Off, Reset, etc, without needing to find the relevant DMX values on the control channels.

Auto Macros are created in SETUP mode under [Auto Menus], [Create Auto Macros] in the [Patch] screen.

Once created, Auto Macros appear in the Macro Window in the same way as User Macros and can be activated in the same way.

Advanced Programming

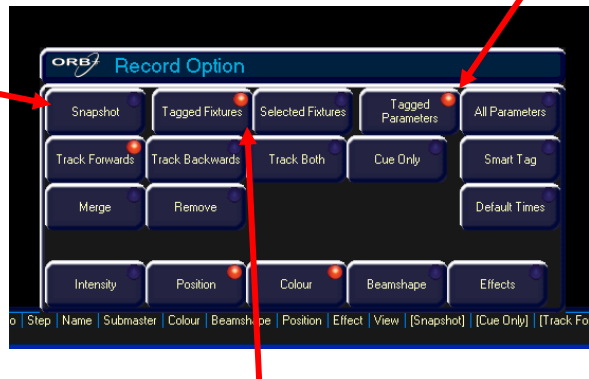
Record Options Window

After setting up the required data in the programmer and pressing the RECORD key the **Record Options Window** is displayed, and the Record Options Syntax Keys appear. This window contains a number of soft keys to allow you to select what and how the information will be recorded:

The top row of buttons are the data selection buttons. The default setting for these buttons is [Tagged Fixtures] and [Tagged Parameters] selected. By using various combinations of these buttons as described below you can determine what data will be recorded.

Tagged Parameters / All Parameters
 These two buttons are mutually exclusive and providing that [Snapshot] has not been selected they determine which parameters are recorded. The relevant fixtures will be determined by the [Tagged Fixtures] and [Selected Fixtures] buttons.
 If [Tagged Parameters] is selected (as shown above), only the tagged parameters of the relevant fixtures in the programmer will be recorded.
 If [All Parameters] is selected, all parameters of the relevant fixtures in the programmer will be recorded. All the attribute selection buttons on the bottom row will turn red and not be editable.

Snapshot
 A snapshot record is a capture of all outputting values from the desk and is a great way of getting a 'block' cue recorded.
 When [Snapshot] is selected – the [Snapshot] button is highlighted and the remaining buttons on the top row are 'greyed out' and no longer accessible. All the attribute selection buttons on the bottom row turn red and are no longer available. All parameters of all fixtures will be recorded. Pressing [Snapshot] again will return the data selection and attribute selection buttons to their previous states.



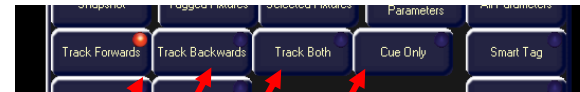
Tagged Fixtures / Selected Fixtures
 These two buttons are mutually exclusive and providing that [Snapshot] has not been selected they determine which fixtures will be recorded.
 If [Tagged Fixtures] is selected (as shown above), all the fixtures in the programmer will be recorded.
 If [Selected Fixtures] is chosen, only the selected fixtures in the programmer will be recorded.

Figure 96 - Record Options Window

Advanced Programming

Tracking Options

The second row of buttons are the tracking options [Track Forward], [Track Backward], [Track Both] and [Cue Only]. These options are only applicable and accessible when the data is being recorded into a cue.



These four options are mutually exclusive, with the default option being [Track Forward] as shown above. The first row of data shows the program state of the colour parameter (* = untagged parameters). The second row of data shows the output when the cue is played back.

CUE 1	CUE 2	CUE 3	CUE 4	CUE 5	CUE 6	CUE 7	CUE 8	CUE 9	CUE 10
Red	*	*	*	*	*	*	*	*	Blue
Red	Red	Red	Red	Red	Red	Red	Red	Red	Blue

If Cue 6 is edited and the colour changed to **Green**, the results of the different tracking options are as follows:

Track Forwards – The edited cue only affects later cues in the stack. This is the default action.

CUE 1	CUE 2	CUE 3	CUE 4	CUE 5	CUE 6	CUE 7	CUE 8	CUE 9	CUE 10
Red	*	*	*	*	Green	*	*	*	Blue
Red	Red	Red	Red	Red	Green	Green	Green	Green	Blue

Track Backwards – The edited cue affects earlier cues in the stack, where the change is tracked back to the last time the colour parameter was programmed. The outputs of cues after the edited cue are not affected (the cue after the edited one is changed to ensure this).

CUE 1	CUE 2	CUE 3	CUE 4	CUE 5	CUE 6	CUE 7	CUE 8	CUE 9	CUE 10
Green	*	*	*	*	*	Red	*	*	Blue
Green	Green	Green	Green	Green	Green	Red	Red	Red	Blue

Cue Only – The changed values are only output in the edited cue; the outputs of previous and later cues are not affected. The cue after the edited one has to be reprogrammed to ensure this:

CUE 1	CUE 2	CUE 3	CUE 4	CUE 5	CUE 6	CUE 7	CUE 8	CUE 9	CUE 10
Red	*	*	*	*	Green	Red	*	*	Blue
Red	Red	Red	Red	Red	Green	Red	Red	Red	Blue

Track Both – The edited cue affects both earlier and later cues. The change is tracked back to the last time the colour parameter was programmed:

CUE 1	CUE 2	CUE 3	CUE 4	CUE 5	CUE 6	CUE 7	CUE 8	CUE 9	CUE 10
Green	*	*	*	*	*	*	*	*	Blue
Green	Green	Green	Green	Green	Green	Green	Green	Green	Blue

Advanced Programming

Merge and Remove Options

These two buttons allow the user to merge or remove the specified data from existing cues, palettes, UDKs as opposed to the default action of overwriting the existing data. These two buttons are mutually exclusive, with the default state of both being 'off'.

If [Merge] is selected the button turns green and the data will be merged into the destination cue, palette or UDK.

If [Remove] is selected the button turns green and the data will be removed from the destination cue, palette or UDK.

Default Times

This button determines what happens to the parameter fade and delay times after the specified data has been recorded. The default state of this button is 'off'.

If [Default Times] is selected the button turns green and after the data has been recorded the fade and delay times are reset to their default values as defined in Desk Setup.

If [Default Times] is not selected the fade and delay times will be kept at their current values as displayed in the Fade and Delay views of the Output Window.

Attribute Selection Bar

The fourth row of buttons is the **Attribute Selection Bar** and indicates which parameters will be recorded for each of the different attributes (Intensity, Position, Colour, Beamshape and Effects).

Pressing each of the soft buttons on the touch screen cycles round the three options for that attribute, except when they are forced to red (see below). The options are indicated by the background colour as follows:

Grey	Green	Red
No Parameters	Tagged Parameters	All Parameters

When [Snapshot] or [All Parameters] are selected – all the attribute buttons are forced to red and are no longer editable.

When recording data to cues, submasters or UDK's - the attribute selection bar initially shows green (tagged) for each attribute in which one or more parameters of that attribute are tagged and grey (none) for those attributes where no parameters are tagged.

When recording data to palettes - the attribute selection bar shows green (tagged) for the attribute being recorded and none (grey) for all the other attributes. You can change this selection as required before saving the data to the palette.

For example – Select some moving fixtures and set the intensity to full, the colour wheel to blue and the gobo wheel to the desired gobo. To save the intensity, colour and gobo data to a Beamshape palette enter the command RECORD BEAM N .. the Attribute Selection Bar shows the following:



Press the [Intensity] and [Colour] buttons to change their state to tagged:

Advanced Programming



Complete the record operation by pressing the ENTER key.

Wheel Editing Modes

The desk provides a number of wheel editing modes which are user selectable and apply when editing several fixtures at the same time. For each attribute there is an unshifted and a shifted wheel mode.

The unshifted wheel mode is applied when the control wheel is moved. The shifted wheel mode is applied when the SHIFT key is held down and the wheel is moved.

The current wheel edit mode for the currently selected attribute is displayed on the LCD screen above the wheels. To change the editing mode, hold down SETUP and press the relevant attribute.



Figure 97 - Set Colour Wheel Editing Mode

The different wheel editing modes are described below:

Absolute Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, the adjusted parameter for all the selected fixtures goes to the same absolute value. For example – Select fixtures 1 – 5 and adjust a parameter:

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	30	20	40	10	50
New Value	15	15	15	15	15
Change in Value	-15	-5	-25	+5	-35

Relative Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, that parameter on each of the

Advanced Programming

selected fixtures will increase or decrease by the same amount from its original value. This mode is most often used for adjusting position parameters (pan and tilt) For example:

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	10	20	30	40	50
New Value	15	25	35	45	55
Change in Value	+5	+5	+5	+5	+5

Fan First Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, that parameter on each of the selected fixtures will increase or decrease by a different amount from their original values, depending on the fixture number. The value of the first selected fixture will be locked. Example – Fan-First Mode (Fixture 1 locked):

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	10	10	10	10	10
New Value	10	15	20	25	30
Change in Value	0	+5	+10	+15	+20

Fan Middle Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, that parameter on each of the selected fixtures will increase or decrease by a different amount from their original values, depending on the fixture number. The value of the middle selected fixture will be locked. Example – Fan-Middle Mode (Fixture 3 locked):

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	50	50	50	50	50
New Value	40	45	50	55	60

Change in Value	-10	-5	0	+5	+10
-----------------	-----	----	---	----	-----

Fan Last Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, that parameter on each of the selected fixtures will increase or decrease by a different amount from their original values, depending on the fixture number. The value of the last selected fixture will be locked. Example – Fan-Last Mode (Fixture 5 locked):

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	50	50	50	50	50
New Value	30	35	40	45	50
Change in Value	-20	-15	-10	-5	0

Fan V Mode

When several fixtures are selected and a fixture parameter is adjusted using a control wheel, that parameter on each of the selected fixtures will increase or decrease by a different amount from their original values, depending on the fixture number.

The value of the middle selected fixture will be locked. The fixtures either side of the middle fixture will be set to the same values to create a 'V'. Example – Fan V Mode (Fixture 3 locked):

Fixture Parameter	Fixture 1	Fixture 2	Fixture 3	Fixture 4	Fixture 5
Original Value	50	50	50	50	50
New Value	70	60	50	60	70
Change in Value	+20	+10	0	+10	+20

Advanced Programming

Colour Edit Modes

As there are two main methods of colour mixing supported on the ORBs – CMY and RGB mixing, remembering which parameter you need to adjust to create a particular colour can sometimes be challenging. In order to combat this, ZerOS treats all colour mixing fixtures in the same way, presenting just a single colour 'space' on both the wheels and on-screen. This allows you to adjust a mixed lighting rig of additive (RGB) and subtractive (CMY) fixtures as one entity.

To change the mode displayed on the wheels, hold down SETUP and press COLOUR, then select the COLOUR EDIT MODE from the on-screen menu.



Figure 98 - Colour Edit Mode

All cue data is stored as CMY values, regardless of what colour edit mode is selected, so switching the mode will not change the output data, only the display of this data.

Knockout Function

The {Knockout} syntax key releases the selected fixtures completely from any running cue stacks, submasters, UDK's or the programmer.

To knockout a fixture, select the fixture(s) and press the [Knockout] key on the touch screen.

Park Function

A 'parked' fixture is one for which all its DMX output values are frozen, and cannot be adjusted, until such a time as the fixture is unparked.

In the Output Window a parked fixture is indicated by having the text [PK] displayed in front of the fixture name, for example [PK] MAC 700 [701], and a red background in 'Channel' view.

To Park a fixture, select the fixture and press the {Park} syntax key. Whilst a fixture is parked, it is still possible to modify the values associated with the fixture in cues, palettes etc but the output values from the desk will not change.

To unpark a fixture select it and press the {Unpark} syntax key The unparked fixture will jump to its currently defined parameter levels.

Rem Dim Function

A Rem Dim (Remainder Dim) function which is often helpful when focussing lamps and fixtures is provided on the desk. The function works as follows:

Select the fixture(s) required. Hold down the SHIFT key and press the FULL key.

If the selected fixture(s) intensity level is 0%, it is set to 100% and tagged.

Advanced Programming

If the selected fixture(s) intensity level is > 0%, it is tagged and remains at that level.

All unselected fixtures have their intensity level tagged and set to 0%.

Fade and Delay Times

As well as the actual output levels, each fixture parameter also has it's own fade and delay times which are recorded when the channel data is recorded into a cue or directly as channel data onto a submaster or UDK.

The default fade and delay times for Intensity, Colour, Beamshape and Position are defined in Desk Setup, and can be adjusted if required, prior to programming cues.

The parameter fade and delay times are displayed in the Fade and Delay views of the Output Window.

After selecting the required fixtures, the parameter fade times can be adjusted using the control wheels, in the same way as the output values, or they can be edited directly in the Output Window.

Use the cursor keys to select a field in the table. Press the ENTER key, enter the fade time using the numeric keypad or external keyboard, then press ENTER.

Delay times are edited in the same way as fade times.

Fade Time Commands

The following commands can be used to set the fade times for the selected fixtures in the programmer:

TIME X ENTER	Sets the fade times for all fixture parameters to X seconds
TIME U/D ENTER	Sets the intensity fade up and fade down times to U and D seconds respectively
TIME X DELAY Y ENTER	Sets the fade time for all parameters to X and the delay to Y

TIME COLOUR X ENTER	Sets the fade times for all colour parameters to X seconds
TIME BEAM X ENTER	Sets the fade times for all beamshape parameters to X seconds
TIME POSITION X ENTER	Sets the fade times for all position parameters to X seconds.
TIME U/D COLOUR X BEAM Y POSITION Z ENTER	Sets the intensity fade up and fade down times to U and D, the colour fade times to X, the beamshape fade times to Y and the position fade times to Z.

Try Cue Function

Whenever a cue is recorded or loaded into the programmer, the current state of the outputs is stored as a reference.

If you change the scene in the programmer, pressing the TRY CUE key once will take the outputs back to the previous recorded output state. The LED in the key is lit.

Pressing the TRY CUE key again plays back the new look back over the corresponding times (default or recorded times depending on what data was in the programmer). While the outputs are fading the LED in the TRY CUE key flashes, and when the fade is complete the LED goes out. This gives a great way of previewing the timing on cues prior to programming them into a cue. Try Cue can be used as many times as required before the scene is finally programmed.

Highlight Function

The Highlight function provides a quick method of locating a fixture (or fixtures) and then allowing the position to be adjusted without tagging any of the other parameters. This can be particularly useful when creating position palettes (see page 95).

Select the required fixture(s) and then press the SHIFT and HOME keys. This will set all the outputs of the currently selected fixtures, except for Pan and Tilt to their home values (defined in Edit Fixtures).

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While a fixture is highlighted only the Pan and Tilt parameters can be edited using the wheels. Adjust the pan and Tilt values as required, and then press SHIFT and HOME again to un-highlight the selected fixture(s). The other fixture parameters will return to their previous output level.

Home Function

The Home function provides a quick method of setting fixture parameters to their 'home' position, ie brightness to full, colour to white, no gobo, no prisms, shutter open, pan/tilt to mid-position etc. The homed parameters are automatically tagged.

Select the fixture(s) required, then enter one of the following commands:

HOME

(homes all fixture parameters; removes all effects)

COLOUR 0 ENTER

(homes colour parameters; removes colour effects)

BEAM 0 ENTER

(homes beamshape parameters; removes beamshape effects)

POSITION 0 ENTER

(homes position parameters; removes position effects)

EFFECTS 0 ENTER

(removes all effects)

Copying Fixture Data

You can copy fixture data from a programmed cue or from another fixture in the programmer. The data for all fixture parameters can be copied, or just those for a particular attribute by using the following commands:

1 @ CUE C ENTER

Copies all the fixture parameter values from the cue C to fixture 1.

1 @ S/C ENTER

Copies all the fixture parameter values from the cue S/C to fixture 1.

1 COLOUR @ S/C ENTER

Copies the colour fixture parameter values from cue S/C to fixture 1.

1 COPY TO 2 ENTER

Copies all the fixture parameter values from fixture 1 to fixture 2.

1 BEAM COPY TO 2 ENTER

Copies the beamshape parameter values from fixture 1 to fixture 2.

1 COPY TO 2 THRU 10 ENTER

Copies all fixture parameter values from fixture 1 to fixtures 2 to 10.

1 COPY TO GROUP N ENTER

Copies all fixture parameter values from fixture 1 to the fixtures in group N.

Remote

Remote Devices

A number of different devices can be connected to an ORB series console using the Ethernet connection. Using specially designed applications, these devices provide remote monitor and remote control functionality.

For information on connecting the devices, see page 77.

Windows Remote Monitor

The Windows Remote Monitor is an application found on the CD supplied with the desk. It can also be downloaded from the Zero 88 website. Once installed, the application will startup and detect any ORB series desks connected to the PC



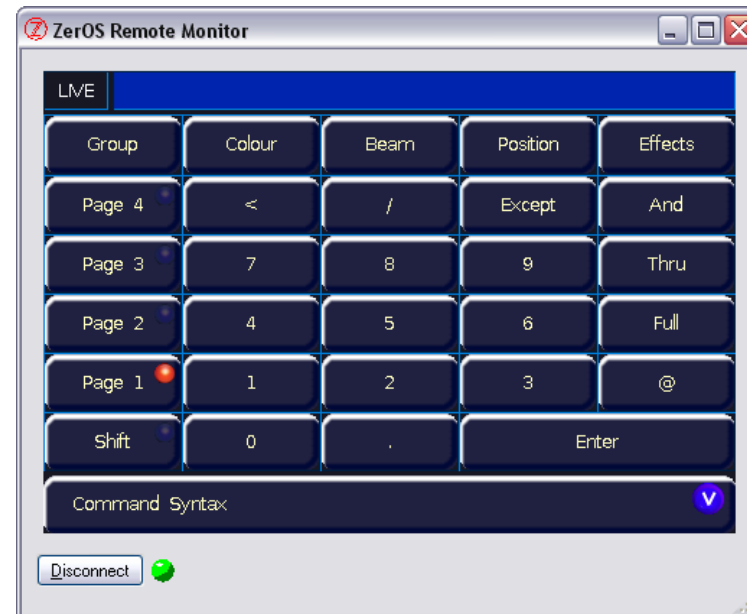
Figure 99 - Connecting the Windows Remote Monitor

Select the desk you want to connect to, and then select the mode from the dropdown box. There are two modes for the Windows Remote Monitor – ‘Monitor’ and ‘Handheld’. In Monitor mode, you can emulate any of the 5 desktops, plus an emulation of the front panel of the desk to allow you to enter syntax.

In Handheld mode, you get the same screens as the iPhone / Windows Mobile remote.

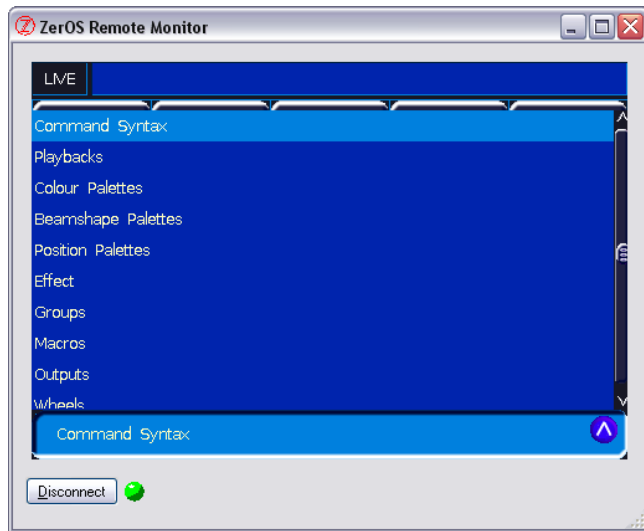
Select the desk you wish to connect to, and the mode you wish to connect in, and press the Connect button.

Handheld Mode



The dropdown box at the bottom of the window allows you to select a different screen of the remote.

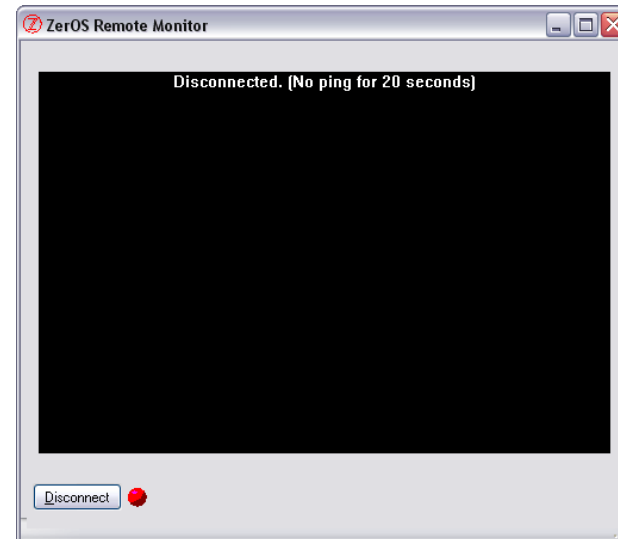
Remote



There are various different options including the Palettes windows, Output Window and Wheels view. Each view has the dropdown box at the bottom to select a new view.



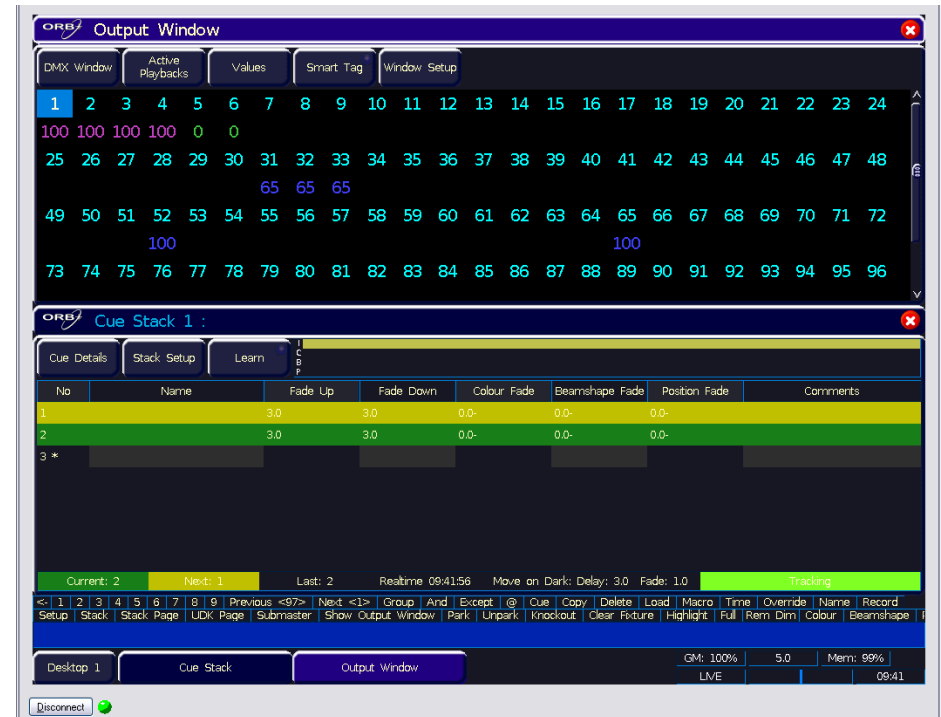
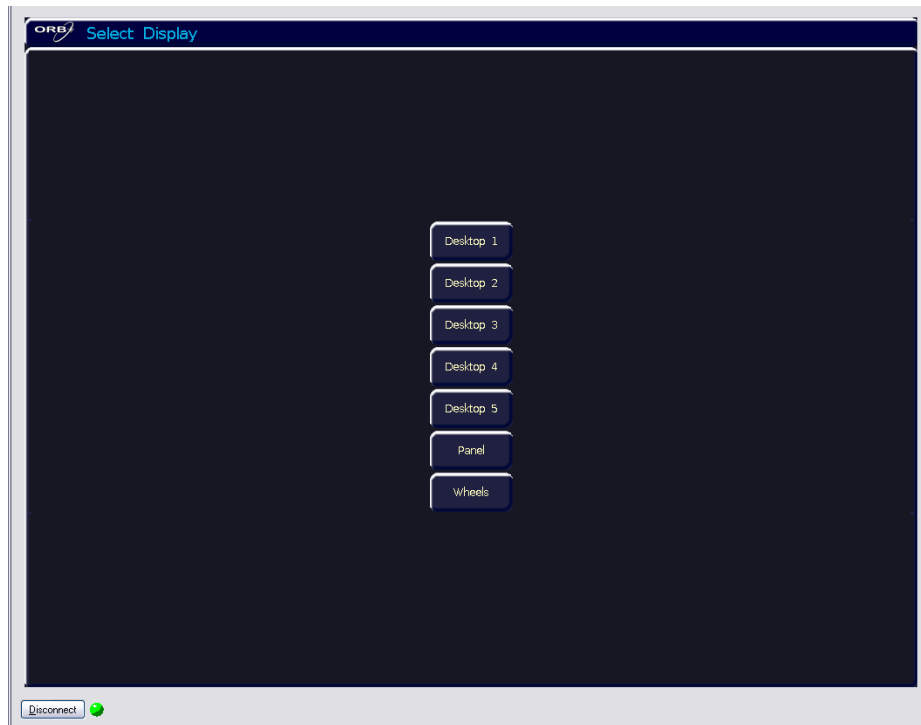
The coloured LED at the bottom of the window indicates the connection status – should the connection fail for whatever reason, this will first turn yellow and then red. After 20 seconds, the screen will change to show that the connection has failed:



In this situation, Disconnect the remote by pressing Disconnect and then try connecting again.

Monitor Mode

When you connect using Monitor mode, the desk first asks you which Desktop you would like to view. There are 7 choices – Desktop 1 to 5, Panel and Wheels. After selection your choice, the desk will connect and display your chosen screen.



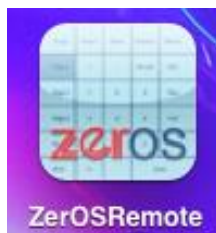
Each Desktop displays the windows contained within it, so setting the Remote Monitor to Desktop 3 will give you a third monitor on which to display windows (likewise Desktop 4 and 5). Using Desktop 1 and 2 will show the outputs from the two VGA connectors on the back of the console, assuming these have been left as Desktop 1 and 2.

Remote

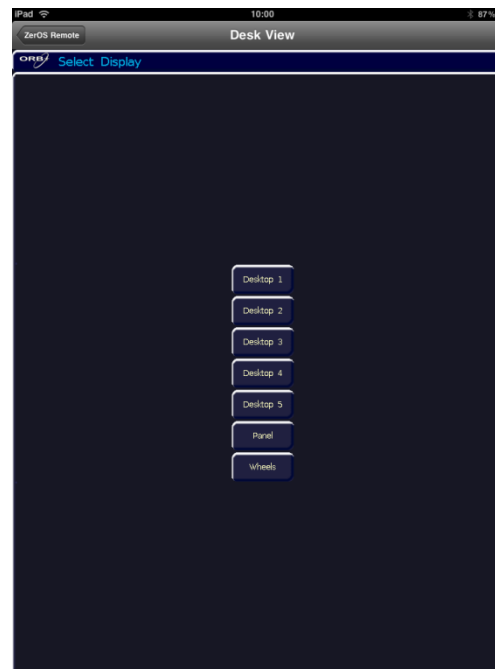
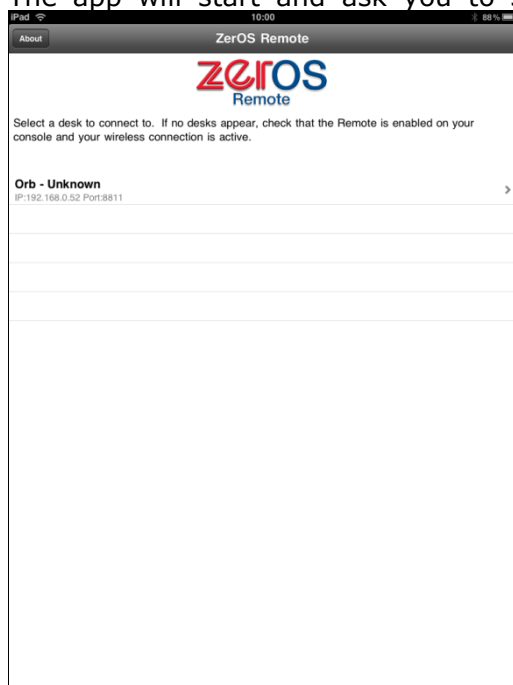
iPad Remote Monitor

The iPad app is available from the iTunes Store and can be purchased in the same way as any other iPad application.

Once installed, the iPad must be connected to a wireless network, shared with the desk. Start the iPad app using the shortcut icon

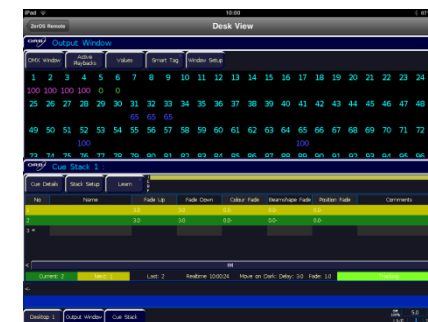
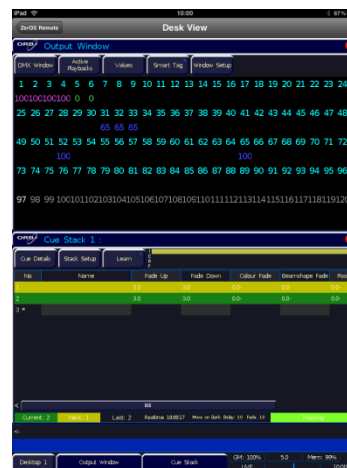


The app will start and ask you to select a desk to connect to -



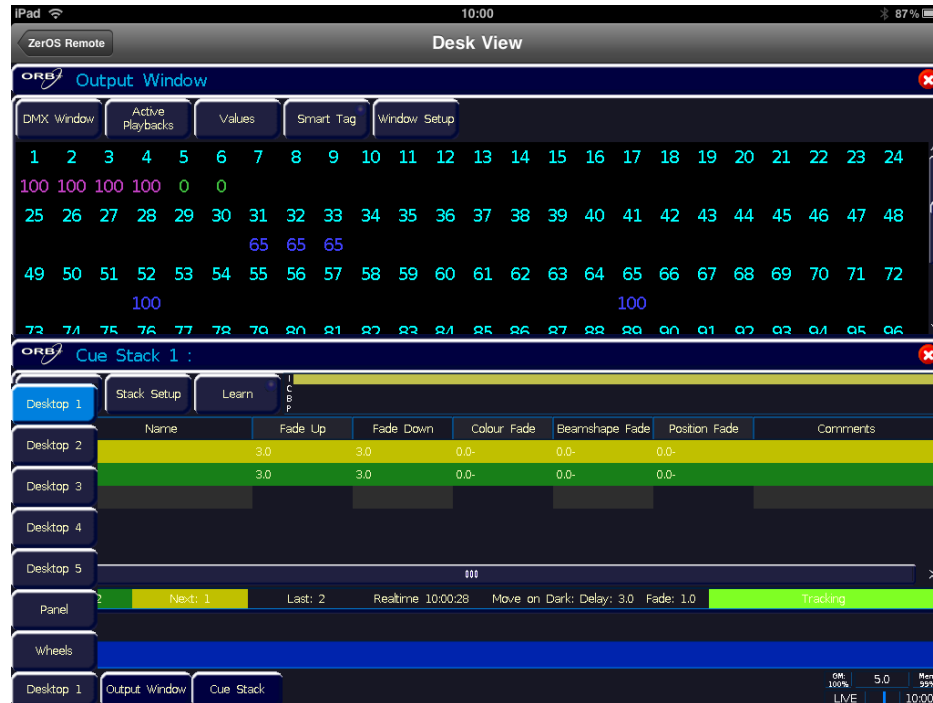
Once a desktop has been selected, the remote application will connect and display the monitor screen selected. Rotating the iPad will rescale the monitor window as required.

Select your desk and the connection will be made. Just like the Windows Remote Monitor, the iPad connects and emulates the monitor screens from the ORB. Again, you must select the Desktop you wish to view.



Other Features

To change which



desktop is being displayed, press the Desktop button in the bottom left of the screen and select a new view screen.

Once the screen is selected, the iPad will redraw the monitor screen



iPod / iPhone Wireless Remote

Windows Mobile Remote

Remote

Other Features

Windows

The ORB allows you to display a number of different windows on the touch screen and monitor screen(s) and to open, select, move, resize and delete windows, as required.

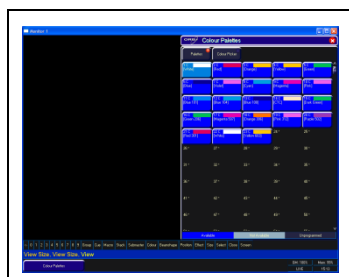
A window displayed on a monitor can be full-size, half-size or quarter-size, and can be displayed in a number of different positions, as illustrated below:



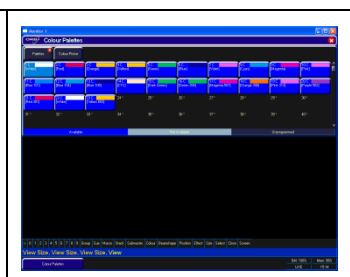
1. Full Screen



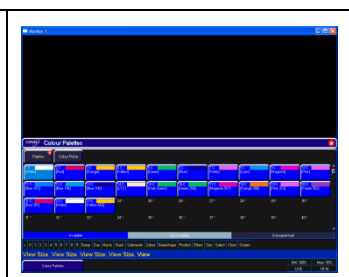
2. Half Screen (Left)



3. Half Screen (Right)



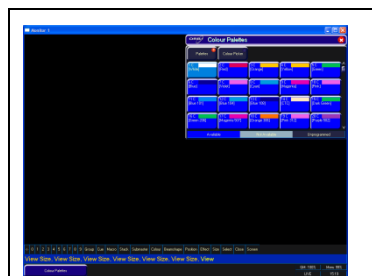
4. Half Screen (Top)



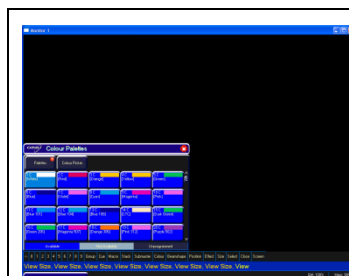
5. Half Screen (Bottom)



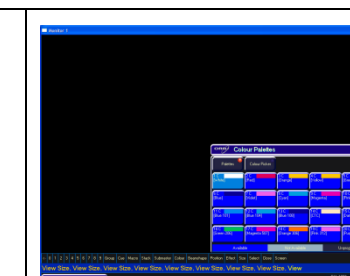
6. Quarter Screen (Top Left)



7. Quarter Screen (Top Right)



8. Quarter Screen (Bottom Left)



9. Quarter Screen (Bottom Right)

Screen Navigation Keys

The screen navigation syntax keys are used for selecting, moving, sizing and closing windows on the monitor displays as follows:

- **{VIEW}** - Used in the command syntax for user view functionality and also for displaying the screen navigation syntax keys
- **{CLOSE}** - Closes the selected (active) window.
- **{SCREEN}** - moves the selected (active) window to the other monitor display or touch screen.
- **{SIZE}** - Resizes the selected (active) window by cycling through the display options.
- **{SELECT}** - Selects a window by cycling through the windows on the monitor displays.

Once a view has been defined, it is possible to store and recall this view using syntax. See page 150 for details.

Mouse Operation on Windows

You can also use a mouse to navigate around the various windows on the monitors. At the bottom of the monitor display is a bar where shortcut buttons appear for all the windows on that screen. Click on these buttons to force the windows to come to the front of the view.

Right clicking with the mouse switches the mouse pointer between the monitor outputs.

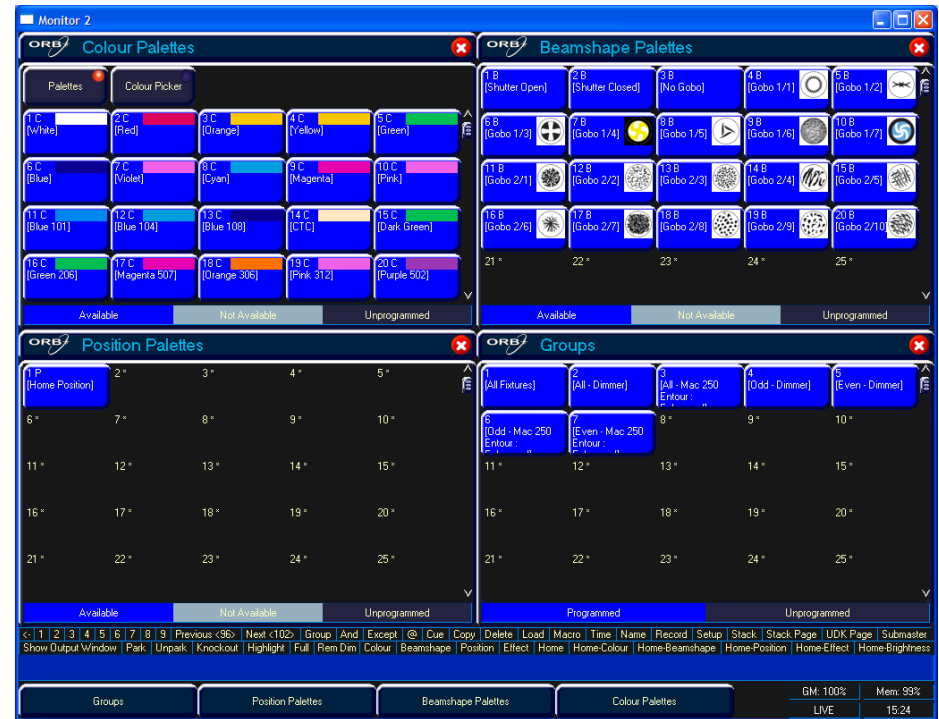


Figure 100 - Monitor Display with 4 windows

Other Features

Trackball

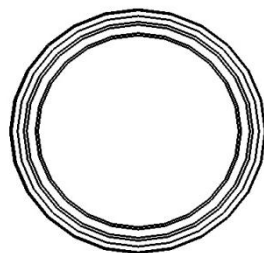
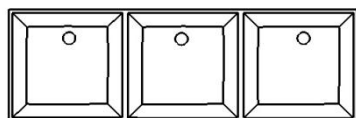
The Trackball on ORB can be used for two key functions – on-screen navigation, and Pan/Tilt manipulation.

The default mode for the trackball is for On-Screen navigation and in this mode the two outer buttons above the trackball have their LEDs lit to indicate this mode.

Moving the trackball moves the on-screen mouse. Pressing the LEFT trackball button 'clicks' an on-screen object, such as a button, to allow manipulation of the monitors and data fields. Pressing the RIGHT trackball button moves the on-screen mouse pointer from Monitor 1 to Monitor 2 and back. This behaviour mimics that of an external mouse.

Pressing the MIDDLE trackball button puts the trackball into 'Pan/Tilt' mode. In Pan/Tilt mode moving the trackball moves the selected fixtures position according to the direction of travel. This also puts the fixture wheels into Position mode so that the adjusted position can be read on the LCD screens above.

When the trackball is in Pan/Tilt mode, holding the middle button and pressing either LEFT or RIGHT trackball buttons locks the Pan or Tilt respectively. This gives finer control of positioning. Pressing the middle button again unlocks Pan or Tilt. Pressing the LEFT or RIGHT trackball button in Pan/Tilt mode switches back to mouse mode.



Preview Cue Window

The contents of a programmed cue can be seen by displaying the **Preview Cue Window** on the monitor. Click on the [Cue Details] soft key in the **Cue Stack Window** or enter the following command:

VIEW S/C ENTER (S = stack number, C = Cue number)

VIEW CUE n ENTER (N = cue number)

The Preview Cue Window is the same format as the Output Window and shows what is programmed in the specified cue on a fixture by fixture basis.

As with the Output Window there are three different views allowing the user to see the parameter values, fade times or delay times.

The [Previous] and [Next] buttons can be used to view the cues in sequence., and the [Current Cue]/[Next Cue] buttons allow you to lock the preview window onto a particular cue.

When you enter the syntax VIEW S/C ENTER, or VIEW CUE N ENTER, the ORB automatically goes into Blind Mode to aid blind programming. This is a special mode where pressing UPDATE will automatically update the cue you are previewing with the contents of your blind programmer.

The fixture parameter data in the window is colour coded to identify level changes between previous cues and the cue you are viewing. For the first cue in the stack, the values are coded relative to the highlight values of the fixture parameters:

Blue	The parameter is programmed and it's value has increased.
Green	The parameter is programmed and it's value has decreased.
Red	The parameter is programmed at the same value as previous (blocked).
Magenta	The parameter is <u>not</u> programmed in this cue and it's value has tracked from a cue earlier in the cue stack.

Preview Palette Windows

The contents of a palette can be seen by displaying the **Preview Colour Palette Window**, **Preview Beamshape Palette**, **Preview Position Palette** or **Preview Effects Palette** on the monitor by entering the following command:

VIEW <attribute> N ENTER (<attribute> = COLOUR, BEAM, POSITION or EFFECTS)

The Preview Palette Windows are the same format as the Output Window and show what output levels are programmed in the specified palette on a fixture by fixture basis.

The [Previous] and [Next] buttons can be used to view the palettes in sequence.

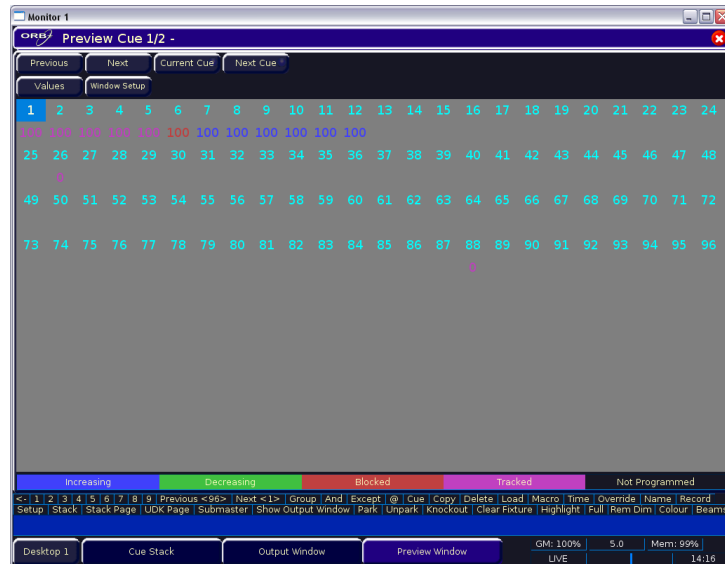


Figure 101 - Preview Cue Window

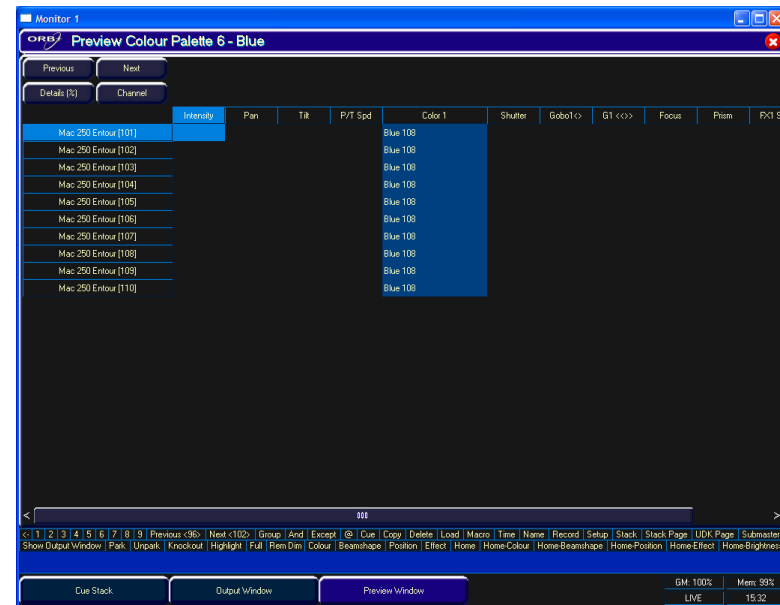


Figure 102 - Preview Palette Window

Other Features

Preview Group Window

The contents of a group can be seen by displaying the **Preview Group Window** on the monitor by entering the following command: VIEW GROUP N ENTER.

The Preview Group Window lists all the fixtures that are contained in the selected group in the form of a table, displaying the fixture name, user fixture number, Manufacturer and Fixture Type.

The [Previous] and [Next] buttons can be used to view the groups in sequence.

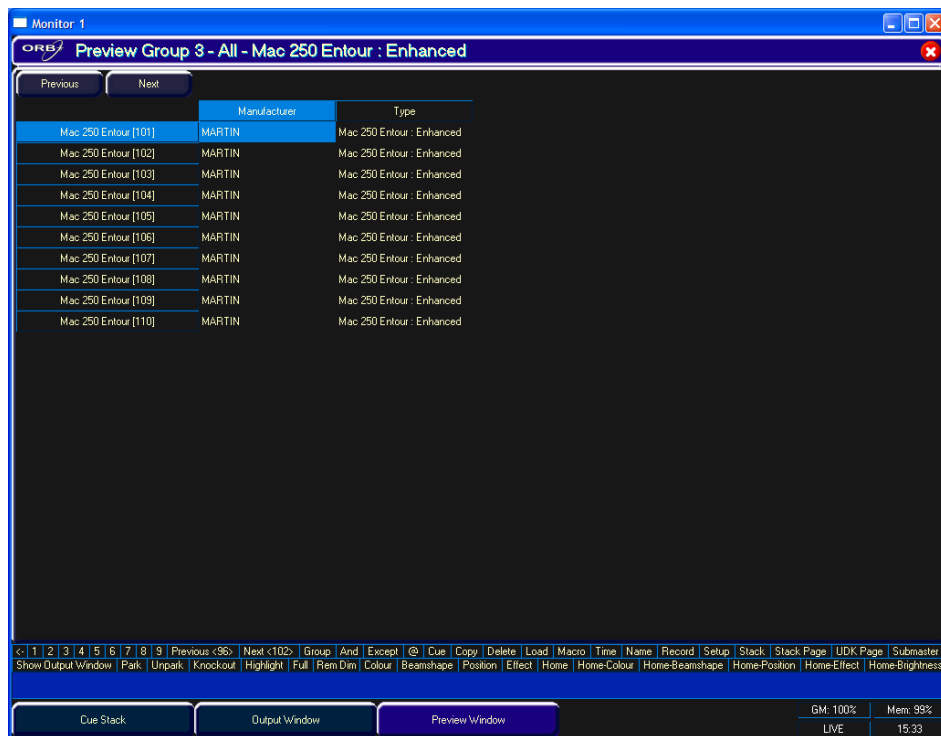


Figure 103 - Preview Group Window

Preview UDK Window

The contents of a channel data UDK can be seen by displaying the **Preview UDK Window** by entering the following commands:

VIEW <UDK>

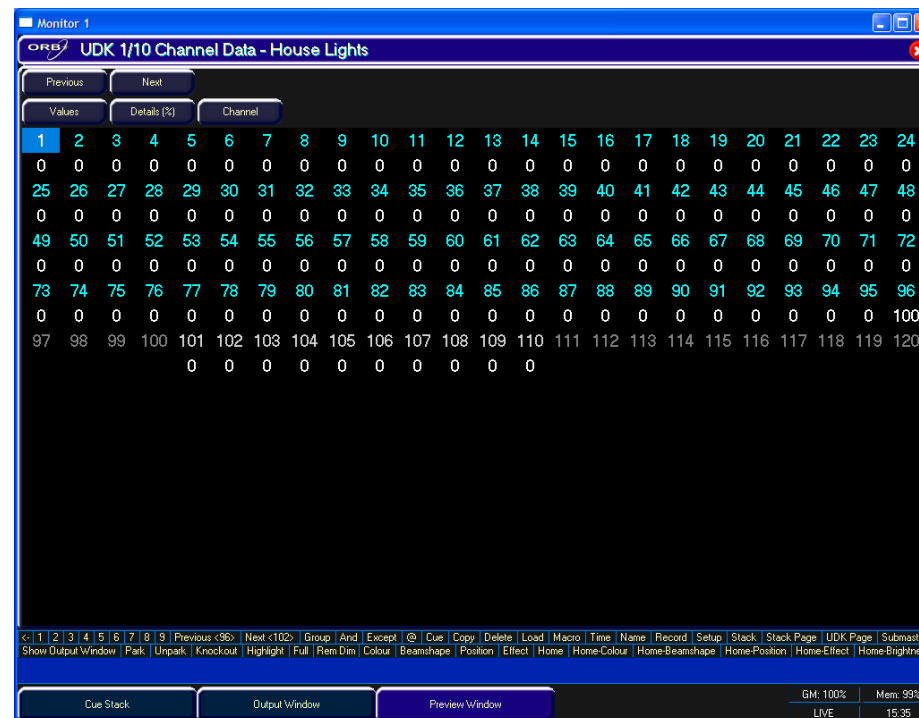


Figure 104 – Preview UDK Window

The Preview UDK Window shows what is programmed in the specified UDK on a fixture by fixture basis.

The [Previous] and [Next] buttons can be used to view the UDKs in sequence.

Preview Macro Window

The commands programmed into a user defined macro can be seen by displaying the **Preview Macro Window** on the monitor by entering the following command:

VIEW MACRO n ENTER

The [Previous] and [Next] buttons can be used to view the macros in sequence.

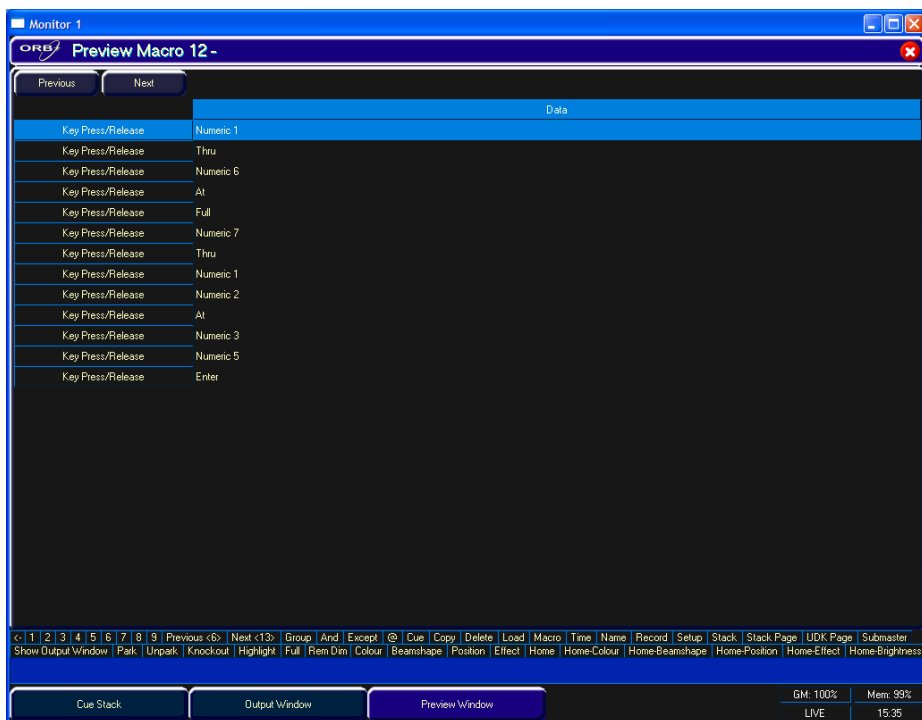


Figure 105 - Preview Macro Window

Active Playback Window

The Active Playback Window is displayed on the monitor by pressing the [Active Playback Window] soft key in the Output Window.

This window shows all the currently active playbacks (Page Number, Playback Number, Stack Number, Master Fader Level, Current and Next cues).

DMX Output Window

The **DMX Output Window** displays the outputs of all 512 channels from one of the four DMX universes. Soft keys are provided in the window to select which universe to view.

To display the DMX Output Window on the monitor press the [DMX Window] soft key in the Output Window.

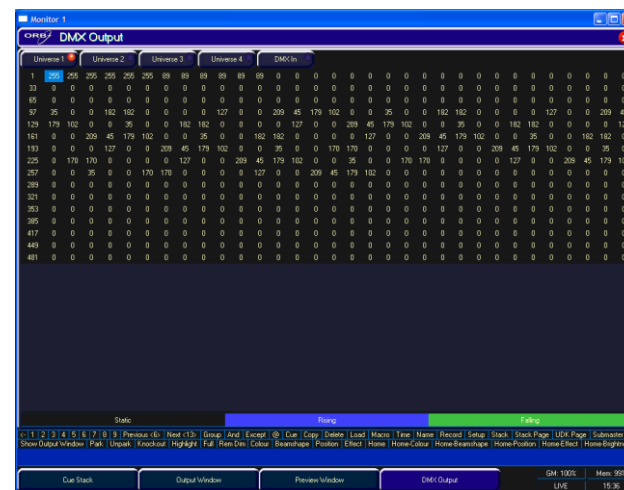


Figure 106 - DMX Output Window

Other Features

User Views

The ORB desk provides the facility to save up to 999 user defined views. A User View defines the configuration of the windows displayed on the two monitors, for example:

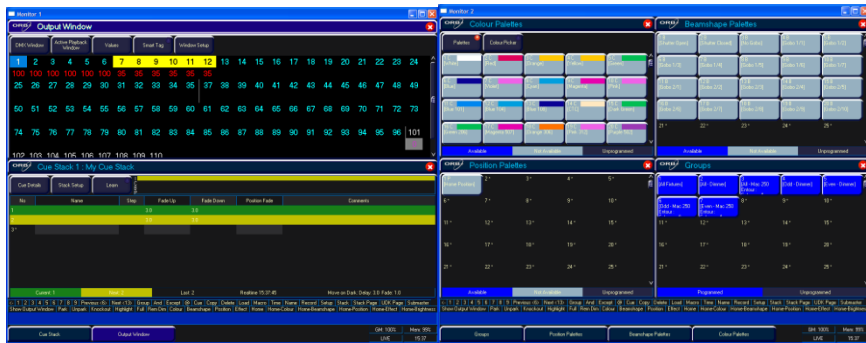


Figure 107 - User Views

Recording a User View

Set up the monitor displays with the required windows.

RECORD VIEW n ENTER

A popup will ask you to choose whether you want to Record All windows or just the visible ones. Select the [Record All] or [Record Visible] option as required. If the selected view contains a recorded view an overwrite warning message is displayed allowing you to confirm the overwrite or cancel the operation.

Recalling a User View

Any of the recorded user views can be recalled by entering the command:

VIEW n ENTER

Deleting a User View

To delete a user view enter either of the following commands:

VIEW n DELETE

DELETE VIEW n ENTER

Storing a User View onto a UDK

To store a user view onto a UDK, enter the syntax:

VIEW n RECORD <UDK>

Pressing this UDK will activate the selected view.

Spare Button

Both the ORB and ORB XF offer a user assignable, blank, 'spare button' within the keypad. This button can be used to as a shortcut key to any function not already assigned to a hardware button on the desk. For example, you may wish to assign it as a REM DIM button to speed up rig checks. By holding SHIFT and pressing the button, a further secondary function can also be assigned to the key.

To assign the function, hold down SETUP and press the blank key.

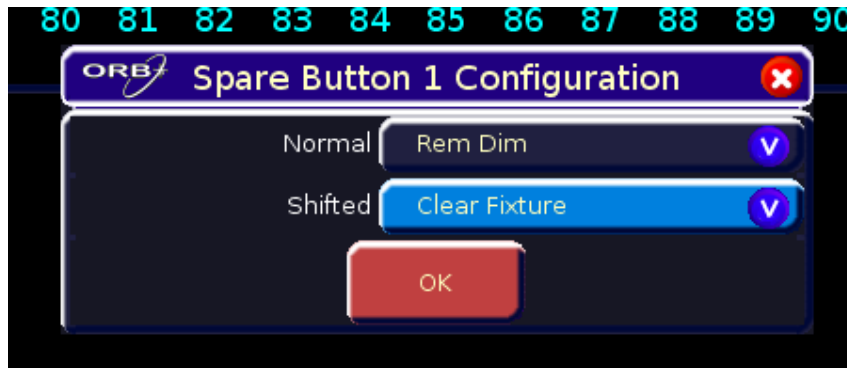


Figure 108 - Spare Button Configuration

Select the drop down menu for the mode you wish to modify (normal or shifted) and select the function you wish to assign to the button.

Software Updates

When software updates become available for the ORB, announcements will be posted on the Zero 88 Product Support Forum which can be accessed via the Zero 88 website.

Zero 88 consoles have a long history of user-inspired development. If you have any questions on the operation of the desk, bug reports

or a suggestion for a feature which is not currently included in the ORB or any of our other range of consoles, visit the Zero 88 Product Support Forum and make a post.

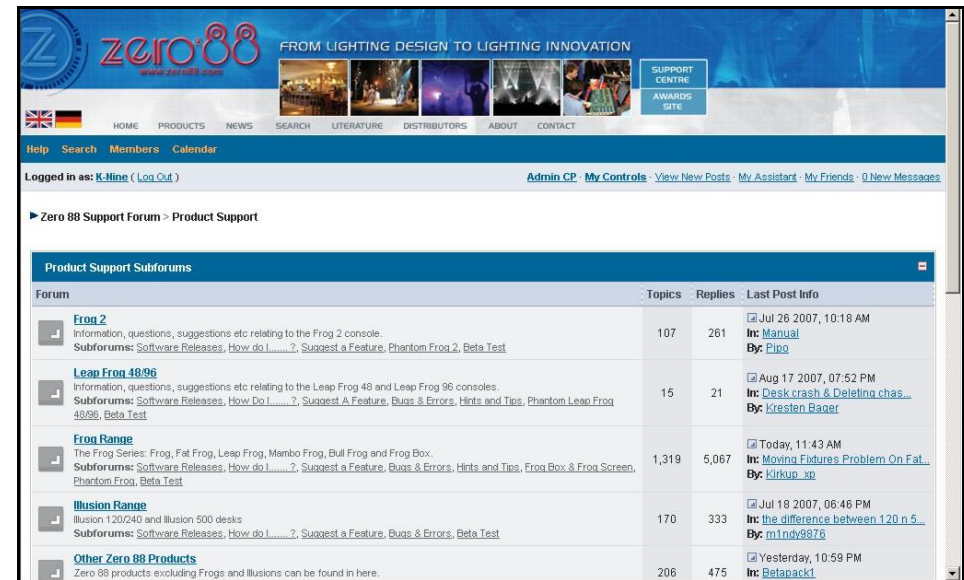


Figure 109 - Zero 88 website

Glossary

Glossary

This section of the manual contains a list of terms used with the ORB desk:

802.11b	The wireless standard which most Wireless Enabled devices can communicate with. 802.11b uses the 2.4GHz radio spectrum. Wireless DMX systems often use 802.11b for communication.
Alignment	A function in Setup which allows the user to invert pan and/or tilt or swap pan/tilt parameters for individual fixtures.
ArtNet™	Artistic License network protocol. This is the Artistic License DMX over Ethernet protocol.
Attribute	A group of fixture Parameters. On the ORB these are Colour, Beam, Position and Effects.
Auto Group	A group that is automatically created by the desk.
Auto Palette	A colour, beamshape, position or effect palette that is automatically created by the desk.
Blind	Modifying the program data within the desk without affecting the outputs.
Blackout	This key sets the outputs of all fixture intensity channels to 0%.
Brightness	See Intensity .
Chase	A complete cue stack can be turned into a chase. A chase is a series of cues which are played back automatically. A Chase has a

number of **modifiers** which determine how it runs.

Command Line	The area of the touch screen which displays commands as they are entered by the user. Commands can be entered using front panel keys, soft keys, control wheels, external keyboard or mouse.
Control Wheel	The three control wheels on the desk are used to adjust fixture parameter and other data levels. The parameters assigned to the control wheels are shown on the touch screen.
Cue	The basic element for storing fixture parameter levels and times. Cues can be played back via manual or master playbacks or they can be assigned to UDK's .
Cue Stack	See Stack .
Details	An option on the Preview and Output Windows which allows the user to see fixture parameter values as text descriptions rather than percentage or DMX values.
DHCP	Dynamic Host Configuration Protocol. Generally DMX over Ethernet systems should not use DHCP, but should be manually configured.
Dimmer	One discretely controlled device or parameter of a device out of 512 possible in the DMX512 protocol. Sometimes also referred to as "Address", "DMX Channel" or "Output Channel"

Glossary

Direction	The Chase modifier which determines which order the steps are output when a Chase is run.	buttons can also be set to operate in Latch mode.
DMX	Digital MultiPlex. The protocol most lighting equipment responds to.	Flashdisk
DMX-512	Standard communications protocol for moving heads and dimmers. 512 channels of control are digitally multiplexed and sent down a cable to fixtures, which listen for their specific data, according to their start address.	A USB device with storage capabilities. The ORB is supplied with a 32mb USB Flashdisk.
Drive	The Chase modifier which determines what triggers each step.	Full
Effect	A mathematical function (sine, cosine, ramp etc) which can be applied to one or more fixture parameters. The ORB desk provides a number of standard effects.	Key that sets the Intensity of the selected fixture(s) to 100%.
Ethernet	Many modern lighting consoles use Ethernet as a medium for transmitting DMX lighting control data using protocols such as Art-Net. This allows lighting data to be carried over existing wiring infrastructure.	Grand Master
Fan Modes	When controlling multiple fixtures, the ability to spread the data relative to a start point, so that some fixtures values change upwards, whilst others change downwards. This can be used to create visual effects such as rainbows or arches with a line of fixtures.	This fader on the front panel controls the final output values of all fixture intensity channels.
Fixture	A parameter or combination of parameters all found within the same unit, for example a Mac 500 or a Parcan.	Group
Flash	Pressing the flash button results in a temporary increase in brightness of the output. The intensity channels are sent to their programmed value when the Flash button is pressed. This is a temporary action which is removed when the button is released. Flash	A collection of fixtures. Groups can be Master Groups, Auto Groups or User Defined Groups .
		Highlight
		A function which automatically puts a fixture into Open White, No Gobo, Shutter Open and the Dimmer at 100%. This function can be turned on or off via the HIGHLIGHT key. Parameters which are Highlighted are not tagged. Highlight is most often used for editing the position of a fixture.
		Home
		Fixtures are said to be at "Home" when their pan and tilt are at 50% with an open white beam at full intensity. The shortcut for Home is SHIFT + HIGHLIGHT. Homed parameters are tagged automatically.
		Intensity
		How bright a fixture is. Also known as Brightness or Dimmer .
		IP
		Internet Protocol.
		IP Address
		The unique identifier for a device communicating on an IP Network
		Jump
		An instruction in a cue memory which tells the cue stack to select another cue as the next one. This is used to bypass cues without deleting them.

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Knockout	A syntax key that releases the selected fixtures from any running cue stack, submaster, UDK or from the programmer.	Palette	Programmed fixture data, normally of a single Attribute which is used in programming Cues, submasters and UDKs. Palettes are nominally grouped into the attributes Colour, Beamshape, Position and Effects.
LAN	Local Area Network – a network between devices which are contained within an area	Parameter	An individual function within a fixture, controlled by one or more DMX channels (Dimmer, Colour, Gobo, Focus, Pan, Tilt etc).
Latch	A function of UDKs, which enables them to have a two stage action. The first press to activate (on), a second press to deactivate (off).	PDA	Personal Desktop Assistant – a palm sized pocket computer, capable of connecting to a ZerOS console via a wireless system
Macro	A series of commands, triggered from a single button press or activated when a cue is triggered.	Playback	An area within the desk for playing back cues in sequence. The ORB desk has 10 playbacks, which can be on any of 100 pages. Each playback has its own Go, Pause and Flash buttons, as well as a master level fader.
Master Group	A Group of fixtures that is automatically generated by the desk based on the fixture schedule. Master Groups are displayed in a toolbar on the touch screen when the GROUP key is pressed.	Pause	A method of temporarily halting a cue stack that is running.
MFF	A Multi Function Fader – one that can be assigned to a number of functions. ORB XF has 60 of these.	Release	Remove control of parameters from a playback, submaster or UDK to allow another area of the desk to regain control of the parameters.
Modifiers	A number of parameters which determine how a Chase is output. Chase modifiers are Drive, Direction, Speed, Fade and Shots.	RJ45	Registered Jack 45 – the connector used for Ethernet, and occasionally DMX.
Node	An area of the desk which can have possession over the parameters of fixtures.	sACN	Streaming ACN – a DMX over Ethernet standard, also known as ESTA Standard E1.31.
Page	A set of 10 Playbacks. The ORB has 100 pages of playbacks.	Shift	A key on the front panel which is used in conjunction with a number of other front panel keys to provide a wide range of additional functions, for example, opening windows on the monitor screens.
Park	The function that freezes a fixture's DMX output values.	Shots	The Chase modifier which determines how many times a Chase will run after being triggered.
Patch	The fixture schedule which shows what fixtures are assigned and what DMX output addresses they are patched to.		

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Speed	The Chase modifier which determines how fast a Chase runs.	UDK	User Defined Key. The bank of buttons top right of the control surface which can be assigned as a number of different functions.
Stack	A stack (or cue stack) is a group of cues in sequence. On the ORB desk, there are 1000 user programmable Cue Stacks.	Universe	512 addresses or slots of control information as conveyed by DMX512 protocol. As a lighting system may have more than 512 discrete things to control, multiple universes may be required. When this is the case, the Universe number is expressed as a subnet (0-15) and universe number (0-15), giving 256 possible Universes on a network
SubNet	A group of 16 consecutive DMX universes is referred to as a sub-net when speaking about an Art-Net system. Not to be confused with the subnet mask.	Unpark	The function that unfreezes a fixture's DMX output values.
Switch	A device which takes the Ethernet data from multiple devices and sends it to other such devices.	USB	Universal Serial Bus. A standard for the transfer and storage of information.
Tagging	The method of marking parameters to be programmed. Only Tagged parameters are recorded. Tagged parameters are shown in the Output Window.	VGA	Video Graphics Array. The monitor outputs on the back of the ORB output as XGA.
Trigger	The method by which a Cue is output. Triggers can be set to GO button, automatic, Real Time, SMPTE Time, MIDI Time or CD Time.	ZerOS	The operating system running on Zero 88s top range consoles
Try Cue	A function that allows you to see the transition from a previous state to the current state before recording the data into a cue.	Zero 88	The manufacturer of the ORB desk.

Technical Specification

Technical Specification

Mains Inlet

The desk is fitted with an IEC320-C14 Mains Inlet and power on/off switch on the back panel.

90-264V AC ONLY

47-63Hz, 200VA (2A)

INTERNALLY FUSED. A GOOD EARTH CONNECTION IS ESSENTIAL

The internal fuse is not user replaceable, contact an authorised service agent if the desk does not power up and you suspect that the fuse has failed.

The ORB is supplied with a bare ended mains lead, which should be connected as follows:

Brown: Live (Hot)

Blue: Neutral

Green/Yellow: Earth

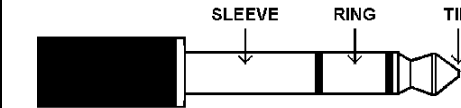
The supply cord must be protected to a maximum current of 10A. If in doubt consult a qualified electrician.

Audio

The desk has three audio ports on the rear panel (line in, line out and sound to light input) as stereo ¼ inch jack sockets.

The line in and out functions are not currently implemented in software.

Connections	
Tip	Left Channel
Ring	Right Channel
Sleeve	0V Signal Ground



Remote Input

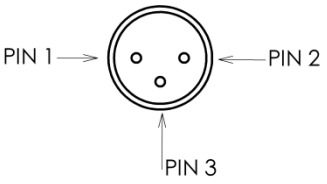
An 8 pin DIN connector providing 6 remote switches (common ground). Short pin to 0v to simulate a button push.

Warning – Do NOT connect anything to the undefined pin.

Socket	Pin	Remote Switch
<p>A diagram of an 8-pin DIN connector socket. It shows a circular socket with eight pins arranged in a circle. The pins are labeled: PIN 1 (right), PIN 2 (bottom), PIN 3 (left), PIN 4 (right), PIN 5 (left), PIN 6 (right), PIN 7 (left), and PIN 8 (middle) at the top.</p>	1	Switch 6
	2	Switch 1
	3	Switch 2
	4	Switch 3
	5	Switch 4
	6	Switch 5
	7	Not Used
	8	0V Common Ground

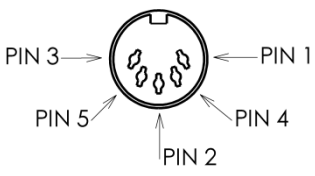
SMPTE

3 pin XLR input and output.
Output 0dBm. Input 0dBm +/- 10dBm.
47 kOhm input impedance. Maximum 50V RMS.

Connector	Pin	Description
	1	Signal Ground
	2	Output
	3	Input

MIDI

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

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

Video Output

2 x 15 pin D connector, XGA resolution output.

CAN Port

The desk also has a CAN port and is capable of supporting iCAN or ChilliNet messages.

Ethernet

The desk is fitted with an RJ45 Ethernet port and is capable of supporting various Ethernet protocols.

USB Ports

Four external USB ports are fitted on the desk. One located on the front panel and three on the rear panel. These support the USB 1.1 standard.

Keyboard & Mouse

Can be added via USB 1.1. An internal trackball (IP65 rated) is supplied to aid with on-screen navigation.

Touchscreens

Can be connected via USB ports. Please see page 58 for information on connecting and supported touchscreens.

External Storage Devices

The primary method of storage for the ORB is via USB Memory Sticks (also known as Flash Disks or Mass Storage Devices). These can be connected via the USB 1.1 ports.

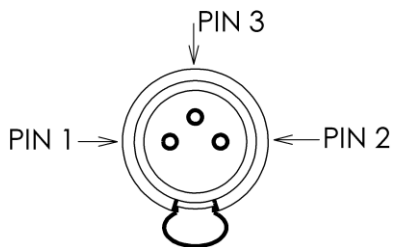
AV Port

The desk also has a 9 pin D-type RS232 – for future use.

Technical Specification

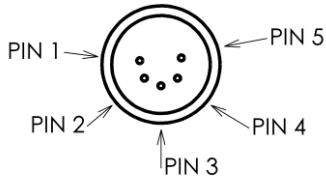
Desk Light

3 pin XLR socket, 12V dimmable under processor control, maximum 5W. Before connecting a lamp, check the polarity matches the desk, especially when using LED based desk lamps which are sensitive to incorrect connectivity and can cause damage to both the lamp and the desk.

Connector	Pin	Description
	1	Not Connected
	2	0V
	3	+12V

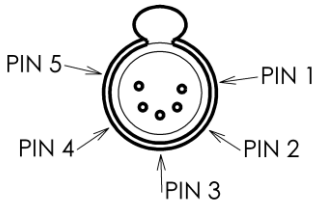
DMX Input

5 pin XLR isolated, with voltage protection. Data on channels 1 - 512 only.

Connector	Pin Number	DMX Output
	1	Signal Ground (0V)
	2	DMX Drive Complement (1-)
	3	DMX Drive True (1+)
	4	Not Connected
	5	Not Connected

DMX Output

Four DMX universes each consisting of 5 pin XLR, isolated, with voltage protection and data output indicator. Data on channels 1 - 512 only. RDM Ready.

Connector	Pin Number	DMX Output
	1	Signal Ground (0V)
	2	DMX Drive Complement (1-)
	3	DMX Drive True (1+)
	4	Not Connected
	5	Not Connected

Kensington Lock



A Kensington style Lock slot is provided on ORB for securing the desk to an operating location, using a standard laptop lock cable.

Operating Environment

- Physical Dimensions : 201mm(H) x 1000mm(W) x 462mm(D)
- At least 100mm should be left clear each side of the air vents on ORB in order to ensure optimum cooling
- Weight : 20kg
- Operating Temperature Range : +5 to +40 °C
- Humidity : 5% to 95% Non condensing

Troubleshooting

No DMX Output?

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

- The DMX Output port green LEDs should be flickering
- The dimmers and fixtures are patched correctly on the desk and that the DMX address and mode on the fixture itself match the settings on the desk
- Desk Setup / Outputs have been configured to output data
- Check the DMX cabling for cable faults, and ensure that a DMX terminator is present at the end of the chain

Fixtures Not Responding?

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

- The dimmers and fixtures are patched correctly on the desk
- The fixtures are not Parked (select the fixtures and use {Unpark} softkey to unpark them.)
- The DMX Output port green LEDs should be flickering
- Desk Setup / Outputs and Network / Art-Net have been configured to output data correctly for your system

No Intensity Output ?

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

- The GRAND MASTER fader is at full
- The BLACKOUT button is off
- Do you have the desk in Blind mode (press BLIND to exit)?

- If the selected fixture(s) have a Shutter parameter, check that the shutter is open.
- Some fixtures also have control of the lamp remotely – try sending the Lamp On Macro command (see page 130) to the fixture, if supported.

Desk Does Not Boot

- Remove all USB storage devices from the desk
- Check Monitor 1 for any error messages or warning information
- Hold SHIFT on a USB keyboard to get to diagnostic mode. Perform a Backup Desk State and email this to Zero 88
- Hold SHIFT on a USB keyboard then clear show data
- If all else fails, reinstall the software as a last resort

Software Installation Problems

- Only the Zero88 memory stick supplied with the desk is guaranteed to work for software updates – other manufacturers of memory sticks may cause boot problems.
- Use the USB connector next to the Ethernet connector on the rear of the desk
- Unplug any other USB devices whilst installing software

Front Panel not responding?

If the front panel does not appear to be working correctly, check the following:

Basic Maintenance

- Is the desk fully booted (check monitor 1 for any errors which may have halted the boot)?
- Do you have the desk in Blind mode (press BLIND to exit)?
- Are the LEDs and LCD screens responding correctly?
- Power on the desk with SETUP held down to enter panel test mode. Hold F9 on an external USB keyboard if holding SETUP on the panel does not work.

Reporting a problem

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

- All version info shown in Desk Information
- Showfile
- debug.dat file if the desk crashed. The desk will prompt you to save this to a USB memory stick on the next boot following a crash.
- Details of what you were doing at the time which memory/sub/palette etc is affected

Support requests can be submitted through our support forum at <http://support.zero88.com/forum/> or via email to support@zero88.com

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

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

If you suspect that your problem is software related, please always check that you are running the latest software version and that all

slave processor firmware is up to date (check in the Desk Information screen – anything highlighted in **RED** is out of date).

Basic Maintenance

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

- The internal backup battery requires replacing every 2-3 years. The console should give you a warning at startup when this battery is running low, however it is good practice to replace it after a couple of years anyway. Please contact a Zero 88 support agent for details on servicing the desk.
- Every month or so, gently wipe down the front panel with a non abrasive, non corrosive surface cleaner applied with a soft cloth. Always exercise care when cleaning over the LCD windows as these are particularly sensitive to abuse and the lacquer which covers these can be damaged through misuse.
- A can of compressed air can be used to clear our dust from the fader tracks and track ball. Do NOT use an oil based lubricant (such as WD-40) on faders as this will cause irreparable damage to your ORB.
- To keep your ORB in optimum condition, after every use, re-fit the Dust Cover supplied. Replacement dust covers are available from your Zero 88 distributor.
- Care should be taken when transporting ORB. Zero 88 are able to supply flight cases for the transportation of their consoles – the shipping crate which ORB 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.
- Always observe the operating environment information in the Technical Specification. If this environment is exceeded, it is likely that damage will occur to your ORB.

Quick Reference Sheet

Saving / Loading

Reset Desk	SETUP [CLEAR OPTIONS] [RESET DESK]
Save Show	SETUP [FILES] [SAVE SHOW]
Load Show	SETUP [FILES] [LOAD SHOW]
Leave Setup	SETUP

Monitor Windows

Output Window	{SHOW OUTPUT WINDOW}
Cue Stack Window	SHIFT + CUE
Submasters Window	SHIFT + SUB
Palette Windows	SHIFT + COLOUR Or SHIFT + BEAMSHAPE etc
Macro Window	SHIFT + MACRO
Group Window	SHIFT + GROUPS
Resize Window	{VIEW} {SIZE}
Close Window	{VIEW} {CLOSE}
Select Window	{VIEW} {SELECT}
Record View	RECORD VIEW <number> ENTER
Recall View	VIEW <number> ENTER
Calibrate Monitor	SETUP [DESK SETUP] [DISPLAYS] [CALIBRATE]

Dimmer Control

Channel at 100%	<fixture no.> FULL
Channel at level	<fixture no.> @ <level> ENTER
Range of channels	<fixture no.> THRU <fixture no.> @
Relative adjustment	Level <fixture no.> @ + 10 ENTER <fixture no.> @ - 30 ENTER
Clear selected fixtures	CLEAR CLEAR
REM DIM	SHIFT + FULL

Fixture Control

Select Fixture	# (fixture no.) ENTER
Home Fixture	HOME
Dimmer control	<Intensity Wheel>
Position control	POSITION <wheels>
Colour control	COLOUR <wheels>
Beamshape control	BEAMSHAPE <wheels>
Home just Position	POSITION 0 ENTER (also COLOUR 0 ENTER, etc)
Untag an attribute	CLEAR + <move wheel>
Untag a parameter	CLEAR + <attribute>
Fan a parameter	SHIFT + <move wheel>
Change Fan mode	SETUP + COLOUR <Shifted Wheel Mode> <select> <OK>

Patching

Add Fixture	SETUP [PATCH] [PATCH WIZARD] <follow wizard>
Edit Fixture	Patch SETUP [PATCH] [EDIT FIXTURES] [PATCH] <edit as required>
Delete Fixture	SETUP [PATCH] [ADD FIXTURES] <select fixtures> <change quantity>

Palettes

Create Auto Palettes	SETUP [PATCH] [AUTO MENUS] [CREATE AUTO PALETTES]
Access a colour palette	COLOUR <enter colour palette no.> ENTER
Access Colour Picker	SHIFT + COLOUR <select colour picker button> ENTER
Store a colour palette	<setup fixtures as required> RECORD COLOUR <enter colour palette number > ENTER
Name a Colour Palette	COLOUR <enter number> NAME <select name> ENTER

Effects – auto palettes must be created first

Apply an effect	<select fixture> EFFECT <effect number> ENTER
Store an effect	<setup an effect> REC EFFECT <enter number> ENTER
Name an effect	EFFECT <enter number> NAME <enter name> / ENTER
Stop an effect	<select fixture> EFFECT <effect number> HOME

Cues

Record a Cue	<select stack> REC CUE <enter cue no> ENTER
Playback a Cue	CUE < enter memory no.> GO
Delete a Cue	<select stack> DEL CUE <enter cue no> ENTER [YES]
Name a Cue	<select stack> CUE<enter cue no> NAME <name> ENTER
Set Fade Times	<select stack> CUE <enter cue no> TIME <enter time> ENTER
Set Delay Times	CUE<enter cue no> TIME <enter time> ENTER
Release Stack	<select stack> RELEASE
Release all stacks	SHIFT + RELEASE

Quick Reference Sheet

Submasters

Record a Submaster		REC SUB <enter sub no.> ENTER
Playback Submaster	a	<via DMX In fader> or SETUP + <select stack> <choose Submaster mode>
Delete Submaster	a	DELETE SUB <enter sub no.> ENTER ENTER
Name Submaster	a	SUB <enter sub no.> NAME <enter name> ENTER
Set Fade Times		SUB <enter sub no.> TIME <enter time> ENTER
Configure DMX In		SETUP [Desk Setup] [Inputs] <Submasters>

Macros

Create Auto Macros		SETUP [PATCH] [AUTO MENUS] [CREATE AUTO MACROS]
View Macros		SHIFT + MACRO
Lamp On Macro		<select fixtures> MACRO <enter macro number - normally 2>
Lamp Off Macro		<select fixtures> MACRO <enter macro number - normally 3>
Reset Macro		<select fixtures> MACRO <enter macro number - normally 1>
Record a Macro		REC MACRO <enter macro number> ENTER <perform task> MACRO
Play a Macro		MACRO <enter macro no.> ENTER
Link a Macro to a Cue		<select cue> <highlight 'Comments' cell> ENTER [MACROS..] <enter macro number> OK OK
Link a Macro to a Submaster		SHIFT + SUB <select sub> <highlight 'Comments' cell> ENTER [MACROS..] <enter macro number> OK OK

Groups

Create Auto Groups		SETUP [PATCH] [AUTO MENUS] [CREATE AUTO GROUPS]
Select a Group		GROUPS <enter group no.> ENTER
Store a Group		<setup fixtures as required> REC GROUP <enter number> ENTER
Name a GROUP		GROUP <enter number> NAME <enter name> ENTER

UDKs

Fixture UDK		<fixture number> RECORD <UDK>
Cue UDK		CUE <number> RECORD <UDK>
Channel UDK	Data	<setup scene> RECORD <UDK>
Macro UDK		MACRO <number> RECORD <UDK>
Palette UDK		COLOUR <number> RECORD <UDK> BEAMSHAPE <number> RECORD <UDK> POSITION <number> RECORD <UDK> EFFECTS <number> RECORD <UDK>
Group UDK		GROUP <number> RECORD <UDK>
Setup UDK		SETUP + <UDK>

Fixture Types supported by ORB

Fixture Library Release 21

<CONVENTIONALS>

Dimmer
Ellipsoidal
Flood
Fresnel
Houselight
Parcan
Pebble Convex
Profile
RGB Dimmer
Softlight

<RELAY>

1 Channel
6 Channel

<SCROLLERS>

1 Chan Scroller
2 Chan Scroller
3 Chan Scroller
4 Chan Scroller
6 Chan Scroller
Lamp+1Ch Scroller
Lamp+2Ch Scroller
Lamp+3Ch Scroller

ABSTRACT

Club Colour
Club Revolution
Club Scan
Colour Flood
Colourchanger CED
Futurescan 1 CE
Futurescan II CE
Futurescan III CE
Futurescan III CED
Galactic Moon IICE

Galactic Star
Gladiator CED
Gladiator Revn
Moon Ray
Moon Scan
Twister 4
VR8 (CE MODE)
VR8 (VR MODE)
VR8R (CE MODE)
VR8R (VR MODE)
VRX Colour VR
VRX Scan (CE)
VRX Scan (VR)

AC LIGHTING

Tour Spot (M1)
Tour Spot (M2)
Tour Spot (M3)
Tour Spot (M4)
Tour Wash (M1)
Tour Wash (M2)
Tour Wash (M3)
Tour Wash (M4)

ACME

iColor 3000 3ch
iColor 3000 4ch
iMove 250
Magic Gobo
Rover
Spot Knight
Spot Queen (Full)
Spot Queen (Split)
Super Scimitar
Supermodel
Winner

ADB

Warp/M
Warp/M+Scroller

ADLITE

Intellite 1
Intellite 2
Intellite Prof
Litebounce II

ALKALITE

Octopod 30
Tracpod TP-81 3ch
Tracpod TP-81 6ch

AMERICAN DJ

Accu Color 250
Accu Roller 250
Accu Spot 250
Accu Spot 575
Accu Wash 250
Active Scan 250
Active Wave 250
Auto Spot 150 Full
Auto Spot 150Split
Color 150 DMX
Color 250 D
Concept 1
Concept 2
Concept Color
Deco 250
DJ Scan 250
DJ Scan/RG
DJ Spot 250
Fab 4
Fascinator
Fire Burst DMX

Marvel

Max
Mighty Scan
Orbitron
Par 64 LED
Pocket Scan
Rainbow 250
RollerTron 250
Scan 250
Scan Tron
Tri Fecta
Ultra Scan 250
XP-3

AMP TOWN

ACC Posi Spot
ControllitePML
ControllitePML(12)
Washlight
WL-HP (8 Bit)
WL-HP (16 Bit)
WL-HP Squarcle

ANOLIS

PowerArc 36 M1
PowerArc 36 M4
PowerArc 144 M1
PowerArc 144 M2

APOGEE

Evo 1200 Spot Hi
Evo 1200 Spot Lo
Locohead 150
Virtual Scan 575
VirtuanScan 1200
VirtuanScan 1200Hi

APOLLO UK

Appendices

Climax	Ledion	Intimidator	Trackscan 250R
Megatron	AYRTON	Kinta	CHROMA Q
Neutron	EasyColor (8)	Lazer Scan	Cascade (Creative)
Paradox	EasyColor (16)	LED Par 200B	Cascade (Library)
Vortex	EyeColor2 (8)	Legend 150R	ColourBlock DB4 M1
APOLLO US	EyeColor2 (16)	Legend 250RX	ColourBlock DB4 M2
Right Arm 8b+Sp+D	Moduled 3	Legend 2000 8bit	ColourBlock DB4 M3
Right Arm 8bit	Moduled 6	Legend 2000 16bit	ColourBlock DB4 M4
Right Arm 8bit +Sp	Moduled 9	Legend 3000 8bit	ColourBlock DB4 M5
Right Arm 8bit+Dim	Moduled 12	Legend 3000 16bit	ColourBlock DB4 M6
Right Arm 16b+Sp+D	B+K	Legend 5000 8bit	ColourBlock DB4 M7
Right Arm 16bit+Sp	Varytec	Legend 5000 16bit	ColourBlock DB4 M8
Roto Q	Varytec 575 Pro	Legend 6000 Wash 8	ColourBlock DB4 M9
Smart Move INmode	BROTHER BROTHER	Legend 6000 Wash16	Rotator 1ch
Smart Move RTmode	EvenLED	Legend 6500 Advanc	Rotator 2ch
Smart Move SMmode	CAMELEON	Legend 6500 Basic	CITY THEATRICAL
ARKAOS	Telescan mark I	Mini Legend	Autoyoke 8-bit
ArKaos Full	Telescan mark III	Mini Legend Wash	Autoyoke 16-bit
ArKaos Maxi	Telescan mark IV	Mushroom DMX	Autoyoke 16-bit +S
ArKaos Tiny	Telescan mark V	Omega 250 C	DMX Iris
Media Master LFull	CAPTURE	Omega I	EFX Plus2
Media Master LMini	Camera	Omega II	EFX Plus2 + Dimmer
Media Master LTiny	CAST	Orbiter RG	CLAY PAKY
Media Master MFull	WYSIWYG Camera	Patriot	Alpha Beam 300 Std
MediaMaster MSmall	CHAUVET	PhotonGeneratorDMX	Alpha Beam 300 Vec
ARTICULITE	3D Magic	Q Mix	Alpha Spot 300 Std
HyperChroma	Aurora DMX	Q Spot 200 Advance	Alpha Spot 300 Vec
MovingSpot 250	Color Tube	Q Spot 200 Basic	Alpha Spot 575 16b
MovingSpot 575	Colorado 3	Q Spot 250	Alpha Spot 575 Ext
MovingWash 250	Colortrack 3	Q Spot 575	Alpha Spot 575 Std
MovingWash 575 8b	DJ Squeeze	Q Spot M1-N	Alpha Spot 700 16b
MovingWash 575 16b	DMX Abyss	Q Spot M1-Y	Alpha Spot 700 Ext
ARTISTIC LICENCE	DMX MegaStrobe	Q Spot M2-Y	Alpha Spot 700 Std
Pixi Power SB (0)	DMX Mushroom	Q Spot M3-Y	Alpha Wash 300 Std
Pixi Power SB (1)	DMX-3F	Q Wash 575	Alpha Wash 300 Vec
Pixi Power SB (2)	Fascination	Sensation	Alpha Wash 575 16b
Pixi Power SB (3)	Imagination	Stage Mover	Alpha Wash 575 Ext
AVR	Insignia	Technoscan 250R	Alpha Wash 575 Std

Appendices

AlphaProfil1200 16V
 AlphaProfil1200 ExV
 AlphaProfil1200 StV
 AlphaProfil1200 16
 AlphaProfil1200 Ex
 AlphaProfil1200 St
 AlphaSpot HPE 300S
 AlphaSpot HPE 300V
 AlphaSpot575HPE16
 AlphaSpot575HPEExt
 AlphaSpot575HPEStd
 AlphaSpot1200 16b
 AlphaSpot1200 16bV
 AlphaSpot1200 Ext
 AlphaSpot1200 ExtV
 AlphaSpot1200 Std
 AlphaSpot1200 StdV
 AlphaSpot1200HPE16
 AlphaSpot1200HPEStd
 AlphaSpot1200HPEExt
 AlphaWash TH 16b
 AlphaWash TH Extn
 AlphaWash TH Std
 AlphaWash1200 16b
 AlphaWash1200 16bV
 AlphaWash1200 Ext
 AlphaWash1200 ExtV
 AlphaWash1200 Std
 AlphaWash1200 StdV
 AlpSpot1200HPE16bV
 AlpSpot1200HPEExtV
 AlpSpot1200HPEStdV
 AlpSpotEasy1200Ext
 AlpSpotEasy1200Std
 AlpSpotEasy120016b
 AlpWashEasy1200Ext
 AlpWashEasy1200Std
 AlpWashEasy120016b

AlpWashHalo1000 16
 AlpWashHalo1000 Ex
 AlpWashHalo1000 Sd
 AlpWashHalo1200Ex
 AlpWashHalo1200ExV
 AlpWashHalo1200Sd
 AlpWashHalo1200SdV
 AlpWashHalo120016
 AlpWashHalo120016V
 Astroscan (9)
 Astroscan (14)
 Atlas
 Bazooka 4C
 Bazooka 6C
 ColorWave 300
 CP Color 150E CMY
 CP Color 150E RGB
 CP Color 400 CMY
 CP Color 400 RGB
 CP Color 575 CMY
 CP Color 575 RGB
 Golden Spot 1200
 GoldenColor1200CMY
 GoldenColor1200RGB
 Goldenscan 1
 Goldenscan 2
 Goldenscan 3
 Goldenscan 3 Exp
 Goldenscan 4
 Goldenscan HPE
 Miniscan
 Miniscan 150
 Miniscan 300
 Miniscan HP3 8
 Miniscan HP3 16
 Miniscan HPE
 Pinscan
 Point

Point In
 Point MH (8bit)
 Point MH (16bit)
 Polycolor
 Rain Spot
 Silverado
 Silverado Alt
 Stage Profile 1200
 Stage Profile SV
 Stage Scan
 StageCol1000 CMY8
 StageCol1000 CMY16
 StageCol1000 RGB8
 StageCol1000 RGB16
 StageCol1200 CMY8
 StageCol1200 CMY16
 StageCol1200 RGB8
 StageCol1200 RGB16
 StageColor 300CMY8
 StageColor 300RGB8
 StageColor300CMY16
 StageColor300RGB16
 StageColor575 8CMY
 StageColor575 8RGB
 StageLight300 8bit
 StageLight300 16bt
 StageZoom1200 CMY8
 StageZoom1200 RGB8
 StageZoom1200CMY16
 StageZoom1200RGB16
 StgColor575 16CMY
 StgColor575 16RGB
 Superscan
 Superscan Zoom 12
 Superscan Zoom 16
 Tiger MRG
 Tiger Multicolor
 Tiger Scan

COEF

Color Disco
 Color Show 200
 Mini 250
 MP 150
 MP 300
 MP 700 Wash EB
 MP 700 Wash MB
 MP 700 Zoom EB
 MP 700 Zoom MB
 MP250 Fresnel(8CH)
 MP250 Fresnel(9CH)
 MP250 Zoom (8CH)
 MP250 Zoom (9CH)
 Perform 200 Disco
 Perform 200 Show
 Perform 1200 Disco
 Performance250 6ch
 Performance250 8ch
 Performance250 9ch
 Sirio
 Sirio 150
 Sirio 1800 6ch
 Sirio 1800 7ch
 Sirio 2500 6ch
 Sirio 2500 7ch
 Sirio Ray 6ch
 Sirio Ray 7ch

COEMAR

Broadway Cyc 2K
 CF 1200 Hard Edge
 CF 1200 Spot
 CF7 Hard Edge M1
 CF7 Hard Edge M2
 CF7 Hard Edge X M1
 CF7 Hard Edge X M2
 CF7 Wash Zoom
 CF7 Wash Zoom X

Appendices

Colour Cyc 250 LX	MM DX Prism 16bit	iColor	XR5 Spot (15ch)
Comet	NAT MM 1200 DX	CONTEST	XR5 Spot (21ch)
Cyc Lite LED	NAT MM 1200/2500	Scn 320	XR5 Wash (16ch)
Digiscan	NAT MM1200/2500DBL	COOLUX	XR7 Spot (8ch)
Fiera 575	NAT PC 1000	Pandora Camera	XR7 Spot (10ch)
Fiera 575 EB	NAT PC 1200/2500	Pandora Gradients	XR7 Spot (16ch)
Fiera 1200	NAT TM 1200 DX	Pandora Layers	XR7 Wash (8ch-8)
Fiera 1200 EB	NAT TM 1200 HMI	CYBERTECH	XR7 Wash (10ch-8)
iCyc 250	NAT TM 2500	Festoon Dimmer	XR7 Wash (10ch-16)
Infinity ACL S 8	Panorama Beam BBI	Festoon Time	XR7 Wash (14ch-8)
Infinity ACL S 16	Panorama Cyc 250	D TEK	XR7 Wash (16ch-16)
Infinity Spot S 8	Panorama Cyc Power	D-Mix	XR8 Spot (16ch)
Infinity Spot S 16	Panorama LED RGB	D-Mix Pro	XR8 Spot (20ch)
Infinity Wash S	ParLED	D-Switch	XR8 Wash (16ch)
iProfile Flex	Pro Spot 150 LX	D-Switch Pro	XR9 Spot (18ch)
iSpot 150	Pro Spot 250 Evo8	DHA	XR9 Spot (26ch)
iSpot 575	Pro Spot 250 Evo16	DBL 6ch	XR250 Spot(8chan)
iSpot 575 EB	Pro Spot 250 LX	DBL 10ch	XR250 Spot(10chan)
iSpot 1200 (8)	Pro Spot 575 LX	DMX 2 LightTalk	XR250 Spot(14chan)
iSpot 1200 (16)	Pro Wash 250 LX	DTS	XR250 Wash(8chan)
iSpot Flex	Pro Wash 575 LX	Arc 250	XR250 Wash(10chan)
iSpot1200 Extreme8	ProSpot 575 MB	Arc 400	XR250 Wash(16chan)
iSpot1200Extreme16	RegoLED	Arc 575 (4ch)	XR700 Spot CMY 22c
iWash 575 EB	Samurai	Arc 575 (8ch)	XR700 Spot CMY 31c
iWash Flex	StripLite LED RGBW	Colour Changer	XR1200 Wash
iWash Halo	Super Cyc	Delta R (15ch)	XR LaserGreen(18ch)
iWash LED	TM DX Prism	EasyScan	XScan 575 (9ch)
KP 12	COLOR KINETICS	Strobe M1	XScan 575 (12ch)
Microscan 2 575MSR	ColorBlaze 48 M1	Strobe M2	XScan 575 (15ch)
Microscan 2 1000AL	ColorBlaze 48 M2	Strobe M3	Z1 (5ch)
Microscan 3 575MSR	ColorBlaze 48 M4	Titan Solo FC 6ch	Z1 (6ch)
Microscan 400	ColorBlaze 48 MA	Titan Solo FC 9ch	Z1 (9ch)
Microscan 400MSR	ColorBlaze 72 M1	Titan Solo RGB10ch	E CUE
Microscan 575	ColorBlaze 72 M2	Titan Solo Wh 10ch	Calypso
Microscan 650AL	ColorBlaze 72 M3	X Image 575	EFFECTS COMPANY
MiniUltraII 200MSD	ColorBlaze 72 M4	XM1200 Spot	CO2Jet
MiniUltraScan250AL	ColorBlaze 72 M6	XR4 Spot (13ch)	ELATION
MM DX Prism 8bit	ColorBlaze 72 MA	XR4 Spot (17ch)	Active Scan 250

Appendices

Active Wave 250	Xcelon 575	TC-250	Gyro 2
CMY Zoom 250	ELEKTRALITE	TC-300	Nebula575/1200 OFF
Colour Spot 250	Elektrik Eye	TF-5	Nebula575/1200 ON
Design LED 36MH 10	mb150	TG-5	Nocturno 2500
Design LED 36MH 12	mm150	TMH-155	PF3603 (8 bit)
Design Spot 250	my150	TR-5	PF3603 (16 bit)
Design Spot 575E	my250	TS-2	Primoscan
Design Wash 250	my250w	TS-5	Promo 2
DesignLED12 Brick6	my575-2	TS-7	Proscan 2
DesignLED12Brick15	my575w	TS-150	Proscan X
Easy Color 8bit	PaintCan	TS-155	Roulette 575
Easy Color 16bit	ELEMENT LABS	TS-255	Roulette 1200
Focus Spot 250	VersaDrive	TW-150	S-IMAGO 2500
HZ-400	ELITE	EVL	Scan 575
Joy 150 (Normal)	ServoColor250 (8)	Colour Pack 250	Scan 1200
Joy 150 (Program)	ServoColor250 (16)	Mini Spot 150 SA	Starlight
Joy 300 (Normal)	ServoColor575 (8)	Mini Spot 150/250	Supercleverscan
Joy 300 (Program)	ServoColor575 (16)	Pro Color	Three Sixty
Krypton81 3ch	ServoSpot 250 (8)	Pro Scan 150/250	FINE ART
Krypton81 6ch	ServoSpot 250 (16)	Pro Spot 250	Fine 400 Spot
Mini Patend	ServoSpot 575 (8)	Pro Spot 575	Fine 400 Wash
Pixel Drive	ServoSpot 575(16)	Pro Strobe TB1500D	Fine 500 Spot
Power Spot 250	ETC	Pro Wash 250	Fine 500 Wash
Power Spot 575	S4 Revolution	Pro Wash 575	Fine 700 Spot
Power Spot 575i	EUROLITE	Spin	Fine 700 Wash
Power Wash 250	LED ML 56	Viva 250S	Fine 1500 Spot 16b
PowerWash250 Basic	LED Par	EXPOLITE	Fine 1500 Spot Ext
Pro Color	LED Par 64	ELP 60 Mode5	Fine 1500 Spot Std
Proton Color	LED Par 64 UV	ELP 60 Mode6	Fine 1500 Wash 16b
Proton Star	LED RGB Mix	FAL	Fine 1500 Wash Ext
Stage Color C	RGB Par (C+B Mode)	360 4 Zoom	Fine 1500 Wash Std
Stage Color CB	RGB Par (Col Mode)	360 Colour	Fine 2000 Spot Pro
Stage Color RGB	RGB Par (RGB Mode)	360 Laser	Fine 4000
Vision Color 250	SuperStrobe	Day Light 1200 EB	Fine 8000
Vision Scan 250	TB-5	DMX Colour Changer	Fine2000 4lite
Vision Scan 575	TC-5	FAL 1000 8bit	Fine2000 Spot
Waterfall 250	TC-150	FAL 1000 16bit	Fine2000 Spot Enh
X Fogger	TC-200	FAL 2000	Fine2000 Video

Appendices

Fine2000 Wash	FOS 1/2/3/4	PHS-700 (8 bit)	SA-5X
Fine3000 Spot	FOS AF	PHS-700 (16 bit)	Shiva (4 Channel)
Hanging LED	FUNKY	PHS-710	Shiva (6 Channel)
Moving Head LED	Daddy-O	PHW 250 (16 Bit)	GENIUS
Project LED	FUTURELIGHT	PS/D-200PR (8)	Micromega
V2000 HPE	Brilliant Flower	PS/D-200PR (16)	Motor Show
V2001	CC-150	PSC-575	Next Scan
V2003	CC-200	PSC-1200	Next Scan RG
V2005	Circle	PSX-575	Nexus
V2008	Cross Beam	RT-150	Nexus 2
V2009	DF-250	RT-240	Nexus 3
V2014	DJ Color 200	SC-240	Quasar
V2018	DJ Head 575 Wash 8	SC-250	Super Quark
V2021	DJ Head 575 Wash16	SC-370	Super Quark MSD250
V2023	DJ Scan 200	SC-375	Topscan
V2024	DJ Scan 250	SC-380	GLITES
V2025 - FS	DJ Scan 600	SC-530 (8 bit)	300S 8bit
V2028 - FS	Duke 1200	SC-530 (16 bit)	300S 16bit
V2029 - FS	Eye-18	SC-740 (8 bit)	Lumiled 8bit
V2031	Eye-36	SC-740 (16 bit)	Lumiled 16bit
V2032	FX-150	SC-780 (16 bit)	GLP
V2033	Genesis	SC-980 (16 bit)	Impression Compres
V2042	H-150	ScanMSD200/H250MK	Impression HiRes
V2048	MH-640 (8 bit)	S	Impression Normal
V2049	MH-640 (16 bit)	Spider	Joy 150
V2080	MH-660 (8 bit)	TML-7	Joy 300
V2081	MH-660 (16 bit)	Voyager	Junior Scan 1
V2082	MH-840 (8 bit)	Wall Light	Junior Scan 2
V2083	MH-840 (16 bit)	G LEC	MAX
V2088	MH-860 (8 bit)	G-Lec	Mighty Scan
V2088P	MH-860 (16 bit)	GENI	MiniPatend
FIVE STAR	Miracle	Mizar 12	MiniStartTec II
Spica 250M 8bit	PCC 1200	Mojo Spin Master I	Patend Light 575
Spica 250M 16bit	PCC-250 CMY	OBY 600 Wash (8)	Patend Light 1200
FLASH BUTRYM	PCC-250 Pro	OBY 600 Wash (16)	Patend Light Basic
FL-575 Spot 8Bit	PHS-200	Oby 2000 Outline	PatendLight1200HMI
FL-575 Spot 16bit	PHS-250 Pro	OBY-3	Pocket Scan
FLY	PHS-260	OBY-5	Startec 575/1200

Appendices

Startec 2000 Ext	Colorway 3ch 2DMX	Color Power	HUBBELL
Startec 2000 ExtII	Colorway 5ch 1DMX	Color Pro	HX Spot
Startube 4	Colorway 5ch 2DMX	Color Pro Enhanced	HX Wash
YPOC 250	Compass	Cyberlight Mode 1	ISOLUTION
YPOC 250 Basic	Daisy In	Cyberlight Mode 2	iColor3
YPOC 250 Color	Daisy On	Cyberlight Mode 3	iColor4
YPOC 250 Color Bas	Daisy Out	DataFlash AF1000	iMove 5w
YPOC 250 L	Danube	DL.2 Global	iMove 250S 8ch
YPOC 250 Pro	Dawn	DL.2 Head	iMove 250S 16ch
YPOC 575 Color	Daze	DL.2 Layer	iMove 250W 8ch
YPOC 575 Pro	Deck	IBeam V2 Set 000	iMove 250W 16ch
YPOC 700	Dice	IBeam V2 Set 010	iMove 575S 8ch
YPOC Color	Dive	Intellabeam 700(7)	iMove 575S 16ch
GREEN HIPPO	Dune	Intellabeam 700(8)	iMove 575SP 8ch
Hippotizer DMXClub	Kaleido 3ch 1DMX	Nebula	iMove 575SP 16ch
Hippotizer V2 Layr	Kaleido 3ch 2DMX	SHOWGUN	iMove 575W 8ch
Hippotizer V2 Mast	Kaleido 5ch 1DMX	Studio Beam (Flat)	iMove 575W 16ch
Hippotizer v3 Layr	Kaleido 5ch 2DMX	Studio Beam (Full)	iRock 4C
Hippotizer v3 Mast	Kolorado 2	Studio Color 250	iRock 7B
Hippotizer v3 PMas	KolorClip 150w	Studio Color 575	JAMES THOMAS
HippotizerStage M1	KolorJet CMY	Studio Command	PixelBrick 22 3
HippotizerStage M2	KolorJet FixedCols	Studio Command H	PixelBrick 22 4
HippotizerStage M3	Kolorstream (CMY)	Studio Spot 250	PixelBrick 22 4+E
HStage Layer 1 M1	Kolorstream (F/C)	Studio Spot 575	PixelBrick 22 12
HStage Layer 1 M2	Parade	Studio Spot 575 Z	PixelBrick 22 24
HStage Layer 1 M3	PopScan 8	Studio Spot 575CMY	PixelBrick 22 24+E
HStage Layer 2 M1	PopScan 16	StudioSpot 575CMYZ	PixelEight 3
HStage Layer 2 M2	Scanvision	Technobeam (Full)	PixelEight 3 Mint
HStage Layer 3 M1	Scanvision 2(8)	Technobeam (Red)	PixelEight 3+E
GRIVEN	Scanvision 2(16)	Technobeam Iris	PixelEight 6 Mint
Acrobat 250FE (Hi)	Super Marine Bronz	Technopro (Full)	PixelEight 6ch
Acrobat 250FE (Lo)	HIGH END SYSTEMS	Technoray (Full)	PixelEight 12 Mint
Acrobat 250PE (Hi)	Catalyst DL.1	Technoray (Red)	PixelEight 12ch
Acrobat 250PE (Lo)	Catalyst DL.1 +Eye	Trackspot	PixelEight 24ch +E
Acrobat 1200 PE	Catalyst Pro 3.2	Trackspot 2 (8)	PixelEight DMX
Acrobat PE 575 (8)	Color Command	Trackspot 2 (9)	PixelEight DMXMint
Acrobat PE575 (16)	Color Command +Dim	x.Spot	PixelLine110 4+E
Colorway 3ch 1DMX	Color Merge	x.Spot Reduced	PixelLine110 20+E

Appendices

PixelLine522 Ef D	VaryColor7 JB Mode	Vortex	Swing II
PixelLine522 Ex35	VaryLED3/84 HOG C	LASER SIM	LOOK SOLUTIONS
PixelLine522 Max1	VaryLED3/84 HOG S	Laser	Unique
PixelLine522 Max2	VaryLED3/84 JB C	LDDE	Viper
PixelLine1044 9	VaryLED3/84 JB S	SpectraWow+	LYTE QUEST
PixelLine1044 27	Varyscan 3 SP + 8C	LE MAITRE	Motorhead
PixelLine1044 Ef D	Varyscan 6	MVS	MAC MA
PixelLine1044 Ex61	Varyscan P6	Stadium Hazer	MAC MA
PixelLine1044 Max1	Varyscan Special	LEADER LIGHT	MAD LIGHTING
PixelLine1044 Max2	Varyscan4 1200HMI	ProNeo Tour RGB	Imp
PixelPar 87 6xRGB	Varyscan4 CP575HMI	ProNeo Tour RGB+D	Itm
PixelPar90 FX E1	Varyscan4EV1200HMI	ProNeo Tour RGBW	MAD Colour 211AP
PixelPar90 FX E1+	Varyscan5MV1200HMI	ProNeo Tour RGBW+D	MAD Colour 211HP
PixelPar90 FX E1E1	VaryScan7	LED	MAD Scan 411AP
PixelPar90 FX E1E2	VaryScanP3	3 Channels - RGB	MAD Scan 411HP
PixelPar90 FX E2	VaryscanSpec Plus	RGB PAR 575	MAD Scan 611ARP
PixelPar90 FX E2+	VScan 3 250MSD (6)	Scarabeo 575	MAD Star 311AP
PixelPar90 FX E2E2	VScan 3 250MSD (8)	LEDJ	MAD Star 311HP
PixelPar90 FXE1E1+	Winner II	Blockbuster 8	MAD Star 511ARP
PixelPar90 FXE1E2+	JEM	Color Burst Sound	Q Colour A/M
PixelPar90 FXE2E2+	AF-1	LED RGB 252	Q Scan A/M
PixelPar90 Hi RGB6	AF-2	LED-56	Q Star A/M
PixelPar90 Lo RGB3	Glaciator	LIGHT CONVERSE	Scan 611A
PixelPar90RGB3+M	Hot 2000	Camera	Star 511A
PixelPar9016bRGB6M	Roadie	LIGHTING INNOVATIO	MARTIN
JB LIGHTING	ZR 22 DMX	CXI	Acrobat
Cartoon Laser	ZR 24/7	Inno 4 Follow Spot	Acrobat (Extended)
JBLED A7 Comp8bt	KINOFLO	Inno Four 36	Atomic 3000 (1 Ch)
JBLED A7 Comp16bt	Koloris	Inno Four EFX	Atomic 3000 (3 Ch)
JBLED A7 St8bt	LAMPO	Inno Four Par	Atomic 3000 (4 Ch)
JBLED A7 St16bt	Columbus 650	Motoryoke ADB 2kW	Atomic Colors (1)
Space Color Laser	Columbus MSR 400RG	MotoryokeP360	Atomic Colors (2)
Twinbeam Laser	Domingo	S4 Par LR	CX-2 (1 Channel)
Vary Color P3 Hog	Gemini	S4 Profile	CX-2 (4 Channel)
Vary Color P3 JB	Ghost	TecLumen	CX-4 (1 Channel)
Varycol Stg1200HMI	Sintesi	LIGHTING TECH	CX-4 (6 Channel)
Varycolor 2000 New	Swift (8 bit)	Caterpillar	CX-10
VaryColor7 Hg Mode	Swift (16 bit)	LITEBEAM	Cyclo 03

Appendices

Cyclo 04	MAC 250+ (Mode 2)	Mac III Extended	MX-4 (6 Channel)
DestroyerX250(1Ch)	MAC 250+ (Mode 3)	Mac TW1 - Basic	MX-4 (7 Channel)
DestroyerX250(5Ch)	MAC 250+ (Mode 4)	Mac TW1 - Enhanced	MX-10
Ego X4	MAC 300 (Mode 1)	Magnum	PAL 1200 (Mode 1)
Ego X5	MAC 300 (Mode 2)	Mania EFX500 M1	PAL 1200 (Mode 2)
Ego X6	MAC 300 (Mode 3)	Mania EFX500 M2	PAL 1200 (Mode 3)
Ext 600 Compact M1	MAC 300 (Mode 4)	Mania EFX600 M1	PAL 1200 (Mode 4)
Ext 600 Compact M2	MAC 300 (Mode 4)	Mania EFX600 M2	PAL 1200E (Mode 1)
Exterior 200	MAC 500 (Mode 1)	Mania EFX600 M2	PAL 1200E (Mode 2)
Exterior 600 (M1)	MAC 500 (Mode 2)	Mania EFX700 M1	PAL 1200E (Mode 3)
Exterior 600 (M2)	MAC 500 (Mode 3)	Mania EFX700 M2	PAL 1200E (Mode 4)
Exterior200 LEDHSI	MAC 500 (Mode 4)	Mania EFX800 M1	Pro 218 (Mode 1)
Exterior200 LEDRGB	MAC 550 (Basic)	Mania EFX800 M2	Pro 218 (Mode 2)
Exterior200LDRGBAW	MAC 550 (Enhanced)	Mania SCX500 (6)	Pro 218 (Mode 3)
Exterior200LEDHSIC	Mac 575 Krypton Ba	Mania SCX500 (8)	Pro 218 Mk1
FiberSource CMY150	Mac 575 Krypton Ex	Mania SCX600 M1	Pro 400 (Mode 1)
FiberSource QFX150	MAC 600 (Mode 1)	Mania SCX600 M2	Pro 400 (Mode 2)
Imager01 M1	MAC 600 (Mode 2)	Mania SCX700 M1	Pro 400 (Mode 3)
Imager01 M2	MAC 600 (Mode 3)	Mania SCX700 M2	Pro 518 (Mode 1)
Imager01 Mirror M1	MAC 600 (Mode 4)	Matrix Controler	Pro 518 (Mode 2)
Imager01 Mirror M2	MAC 600NT (Mode 1)	Maxedia Base	Pro 518 (Mode 3)
Imager04 M1	MAC 600NT (Mode 2)	Maxedia Layer	Pro 918 (Mode 1)
Imager04 M2	MAC 600NT (Mode 3)	Maxedia Output	Pro 918 (Mode 2)
Imager04 Mirror M1	MAC 600NT (Mode 4)	MiniMac Prof (M1)	Pro 918 (Mode 3)
Imager04 Mirror M2	Mac 700 Wash	MiniMac Prof (M2)	Pro 918 (Mode 4)
Imagescan (Mode 1)	Mac 700 Wash Ext	MiniMac Prof (M3)	Pro 1220 XR Mode 1
Imagescan (Mode 2)	MAC 700Profile Bas	MiniMac Prof (M4)	Pro 1220 XR Mode 2
MAC 250 (Mode 1)	MAC 700Profile Enh	MiniMac Wash (M1)	Pro 1220 XR Mode 3
MAC 250 (Mode 2)	MAC 1200 (Mode 1)	MiniMac Wash (M2)	Pro 1220 XR Mode 4
MAC 250 (Mode 3)	MAC 1200 (Mode 2)	MiniMac Wash (M3)	Pro1220 II Full
MAC 250 (Mode 4)	MAC 1200 (Mode 3)	MiniMac Wash (M4)	Pro1220 II Reduced
MAC 250 Entour	MAC 1200 (Mode 4)	MiniMacMaestro(M1)	Pro1220 IIR Full
MAC 250 Entour Enh	MAC 2000 Perf (8)	MiniMacMaestro(M2)	Pro1220 IIR Reduce
MAC 250 Krypton	MAC 2000 Perf (16)	MiniMacMaestro(M3)	Pro1220CMYR Mode 1
MAC 250 Krypton En	MAC 2000 Prof (8)	MiniMacMaestro(M4)	Pro1220CMYR Mode 2
MAC 250 Wash	MAC 2000 Prof (16)	MX-1 (1 Channel)	Pro1220CMYR Mode 3
MAC 250 Wash Ex	MAC 2000 Wash (8)	MX-1 (6 Channel)	Pro1220CMYR Mode 4
MAC 250 Wash Ex	MAC 2000 Wash (16)	MX-1 (7 Channel)	Pro1220RPR Mode 1
MAC 250+ (Mode 1)	Mac III Basic	MX-4 (1 Channel)	

Appendices

Pro1220RPR Mode 2	MILTEC	SeaChanger/CTC	Theatre Colour
Pro1220RPR Mode 3	MT 250 Scan	SeaChanger/Dimmer	Theatre Colour LT
Pro1220RPR Mode 4	MOJO	SeaChanger/Green	Theatre Master
Punisher X250(1Ch)	Mojo Scan 1	SeaChanger/Magenta	Theatre Wash
Punisher X250(6Ch)	Mojo Scan 2	OSIRIS	Tornado
RGB Laser 1.6	MORPHEUS	Isis 575 Spot	XL 250 Extended
Robocolor II (M1)	ColorFader	Isis 575 Wash	XL 250 Short
Robocolor II (M2)	ColorFader + Dim	Neftis 575	XL 250 Standard
Robocolor III (M1)	PanaBeam XR2	Orus 1200 Spot	XL 575 Extended
Robocolor III (M2)	MOVING LED	Seth 250	XL 575 Short
Roboscan 805	Moving LED	PAN COMMAND	XL 575 Standard
Roboscan 812	MOVITEC	Colorfader Mode D	XL 700 Extended
Roboscan 812 (Ext)	SL250 (16 Bit)	PR LIGHTING	XL 700 Short
Roboscan 1020	WL250 8	Chameleon M	XL 700 Standard
RoboZap	WL250 16	Design 150	XL 1200 Spot Exten
smartMac 8bit	MUSHROOM	Laser 100	XL 1200 Spot Short
smartMac 16bit	Moving LED Max	Moon	XL 1200 Spot Stand
Stage Cyclo	Moving LED Min	Nova	XL Framing 1200 Ex
StageBar54 HSI	NJD	Orland Follow	XL Framing 1200 Sh
StageBar54 HSIC	Chroma HX	Orland Scan	XL Framing 1200 St
StageBar54 RGB	Datamoon	Pilot 150 (8 bit)	XL Wash 700 Ext
StageBar54 RGBAW	JL10 (Mode 1)	Pilot 150 (16 bit)	XL Wash 700 Short
Wizard (6 ch)	JL10 (Mode 2)	Pilot 150 GP	XL Wash 700 Std
Wizard (8 ch)	Microbeam 100	Pilot 250	XL Wash 1200 Ext
Wizard Extreme8 ch	Mirage LED (3ch)	Pilot 250 Wash	XL Wash 1200 Short
Wizard Extreme11ch	Mirage LED (MX90)	Pilot 300 (8 bit)	XL Wash 1200 Std
MAX	MX90 Mode	Pilot 300 (16 bit)	PRG
Max 1000 8bit	Predator HX	Pilot 575	EX1 Ambient
Max 1000 16bit	Predator MX	Pilot 575 Wash	EX1 Background
MDG	Quasar HX 4ch	Pilot 1200	EX1 Camera
Atmosphere	Quasar HX 8ch	Pilot 1200 Wash	EX1 Keystone
Ice Fog	Raptor HX 4ch	Pilot Wash(8 bit)	EX1 Object
Max 3000	Spectre (3 Chan)	Pilot Wash(16 bit)	EX1 Object Texture
Max 5000	Spectre (MX90)	Planet	EX1 Spot
METEOR	Super Blitzter	Solo 250	PROEL
XL	NOVA LIGHT	Solo 575	575 CN Tarkus
MICROH	High Ground	Solo 575P	575 SE Dream Light
LED Bar 2	OCEAN OPTICS	Solo 1200	575 Wash

Appendices

PROSOUND	Beam 250 XT	ColorSpot 575AT M4	ColorWash2500EATM1
Smart Scan II	ClrWash575ATZoom 1	ColorSpot575EAT M1	ColorWash2500EATM2
PULSAR	ClrWash575ATZoom 2	ColorSpot575EAT M2	ColorWash2500EATM3
ChromaZone/Bank 6	ClrWash575ATZoom 3	ColorSpot575EAT M3	ColorWash2500EATM4
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Athena	CityColor 300	XS-700 (8bit)	KTM 5.4 (16 Bit)
Easy Touring S	CityColor 400	XS-700 (16bit)	KTM 5.5 (8 Bit)
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Spot575TM(16ch)	VL 1000 A	VL5 Wash (Mode 6)	250 14/2
Vari-Color (2 Ch)	VL 1000 AS	VL5 Wash (Mode 7)	Snark 250
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Wash575TM(8ch)	VL 1000 TS	VL5 Wash (Mode 9)	VDP150 CC4
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Techni Scan DX	VL 2000 Wash (E16)	VL6 Spot (Mode 5)	VISUAL PRODUCTIONS
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TecniScan 150	VL 2000 Wash (S16)	VL6 Spot (Mode 7)	Canvix Normal
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TOPLITE	VL 2500 Spot	VL6B (Mode 6)	WYBRON
Merlin-C	VL 2500 Wash	VL6B (Mode 7)	CXI Index SpdOff
TRITON BLUE	VL 3000 Spot	VL6B (Mode 8)	CXI Index SpdOn
CC 250	VL 3000 Wash	VL6B (Mode 9)	CXI Mix SpeedOff
LED 36 Fixed	VL 3500 Spot	VL6B (Mode 10)	CXI Mix SpeedOn
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- Droplet Stat HSI C
- Droplet Stat RGB
- Droplet Stat RGB C

YING WEI

- D+RGB
- Spot Wash 1200 M1
- Spot Wash 1200 M2
- Spot Wash 1200 M3

ZAP TECHNOLOGY

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