Lighting Application Suite 7.0 SR1

System Manual

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System Manual (original version)

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1   Contents

1 Changes in LAS 7.0

1.1 Programmer

DALI

The DALI Manager integrates DALI ballasts and sensors into the Programmer. See „20 DALI with the LAS".

Sequencer

Emotion FX Sequence: The Sequence properties have been extended to configure the patched pixels overlay mask.

It is possible now to let a video loop automatically. To do so you just have to resize the video item on the timeline. The video will loop until the end of the video item has been reached (does only work with Emotion FX v7.0.3 or above).

Standard Sequence

The standard Sequence can be synchronized to an external timecode source (e. g. SMPTE or MTC). The timecode synchronization has to be enabled in the sequence properties. Here you can also specify a timecode window when the sequence should start playback and when it has to stop.

The sequencer toolbar was extended with a new button (only visible for standard sequences) which allows you to temporarily disable the timecode remote controlling.

e:script

There are several new commands for e:script. See the Advanced Manual for a list of new commands.

Device Manager

The following devices have reached their end of life and are no longer officially supported and have been removed from the device manager: Nano RS-232, Excite (not Excite+).

Bitmap Wizard

The Bitmap Wizard has been extended to use the current Programmer View content as wizard input again. The wizard dialog reworked to use a property grid instead of multiple dialog pages.

Preview Window

The Preview Window was extended with the "Zoom to Fit Window" function.

Action Pad

The function `Assimilate Selected Items...` via the context manu was extended with more parameters like Padding and State Control.

Cuelist Pages

The "Pages Setup" has been moved from the cuelist directory into a separate dialog. The setup is reachable now by a new button located in the "Cuelist Overview".

Patch Import

The patch import can be configured to work additive now instead of clearing the current patch. A combobox was introduced in the "Import Patch" file dialog to select between the new or old behavior. Fixtures that are not touched by the imported patch will stay in the show. Also the import function will no longer reset the "Show Options" during import.

Patch Dialog

The Patch Dialog offers an option now where you can specify into which section the fixtures should be inserted.

Automation

Conditions: The Trigger machine has been extended to support Conditions for every Trigger. A Trigger will only fire if all conditions are met. The setup dialog for a trigger rule has been extended with a configuration page for the Conditions. A new Action "Trigger Activation" allows enabling or disabling all Triggers in one group.

The old "valid from/to" controls have been removed from the Trigger page. Older shows containing such a condition will be converted during showfile loading into the new Condition format and a "Date" condition will be inserted automatically. See „16.3 Triggers" for details.

Some new trigger rules have been added:

• Backup Event Trigger: This event is fired if the backup system changes it's standby state (entering standby mode or leaving standby mode).

• Ethernet Input Trigger: This event is fired if a configured datagram is being received from a UDP or TCP client device driver. The datagram can be entered as ASCII plain text or hexadecimal bytes.

• DALI Event Trigger: This event is fired if a DALI sensor or a configured sensor rule has been changed.

For the ETH2DALI, Labeled Events were introduced. See „Automation with DALI devices" in the chapter „16 Automation" for details.

Copy and paste Actions and Triggers

You can copy and paste Actions and Triggers in the automation dialogs and in the Sequencer for Actions. See „16.11 Copy and paste Triggers and Actions". These functions are also available for Actions in Sequences.

Emotion FX

IMPORTANT: The Emotion FX 7.0 will not work with Programmer versions prior V7.0 correctly. Make sure that you have upgraded both applications to 7.0 or higher!

1.2   Changes in LAS 7.0 SR1

The Service Release for the LAS 7.0 is only an update relase without increased functionality and features.

2   Introduction

2.1   The Lighting Application Suite

Lighting control with its long history has changed over the last decade. From very first steps in the last century over panel controlled variants into the current era of computer controlled lighting. But not only control has changed, today's fixtures[1] with high output LEDs are available at so reasonable prices that even amateur enthusiasts can afford to have sophisticated light systems in theaters, on stage or at home. These lighting systems were only available for professional companies in the past. However, this development has an enormous side effect on lighting control: the installations get more and more complex,

Staatstheater Hamburg, 1957
Source: Wikipedia

expectations from audiences and customers are growing. Only with computer control it is possible to create new effects and new applications. Ever tried to create a color illumination on a 4096 pixels video wall without an application that supports you in setting up the configuration and create myriads of DMX commands? Up-to-date lighting control needs hardware, software and computers. And it needs the right software to do the job effectively.

e:cue released its first version of the Lighting Application Suite (short: LAS) in 2006. The LAS is an application suite to setup a configuration with engines, fixtures and everything else to have a physical representation of the installation. After this you can create illuminations, light shows with effects and much more to run on your selection of fixtures. You can test and debug the whole configuration, you can download the shows to engines like Butler or Butler XT and run them in standalone mode. You can control your whole network, maintain configurations and even update engines with new firmware. The LAS is the central application for creating light shows and controlling complex lighting projects, and to control your network and all devices in it. And the LAS can do a lot more.

2.2   About this book

LAS versions

This manual covers the features and functions of the latest Lighting Application Suite Version, for earlier versions visit www.ecue.com/download, where you also will find the manual for past versions. The Advanced System Manual for LAS stays valid until a new version is announced, it describes mainly the e:script language which is the same for all LAS 5.x versions.

This manual describes the Enterprise Edition of the Lighting Application Suite! Configuration details for specific devices, e.g. Butler XT standalone triggers, are covered in the Setup Manuals for the devices.

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1 A fixture is a lighting device like a LED bar or a LED matrix on a board

Structure

We tried to provide a manual that serves beginners in lighting control as well as experienced and advanced specialists in lighting development. This is not an easy task and the same time dangerous. For those readers not familiar with terms and terminology an explanation may be confusing, for the experienced user boring. However, it is not possible the serve all readers in a perfect way. In the following chapter "How to read" you will find some hints how to use this manual best in your actual situation.

Symbols and notation

The following symbols are used throughout this book:

> The info symbol mark emphasizes a certain aspect, something that needs special attention. Or it marks something avoid.

> The lamp symbol shows an idea, something that is not obvious. Can also be a tip or a trick or something that is not documented explicitly.

Menu entries or commands in windows or dialogs are set in a different typeset like **Save** or **Open As**. Expressions or names to denote a function or a feature are set in bold, like **Device Manager**. If expressions are written with beginning capital letters, they are used in the special meaning for this application. So Main Window is not just the main window, but the Main Window of the LAS, with a relevant difference to Status Window or Content View. All screen shots and diagrams relate to Lighting Application Suite Version 5.3.

3 How to use this manual

3.1 Previous knowledge

You should have some basic knowledge about lighting technology, you also should be familiar with Microsoft® Windows® or other PC operating systems. General common technologies, protocols or interfaces as TCP/IP, RS-232 or MIDI are assumed as known. Expressions like DMX, RGB or Ethernet should not sound like rocket science to you.

Expressions that are not common knowledge or are sometimes used in different ways or are special expressions in the e:cue environment will be explained in Addendum A at the end of this manual.

3.2 Levels

If you just begin with computer controlled lighting and you had never to do with lighting programs before you should read on and begin with the very first chapters. If you already worked with lighting consoles or if you used another lighting control program before you may skip the first two chapters. In the addendum at the end of this book you will find a table of common terms and expressions used here.

4 About the LAS

4.1 Objectives

The LAS serves as a host-oriented application for

- setting up the device and network configuration with all involved engines, fixtures, user terminals and interfaces, create a logical representation of the installation
- creating light shows with effects, video to pixel translations or lighting scenarios to download to engines for standalone use (e.g. to an e:cue Butler XT)
- playing videos or other media files on fixtures or video walls
- testing and verification of shows and lighting applications
- creating user-specific programs
- central control and interface instance for huge and complex lighting applications

4.2 Usage scenarios

The LAS can be used in two scenarios. In Online Mode the LAS controls all fixtures and engines directly, sends commands and receives control requests from user terminals or interfaces. In this mode the Action Pad, a window-oriented GUI with control elements like buttons and faders, has a very special role. This Action Pad is not only usable on the LAS host directly but also remote via HTTP on PCs, iPhones and Android devices.

The LAS is also used as a development station to create lighting applications or scenarios then transferred to standalone-capable engines like the Butler XT. After the scenarios are tested and verified the engine runs the lighting application, disconnected from the LAS.

4.3 Third party products

As the server hardware for the Lighting Application Suite is PC-based, many other open protocols and interfaces are support. Examples are MIDI, RS-232 or Art-Net. With the e:cue LCE server also DMX devices can be connected to the server without use of additional DMX interfaces. As fixtures not only Traxon products are supported, but many other lighting devices from various vendors.

Besides standard interfaces some interfaces from other vendors are supported, like the Moxa 12xx and 22xx digital/analog converters.

The Library Editor, an editor for the Fixture Library, allows you to create fixtures that have not the general channel assignments.

Please remember that the use of non-e:cue devices may require a certain edition of the Lighting Application Suite or additional credits. If in doubt please contact your e:cue distributor.

> The LAS supports devices with standard, open interfaces. Special interfaces with propriety interfaces and drivers are not supported!

5   e:net - the e:cue network

The backbone for communication between the server with Programmer, Patchelor and other applications is the e:net. The entire structure uses three network types, e:net, e:bus and DMX. All networks are based on standards like Ethernet or RS-485, including DMX.

As a third network, that should be mentioned, e:pix is used with the Video Micro Converter and certain fixtures that need high-speed communication with many channels.
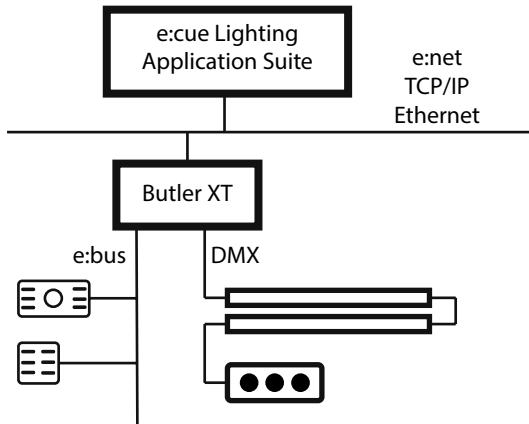
5.1   e:net

e:net is a communication protocol that uses TCP and IP as transport protocols and Ethernet as network layer, so it is comparable to FTP or HTTP. e:net realizes the data exchange with other e:net-capable devices like Butler XT or e:node. e:net can run in any Ethernet environment, however high data traffic in office networks may interfere when running complex animations. For dedicated lighting applications the engines and the e:net server should get a separated network segment, independent from other subsystems.

5.2   e:bus

The e:bus is a two-wire, bidirectional serial bus network. It supports bus, tree and star configurations, a bus topology allows the largest cable length of 400 meters. It is a self-organizing network and polarity-independent, all e:bus devices adjust their settings automatically. Another great advantage of the e:bus is that it wears data and supply voltage, so an e:bus master Butler XT supplies power to all e:bus clients (up to 1000 mA). Up to eight devices can share one e:bus network segment, address distribution is also automated.
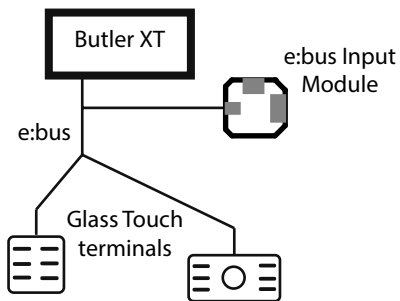
5.3   e:pix

e:pix is a protocol based on DMX, developed by e:cue, for an improved communication between the VMC and Traxon e:pix-ready LED products. e:pix carries a maximum of 4096 channels (DMX: 512) per line with a transfer rate of 1Mbit/s. It uses standard RJ45 cables.

5.4   Modes, layers and messages

There are many possible configurations how lighting application are set up. In most cases there are servers used to design and program shows and control structures (e.g. an LCE), engines to execute or translate commands and sequences (e.g. Butler XT), user terminals to build an interface between applications and users (e.g. Glass Touch terminals), interfaces to translate protocols and networks (DMX2DALI or e:bus Input Module), and in the end fixtures or any other lighting device. Any lighting application can consist of all these elements, or only few. The smallest configuration could be a Butler XT and only some LED liners. So several **modes** are possible.
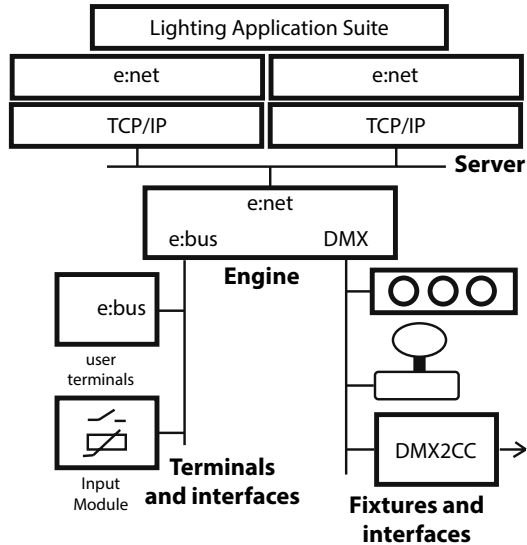
5.5   Online mode

A configuration with a server as main actor is called an online application. The main controlling element here is the LAS, it sends commands to and receives triggers from engines or user terminals, sends DMX values directly or via engines to fixtures. The server is the target and source of all activities. An engine like a Butler acts as a kind of interface only, it receives DMX commands from the server via e:net and translates them to an DMX interface going to the fixtures. This is a one-way communication, the fixtures do not tell if they received the commands.

User terminals create e:bus messages, if a user presses a key or does something else on the terminal. The engine receives this e:bus message and sends it as a so called key message via e:net to the server, this triggers the Programmer in the LAS and the assigned action gets executed. In this scenario the engine is only a kind of interface or translator, it does not act in the sense of controlling. However, the e:bus is bidirectional, messages are created and sent to the server, but also the server may send messages to interfaces or terminals. This is a typical use case for medium to very complex lighting applications. There may be dozens of engines and hundreds of DMX channels to fixtures. Not to forget many user terminals and interfaces creating a connection to other protocol universes (DALI, sensors, Building Management Systems, dry contacts, dimmers), either in the e:bus or in the DMX world.

5.6   Standalone mode

In standalone mode there is no server present, the engines are the controlling and executing elements. The server was necessary to create the show and sequences, triggers and actions that make up the lighting application. After the shows were downloaded to the engines and the server removed, the engines take over control. Now key messages from terminals or messages from interfaces are received by the engines (there may be more than one, synchronized by one master). And the engine sends the DMX commands to the fixtures.

There is one great difference between online and standalone mode to be aware of. The LAS is able to do a lot more than an engine. The LAS can

generate completely dynamic sequences, with e:script, wizards or media to DMX translation, either video or audio. Engines can only play pre-stored sequences, react to key messages by starting or stopping sequences. Triggers for a change of activities can be key messages, but also triggers from the realtime clock or closing/opening dry contacts connected to the engine. Even this may sound very limited it offers many possibilities for shows and lighting applications.
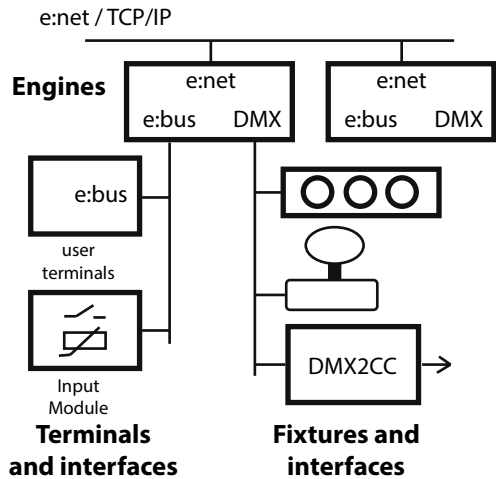
5.7   LAS remote access

The LCE already has an integrated touchscreen. Control for the LCE, and any other PC, is also possible remote network devised. The LAS can be mirrored onto iPhone or iPad, or onto PCs/netbooks/notebooks. In this way the LAS is directly controllable with remote devices, and the user interface can be completely customized.

Of course, this network mode and the online mode can be combined, as the LAS with the controlling function, can now control engines again. Only the user interface for the LAS is now external.
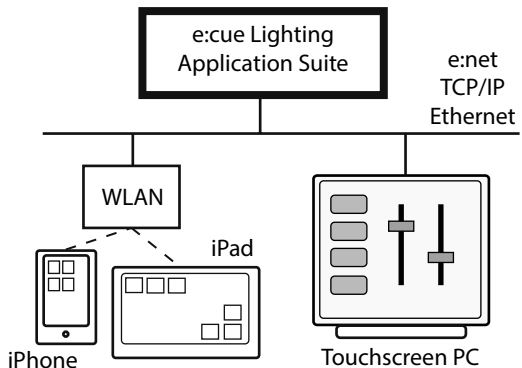
6   Installation

6.1   System requirements

Required:

> CPU with SSE2 support (AMD® Athlon64® or higher, Intel® Pentium®
> 4 or higher), e.g.: Pentium 4 3.2 Ghz, Pentium D 2.66 Ghz or
> AMD Athlon 64 3000+
> Microsoft® Windows® Vista® Professional SP1 32bit or 64bit,
> Windows® 7 Professional 32bit or 64bit
> DirectX9.0c (since 5.3 included in Package)
> 4 GB Memory
> 200 MB disk space
> DirectX9-compatible graphics adapter with 128 MB RAM
> (for Emotion FX) and Pixel Shader 2.0b support,
> 1024x768 minimum display resolution,
> e.g.: 128 MB PCIe NVIDIA® GeForce® 6600 GT, ATI Radeon® x1950
> FLASH supporting web browser

Recommended:

> Dual Core 3Ghz Processor e.g.: Intel® Core i7®-950,
> AMD® Phenom® II x4
> Windows® 7 Professional 32bit or 64bit
> 4 GB Memory
> 200 MB disk space
> DirectX9-compatible graphics adapter with 512 MB RAM,
> 1920x1080 display resolution,
> e.g.: 512 MB NVIDIA® GeForce® 8800 GTX, ATI Radeon® HD 3870
> Additional network adapter

6.2   Versions and upgrades

The Lighting Application Suite is available in several versions. The Standard Edition allows basic creation of shows including effects and network maintenance. This version is sufficient when you begin or if you want to get an idea what the application does. Non-e:cue devices are not supported.

The Premium Edition provides additionally an Audio DSP and e:script editing. With the Premium Edition virtually unlimited DMX universes are supported. The Premium Edition includes one Automation Credit. The Enterprise Edition has all these features, 10 Automation Credits and one DMX credit for connecting Art-Net or KiNet DMX controllers.

All Editions except the Standard Edition can add additional credits online.

For running other editions than the Standard Edition a USB licensing dongle is required. Only the Standard Edition runs without a dongle, all others require a dongle to run the application. The LCE and LCEfx versions are only available with the Lighting Control Engines.

The following table shows the different dongle versions and upgrade options that are available.

7   LAS version overview

7.1   Non LCE Editions

Feature	Standard	Premium	Enterprise
DMX Universes allowed	4	Max	Max
Automation Credits	-	1	10
DMX Credits	-	-	1
Butler Upload	-	Yes	Yes
Trigger	-	Yes	Yes
Media Player	-	Yes	Yes
Scripting (e:script)	-	Yes	Yes
Timeline	Yes	Yes	Yes
Credit Upgrades	-	Yes	Yes
Emotion FX	-	Demo	Demo

7.2

7.3   LCE Editions

Feature	LCE mx	LCE2 Ultimate	LCE2 Ultimate fx
DMX Universes Allowed	16	Max	Max
Automation Credits	99	99	99
DMX Credits	1	1	1
Butler Upload	Yes	Yes	Yes
Trigger	Yes	Yes	Yes
Media Player	Yes	Yes	Yes
Scripting	Yes	Yes	Yes
Timeline	Yes	Yes	Yes
Credit Upgrades	Yes	Yes	Yes
Emotion FX	Demo	Demo	Full

Note:

• Emotion FX running in demo mode means that sequences are stamped with an e:cue watermark. Only LCE2 Ultimate fx runs an unlimited Emotion FX version.

8   The LAS Credits system

8.1   Credits as connection extensions

The Lighting Application Suite allows the use of external systems and interfaces over open and standard protocols. All devices, if DMX engines or user terminals from e:cue or Traxon, do not require credits and the number of connections is practically unlimited. All other devices, drivers and system connections consume credits and the maximum number so is limited. You can extend your credits by the online credits extension function in the Programmer.

Drivers and connections that require credits are marked with a dollar symbol ($) in the Device Manager. If the credits range is exhausted, an error message is displayed.

8.2   DMX Credits

DMX Credits are consumed by external DMX output devices not from the e:cue or Traxon product range, e. g. KiNet and Art-Net devices. One credit is used for one physical DMX universe. The IP addresses used do not count, only the number of universes.

8.3   Automation Credits

One Automation Credit is consumed per driver or per IP address of the connection. This can be

• A driver for a non-e:cue device with a unique
   IP address like a Moxa IO product or an external MIDI interface. The LCE-internal MIDI interface does not need credits as it is an e:cue product or a part of it.

• Also an RS-232 connection consumes one credit.

• An external client via HTTP, either as a HTTP web client or via the HTTP interface. Every client with an own IP address consumes one credit. As an example two Mobile Action Pads plus one PC with a web browser will need three Automation Credits.

• Connections over the TCP, UDP or OSC interfaces in e:script with a unique IP address.

As a general rule: external interfaces use credits, e:cue and Traxon interfaces and products do not.
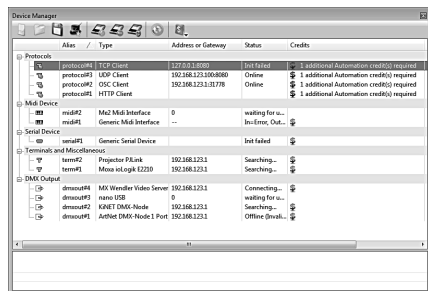
9   Installation steps

Before installation please note:

> (i) If you used the LAS before and made changes to the fixture library, make a backup of the fixture library before installing or your changes will be lost! If you have an e:cue dongle, please do not plug it in until you finished the HASP driver installation! You can safely install version 5.x without overwriting version 3.8 (or earlier).

- Insert the e:cue CD. If the installation routine does not start automatically, launch "AutorunMenu. exe" from the installation CD in the Windows Explorer.
- In the upcoming menu, select your preferred language and click on "Software". Then start the package installer.
- In the package installer, choose the desired applications and install them one after another by pressing "Install" in the particular row.

After the installation of the Programmer the system has to be restarted to enable certain drivers and the licensing system.

9.1   Connecting the Dongle

Before you can use the dongle, you have to install the HASP dongle driver. This driver is provided in the e:cue Package Installer under "HASP SRM USB Dongle Driver Installer for e:cue Programmer and UFGM". You can plug in the dongle after the installation has finished.

If the dongle driver has been installed properly, the LED inside the dongle will switch on. If it does not light up, the driver was not installed properly. If you plugged the dongle before you installed the drivers, your PC will possibly need a reboot before it accepts the dongle. However you can also try just to unplug it, wait a few seconds, and plug it back in.

9.2   Compatibility with older versions

New LAS versions are fully compatible with older LAS versions but not vice versa. Dongles since LAS version 5.2 can be used with following versions except for the LCEfx version. Patch files since Patchelor 5.2 can be used in newer versions without modifications.

9.3   Manual updates

This manual will be updated continuously. To get a new version visit

<p align="center">http://www.traxontechnologies.com/</p>

Retrieve the new version and replace the existing manual (usually) at

<p align="center">C:\Program Files\ecue\Programmer Vx.x\
Resources\SystemManuals\system_manual_lasxx.pdf</p>

9.4   File associations

Since LAS 5.3 the default Windows file association for *.shw files (Programmer show files) is changed if the installation runs with administrator permissions. Now double-clicking .shw files shows are opened with the Programmer.

9.5   Dongle upgrade

Some functions in the Lighting Application Suite, like Automation, Art-Net devices or connection of non-e:cue devices, are available as credits. The LAS Enterprise Edition for example has five credits for non-e:cue devices, if you want to connect more, you have to upgrade your credits for this area.

Since LAS 5.5 this is possible via the menu commands `Extras | Dongle Upgrade`. The procedure to upgrade credits on your dongle, where the credits are stored, is as follows:

- Select `Extras | Dongle Upgrade | Generate Upgrade Order ID` in the Programmer.
- Enter the wanted credit upgrades and your order data.
- After closing the dialog, the order data and message text will be copied to Window's clipboard.
- Create a new email message to your e:cue or Traxon distributor, press `Ctrl + V` to paste the created order message and codes to the message body to the mail and send it to your distributor.

After the order has been processed, you will receive an upgrade file via email. Save this file to your harddisk, e. g. to your `my Documents` directory.

- Select `Extras | Dongle Upgrade | Upgrade Dongle From File` in the Programmer.
- In the file dialog, select the received upgrade file.

The upgrades are saved to your dongle now.

Note that you always order an upgrade and install the upgrade file before starting any new order. Do not mix ordering and installing upgrades. Before an upgrade is made, the Programmer checks the state of the dongle during the ordering process.

Order numbers for LAS upgrades

104851040000	Lighting Application Suite Automation Credit
104851050000	For one additional E-DMX universe (Art-Net, KiNet)
104850980000	For 8 additional E-DMX universes
104851000000	For 16 additional E-DMX universes
104851010000	For 32 additional E-DMX universes
104851020000	For 64 additional E-DMX universes
104851030000	For 128 additional E-DMX universes

10   Workflow in the Lighting Application Suite

If you are not already familiar with the LAS, it is important to understand the workflow and how to use the various tools of the LAS. We will begin with a not too simpel example and create a setup and a little show for a lighting scenario.

Let us assume we want to create an eye catcher for a store, or for your living room. What we will use as fixtures are 8 pixel add-on boards (8PXL RGB) from the Traxon line. These are RGB LED stripes, mostly used to enlarge the 64 pixel boards. Here we will use them as separate fixture lines, eight of them. We place them on a virtual surface and get this installation:

Our installation now has 8 x 8 LEDS, each with three channels for R, G and B, giving 192 used DMX addresses. So one e:cue Butler would be enough to control the installation, leaving enough room for even more fixtures to be added later. This Butler engine will not only be used for interfacing the LED stripes, it will also store the shows later and run the show.

The steps for realizing shows for our installation will be:

• Create a physical model of fixtures and placement with the Patchelor, resulting in a so called patchfile.

• Use the Programmer, setup the network and engines and interfaces

• Import the patchfile in the Programmer to make the configuration known.

• Logically connect the fixtures to the engine.

• Create and test your shows.

• Export the shows to the engine, here Butler Classic.

• Run the show online or standalone, without LAS.

10.1   Step 1: Create an installation image, patching

The first thing we will do, is to model this configuration for later use, when creating the shows. This modelling is done with the Patchelor. In the Patchelor, you can create a model of the installation, including wiring and physical placement. Very important is the definition of the covered space. Then you will create a so called patchfile. This not only contains the placement and physical layout of the installation, but also the addressing scheme and the sizes of the area. Many tools, used later in the Programmer, refer to these data and values. So for every more or less complex installation you will use the Patchelor to create a model of the installation, a patchfile. For our installation this might look like this:

The black stripes are our 8PXL boards, the line in the middle is the DMX wiring. The right window shows the dimensions and other parameters of the configuration. This configuration is now saved to a Patchelor file, here named 8x3pxl_rgb.pdoc, additionally exported via `System Menu | Export As ... | Extended Patch File (*.patx)` and saved in a directory for later use. The green DMX configuration, of course, is different from the real wiring, which would look like this:
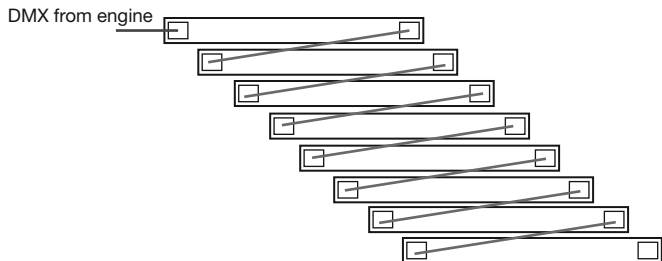
So we start the Programmer now to setup the network and work with the created patch.

10.2 Step 2: Network setup, patch import

The created patchfile is the main input for the Programmer, it contains all necessary information to build shows, to map videos on this very special area of fixtures.

After starting the Programmer as a first action we connect the Butler to the programming system and configure the network, which means to assign a unique and valid IP address to the Butler. The Device Manager and the Device Wizard in the Device Manager make it easy to add engines and output devices for the Programmer. The basic engine parameters are set in the upper left small window of the Programmer, selecting the `Network` tab, when the engine is physically connected to the Programmer, but the driver in not active.

We start the Device Manager - the smart phone icon in the main icon menu - and run a network scan with the Automatic Setup Wizard - the hat icon - to find output engines.
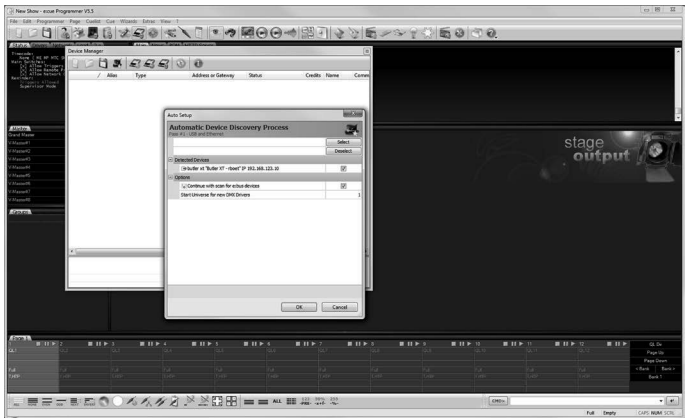
We could also set parameters for the Butler here. We add the Butler as our standard DMX output device for DMX universes 1 and 2 ...
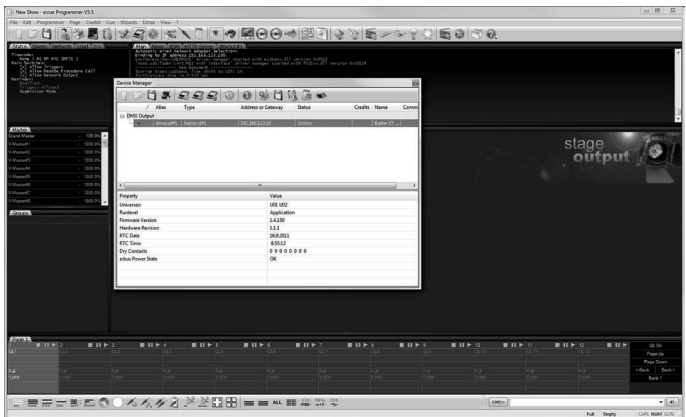
The Butler is now connected to the Programmer as DMX output device. As DMX is a unidirectional stream, the Butler is not aware if the fixtures are really connected. All following actions can be done without fixtures, the Preview Window can be used instead to see the created shows.

10.3   Step 3: Creating shows

After the network and engine are configured properly, we can import the patchfile created with the Patchelor via menu entries `File | Import | Patch` ... Now the Programmer knows which fixtures are connected and also knows the physical layout taken from the patchfile. We can see this opening the Preview Window, either with the eye icon or via the main menu `View | Preview` ...

When importing a patch, you can select wether available fixtures are cleared or kept (overwrite or overlay the fixtures).
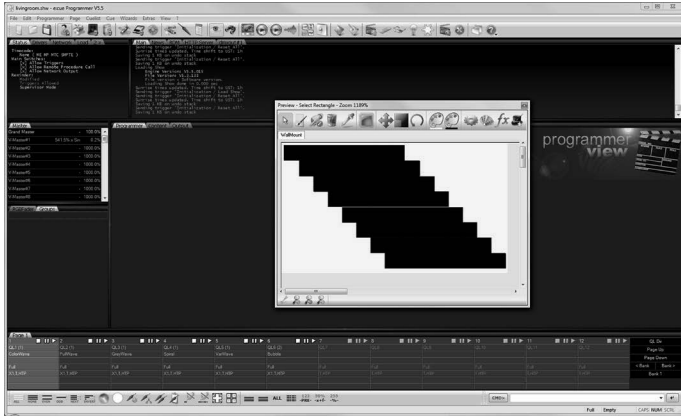
The Preview Window not only shows what will happen with the fixtures, you can also see that there is right the layout we created with the Patchelor. As a simple example we create some shows with the e:script Wizard, we use `Wizards | e:script Wizard | Generate full shows` and 12 cuelists will be supplied with ready-made shows. Do not forget to clear the Programmer View before. Playing these cuelists the Preview Window shows how the output on the fixtures would look like:
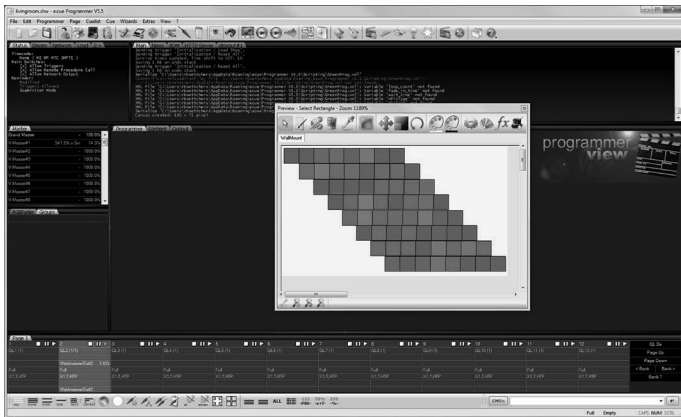
The Preview Window is a great help to test the configuration, check layouts and view shows created.

Previewing with Imagine

There is an even more helpful program in the LAS to preview the show and the installation: Imagine. With Imagine you can even show 3D layouts of fixtures, you can change the background, so in the end it looks very close to the real installation. Imagine is not very helpful here in our example, as the fixture area is rather small. However, in bigger installations Imagine is of great help and provides a realistic preview of the shows.

Imagine is part of the Lighting Application Suite and a separate application. Start Imagine from your desktop, open the Device Manager and add a driver for `3D Visualiser | Imagine`. Imagine will get online and the Programmer can output data to Imagine.
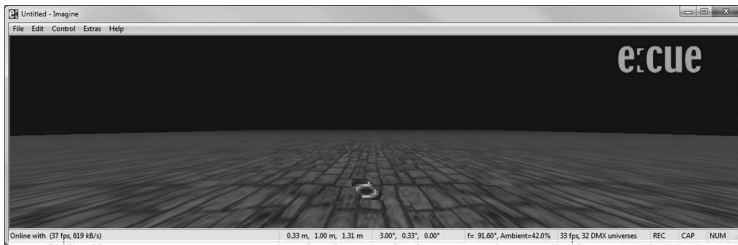
10.4 Step 4: Export shows to the Butler

The last step would be an export of the shows to the Butler for standalone operation. The Export To Device Wizard sends the cuelists to the Butler, with some options which shows are exported.
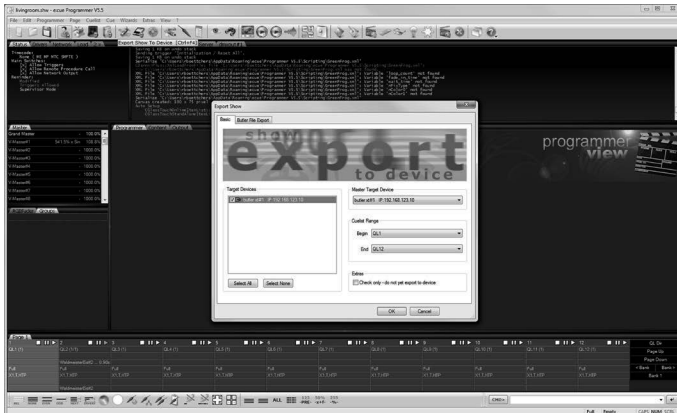
After exporting the cuelists to the Butler, we could disconnect the Butler from the network and the Programmer, we could connect the Butler's DMX output to our LED stripes and run the shows in standalone mode, without the Programmer.

You should not forget to save the show in the Programmer, for later changes or corrections.

10.5 Summary

The workflow with Patchelor and Programmer is rather common for most projects. Create a logical model of the configuration, either with some small fixtures or for the complete outside wall of a department store. Create shows, or map videos to the area, use the Sequencer to create more complex shows.

These shows, depending on the configuration and project conditions, will then run in the Programmer and DMX output is sent with engines like Butler or Butler XT to the fixtures. Or shows are exported as cuelists and stored in an engine for standalone mode.

The next degree of complexity comes with triggers and actions. Some examples:

• Use daytime events like sunrise or sunset to play different shows.

• Use Glass Touch terminals or dry contacts on the Butler XT to control shows.

• Send RS-232 from Butler XT or MIDI from the Programmer to control external devices.

• Use an e:bus Input Module and a motion sensor to control cuelists if somebody approaches, connect the e:bus Input Module via e:bus to the Butler XT.

• Use the Action Pad as GUI to control shows.

• Use Versatile Masters to control show speed or intensity, even effect speed.

Following a workflow like the one shown here, is the basic approach. Assign fixtures and layout, create shows and cuelists, setup control and interfaces and use the Preview Window or Imagine to design and test. Triggers help to automate and adapt. The Live FX dialog creates effects and patterns. With Emotion FX you can create sequences with videos, images and text, apply effects to images or videos and send them to a display or to a Video Micro Controller to use a huge LED mesh for display.

11   The user interface

11.1   Main window

After starting the Lighting Application Suite you will see the following window in all editions:
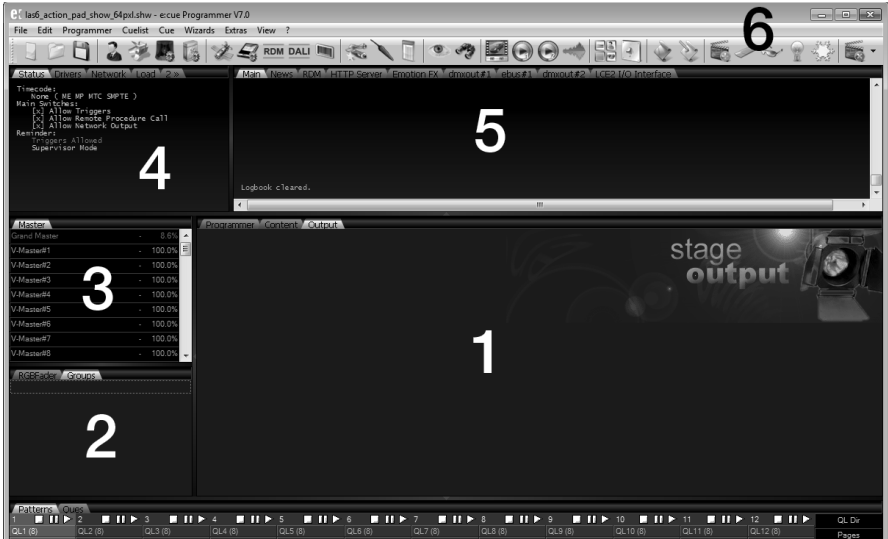
These are the main elements in the LAS user interface, we will go into more detail later:

1   The Main Window - Programmer view, content view and stage output - here you build the configuration, assign effects, build the configuration ("to patch"), preview the results and many more functions and views. The three areas are accessible via tabs on the upper border.

2   Fixtures and Groups Window - the fixtures in your configuration, in some cases put together in groups for easier handling.

3   The Master Window - Masters controlling parameters like speed or intensity, similar to faders on a mixing console.

4   The Status Window - all status, driver, network and system information and control is put together here.

5   The Logbook - all relevant information about things happening in the network and in the Programmer. There may be several tabs for additional drivers or e:net.

6   The most important functions are accessible in the menu bar with icons.

7   Cuelists and pages - a list of the available cuelists. The cuelists can be modified and setup here.

There are some more components in the Main Window like the status bar or the secondary icon menu. We will have a closer look at them when we talk about the functions that are available in the menus.

11.2   Adapting the application layout

The size of all windows can be changes at the single borders by moving the mouse cursor over the borders and dragging them. The complete window layout is editable via the top menu, `View` / `Main Screen Setup...`

The window description as an image in the Programmer or Content View can be made visible or invisible with the icon in the bottom menu, see next page.

The complete setup of the user interface and its behavior can be modified in `Extras` | `Application Options | Basic`:

• Show splash screen: Show the e:cue logo when Programmer starts.

• Reload last saved show: Load the last saved show when Programmer starts.

• Start Application when Windows starts: Automatically start the Programmer when Windows starts. Only available for Elements & Enterprise Editions. If the LAS is the control of the lighting scenario, e.g. via an ActionPad, this option will be selected.

• Don't save anything on close, just close: This disables the dialogue on application exit asking if changes in the show should be saved.

• Always ask before closing the application: This prevents you from accidentally closing the program during a live show.

• Minimize to System Tray: Instead of minimizing to the Taskbar, the Programmer will only be reduced to a System Tray Icon when minimized.

• Auto Save: You can enter the interval at which you would like your show to be saved automatically (in minutes). To disable auto backup enter zero. It is recommended to disable this feature during a live show.

In case you want to restore the original window layout, select `View | Reset Window Layout` to restore the original settings.

11.3 Keyboard/mouse handling and shortcuts

In most cases the usual Windows® shortcuts for menu functions are also usable in the Lighting Application Suite. Ctrl-C copies an item, Ctrl-V pastes the copied item, Ctrl-X copies and cuts the item. When selecting items in a dialog or in a list keeping Ctrl pressed marks al clicked items as selected, keeping Shift pressed selects all items between the first and the last selected. In many views, e.g. fixtures in the Programmer view, you can select elements by drawing a rectangle with a pressed left mouse button.

Another feature is available in dialogs: placing the cursor in a numeric field, the mouse wheel can be used to increase or decrease the value.

Many dialogs and functions can be called by double-clicking on items like cuelists or cues or fixtures. Not each and every possibility is documented here, sometimes it is just worth trying out.

11.4 Application options in the Mini Toolbar

The Mini Toolbar at the bottom of the main window has some icon commands for additional display options:

HEAD	Show the header logos for Programmer View, Output View etc.
MAN	Show the manufacturer names in Programmer View.
NONE	Hide all channels.
123 -PRE-	Hide the Preset names (see Preset chapter)
50% -x+f-	Show the decoded range value.
255 -%-	Hide percent value, show real DMX value instead.

12   Basic setup and programming

12.1   Start small

We will begin with a very simple configuration and only few devices to approach concepts, basic functions and features of the Programmer. Even if this is not really a useful and realistic case it shows some important steps how to begin.
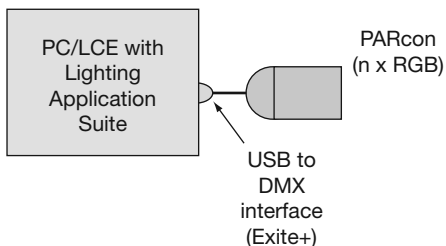
A standard par with 56 RGB LEDs is connected to a PC with a USB2DMX interface (Excite+). So we have everything to create a very basic lighting application. Those basic RGB devices are called RGBFaders in the Lighting Application Suite.

We start the LAS and the first action we have do is to **patch** the configuration. A patch is the internal representation, the devices that make up our lighting scenario and how they are connected and distributed. The first function we will use is the Device Manager, which helps to select engines and/or interfaces.

Start the Device Manager with the smartphone icon in the top icon menu. At first the list is empty, there are no assigned devices just after starting the Programmer.

The Device Manager dialog serves as a central point in maintaining your input and output devices, as well as configuring and setting them up. At the moment no devices are displayed, we have to add them first. The hat icon in the top menu is the Automatic Setup Wizard, one of the many wizards in the Programmer. Pressing this icon starts a scan over all ports and interfaces and discovers all devices available. Here only the Excite+ is available. So press the little hat icon and the Excite+ will be discovered.
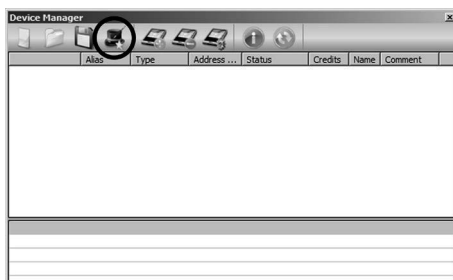
It would also be possible to add drivers manually, this can be helpful for simulation configurations, or to develop and test shows and configurations while the real devices are not available.

Now we can see the Excite+, it is selected automatically. Ignore the additional lines at the moment, they are meant for engines like the Butler XT, an additional e:bus scan would discover user terminals or interfaces connected via e:bus to the Butler XT.

After pressing OK the Excite+ is known in our patch as an output device.

The Exite+ is a very simple DMX to USB interface, but it provides a DMX input and output without necessity to have an Ethernet network for connecting fixtures or engines.
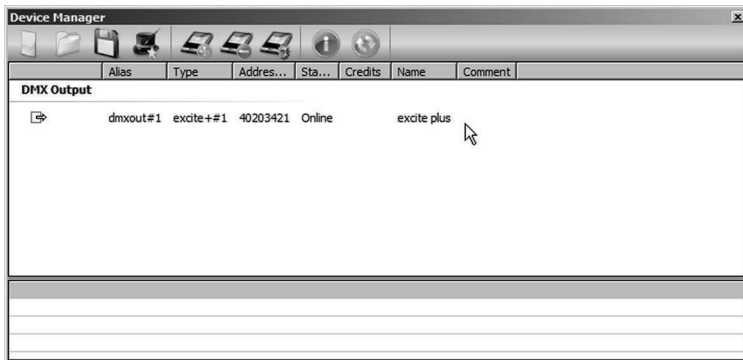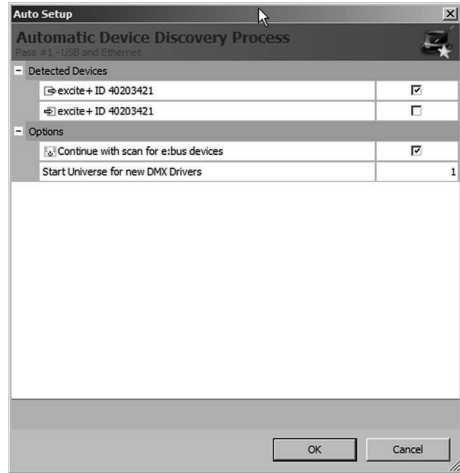
Now we have a DMX output device. The status Online and the shown frame rate indicate that our Excite+ is well and alive. If you just move the mouse cursor over the little box with the arrow on the left a popup window will show and gives more information about the settings for this device. A double-click on the little box opens another dialog:

As you can see the Device Manager of the Programmer has recognized the Excite+ and you could change parameters for it. You can set the DMX start universe and other parameters, save a comment, e.g. where the device is located.

For the Excite+ there is not much to adjust or set as driver and device parameters. We will a see more complex example in a later chapter. Close all dialogs and return to the Programmer view.

Now we have to finalize our patch. How your patch looks in more detail and how to add fixtures now can be seen if you press the spotlight icon in the top menu, this is the Patch Dialog.
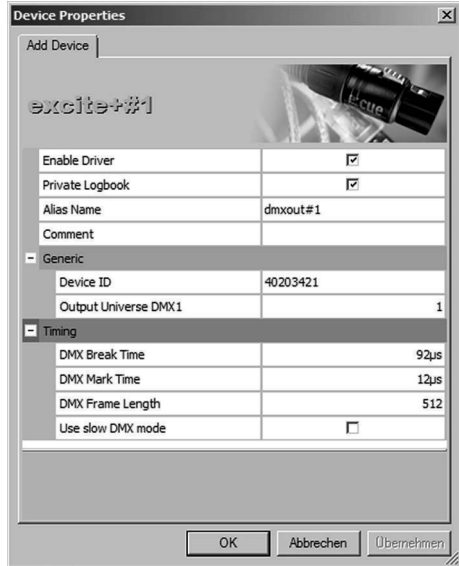
The Patch Dialog is suitable for small, simple configurations, we will get to know a tool for complex lighting scenarios later.

After the Patch Dialog opened you will see that you have one DMX universe, this is our Excite+. Here you have your devices and a list of DMX universes covered. Leave this dialog open, we will need it to add our fixtures.
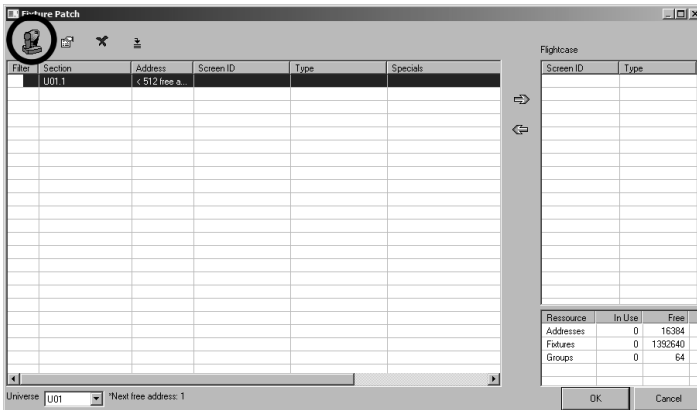
The next step is to add our par spotlight as the fixture of choice. The Programmer assumes and selects the Excite+ now as the default output device, as there is only one. We can add fixtures by pressing the headwash icon left most in the top menu of the Patch Dialog. Doing so opens the Fixture Library with loads of predefined fixtures including their parameters, like used DMX addresses etc. Most likely our par from an unknown manufacturer is not in the list of predefined fixtures, but has the usual DMX addressing scheme, RGB on DMX channels 1, 2 and 3, as most RGB devices have.
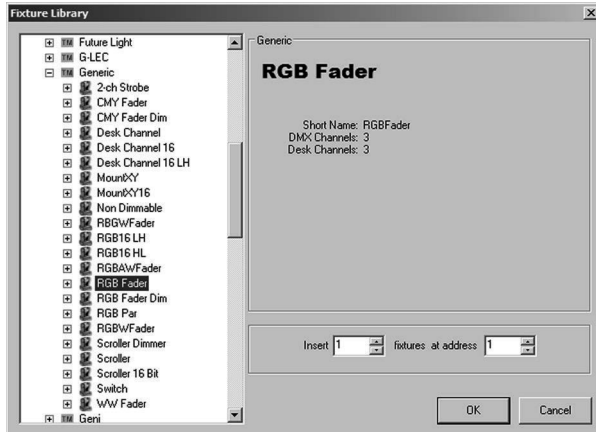
We can use a so called generic device which has the same addressing range. We can insert one or more fixtures, and we can start at any DMX address that fits for the number of fixtures. We have only one par, so we leave the parameters as they are. Of cause, our par must be configured in this way, it has to use DMX addresses 1, 2 and 3 for the three RGB channels. Closing the Fixture Library with OK adds this fixture to our path and brings us back to the Patch dialog.
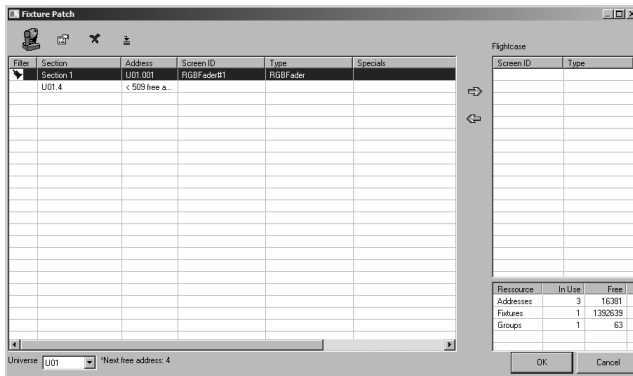
Everything is updated now. We have one section with our par, and U01.001 as address says that it is in DMX universe 01 and the DMX addresses starts at 001. Three DMX addresses are in use in this DMX universe, so still 509 addresses are free. All information about the complete patch can be seen here. And more if you double-click on the section name. We close this Patch dialog and return to the main window with the Programmer view.
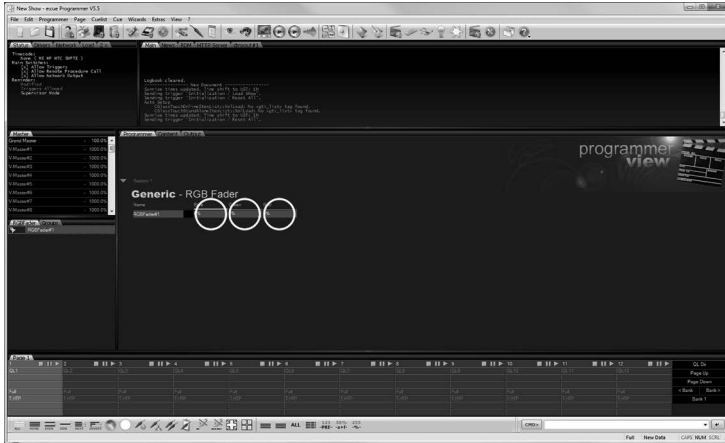
Also the main window has changed. In the Fixtures & Groups window we now see our fixture as RGBFader#1, this is our par spotlight. If you left-click on this fixture it will appear in the Programmer view, with its name and the three DMX channels representing red, green and blue. Now, when you move the mouse cursor over the channels (the three circles in the picture), keep the left mouse button pressed and move the mouse horizontally, the values for the currently selected channel will change like a fader. And so will the intensity of the correspondent color channel of the par spotlight. Press the Shift key additionally and you can fine-adjust color settings. Our patch is ready and works fine.

This is the time to introduce some more expressions for the Programmer. When you are in Programmer View move the mouse cursor over the fixture name there and select fixtures with a mouse click left, the device or fixture gets **touched**. With a right mouse button click over the fixture name a context menu will open, allowing to **touch** or **untouch** various combinations of fixtures. A right mouse button click over the channels will also allow to touch oder untouch channels, and some more choices. To **touch** a fixture means that it is selected and the channels are modifiable or affected by other actions or settings. Many functions require that the channels of a fixture are touched.

13 Cues and cuelists

13.1 Basic definitions

One fundamental expression in the Lighting Application Suite is the cue. Wikipedia defines this term as "Trigger for an action to be carried out at a specific time in theaters or circus shows". In the LAS a cue is the collection of all DMX, e:bus, e:net and other commands to create a specific lighting setting or action at a given time, like intensity or color values for RGB faders, liners or spotlights, and this for all affected devices.

A cuelist is a sequence of up tp 4096 cues sent into a lighting system. The cuelist has own parameters, one example is the timing, the speed with which cues are sent to the devices, also fading when changing from one cue to the next. Another parameter could be if the cuelist is played repeatedly or only once. Cues and cuelists are an important concept to understand lighting applications. We will create a cuelist to see what happens and how to do this.

13.2   A very basic cuelist

In the Programmer View click on the RGBFader#1 in the Fixtures Dialog to have it in our working space. Now we double-click on the (empty) cuelist title field QL1 in the Cuelist View at the bottom and a new dialog will open: the Quelist Dialog.
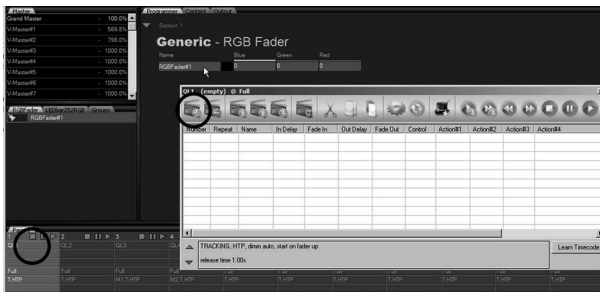
Now we drag the output intensity for Blue in the RGBFader#1 to a high value and press the `Add Cue` button in the Cuelist Dialog. A small request will be displayed to enter a name for the cue, we call it 1 here, every other alphanumerical expression would be allowed. After another `OK` the current cue, the values for R, G and B at this moment, will be added to the cuelist.
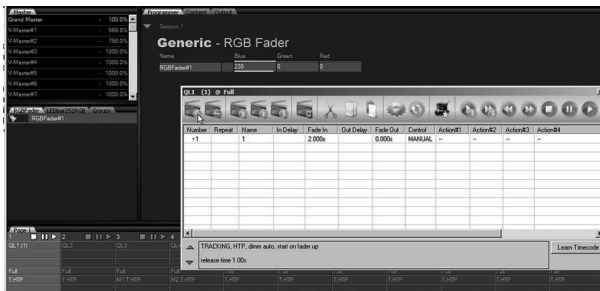
New we pull back Blue to a low value and drag Green to a high value. Again, press the `Record Cue` button in the Cuelist Dialog and the new cue will be appended to the list. It gets the name 2.

You can even add cues to cuelists if the Quelist dialog is not opened. Either press R on the keyboard, or use the Record Cue Icon in the main icon menu, the clapper board with the green cross. The cue is added to the current active cuelist, which is green in the cuelist window at the bottom of the Programmer window.

You might guess it: we pull down Green, set Red to a high value and record this cue again. Now your cuelist QL1 contains three cues, one with blue, one only green and one with red.
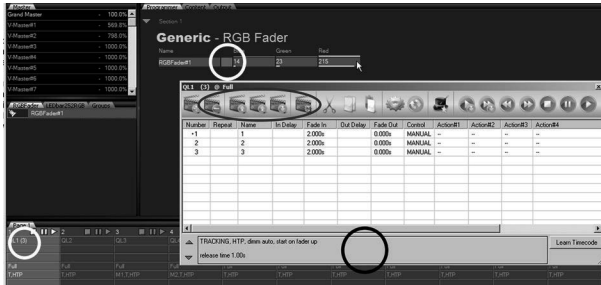
There are things more to see. When changing the colors for the RGBFader, the small color field between the fixture name and the three channels reflects the current color settings. When you add cues to the cuelist, the QL display in the lower left cuelist overview shows the number of cues in the cuelist. In the Cuelist Dialog you can rearrange the cues, move them up or down, or delete cues. One important function is the field at the bottom of the Cuelist Dialog (red circle). When you press it, the Cuelist Properties can be set.
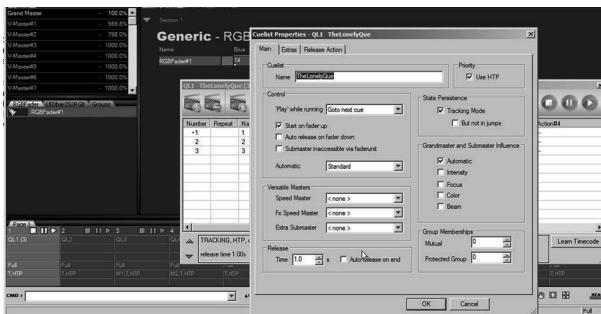
In the Cuelist Properties dialog you can modify all parameters for the entire cuelist. One parameter is the name of the cuelist, which is set to "TheLonelyQue" here. We will return to the Cuelist Properties dialog later and get in more detail. We now close it and return to the Cuelist Dialog to learn some more functions and settings.
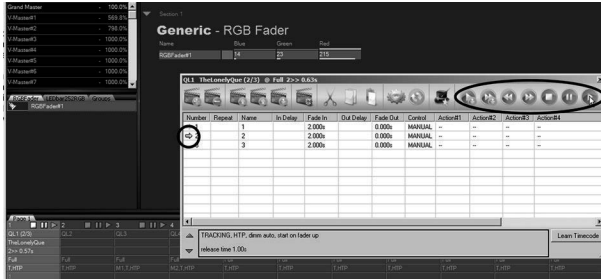
Now, to play the cuelist, there is a set of buttons on the top-right of the dialog. When we press the `Play` button the current cue is played, the cue cursor moves to the next cue and stops. Pressing `Play` again calls the next cue, after the last cue is played the cue cursor goes back to the first cue. With the default settings you will also notice that the colors do not change as a hard cut, there are fadings between the cues.

In some cases this would be what was wanted. However, we want to play the cuelist again and again in a loop, not as a single step procedure. If you have a look at the parameters for the cues you will see that every cue has a fade-in time of 2.0 seconds, a fade-out time of 0.0 seconds, and `Manual` in the control column. This value says that the sequence of cues is triggered externally or by pressing the `Play` button. To run the cuelist automatically and in a loop we have to modify these parameters for the cues, and this leads us to an additional dialog, the Cue Properties.

We could set the parameters one by one for every cue by a double-click on each cue name. This would also call the Cue Properties dialog, but there is an easier way to do it. Click on the first cue, hold the Shift key pressed and click on the last cue. Now all cues are selected. With the mouse cursor still over the cues, press the right mouse button and select `Properties`. This calls the Cue Properties dialog for all selected cues.

One cuelist can have up to 4096 cues, up tp 36 cuelists can be played simultaneously in the Programmer.
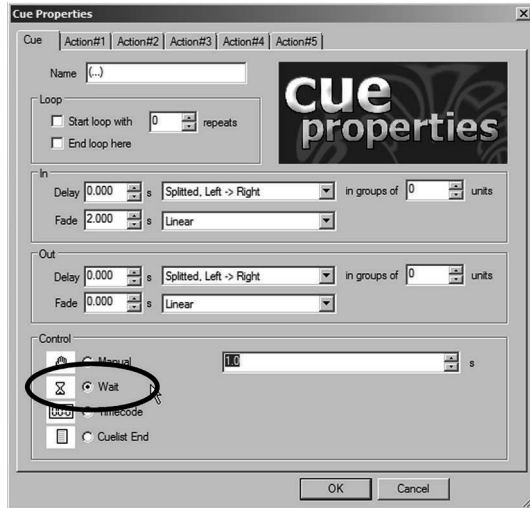
As we saw before the cues are not just switched but there is a automatic fading between the cues. The fading parameters can be changed in the Cue Properties dialog, the fade-in delay and the fade-out delay and the fade duration. In the control section we now set the control checkbox to Wait, with a wait time of 1.0 second. Closing the dialog with OK sets the values. Now, back in the Quelist Dialog, we press Play and now the cues are played sequentially and in a loop.

We close the Quelist Dialog and return to the Programmer View. To play the quelist from here there are controls in the Cuelist overview where we also can start and stop playing of cuelists. So we can start our little cuelist from here. While the cuelist gets played we can see the generated output in the Output Window. So we select the Output tab in the Programmer. But, after starting play in the cuelist overview, nothing happens.

If the devices are still active in Programmer View the Programmer has primary control and the cuelist player cant access the devices. So before playing the cuelist with effective output you first have to clear the Programmer workspace or pressing Ctrl-Y. After this, the cuelist player gets control over the channels and plays the cuelist.

Even when stopping the playback of a cuelist there is a fade-out and not a sudden stop. This makes sense as lights should not be simply switched off in lighting applications. Forgetting to clear the Programmer workspace before starting cuelist playback is a common pitfall, so be aware of this.

14 Cues and Actions

Cues are much more than just a set of DMX value set sent to a fixture. An important attribute of a cue is an **action** connected to a cue, but not only to cues. You will find actions in many places in the Programmer, in the Sequencer and in the Cuelist Properties for example. An action can start or stop other cuelists, start or stop media play, send MIDI or RS-232 messages and can execute e:script macros (e:script is a C-like macro language in the Programmer, see the corresponding chapter at the end of this manual). In this way a cue is a single entry in a cuelist, that may contain many activities: sending fixture commands or just only executing actions.

So the most important and most powerful settings for a cue are the five actions. With these actions you can execute many commands, not only in the Programmer, but also system commands, or you can control external devices.

To get the cues into a cuelist you can even record cues from external DMX devices (with a proper system interface), from the Stage Output or from the Programmer. Use the main menu Cue | Record ... for this purpose.

Parameters for fades and timing can be adjusted in the Cuelist Window. Cues can be called back into the programmer for editing (select the cue, right mouse button,select Load), and they can be moved around within the cuelists with cut&paste functionality. After creating a cuelist you can edit the cuelist properties, like HTP/LTP[1], Chaser Mode, Timecode etc. Submasters and speedmasters influence the intensity and playing speed of cuelists. This will be explained in the chapter about masters.

The Programmer contains default cuelist and default cue settings. The defaults for new cues and cuelists are set under Extras | Show Properties.

---
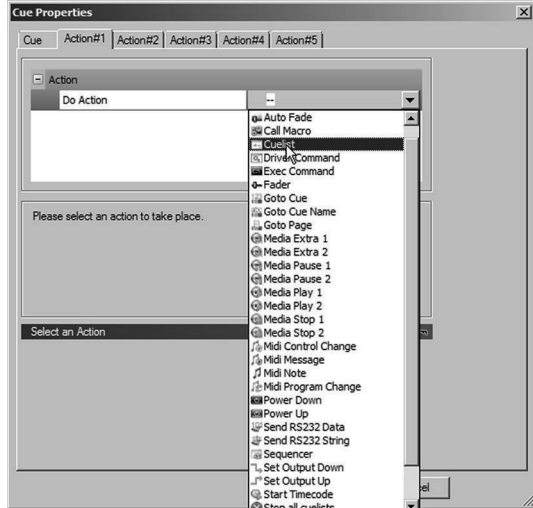
1 Highest Takes Precedence/Last Takes Precedence, which of two values is used.

14.1   The Cue Properties dialog
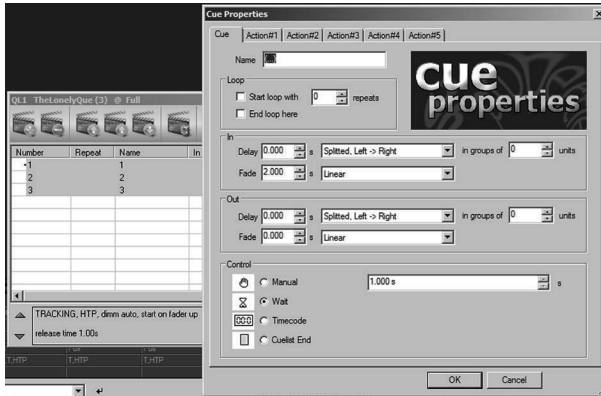
After opening a cuelist and selecting cues the right mouse button menu contains the `Properties` dialog. All parameters affecting usage and handling of a cue are set in this modal dialog. In the Cuelist Properties dialog you can set the following values for each cue:

Fade-in and fade-out time	Fade time from and to the next scene. Fade-in specifies how long it will take all the values in a cue (like intensity, focus, colors) to reach the amount that was specified in the cue. Fade-out only has an effect if the non-tracking mode has been activated in the cuelist properties. In that case it determines the fading out time for fixtures which are not present in the following cue. If fixtures are present in the next cue as well, the fade-out value will be ignored. There are several soft modes for fading, take note that they are not supported when running a show standalone in the Excite or the e:node. Soft start and stop when fading, useful for pan/tilt movements, but not recommended if the fixture has its own soft motion modes.
In-delay and out-delay	Delays allows fades which are spread over several fixtures, i.e. with a delay setting some fixtures are faded in earlier than others. You have several different basic modes, each with multiple possible effects. In the splitted modes, adjusting the group count will let the specified effect be recurred for every group. - In the randomized mode, every fixture will have randomized fading time applied. - In all-at-once mode all fixtures will fade all together. - The grouped-modes offer the same effects as the splitted modes, with the difference that the group count will let a certain number of fixtures fade at the same time.

	- The mapped modes are the most advanced delay modes. They offer various special effects that can be altered differently through group count. Delay with Fade: a combination of delay and fade yields softer transitions. Fade Time > Delay Time: delay barely visible. Fade Time = Delay Time: delay with soft edge Fade Time < Delay Time: delay with hard edge. For best results, make the delay time a bit shorter than the actual cue running time. - Delay in Groups of X units: if you enter a value, fixtures will be faded in groups. The groups are made according to ScreenID numbers, counting vertically. If you set the same value here as in the Section Cluster Size, you will get the following transitions: Left->Right, Top -> Bottom, Right->Left, Bottom -> Top, Middle->Outside, Middle -> Outside (vertical), Outside->Middle, Outside -> Middle (vertical).
	In manual mode stepping to the next cue must be triggered. In wait mode the next cue is started after a given timeframe. The stepping can also be triggered by timecode, or if another cuelist ended.
Loop start, end and repeats	Select a range of cues, call the dialog and create a loop in the cuelist, with one cue as start and one as end. Set the number of repeats. Loops may be nested. Another way of creating a loop: using the Cuelist window, select the cues you want to loop. Right-click on the selection so that the context menu appears. Select the "Create Loop" command. Specify how many repeats you want and close the dialogue.
Control: Manual	Makes the Programmer wait for a keypress after the cue has appeared. This is the Play button in the cuelist window or a Play button on the e:cue Faderunit. If the show has been exported into a standalone device, the keypress can also be one of the following: a serial command reaching the Excite, a keypress on the e:node or an electrical signal reaching the e:node's opto-input
Control: Wait	The time specified here (in seconds) will be the complete running time of the scene, inclusive Fades and Delays. After this time has passed the next cue will be started.
Control: Timecode	When set to Timecode, the cue will appear for the time it takes until the specified SMPTE time has been reached. This is called "wait until"-SMPTE and means that the next cue will be started when the time that you have specified in this cue is reached. If timecode is not present, the programmer will wait indefinitely. See also the chapter about Timecode.
Control: Cuelist end	This mode can be used to have a cue run as long as it takes another cuelist to run through. For this, the timing must be set to Cuelist End and another cuelist must be specified. The cue will then appear as long as it takes this other cuelist to run through; only after that will the next cue be started.

Using Cue Actions

Each cue has five slots where you can set actions that you want to be triggered by the cue. Actions allow access to the complete functionality of the programmer, including interfaces, timecode, media, network, macro programs and more. To trigger an action with a cue:

• Double click a cue and click on an Action tab (or double click the cue's Actions column in the Cuelist Window). This brings up the cue's Action Properties.

• Select an action from the drop down menu. For more details about actions see "Actions, events and triggers". Some actions require that a licensed edition of the LAS is running. Furthermore, specific actions are native to the media engine or the programmer. Below the menu there is an indicator which shows you whether the action is possible with the edition that you are currently using.

• Depending on the kind of action you selected you might have to specify other parameters. After clicking OK the action is linked to the cue and will be triggered when the cue is played.

14.2   The Cuelist Window menu

We already used the Cuelist Window to play our first little cuelist. Here now a list of the complete icon menu.

	Function	Shortcut
	Add ('record') cue; in the following dialog you can name the cue and where it is placed. Only touched (selected) channels are recorded! Also possible: recording from sources, `Cue	Record`... from main menu.	R
	Delete cue.	Delete
	Load or merge cue; cues are loaded into the Programmer View. Clears the current Programmer content!	E
	Save cue; Programmer View gets cleared.	S
	Edit cue properties; calls the Cue Properties dialog.	F2
	Cut cue.	Ctrl-X
	Copy cue.	Ctrl-C
	Paste cue.	Ctrl-V
	Show Cuelist Directory.	
	Make loop over the selected cues.	
	Show wizzards.	

	Goto here.	
	Skip here.	
	Skip back one cue and pause.	Ctrl-F11
	Skip forward one cue and pause.	Ctrl-F12
	Stop.	F10, Space
	Pause.	F11
	Play .	F12
	Switch between cuelists.	Alt-CurUp, Alt-CurDown
Learn Timecode	If the Programmer is receiving timecode you can teach-in the cue timing on the fly while Timecode is running. For this all the cues have to be set to MANUAL mode.	

14.3   The Cuelist Properties dialog

You can bring up the Cuelist Properties dialogue in several ways: press F2 or ALT-ENTER while keyboard focus is on a cuelist (for example if it has been clicked), or using the right mouse button context menu in the cuelist window. As there are many possible parameters for a cuelist the fields are distributed over three tab-selectable areas.

Masters and submaster will be described in the next chapters, just skip these parameters if you dont know or use them at the moment.

Cuelist name	Enter the name of the cuelist.
Control	
Play while running	Define what happens if the play button of this cuelist is pressed during playback. This does not only refer to the play button in the cuelist, but generally means any "Play" actions for this cuelist in the whole e:cue system, whether triggered by the Faderunit, the Action Pad, an e:bus device or otherwise. The following actions are available: Goto Next Cue, Restart Cuelist, Ignore, and Stop Cuelist.
Start on fader up	If you want the cuelist to automatically start as soon as you move the fader on the faderunit from its zero position, tick the checkbox.
Auto release on fader down	If you want the cuelist to automatically stop as soon as you move the fader on the faderunit to zero position, tick the checkbox next to Auto release on fader down.
Submaster inaccessible via faderunit	If you don't want the fader on the faderunit to control this cuelist's submaster, tick this checkbox.

Automatic	If your cuelist contains cues that are controlled by AudioDSP, you can make the programmer keep the submaster down unless a beat is recognized by the AudioDSP – select High if beat valid.
Versatile Masters	
Speed Master	You can assign a Versatile Master as a Speed Master to your cuelist here. With this you can adjust the speed of your cuelist subsequently and live (Pitch Control). The Masters are visible inside the "Masters" register card.
FX Speed Master	This assigns a Speed Master to any Live FX effects which the cues within the cuelist might contain. Using this you can change the speed of Live FX effects during playback, using a Speed Master.
Extra Submaster	Assign an additional intensity master for this Cuelist. This is helpful e. g. when using the Action Pad's Color Picker.
Release time	By default a cuelist runs in a loop. To make a cuelist stop after it has run through once, tick the checkbox next to "Auto Release On End". You can then specify the time for fade out of the last cue under Release Time.
Priority	
Very High/Normal/Very Low	Global cuelist priority. A running cuelist with a higher priority always takes control over a cuelist with lower priority.
Use HTP	To set the cuelist to LTP mode (Latest Takes Precedence) untick this checkbox. LTP and HTP modes define what happens when two cuelists try to access the same fixture. HTP (Highest takes precedence), default: The highest value gets priority control. LTP (Latest takes precedence): The value that has been send last gets priority control. The HTP setting cannot work if the channel has been explicitly defined as LTP in the Library Editor.
Smooth	The smooth option determines whether the value of the current running channels will be taken into account on a cuelist start. If set the cuelist will fade in (depending on the fade-in options). Otherwise the default value of the channel will be taken (usually 0 or 128)..
State Persistence	
Tracking mode	In tracking mode a fixture remains on the DMX value set by the cue either until another cue changes the value or until the cuelist ends. In non-tracking mode (more common in theatre lighting), fixtures return to their original states as soon as the cue ends. In this context, the fade out time, as specified in the Cue Properties is the time it takes for returning the fixtures to their normal state once the cue ends. In case the fixture is contained in the following cue the fade out value is ignored and a normal fade occurs. The fade out time only has an effect if the cuelist is set to non-tracking mode.

But not in jumps	This is only valid in tracking mode. In case fixture values change dramatically (e.g. from 100 to 0) from one cue to another, this option automatically smooths out the transition, thus preventing a visible "jump".
Grandmaster and submaster influence	You can set which channels of the cuelist are affected by Masters. - Automatic: Submaster automatically modifies the appropriate channels (dimms RGB/CMY channels if fixture lacks intensity channels) - Intensity: Submaster only modifies intensity channels - Focus: Submaster modifies focus channels (lowering the submaster moves focus channels towards default/home position) - Color: Submaster modifies color channels - Beam: Submaster modifies beam channels (lowering the submaster moves beam channels back to their default position)
Group memberships - Mutual exclude ID	With Mutual Exclude you can easily define a set of cuelists of which only one can be run at a time. If a cuelist with Mutual Exclude ID number starts, it will automatically stop any other cuelists which have the same ID number entered here.
Group memberships - Protected Groups	By defining certain cuelists as 'protected groups', you will protect these cuelists against accidental release actions. When declared as protected, the cuelists have to be explicitly addressed to stop them.

14.4 Extras

Chaser mode - Type	Under "Type" you can specify the mode: Chaser Forward, Chaser Reverse, Chaser Flip (Chaser runs back and forth), Chaser Random (plays random steps of the chase). See also the chapter about the Chaser Wizard. The settings only come into effect after you have clicked OK.
Chaser Speed	Chaser Speed sets the Chaser's speed in BPM. The chaser speed is shown in the cuelist's view and can be adjusted by clicking where it says "...BPM". You can also press Play (or any play button referring to this cuelist, for example on the faderunit or in the Action Pad) at the desired pace to teach-in the current BPM.
Chaser auto speed from Audio DSP	Tick this checkbox to let the AudioDSP set the ChaserSpeed for this cuelist.
Disable BPM Teach-In	This deactivates automatic teach-in by using PLAY buttons.
Timecode Master	Tick this checkbox if the cues in this cuelist are timecode-controlled. The Programmer will skip back to the first cue whenever timecode is lost. If you skip around in the timecode, the cuelist will skip to the first cue shortly but then immediately catch up to the correct position in order to ensure that values are tracked properly.
Timecode Auto Activation Window	You can make your cuelist automatically start if the timecode is between the values you entered.
Auto Release if Timecode is Outside Window	Tick this checkbox to automatically stop the cuelist if timecode is outside the values that you entered above.

Release Action

You can set Actions that you want to be triggered when the cuelist gets released. Actions allow access to the complete functionality of the Programmer, including interfaces, timecode, media, network, macro programs and more. A classic use for this would be to stop a media file that is started by the first cue in the cuelist.

To do this, click on the tab "Release Action", then select an action from the drop down menu and enter additional parameters. Some actions require that an e:cue media dongle is present. Below the menu there is an indicator which always shows you whether the action is possible on the combination that you are currently using.

14.5   Cuelist context menu

The context menu, which opens by click of the right mouse button on one or more selected cues, offers additional functions which affect the selected cues. You can select several cues by clicking&dragging or holding CTRL/SHIFT while clicking as used with other Windows dialogs.

• Extras | Invert Cues: This command inverts the order of all selected cues.

• Extras | Scramble Selected: This command puts the highlighted cues into random order. An interesting application for this are chaser cuelists.

• Timing | Add/Subtract Timecode: You can use this command to change the timecode times of all the highlighted cues, either adding or subtracting from the start time.

• Timing | Stretch/Shrink Timing: Using this command you can specify a factor by which the timing of all highlighted cues should be lengthened or shortened. The command only works with timecode cues.
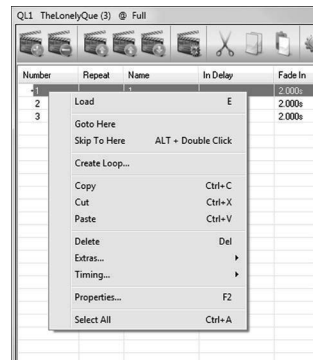
15   Organizing cuelists

15.1   The Cuelist Directory: pages

In bigger projects it is necessary to have a huge number of cuelists. At that point it makes sense to keep the cuelists well organized. This is done with cuelist pages. Pages are part of the Cuelist Directory. One cuelist page contains 12 cuelists.

On the left of the Cuelist Overview you have everything needed to keep your cuelists in order. Clicking the QL Dir button brings you to the Quelist Directory dialog from where pages and banks can be added or get reorganized.
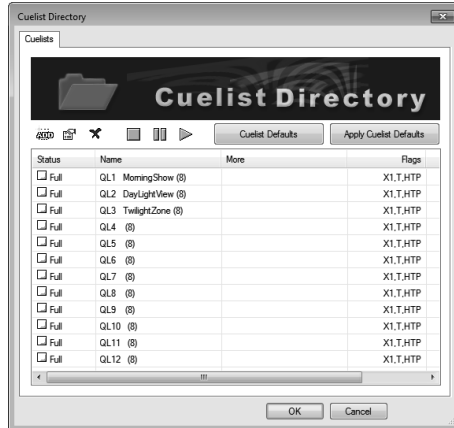
The Cuelist Directory dialog has to tab-selectable areas, one for cuelists and pages, and one for cuelist and banks. Let us walk though the possible functions of the cuelist pages.

ADD	Appends 12 more cuelists at the end of the current set of cuelists. These 12 new cuelists form new page. The name of the page can be changed.
	Shows the Cuelist Properties dialog. The same happens if you double-click on a cuelist here.
	Deletes the last page with 12 cuelists. It does not delete a single cuelist, but the complete page!
	Pauses the current played cuelist.
	Stops play (releases) the current playlist.
	Starts playback of the current cuelist.
Cuelist Default	You can define a default setting for cuelists, e.g. if you have to create many similar cuelists. This button takes you to the Cuelist Default dialog where you can define these defaults.
Apply Cuelist Defaults	Apply the defined cuelist defaults to all selected cuelist displayed here.

After adding additional pages you will them in the Cuelist Window as tabs.The second tab shows the Cuelist Directory dialog for banks to front.

15.2   The Cuelist Directory: banks

Banks are a feature of the LAS when faderunits are used with the application. In one bank 12 faders of a faderunit can be mapped to cuelists. By default, the twelve faders on the faderunit are mapped to the twelve cuelists of the currently active page. You can change the assignment by double-clicking a fader and selecting a different cuelist.
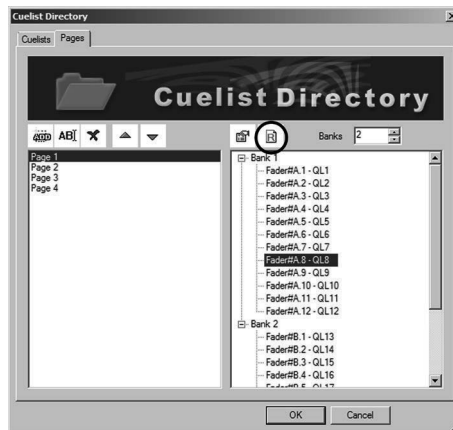
Clicking `Restore Page` button you can assign 12 cuelists to faders in one step. Select the cuelist which should be the starting point for mapping the 12 faders. After `OK` the faders will be mapped to the cuelist beginning with the first selected.

15.3   Advanced cues and cuelists

As a first step we had cues with RGB values to be sent to a fixture, and a cuelist as a sequence of cues with fade-in and fade-out times. But cues can be more that just lighting values, cues can also control things in the Programmer and in external devices.

When you double-click a cue in a cuelist you will see the timing and execution parameters at first, but there five more tabs with actions (actions and triggers will be handled in more detail in a later chapter). Actions define just what the name says: activities to be executed when a cue gets played. So a cue may contain lighting values for fixtures, but they dont have to.
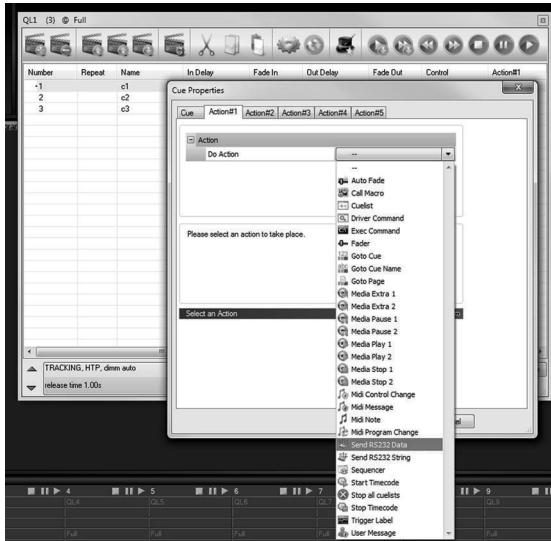
To make a cue wear an action select one of the action tabs, click the Do Action drop-down list and select a so-called action. There are many actions available, like starting or stopping media play, send RS-232 data to external devices or start and stop cuelists.

The possibility to start and stop cuelists makes another mechanism possible: to use one cuelist as a kind of master cuelist, controlling other cuelists. In this way you can create very complex control scenarios. To create such control cuelist systems, there is even a way to do it manually or automatically. The main Programmer menu has an entry `Cue | Record ...` to receive cue contents, even from an DMX source. This provides far more possibilities to setup cues and cuelists.

15.4   Visual settings for Cuelists

If you place the cursor over the cuelist page tab - here "Patterns", and press the right mouse button, you can select `Visual Settings`. In the dialog you can select the displayed information.
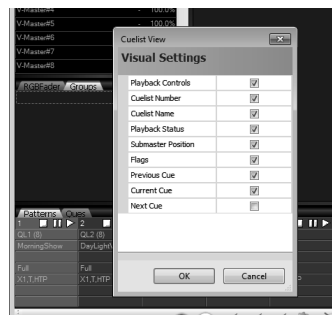
16   Automation

16.1   Actions, events and Triggers

There are three terms you will happen upon in many places in the Lighting Application Suite. They are a foundation stones of every application and it is important to understand the basic principles.

At first you should be aware of the situation that a lighting application consists of certain elements on various levels, some more and some less intelligent and powerful.
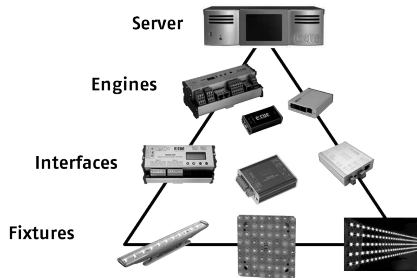
Not all levels have the same capabilities. An LCE server has the highest functionality and can execute e:scripts, generate or render effects/animations, play media and much more. Engines like the Butler XT are powerful, but they cannot render or animate, they can play cuelists and react to triggers like sunrise or sunset, or state changes for dry contact inputs. The Butler classic has no internal clock, so no date/time triggers are possible.

Interfaces just convert protocols and interfaces, so from here down there is no intelligence except DMX capability or other direct interfaces. For these reasons not all actions and triggers are available with all engines when they run in standalone mode, i.e. without a LAS-driven server.

16.2   Definitions

Trigger	A Trigger is a predefined condition that is met. Triggers can be: a date/time condition, the end of a cuelist, an opening or closing switch, receiving a defined MIDI message or DALI data. Triggers usually cause the execution of an action and are a central function in the Programmer..
Action	An Action induces a change of state in the application. Such a state change can be: starting or stopping a cuelist, playing a certain cuelist, go to a defined cue, play a media file or stop it, or execute a sequence in the Sequencer.
Event	The Event is an expression that is mostly used in sequencing functions. As in the Sequencer, an Event comes up when the timeline reaches an Event in a Sequencer track.
Conditions	A Condition limits the range when or why a trigger becomes valid or not. Typical Conditions are time oder date related Conditions.

16.3   Triggers

Triggers are conditions met, triggers cause the execution of an action. There are also two different sets of triggers for Programmer and Butlers. We will see Triggers in the Programmer as a first step.

You can define triggers in the Programmer, these can be internal or external triggers. Depending on the type of trigger there will be a list of possible parameters and additional conditions. Example: you could play cuelists triggered by MIDI messages, which cuelist gets played depends on the received note value.
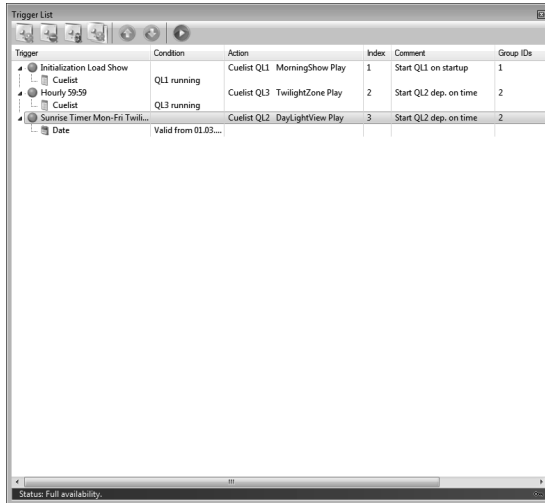
To create a Trigger, click the switch icon with the plus sign. In the following dialogs you have to define the source of the Trigger, Conditions to limit its validity and the resulting Action. Triggers in this overview have a green or red traffic light at the left. Green Triggers are active, red Triggers are disabled. To change the state of a Trigger, double-click on the traffic light. To show the full Trigger definition or hide it, click on the small triangle at the beginning of each line.

Selecting a Trigger

There are several Triggers available, internal and external Triggers. Internal Triggers are e. g. Sunrise Timer, end of play of a Cue List or peer events. External Triggers come from user interfaces, via MIDI oder TCP. Select a Trigger source from the dropdown list. A description for the Trigger is always displayed in the bottom row of the Trigger dialog. Some Triggers need parameters, like Cuelist numbers or events like start/stop/end of a Cuelist, or other parameters.

Triggers can be put together in groups, use the Group ID to collect several triggers in one group. Single Triggers or Triggers in one group can be disabled or enabled from other sources like the Action Pad.
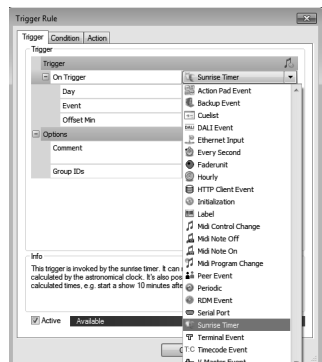
Selecting a Condition

Conditions can limit the execution of Triggers. After adding a Condition it can be inverted by setting the checkmark in the Condition, after the Condition type. This way you can select the Condition "If QL1 is running" or "If QL1 is NOT running". Typical Conditions depend on the astronomical clock, state of Cuelists, state of the Media Player or even on global e:script variables. Select parameters for the Condition in the right part of the Condition dialog.

When loading older shows without Conditions, only the one date definition (Valid From/Valid To) will be converted to the new format.
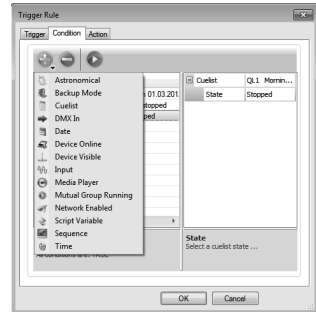
Conditions are defined globally and stored within your show. So if you define one Condition, this Condition will also be available when defining the next Condition. Using one identical Condition for several Triggers and modifying the Condition will also change the definition for all other Triggers, that use it.

Select an Action

Actions are the result of a Trigger, when the predefined Conditions are true. The Action changes the state of the Programmer or send data to external interfaces. A complete list of Actions will follow on the next pages.

Also Actions require additional parameters, which are defined in the Trigger Rule dialog, in the tab Action. These parameters tell which Action to execute in detail. For example, for a Cuelist Action, they define which Cuelist is used and what to do with the Cuelist, play, start or stop. Always keep in mind that these Actions are valid for the Programmer only. Engines like Butler XT2 or ETH2DALI support different sets of Triggers and Actions. The limitations are shown on the following pages also.
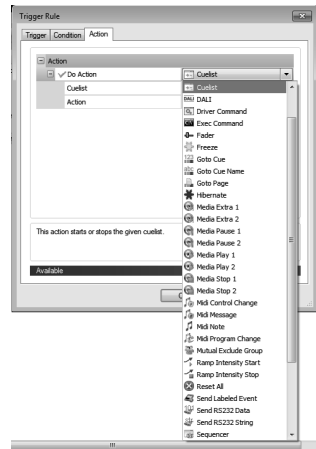
16.4   Setting up MIDI controlled triggers

There is a MIDI learn function s which simplifies the definition of MIDI controlled triggers. Press the `MIDI Learn` button in the Trigger definition dialog. The next MIDI event received will be used as trigger event.

16.5   Butler DMX Engines

Butler DMX engines can run in two different modes: online or standalone mode, the Butler XT2 does not differentiate between standalone and online when assigning triggers. When the engine is connected to the Programmer, it is in online mode. Triggers from the Butler XT are passed to the Programmer via e:net and executed in the Programmer. The same time the Programmer can send commands and data to the engine, then transferred to e:bus or DMX. So in online mode the actions, that the Butler XT is able to do alone, are not relevant. Incoming triggers, e.g. from a Glass Touch terminal, are passed to the Programmer and executed there.

When the engine is not connected to the Programmer it runs in standalone mode and plays cuelists stored on an SD card. The actions that the Butler XT can execute now are different to the ones in the Programmer. You can configure these standalone triggers only for the Butler XT, not for Butler classic or USB2DMX devices.

There are triggers available for certain time events, different system events and even for Sunrise timer events like sunset or noon. These triggers can be widely configured to achieve a very powerful and flexible automation. You can define the same actions as in the above table to be performed when a trigger rule is hit.

Possible standalone triggers for the Butler XT are shown on the next page.

- Start cuelists at given time/date
- Start cuelist with Twilight Timers
- Start cuelist on triggers like button-press and -release
- Start cuelist on signal at dry contacts
- RS-232 triggers or e:bus triggers

Triggers by the buttons and the dry switch contacts can be set separately for online and standalone mode. The other standalone Triggers for the Butler XT are defined in the Standalone Mode Trigger List in the Device Properties (used in the Device Manager, third tab). Only Actions available for the Butler XT are selectable in the definition dialog of possible standalone Triggers. See the table of possible Actions for the Butler XT in standalone mode.
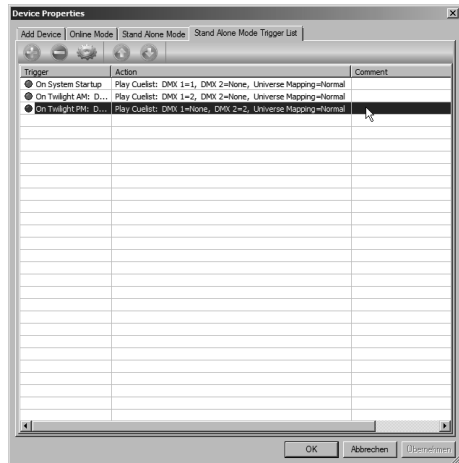
16.6   e:bus devices

Terminals, connected to the Butler XT via e:bus, can also trigger Actions. Again there is one configuration set for online mode, and one for standalone mode. Online and standalone refers to the mode of the Butler XT, not the terminal, this is always connected to the engine.

In online mode the key messages are passed to the Programmer and trigger actions there. In standalone mode the key messages trigger actions in the Butler XT, e.g. to start a cuelist or to increase or decrease intensity on an output.

One speciality for the TWheel: in online mode the wheel can be mapped to a Versatile Master, in standalone mode the wheel triggers an action in the Butler XT. So when ever using a terminal or other devices you can assign different actions for online and offline mode. For this
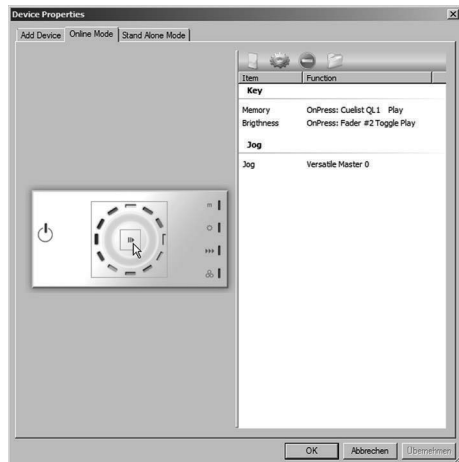
reason you can do so much more in online mode because the Programmer executes all triggers and possible events. Engines are mainly used for playing cuelists.

16.7 Possible Triggers

Not all targets support all Triggers. PR = Programmer, S2 = Butler S2, X2 = Butler XT2, ED = ETH2DALI

Trigger	Description	PR	S2	X2	ED
Action Pad Event	Created with events in the Action Pad. E. g. a button gets pressed.	√			
Backup Event	When using master and backup server and switching.	√			
Cuelist Event	When Cuelists start, stop or end. Butler XT2: nur Stop and End.	√	√	√	√
DALI Event	Several events with DALI devices.	√			√
Ethernet Input	Event messages from ETHERNET datagramms.	√			
Every Second	Created every second.	√			
Faderunit	Events from a faderunit.	√			
Hourly	Every hour with a time shift.	√		√	√
HTTP Client Event	Created by HTTP server responses.	√			
Initialization	Created on startup or restart. Use to initialize Programmer or engine.	√	√	√	√
Label	Created by a Trigger Label.	√	√	√	√
MIDI Control Change	Response to MIDI CC messages.	√			
MIDI Note Off	MIDI note off message received.	√			
MIDI Note On	MIDI note on received.	√			
MIDI Program Change	Response to MIDI PC messages.	√			
Peer Event	Response to messages sent ny peer machines.	√			
Periodic	Trigger created on dates and times.	√		√	√
RDM Event	Response to e:script RDM requests.	√			
Serial Port	Events with the serial port.	√			
Sunrise Timer	Events with the astronomical clock like sunrise, noon etc.	√		√	√
Terminal Event	Events with external terminals like e:com.	√			
Timecode Event	Timecode start or drop.	√			
V-Master Event	Events with V-Master changes.	√			

For Butler and Butler XT see the Setup Manuals for the devices and supported Triggers.

16.8 Possible Actions

Actions can be selected in many places, in cues and cuelists or in events in the Sequencer. Here is the list of possible actions which can be executed by the Programmer and engines.

In some cases only a single action can be selected, in others, like in the Cue Properties, up to five different Actions can be defined.

Programmer Actions

Action	Description
Auto Fade	Start an automatic fade on a Versatile Master.
Call Macro	Execute a macro with a given name. Up to five numeric comma-separated parameters are allowed. Macro call can be redirected to a peer engine inserting \\peername\ before macro name.
Cuelist	Start/Stop/Pause/Toggle/Choose given cuelist.
DALI	Send a DALI control command to a device.
Driver Command	Execute a direct driver command. At least one driver must be added in the Device Manager, for example a Panasonic PTD RS232 Terminal.
Exec Command	Executes a command like a macro, e.g. "StartCuelist(QL(1));". For real macros use Call Macro.
Fader	Start/Stop/Pause/Toggle/Choose cuelist mapped on the specified fader.
Freeze	Corresponds to the Freeze button in the Programmer (see chapter about little helpers). Freezes cuelist play and pauses.
Goto Cue	Jump to a specific cue in a cuelist.
Goto Cue Name	Jump to cuelist by name.
Goto Page	Select a page in the Cuelist Directory.
Hibernate	Like Freeze, additionally the Grandmaster is set to 0% internally and the value is displayed in red.
Media Extra 1/2	Media Player advanced functions (Skip, pre-cache). For this function an .m3u playlist file must be loaded in the respective Media Player (e. g. created with Winamp).
Media Pause 1/2	Pause playback for Media Player.
Media Play 1/2	Start playback of a file. To use an aliasname write :aliasname. To start video capture use $capture as filename.
Media Stop 1/2	Stop media playing. "mp3" as parameter stops audio, "jpg" stops video, "all" stops all playing.
Midi Control Change	Sends a MIDI Control Change message on the given channel.
Midi Message	Sends nearly every MIDI message like "0x90 0x0c 0x7f" as MIDI Note Message.
Midi Note	Sends a specified MIDI Note message.
Midi Program Change	Sends a MIDI Program Change message.
Mutual Exclude Group	Starts or stops a cuelist in a mutual exclude (mutex) group. if Play is selected: plays the next cuelist in a mutex group; if no cuelist is playing it starts the first or the last paused cuelist of this group.
Ramp Intensity Start	Increase or decrease the intensity of a fader or a cuelist submaster per second. After the action was started, the intensity gets increased or decreased by the given percentage in an interval of 35 ms.
Ramp Intensity Stop	Stops the Ramp Intensity process for the defined fader or submaster.
Reset All	Reset the Programmer, ends all cuelists, macro execution etc.

Send Labeled Event	Send a labeled event string to a device.
Send RS-232 Data	Sends binary data via RS-232, e.g. "27,'h', 0x0a".
Send RS-232 String	Sends an ASCII string via RS-232, e.g. "Hello World!".
Sequencer	Sends Play/Pause/Release/Continue to a saved sequence in the Sequencer.
Set Intensity	Sets the intensity of a fader or cuelist submaster. This relates to the control curve of the fader, either logarithmic or linear, so only in linear mode an action parameter 30% will set the fader to 30% of the end value, which is in real 300%.
Start Timecode	Starts generation of internal timecode. On the Media Engine this timecode is sent as MIDI MTC.
Step Intensity	Closes generation of timecode.
Stop All Cuelists	Stops all running cuelists and stops Media Players. To include protected groups add group ids as comma-separated values. To exclude cuelists add their numbers as negative numbers.
Step Intensity	Increases or decrease the intensity of a fader or cuelist submaster by the given percentage. This, again, relates to the control curve, either logarithmic or linear.
Stop Timecode	Stop generating timecode.
Trigger Activiation	Enable or disable all Triggers with the defined group ID.
Trigger Label	Triggers another Trigger Rule with setting "ON LABEL". Multiple Actions can react to the same label.
User Message	Writes the given message to the Logbook.

Butler/ETH2DALI Actions

The Butler S2 and Butler XT2 have different Actions from the Programmer when running in stand-alone mode. See the chapter „42.4 Device capabilities" for details. The ETH2DALI supports all Actions as the Butler XT2 plus DALI and Labeled Events.

Action	Impact
Play Cuelist	Plays the selected cuelist on the selected output port(s).
Toggle Play Cuelist	Pauses the selected output(s) or resumes playing.
Pause	Pause the current cuelist on selected output(s).
Resume	Resume playing cuelist from current point for output(s).
Pause/Resume	Toggle pause and playing on selected output(s).
Stop	Stop the current cuelist on selected output(s).
Stop/Play	Stop the current cuelist or play from start for selected output(s).
Next	Skip to next cuelist on selected output(s).
Previous	Skip to previous cuelist for selected output(s).
Restart	Restart current cuelist for selected output(s).
Intensity Up	Increase intensity for selected output(s).
Intensity Down	Decrease intensity for selected output(s).
Set Intensity	Set intensity for selected output(s) in %.
Set Current Output	Select output(s) as current output, can be used in other actions as "current output" as default.

On/Off	Switch output(s) on and off.
Send e:net Message	Send e:net key message "n" to other device.
Toggle Freeze	Freeze/unfreeze selected output(s). Will not be broken by triggers.
Toggle Hibernate	Freeze/unfreeze selected output(s). Will be broken by triggers.

Automation with DALI devices

DALI input devices can create Triggers executing specific DALI Actions or other Actions in the Programmer. The DALI environment has an own Action in the Programmer that is used to control DALI ballasts.

Triggers by DALI input devices

Three devices are supported as DALI input: keys, motion detectors and light sensors. You should define proper Input Rules for sensors and detectors to define the specific behavior. See chapter „20.5 Inputs and Input Rules". Use the Automation Window to define Triggers caused by DALI inputs. Three input types are available.

Using keys or devices behaving like keys over a DALI interface, select the DALI line, the device number and the event type. Possible event types are:

OnKeyPressed	Key shortly pressed shorter than one second and released
OnKeyLongPressedStart	Key pressed and held.
OnKeyLongPressedStop	Key held and released.
OnMotionDetected:	A motion detector reported a change
OnLightSensorChanged	A light sensor reported a change

For the OnKeyLongPressedStart trigger:

first the Trigger OnKeyPressed will be executed, short time later OnKeyLongPressedStart. So there are two Triggers executed in this case.

All five selections are listed, because at this state the Programmer cannot identify the type of input device.

With motion detectors, Triggers are usually executed with the assigned Input Rule, which contains the device configuration. After selecting the rule, you can additionally select if the assigned Action gets executes on motion start and/or on motion end.
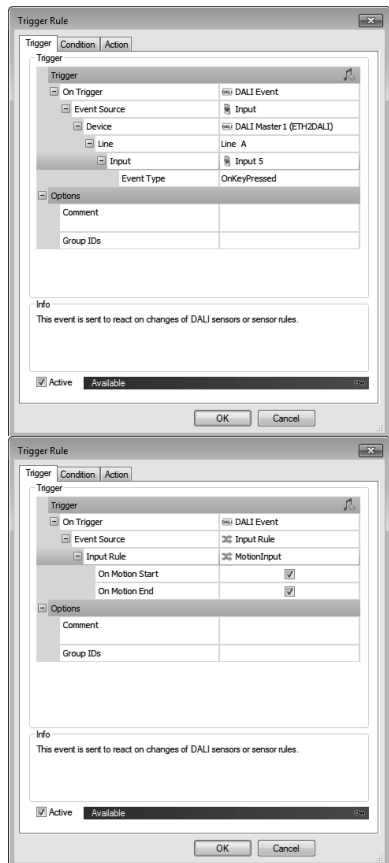
For light sensors just select the necessary Input Rule, this contains the device and input configuration completely.

Notes on Actions for DALI devices

You can select any available Action for a Trigger, Triggers from DALI devices are not limited to DALI Actions. However, there is one specific DALI Action that is used for setting the intensity of a DALI ballast in various ways.

Select DALI as Action, define the ETH2DALI to use and the DALI line A or B on the device.

You can send the DALI command as address type to

• a single ballast

• to a group (of ballasts) or

• as broadcast to all ballasts.

Remember that DALI is a slow protocol, to get even dimming behavior, use groups instead of single ballasts. When using a single ballast, select the DALI address as Address. When sending to a group, select the defined DALI group. In broadcast mode, no address is necessary.

The command is the real executed Action.

Set Intensity	Sets the light intensity of the ballast(s). The Intensity can be entered as percent value, which is converted to the value range of an integer of 0 to 254. So, if you enter the intensity as 40%, the value will be adapted to 39.5%. Select the fade time, either the fade time stored in the ballast, or a value from 0 to 90.5 seconds.
Set Predefined Intensity	Select the ballast internal values off, minimum, maximum or off.
Set Ramp Intensity	Start or stop a dimming run for the ballast or a group. Use Ramp Up and Ramp Down for the dimming direction, Stop to end the dimming, Toggle to invert the direction. The dimming rate is defined in the ballast parameters. **Toggle is only usable in online mode.**
Set Step Intensity	Use Up (but do not switch on, if off), On and Step Up, Down (but do not switch off), Step Down and Off.
Goto Scene	Recalls a pre-stored scene in the DALI ballast(s) from 1 to 16.
Store Scene	Current settings are stored in the ballast as DALI scene from 1 to 16 and can be recalled later.

Toggle Intensity	If the intensity is zero, the ballast will be set to the LastOnLevel (in ballast properties). If the intensity is not zero, the intensity will be set to zero. If applied to a group or as broadcast, an additional ballast as parameter has to be taken as reference value for the intensity.
	This Action is only usable in online mode.

(i) **For Broadcast | Goto Scene and Group | Goto Scene the current level will not be updated. Predefined Intensity | On Level is only possible for groups and ballasts, not for broadcast. Indicate | On, then Indicate | Off switches all ballast to 100%, even if they had another value before.**

16.9   Labeled Events

Labeled Events are an automation technique for standalone mode. Today they are only supported by the ETH2DALI. With Labeled Events, you can send a string to another device via network or serial line. When the receiving device receives the Labeled Event, the assigned Action gets executed. To add a Labeled Event for the receiving device, click on the icon in the main window of the Programmer and a dialog will open.

Select the ETH2DALI to define the Labeled Event for, click the plus icon in the top window menu, give the Labeled Event a value (only a to z, A to Z, 0 to 9 and _ allowed) and add an optional description.
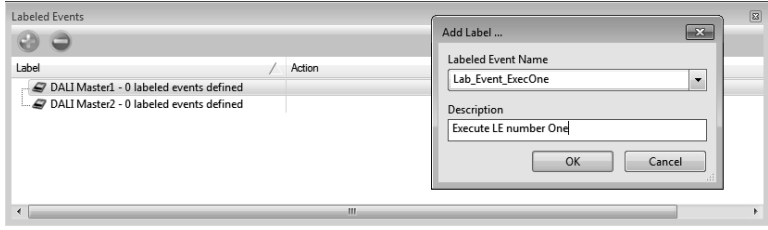
Click on the created event, press the right mouse button and select Add Action. Select The Action that this ETH2DALI will execute when receiving this string. Be sure to select only Actions, that the target device supports. When exporting the show to the ETH2DALI later, the Labeled Events are also exported to the device and stored. This is now the Action that the receiving ETH2DALI will execute. Up to 50 Actions can be assigned to one Labeled Event.

Labeled Events can also be sent by a webbrowser connected to the ETH2DALI. The syntax is:

http://192.168.123.nnn/LabeledEvent:LabeledEventName

where 192.168.123.nnn is the address of the device.
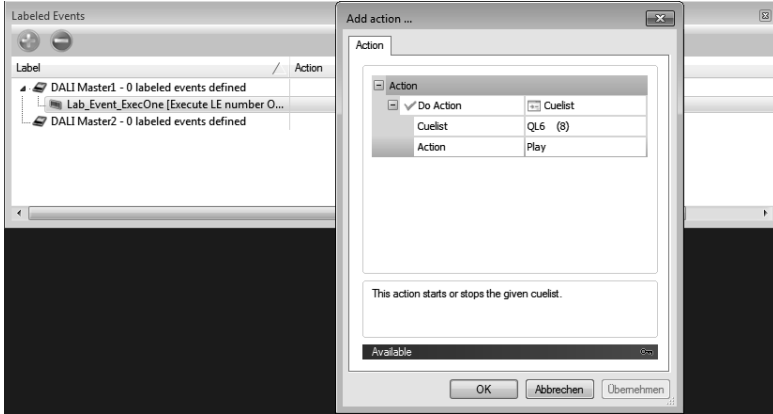
Close the dialog. To send the Labeled Event from the source device to the target device use an Action bound to any function that can execute an Action. Here the Action sending a Labeled Event is bound to the first Cue in a Cuelist.
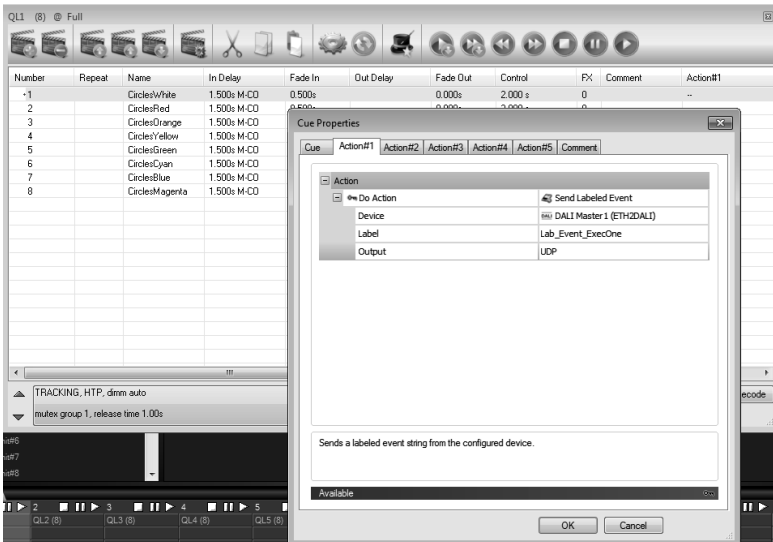
So when this Cuelist starts playing, with the first Cue the Labeled Event Lab_Event_ExecOne will be sent to the target device and the related Action on the target device will be executed.

16.10 Trigger Groups

When defining Triggers, you can assign Triggers to Trigger groups by entering a Group ID. You can enable or disable a group of Triggers by the Action Trigger Activation, e. g. from the Action Pad or from a Cuelist.
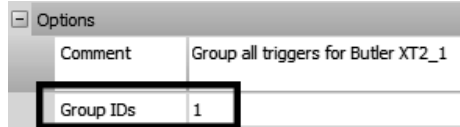
16.11 Copy and paste Triggers and Actions

When creating several similar Triggers and Actions you can use a copy and paste function. In the upper right corner of the Action and the Trigger definition dialog there are tree icons to use.

The note head is the MIDI Learn function. The next right paper icon copies the current Action or Trigger to an internal Trigger or Action clipboard. Close the Trigger or Action. When you now create a new Action or Trigger, the current content of the clipboard is used to fill the new Action or Trigger. Or open an available Trigger or Action and click the right-most clipboard icon to paste the clipboard content into the Action or Trigger. Change the parameters for the Trigger or Action to your needs.

The copy and paste function is also available in the dialog windows in the Sequencer. Also here you can copy and paste Actions.
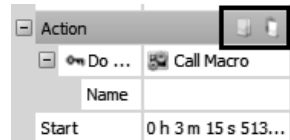
17   Working with fixtures and channels

After you have a basic idea what the Programmer does, we will now see how to work with fixtures and channels. When using fixtures in the Programmer some functions only affect certain fixtures and their channels, usually RGB. Or sometimes you want to modify only some fixtures. Normally every fixture has several channels. If you want to assign a value or an effect, these are cases where you want to select only specific fixtures or channels.

17.1   Adding/selecting fixtures

In the Fixtures and Groups window view, click the fixture that you want to add to work on. After that you have several options:

- Clicking on fixtures inserts them into the Programmer View.

- Pressing Ctrl-A inserts all fixtures.

- Pressing ENTER brings up the Use Range dialogue, where you specify indices to select fixtures.

- Right-click to use the context menu and select `Use all` or `Use range`.

- Select single fixtures with the plus and minus icons in the fixture list.
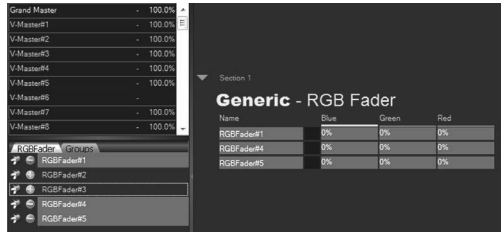
If the list contains too many fixtures to fit them all on the screen, arrows for scrolling will appear next to the headline. To save space, you can right-click on the headline and select `Force Short View`.

Just clicking a fixture selects it, but there are more options: You can set the channel value for several fixtures at once by selecting more than one fixture. Also, there are special commands for selecting fixtures, available from the lower tool bar, via keyboard shortcuts or via the context menu. Using the mouse: clicking on a fixture selects it. Moving the mouse while holding down the left button (drawing a rectangle) selects several fixtures.

- Holding CTRL while clicking a fixture adds this fixture to the selection. All fixtures are deselected by clicking in an empty area.

- Using the Preview Window: by default, fixtures can be selected by clicking them in the Preview window, using the tools Select Single and Select Rectangle.

- Using keyboard shortcuts: all the keyboard shortcuts are listed in the Addendum. Pressing N always selects the next fixture. This is especially useful when Highlight is activated (press H), because it makes it easy to find the position of a real fixture.

- Using special commands: bring up the context menu by a right-click on a fixture in the Programmer View).

- Or use the icons in the lower right part of the Programmer View.

17.2   The Mini Toolbar

This part of this window at the lower main window can be used for selecting fixtures and also for adapting the display of fixtures to your need.

ALL	Selects all fixtures.
NONE	Unselects all fixtures.
EVEN	Only selects fixtures with even numbers.
ODD	Only selects fixtures with odd numbers.
NEXT	Selects the next fixture in the list.
INVERT	Inverts the selection.

17.3   Selecting a channel

Click on a channel or use the arrow keys to select it. The grey bar above the channel thickens to show that it is selected.
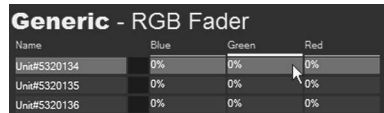
17.4   Touching

By default, channels appear dark blue with a grey text. As soon as a channel is **touched** by changing its value, it appears green with white text. Only the selected channels will be saved when recording a cue. This allows the Programmer to let several cuelists access different channels of the same fixture.

There is, however, a little drawback. By default, a cuelist runs in tracking mode, which means that a channel only changes when you set it. If the cue ended and the channel hasn't been told to switch off, it will stay on. Now, if you make some changes in one cue but forget to touch the same channels in the next one, they will forget to switch off. In some cases this can lead to unwanted effects with reasons that are hard to understand.

In this case the other menu icons are helpful to touch, untouch or set the parameters for one or more fixtures.

	Calls the Color Picker dialog to select an RGB value. Select a unit, click the icon and set the color.
	Sets all colors to maximum giving white.

⬚	Untouch the selected color channel in the selected fixture.
⬚	Untouch and deselect all fixtures.
⬚	Open White: touches all channels (except pan and tilt) and sets them to default values.
⬚	Focus home: sets the focus channels to home position (50% pan, 50% tilt).

It is recommended to perform a `Touch all` command to the fixtures, touching all channels, before doing the programming. This activates all the channels at once and sets them to their default values:

• Select all fixtures by pressing Ctrl-A.

• Then do the Open White command (or Shift-W) and set the pan/tilt channels to 50% using the Focus Home command (or Shift-Q).

• It is also possible to manually untouch channels by using the commands Untouch Channel (or U) and Untouch Full (or Shift-U).

The icons for the Live FX functions will be explained in the Life FX chapter.

17.5   Setting channel values

Note that the channels are not displayed in order of the DMX channels of the fixture; they are grouped into Intensity, Focus, Color and Beam channels. To set the DMX value of a channel, simply click & hold it and then drag to the left or to the right. You can also set the value by using the right mouse button context menu, keyboard shortcuts or the command line.

Click on a channel and move the mouse to change a channel's value. The speed can be adjusted in the main menu under `Extras` | `Application Options` in `Mouse`.

Pan and Tilt channels: there is a special 3D mouse control for Moving lights. Regardless of whether you click pan or tilt the mouse influences both. The X-axis of mouse movement controls pan while the Y-axis controls tilt. To disable this feature and set pan and tilt channels individually, hold Alt when clicking a pan or tilt channel.

Shifted Slide: to fine-tune the value of a channel hold Shift while moving the mouse. The speed can be adjusted in the main menu under `Extras` | `Application Options`, in `Mouse`.

Spread: to spread a value over several fixtures, hold Ctrl while moving the mouse. If a faderunit is connected you can hold the e:cue key while turning a jog wheel to achieve spreading. Values or settings, i.e. for gobos, can be chosen from a list if you right-click on a channel and select `Set to`.

Using the faderunit

Use the keys B,C,F,... next to the jog dials to quickly assign them to channel groups (Beam, Color, Focus...). Red bars show the channels to which the jogs are currently assigned.

Using the Command Line

Either set the cursor into the Command Line or press Tab.

Channels can also be set by typing commands into this command line. The following syntax is used:

ScreenId#ChannelName@[Value | F][% | x]

Set the value of a fixture channel; Value is a number, F is full, % is a percent value from 0 ... 100, x is a DMX value 0 ... 255.

Other commands are:

:MediaFile   Play media file on Media Player 1
;MediaFile   Play media file on Media Player 2
!Command()   Execute a single e:script command
$MacroName Execute a macro

The Command Line has a history feature. Previous commands can be repeated by using the cursor keys when the cursor is placed in the Command Line. The history is kept when the Programmer is closed. Alt+Down shows all past commands.

18   The Color Picker

The Color Picker is a very helpful tool to set single colors or to create spreads over several fixtures. The color can be selected in the HSB (Hue, Saturation, Brightness) color model by clicking in the circle, or in the three dimensional RGB color model by moving the points.
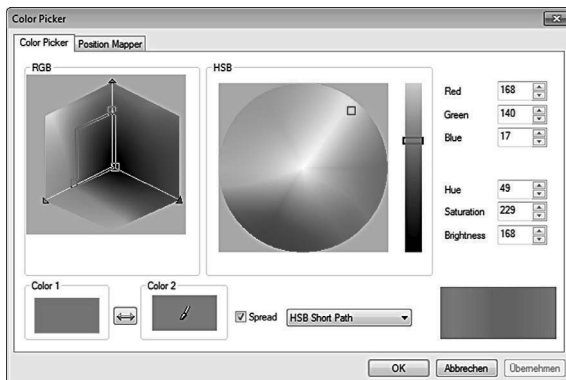
The Color Picker only works for fixtures which support CMYK or RGB color. If the fixture stays black after using the Color Picker, check if the Intensity channel is set to 0%. You can either select a single color for a channel or create a color gradient. Select more than one fixture of the same type.

- Open the Color Picker and select the first color.
- Click `Color 2` and select the second color (the checkbox `Spread` must be ticked).
- Select a gradient model from the drop down box:
  RGB: Most authentic gradient.
  HSB Short Path: Shortest path along the HSB color circle.
  HSB Long Path: Longest path along the HSB color circle, involving all colors in between.
- Use the button between the two color fields to exchange both colors.

Now you have to define in the Position Mapper tab how the colors are spread:
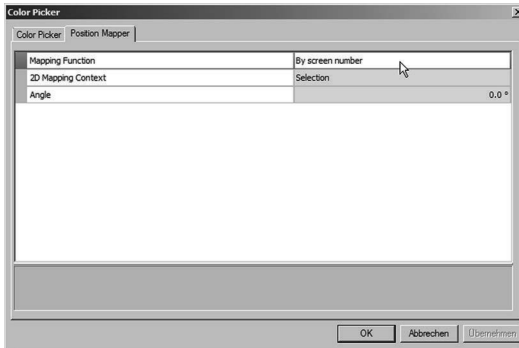
Mapping:

- By screen number, Mirror by screen number - spreads the colors beginning from the lowest screen position to highest, so for a matrix device from top left to bottom right; or vice versa, if mirrored.
- Random, Random with fixed seed - distributes the color mappings by random, giving a patchwork look.

The following mappings only make sense for matrix (2D) fixtures like PXL Boards and video walls where a Live FX is running (e.g. a sinus or ramp effect, see Chapter Live FX for details).

- Linear (2D) - mapping horizontally from left to right.
- Polar (2D) - mapping from center to outer edge.
- Radar (2D) - like a radar beam wiping over an area.
- Spiral (2D) - similar to Radar, but an ongoing movement.
- Mirror (2D) - Mirror mapping at center to outer edges, horizontally
- Kaleidoscope (2D) -just as the name implies, a pattern from inside to outside and reverse.

2D Mapping Context: The Mapping Context can only be selected when a 2D Mapping is used.

• Selection - only the selected fixtures.

• Video Canvas - the current video canvas

• Section - the whole section.

Angle: You can turn the 2D mapping anti-clockwise in degrees, not available for non-2D mappings.

All changes in the Color Picker are transferred to fixtures immediately, so you see the chances at once. Changes are not transferred to the Preview Window, here the update runs on closing the Color Picker. The Color Picker is not only available in the Programmer main window, but also in the Preview Window.

19   Managing devices

19.1   Installation of drivers

The e:cue Programmer can make use of the several e:cue hardware devices as well as of many third party devices. For these devices the Programmer needs drivers which are installed during the first installation. Several drivers are available, there are drivers for physical devices like Butler, Butler XT, ETH2DALI or Excite+, and virtual drivers for additional functions like Imagine. In this chapter we will deal with devices, drivers and configuration of devices.

> ⓘ   Firewalls (in hardware as well as in software) prevent the e:cue Programmer from connecting to network-based devices. If you have a firewall running, either disable it or unblock the following ports: TCP/IP 31772, 31773, 31774, as well as FTP and Telnet ports. Furthermore the Security Preferences which are set in Microsoft Internet Explorer can prevent successful uploads when they are set to High.

The process of registering devices in the e:cue Programmer is quite similar for all different devices that are supported. This also includes virtual devices like visualizers like Imagine. All actions happen in the Device Manager. For a detailed description see the Setup Manual of the device.

19.2   Device configuration

To open the e:net network device setup for a particular device, switch to the Network tab in the Status Windows. Here you can see a list of all visible devices inside the network, if they are already reachable by the Programmer. Perform a double-click on the device that you want to configure. This will open the device setup window for that device. The device setup differs from device to device, as they have different functions and parameter. Before a device becomes visible in the Network tab it has to be connected with the Device Manager.

19.3   Using the Device Manager

To start the Device Manager click the smart-phone icon in the top icon menu of the Programmer, or select View | Device Manager in the windows main menu. In the Device Manager you can register all the input and output devices the   Programmer can communicate with. To register devices, you have several options: The easiest way is to run the Automatic Device Wizard. The Device Wizard will find any new compatible devices in the network and present them in a dialog. Here you can select the devices that you want to add to your show. This includes e:bus devices like the Glass Touch series by default. To start the Automatic Setup Wizard, press in the device manager toolbar The other way to add a

device is to press the Add Device icon (left circle) and then to manually select the device you want
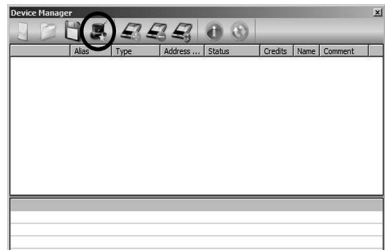
to add. This opens the device properties window for the device that you are about to add. First of all, you have to enter necessary information like e.g. IP Address (this depends on the particular device type). Press `Ok` to confirm. You can open the device properties later by double-clicking a device or by selecting the Modify Device icon (right circle).

For further configuration instructions, please refer to the chapter of the particular device you wish to install. The parameters and their values differ with different devices.

The devices recognized by the Programmer today are:

- Excite+ and Nano+
- Butler, Butler S2
- Butler XT, Butler XT2
- Butler PRO DMX/RDM, e:pix
- ETH2DALI engine
- Media Engine 2 DMX module
- LCE I/O interface
- LCE2 I/O interface
- Glass Touch series
- e:bus Input Module
- Moxa 12xx and 22xx interfaces
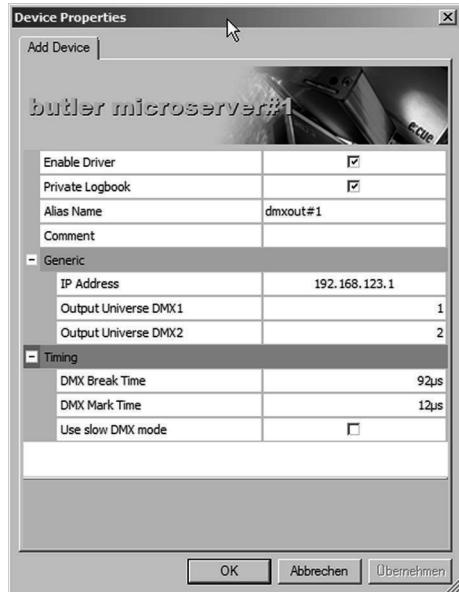
Devices that are not listed above cannot be registered automatically through the device wizard. These must be registered manually. All available interfaces are displayed when adding an interface manually.

You can import and export complete device configurations in order to transfer them to other shows easily. To export a device list to a file, just press the diskette select folder and filename and then press `Save`. To import a device list, press the folder icon, select the device list file that you want to import and press `Open`. If you import a device list, any existing items in the device manager will be deleted!

19.4 Basic settings

Several basic settings are alike for all devices that can be added into the e:cue Programmer. These are as follows:

Enable driver	The device driver will only be active if this box is checked. If not, the driver will remain inside the device manager but will not be functional.
Private logbook	Check this option to enable a separate logbook tab for the particular device.
Alias name	The alias name identifies the device driver inside the Programmer. This is e.g. needed when using macro commands for device operation. Normally, you can leave the suggested name.
Comment	An optional comment about the driver. You can type in e.g. the physical location of the device or any other information you might need.

Installing e:net devices

Here is an example how to connect an e:net device, in this case a Butler engine. There are some pitfalls where you do not get e:net devices online.

ⓘ **It is not advisable to use an e:net in a network domain or in a network where you do not have full control over used addresses. Also, heavy traffic in a network can interfere communication between e:net devices!**

The Butlers have general factory settings, e.g. for the IP address and the netmask. Before connecting e:net devices take care for the following things:

• Switch off all firewalls in your Windows system, if in hardware or in software!

• To be able to change the network settings in the Butler the IP address of your PC/LCE must be in the 192.168.123.* range! If your system is member of a domain or your IP settings are controlled by DHCP change the IP address for your network adapter manually to e.g. 192.168.123.100 in Windows' IP4 network settings (`Control Panel` | `Networks` | `Adapter settings` or similar). Otherwise you will see the e:net device in the Network tab but you are not able to configure it!

• Connect PC/LCE and e:net device to a network switch or hub with usual RJ45 patch cables. When connecting PC/LCE and e:net device directly you have to use a crossover network cable (TX and RX lines crossed).

ⓘ **All devices in the Device Manager must have unique names! Otherwise the drivers are not addressable correctly.**

- Start the Programmer, connect the Butler to your system (directly or via switch). You can see the Butler in the Network tab of the Status Window with its factory address of 192.168.123.1; to avoid address conflicts set your system to a different address!
- Click in the Network tab of the status window on the Butler. The Device Configuration dialog opens.
- You can now set the Butler's network address, netmask and network gateway. Use 255.255.255.0 (Class C network) for the netmask, 0.0.0.0 as default gateway (no gateway).
- Set the IP address to a value which fits to your current network range. As we do not use DHCP (Dynamic Host Configuration Protocol) in the Butler be sure that no address conflicts happen. If you are running a separated network only, set the IP address into the 192.168.123.* range to an unused IP address.

Device Setup	
butler	
Name	
IP Address	192.168.123.1
Subnet Mask	255.255.255.0
Gateway	0.0.0.0
IR Remote	Auto
Master Slave Group ID	0
Run Mode	Standard
Run Mode Parameter	0
Repeat on end	Disable
Timecode Master	Disable
Don't cycle to last cuelist	Disable
On power up goto last cuelist	Disable
Unlinked slave fades black	Disable
Show Upload	Allowed
Firmware Update	Allowed
Firmware Version	V2.1.20
Build Date	Jun 07 2010
IR Version	V2.10
Show Name	
Show Creator	
Cuelists	0
Show Size (kB)	0

- Close the dialog with OK, the Butler gets a new network configuration which will become active now. You do not have to restart the Butler.
- Exit the Programmer, if necessary change your systems IP address to the old value or reintegrate it into your domain. Make sure that the network bindings are correct, see the Extras | Application options | Advanced tab to check network bindings.
- Restart the Programmer, the Butler appears with its new IP address in the Network tab of the Status Window.
- Activate the Device Manager and start the Automatic Setup Wizard. The Butler will be discovered. With the Select or Deselect buttons you can select all or none of the displayed devices.
- Close the Device Manager dialog with OK, the Butler is now available as an DMX output device.

• In the Device Manager, double-clicking the left icon before the device opens the Device Configuration dialog.

• Give the device a descriptive name.

The Butler is now ready to use and fully configured. All other e:net devices are configured this way, there may be different parameters. Have a look at the Setup Manual for configuring the various e:net devices.

As a second example we will now configure a Butler XT.

(i) **Never assign the same Alias to more than one device! The Alias becomes the internal address of the driver, non-unique names hinder the correct addressing.**

19.5 Configuring a Butler XT

The basic procedure, selecting the device in the Network tab in the Status Window, stays the same. However, the parameters set for a Butler XT differ from a Butler.

The Butler XT has much more functionality than a Butler. You can set the internal realtime clock and the day light saving setting, merge the DMX streams from DMX universe #2 into #1 and many more features. See the Butler XT Setup Manual for details about the settings of the Butler XT.

After setting the network and device parameters, open the Device Manager, call the Automatic Setup Wizard, select the Butler XT. The display of the device status should go to **warming up** and then to **online**. The Butler XT is now a DMX output device and ready for configuration.

Double-click on the Butler XT in the Device Manager and the extended Configuration Window will open. Here you can:

- Assign actions for the two buttons on the Butler XT, once for online mode, when the Butler XT is connected to the Programmer.

- Assign actions for Offline or Standalone Mode, again you could simply play a cuelist, or set the intensity for a fixture up or down.

- For both cases, online and standalone mode, assign different actions on key-press and key-release, e.g. play a cuelist when the key is pressed, and stop it when the button gets released.

- Assign actions to the dry-contact inputs. Move the mouse cursor over the dry-contacts in the picture.

- Set triggers, actions that are executed when certain conditions are true. This could be sunrise or sunset time and many more.
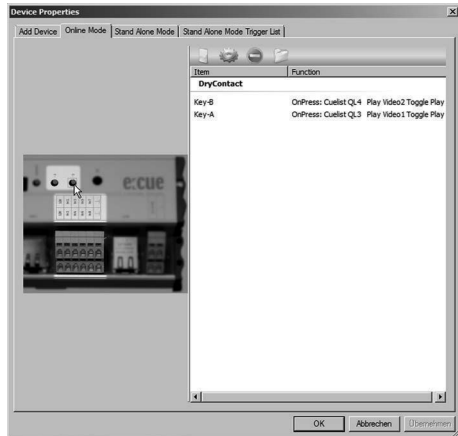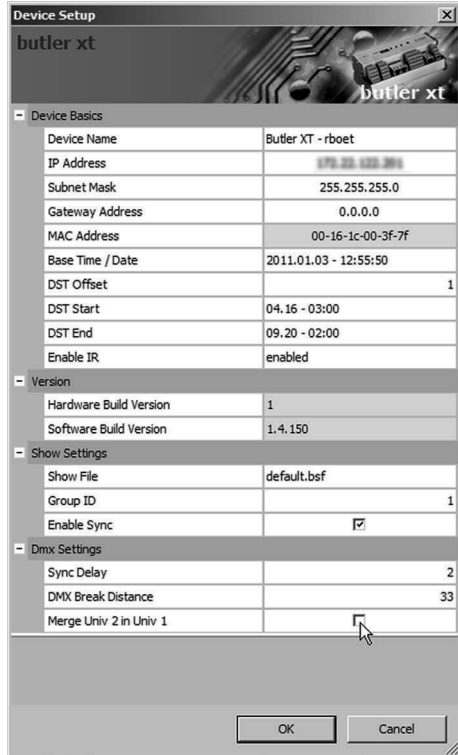
• To set actions for the buttons click on the buttons in the picture, or double-click the button (Key) in the right part of the window.

To add or remove a Trigger, use the plus and minus buttons, to rearrange the list use the up and down buttons. Select the Trigger, e.g. sunrise time, and select an Action.

An existing Trigger can be edited selecting the trigger rule and pressing the cogwheel button.

If e:bus devices are connected to the Butler XT they have their own configuration and setting dialogs. Each of these dialogs have their specific layout and parameter set.
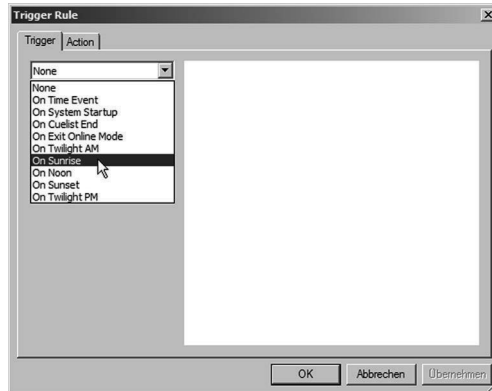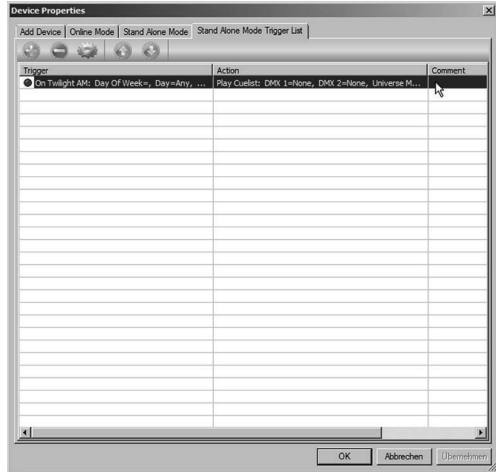
19.6   Configuring a Butler XT2

Again, the Butler XT2 can be integrated and configured like Butler and Butler XT. The parameter set of the Butler XT2 is listed in the Setup Manual of the Butler XT2. Click the network tab and the Butler XT2, assign IP address and network, close the dialog and transfer settings and use the Device Manager to assign the Butler XT2 to the Programmer's network.

Assigning actions and triggers for the Butler XT2 is different from the Butler XT. The Butler XT2 does not have separate standalone and online triggers and actions, you can define all triggers and related actions in one step. During the export process, when sending cuelists and triggers to the Butler XT2, not supported triggers and actions will not be transferred. The configuration of the Butler via the Device Manager has some additional parameters.

• The Butler XT2 supports an RDM-only mode. If the checkmark for »RDM only mode« is set, only RDM will run and no DMX data gets sent to the outputs. Still you have to enable RDM for the outputs.

• The DST (daylight saving time) checkmark enables the Programmer so send DST information to the Butler XT2 while exporting shows to the Butler XT2.

• The »Action Pad« checkmark must be ticked if the Butler XT2 is used with a Remote Action Pad. If this parameter is not enabled, no Action Pad pages will be exported to the engine. See the Action Pad chapter for details about Action Pad and Remote Action Pad.

19.7   Triggers and Actions for Butler XT2

For the Butler XT you had to define Triggers and Actions for online and standalone mode separately. For the Butler XT2 these settings are harmonized for both operation modes. In online mode the Triggers from the Butler XT2 are routed to the Programmer, e. g. dry contact Actions or e:bus Actions. In standalone mode the Butler XT2 handles these Actions and starts or stops cuelists. The Triggers and Actions for the Butler XT2 are not set separately but in a single run. There are no different tabs like for the Butler XT.

When the Butler XT2 is in online mode all defined Triggers and Actions are run in the Programmer. For standalone mode only those Triggers and Actions get exported that the Butler XT2 can handle in standalone mode. All online mode-only Actions and Triggers are not exported.

Triggers supported in standalone mode

See the following table which Triggers and Actions are supported by the Butler XT2 in standalone mode.

Initialization	Parameter context ignored
Cuelists	Only stop/end supported
Hourly	Seconds are ignored, only hour/minute
Label	Fully supported
Periodic	Fully supported
Sunrise	Fully supported

To start cuelists in parallel, use the Trigger Label instead.
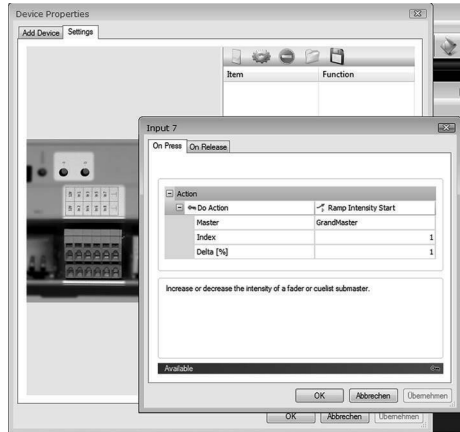
Supported Actions in standalone mode

Only actions that the Butler XT2 can execute in standalone mode are exported during the upload of actions and triggers (Quick Update). Actions and Triggers not supported for standalone mode are ignored.

Cuelist	Supported except parameter Choose
Mutual Exclude Group	Fully supported
Set Intensity	Fully supported
Ramp Intensity Start	Fully supported
Ramp Intensity Stop	Fully supported
Reset All	Fully supported
Step Intensity	Fully supported
Stop all cuelists	Fully supported
Trigger Label	Fully supported
Hibernate	Fully supported
Freeze	Fully supported

Configuring e:bus devices

If the Device Manager detects a new device it also offers a scan for e:bus devices. Here an example for the e:bus Input Module. After the device scan with the Automatic Setup Wizard the e:bus module is included in the list of known devices. The e:bus devices are listed in a tree-view like manner below the engine that they are connected to.
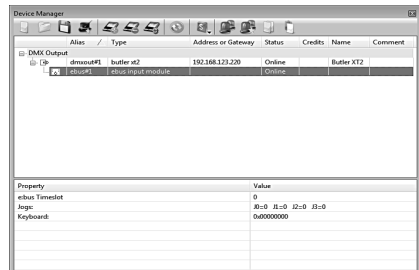
Again a double-click on the e:bus Input Module shows a configuration dialog for the module. You can assign on-press and on-release actions for the switching contacts as well as for the motion detection sensor. Separate actions are defined for online mode, where the module controls the Programmer, and standalone mode, where the module control the Butler XT. Move the mouse cursor over the screw terminals in the picture and click to assign an action.

There is one exception here, it is the light intensity sensor in the e:bus Input Module. This can only be used in online mode and you do not assign an action, but a fader. You can then use this fader as master in a cuelist or access it from en e:script macro.
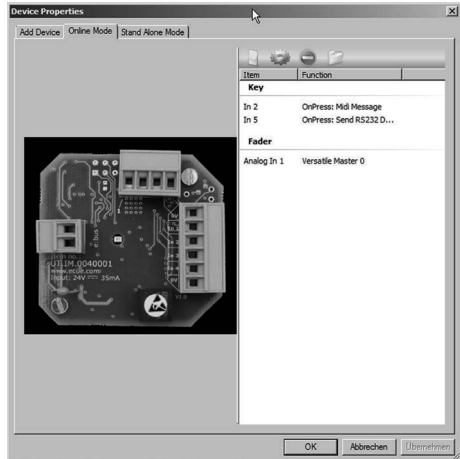
This way the switching contacts with the e:bus Input Module can serve as control for actions executed in the Programmer, or can control functions of the Butler XT the same way as the buttons and dry contacts in the Butler XT. With other e:bus devices like Glass Touches the logical view is the same, only the configuration is different.

19.8 Simulating devices

Even if devices are not really present you can add them to your patch. Adding a device is a possibility to get familiar with the many available in the Programmer.

Just use the Add Device icon in the Device Manager's main menu and select the device you want to have.

Even if the device is not really present, you can see which actions can be assigned in online and standalone mode, or where actions and Versatile Masters are available. This is not only possible for terminals, but also for "phantom" engines. As you see here, there are also non-device drivers like the Imagine driver.
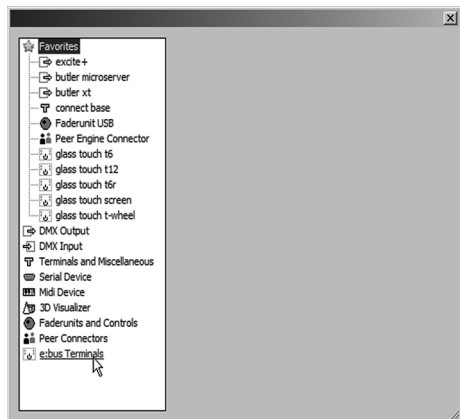
19.9 The magic of context menus

In many cases there are context menus behind entries in lists and overviews. One example is the Device Manager and the Butler XT with the e:bus Input module. Select a device and click the right mouse button. For the e:bus Input Module you will get the following menu:

- The Properties dialog
- Blink and Beep: the Locator LED in the module will either light up for some seconds or continuously.
- Copy and Paste control settings, if you have several modules that are configured similarly.

Also for the Butler XT there is a context menu behind the entry in the Device Manager:

- Again the Properties dialog.
- Switch status: change the status displays below.
- Quick update: send all changes, including cuelists, to the Butler XT.
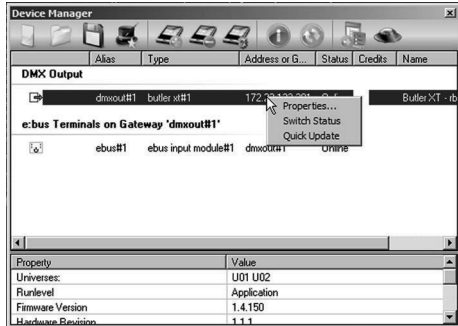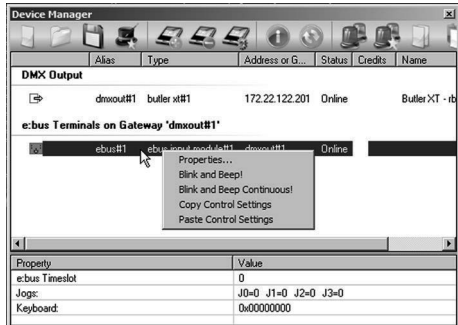
19.10 Device Manager Overview

Here are all menu icons from the Device Manager:

	New configuration set. All current devices will be deleted and a blank configuration will be prepared.
	Import a driver list. You can save your current configuration as a driver list and import it again later.
	Save driver list. Just what was mentioned above.
	Device Configuration Wizard. Scans all available networks and displays them in a selection list. Also e:bus devices can be discovered and selected.
	Add a driver. These are not only drivers for devices but also standalone drivers like Visualizer or MIDI interfaces.
	Deletes a driver/device from the current configuration.
	Opens the Configuration dialog for this device/driver.

	Opens a dialog showing the available Credits. Credits are necessary to use third party devices. The various versions of the Programmer (Standard, Enterprise, LCE) have different numbers of Credits.
	Restart all drivers. If you are not sure if all drivers are active, or if you made many changes, restart them all.
	Switch the status display in the lower part of the Device Manager (only for input/output devices).
	Quick Update sends all changes except DMX show data, to the engines and devices. This is the best way to be sure to send all updates made (button configs, e:bus configs, Triggers, ActionPad).
	Blink and Beep: enables a locator device in the unit for some seconds (e:bus devices only).
	Blink and Beep: enables a locator device in the unit until disabled again (e:bus devices only).
	Copy control settings from this device to clipboard (e:bus devices only).
	Paste control settings for this device from clipboard (e:bus devices only).

Fixture Properties

In the list of patched fixtures you can modify the properties of fixtures by right-clicking on a fixture. The context menu allows to change the section, the fixture belongs to, its name, invert tilt an pan for moving heads or assign an additional submaster, a Versatile Master etc. You can also modify all and more properties in the Fixture Properties dialog. The Fixture Properties dialog defines basic fixture settings. Select the Patch tool (spotlight icon), right-click a fixture and select Properties

The dialog has two tabs, Basic and Mapping. Before the Patchelor was available, positioning and adjustments in the section were made here. Today, these mapping parameters are filled in by the Patchelor, the patch file contains these values, when a patch file is imported, the mapping is taken from the patch file.

Basic	Section	The section the fixture belongs to.
	Screen Name	Usually the fixture gets a unique ScreenID for identification in the Groups & Fixtures window. If desired, a single ScreenID (which is visible as one fixture in the Programmer) can be used to control multiple real fixtures of the same type:
	ID	
		Highlight multiple fixtures by clicking & dragging or holding CTRL/SHIFT while clicking additional fixtures.
		Right-click into the selection to bring up the context menu.
		Select Set Screen ID from the context menu.
		In the dialogue which appears, enter the desired ScreenID and uncheck the box for Auto Increment. Click OK.
		Now all the highlighted fixtures are patched to a single ScreenID. In the Specials column of the patch table the first fixture is labeled Daemon, while all dependent fixtures are labeled Shadow. Only a single fixture (the Daemon) will appear in the Programmer View.
DMX Address	Universe	The assigned DMX universe.
	Address	The address in this DMX universe.
Intensity	Preheat	To set a range in which the intensity value of a fixture will stay, this is the lower value.
	Limit	To set a range in which the intensity value of a fixture will stay, this is the upper value.
	Master	To assign a Versatile Master as additional submaster.
Filter	Color	To reflect the fact that many lighting fixtures come with a built-in color filter, this feature allows you to select a color for the fixture. The selected filter color is shown in the Programmer View as well as in the preview window.
Focus	Invert Pan	Inverts the pan channel.
	Invert Tilt	Inverts the tilt channel.
	Swap Axis	Swaps pan and tilt channel.

Using devices for DMX input

There are several ways to receive DMX input from an external device, either you can use an e:cue Exite+ for DMX input and output, or with the LCE2 and LCE2-fx you have DMX input interfaces built-in. This DMX input can be recorded or can be used to control the Programmer. In general, the Excite+ and the LCE2 DMX input behave the same way.

19.11 Using an e:cue Excite+ or the LCE/LCE2 DMXin

The Excite+ is an USB to DMX interface and has one DMX output or input, but not at the same time. To use the Excite+ as interface open the Device Manager and add a driver for the interface. As an DMX input interface select the DMX Input section and use either Excite+ or ME2 DMX Input Module. After selecting the driver you can configure the interface either as pure DMX channel or as Remote Control. As a DMX source the DMX stream can be merged into a cuelist or can be recorded into a cuelist.

(i) When using the ME2 Input Module for DMX you always have to add both ME2 drivers, `MIDI Device | MIDI` and `Terminals and Miscellaneous | ME2 Input Module`!

Enable Driver	Set driver active or inactive
Private Logbook	Enable to create a separate logbook in main window.
Alias Name	A symbolic name for the interface.
Device ID	Unique ID for device, use 0 for auto assignment.
Merge incoming DMX	Merge incoming DMX into the output stream of the Programmer.
Merge into DMX universe	Select the DMX universe, where the DMX stream is merged into.
Enable Remote Control	Activate remote control function
Remote Control Address	Base address for remote control receiver.
First Cuelist	Number of first cuelist that can be controlled.
Last Cuelist	Number of last cuelist that can be controlled.
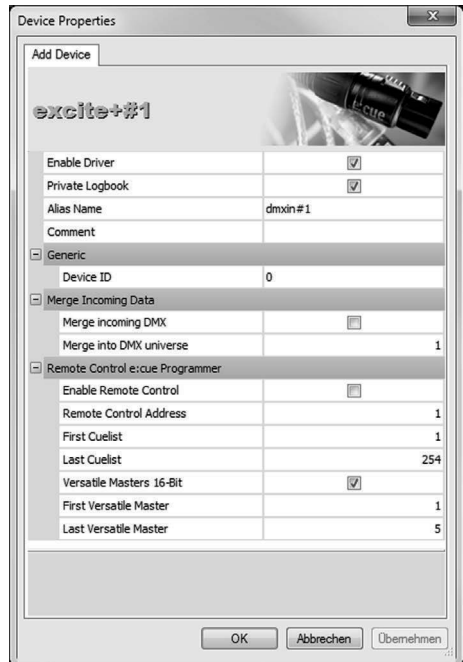
Versatile Masters 16 bit	Enable 16 bit versatile masters, MSB first, LSB last.
First Versatile Master	Number of first Versatile Master to be controlled.
Last Versatile Master	Number of last Versatile Master to be controlled.

19.12 DMX Input Remote Control channels

Address	Level	Function
1	0 1 ... 254 255	Default Cuelist number Reset all cuelists
2	0 1 ... 255	Default Cue selector
3	0 ... 63 64 ... 127 128 ... 191 192 ... 255	Stop Pause Default Play
4	0 ... 63 64 ... 191 192 ... 255	Skip backward Default Skip forward
5	0 ... 255	Grandmaster
6	0 ... 255	Versatile Master#1, MSB
7	0 ... 255	Versatile Master#1, LSB
8	0 ... 255	Versatile Master#2, MSB
9	0 ... 255	Versatile Master#2, LSB
10	0 ... 255	Versatile Master#3, MSB
11	0 ... 255	Versatile Master#3, LSB
12	0 ... 255	Versatile Master#4, MSB
13	0 ... 255	Versatile Master#4, LSB
14	0 ... 255	Versatile Master#5, MSB
15	0 ... 255	Versatile Master#5, LSB

19.13 Using the dry contact inputs on LCE

Like the DMX interfaces it is necessary to add both drivers in the Device Manager. Open the Device Manager and add both the drivers `MIDI Device | MIDI` and `Terminals and Miscellaneous | LCE2 Input Module`!

You can view the status of the dry contact inputs selecting the Input Module in the Device Manager.
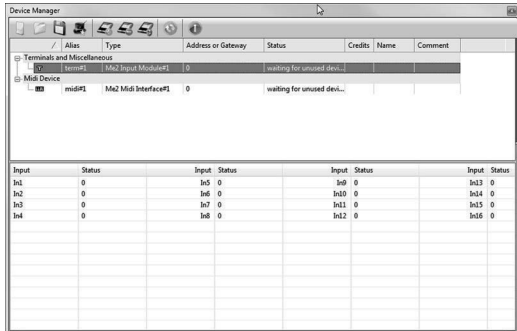
19.14 Using the dry contacts and relays on LCE2

In the LCE2 there is no built-in MIDI interface, additionally there are two relay outputs. To use the dry contacts and relays it is sufficient to add the terminal driver from the LCE2. I/O subsystem.

Either the DMX or the terminal drivers can be added or both.

Double-clicking on the devices in the Device Manager opens a dialog where you can set logbooks and behaviuor of the relay output.s

Dry contacts can also be queried via e:script for specific purposes. Also the relay outputs can be controlled with an e:script macro.
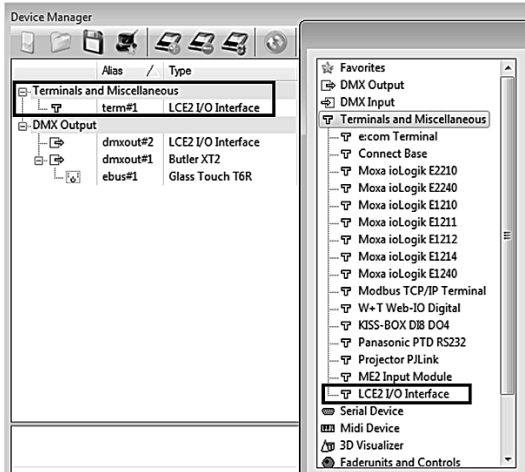
19.15 Assigning Actions to LCE/LCE2 terminal drivers

To assign Actions and Triggers to terminal inputs open the Automation Dialog and assign an event to the terminals inputs. Select Terminal Event with the proper terminal ID. You can choose between Input Raise or Fallback or other parameters. The relay outputs can be set from the Programmer directly. In the Device Manager select the LCE2 terminal driver, right-click for a context menu and select which output to set to which state. In the context menu you can generate e:script for the command.

85
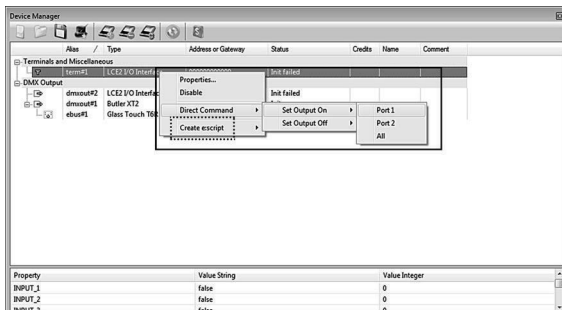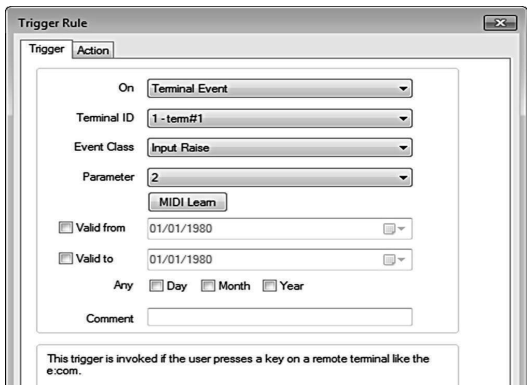
19.16 Using digital inputs and relays of the ETH2DALI

To assign Actions to the digital inputs of the ETH2DALI, open the Device Manager, double-click the terminal device of the ETH2DALI. Under `Settings` click the digital input to use and select an Action to be executed. You can assign different Actions for the rising and the falling edge of the signal.
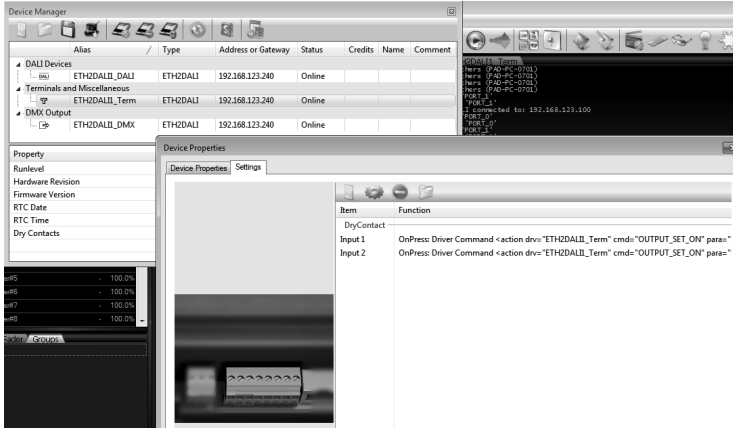
To set the relay contacts closed or open, use a `Driver Command` as Action, select the ETH2DALI, the port and the target state.
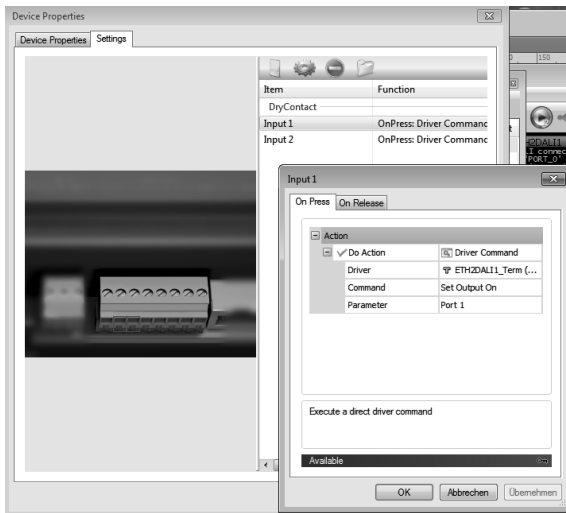
20 DALI with the LAS

20.1 Programmer support for DALI

The Programmer supports DALI devices and ballasts with version 7.0 and higher. To connect DALI devices to the Programmer, you will need at least one e:cue ETH2DALI engine. This engine is connected to the LAS server like every other engine using the e:net protocol over Ethernet/TCP/IP. See chapter „19 Managing devices" for details how to connect an engine, how to configure it and add device drivers.

20.2 Integrating the ETH2DALI engine

Connect the ETH2DALI to the e:net network, open the Device Manager and execute a network scan with the Automatic Device Wizard. The ETH2DALI will be found.

> (i) **Make sure that the ETH2DALI has a unique IP address. In factory state the IP address will be 192.168.123.1. All devices in the network must have unique IP addresses, otherwise communication will be disturbed.**

After integrating the ETH2DALI and assigning drivers, the ETH2DALI will show as three devices: one for DALI, one for DMX and one for the terminal block with the digital inputs and the relay outputs.

Double-clicking on the devices opens the configuration dialog of the Device Manager. In the dialog you can assign parameters and functions. For the DALI section assign a unique and descriptive device name, select a private logbook for the DALI interface and leave the driver enabled.

The basic parameters like IP address or netmask can only be modified, if you remove the ETH2DALI from the Device Manager and change the values in the Network section of the main window, as mentioned before.

To use the Action Pad or Mobile Action Pad with the ETH2DALI, the Action Pad checkbox in the Export section must be set active.

For details, how to set the system parameters online, via web browser or with the cursor keys on the ETH2DALI, see the Setup Manual for the ETH2DALI. After integrating the ETH2DALI, close the Device Manager.

> (i) **Even if the three devices, DALI, DMX and terminals, are the same device, the names for the three sections must be unique! If the names are identical, the system cannot address the drivers.**

20.3 The DALI Manager

To manage and configure the DALI system and DALI devices, connect your DALI ballasts, sensors etc. to the ETH2DALI. Then start the DALI Manager by clicking the **DALI** icon in the top icon menu of the Programmer window:
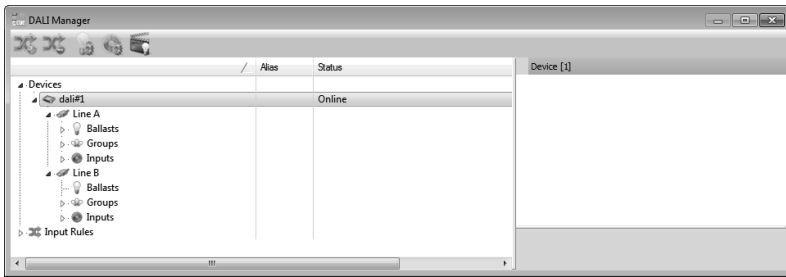
The window shows a single ETH2DALI engine connected to the Programmer with the two DALI lines. If more than one ETH2DALI is connected, you will have all devices in the Devices branch. The Input Rules section is common for all devices and defines rules how to handle switches, motion detectors and light sensors. To insert your ballast and sensors, select one of the lines of the ETH2DALI and click the `Address Ballasts` icon in the top icon menu of the DALI Manager:
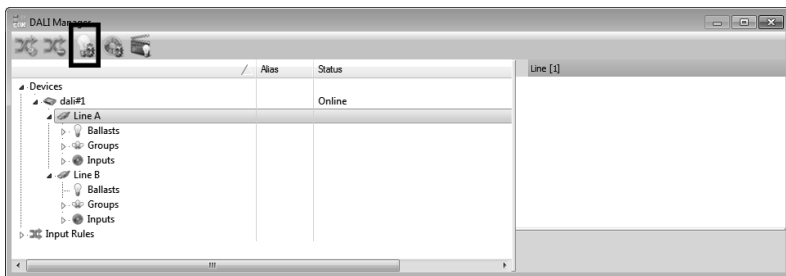
After a warning window, the DALI Manager will now scan the selected DALI line for all addresses and will assign DALI short addresses to the ballasts. Do the same with the icon for inputs:
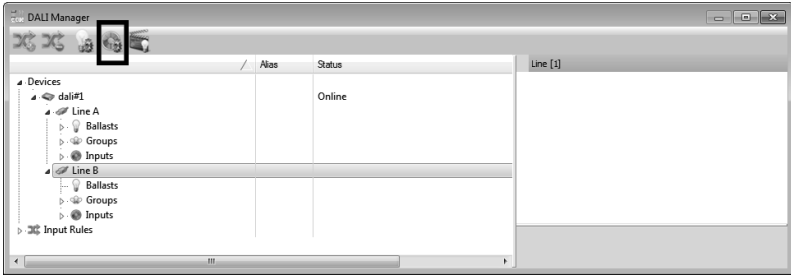
While scanning, the DALI Manager displays the current progress and the assigned short address for the DALI ballasts:
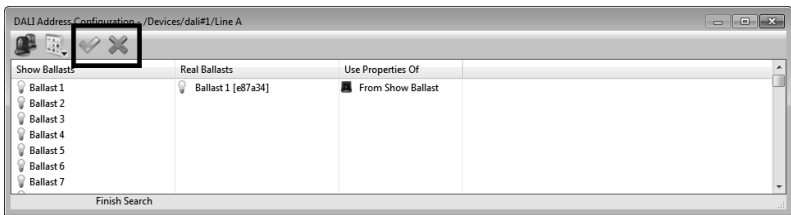
The properties, that are assigned to the device, can either come `From Ballast` (the device) or `From Show` (the Programmer). Clicking on the `Use Properties Of` field opens a drop-down list to select to source of the properties. Multi-select is possible: click one device and the next with the shift key pressed includes all devices in between, use Cntl to select single ones. Click the green tick to assign the addresses now, or the red cross to cancel assignment. After all ballast are addressed, a message window signals the end of the operation.
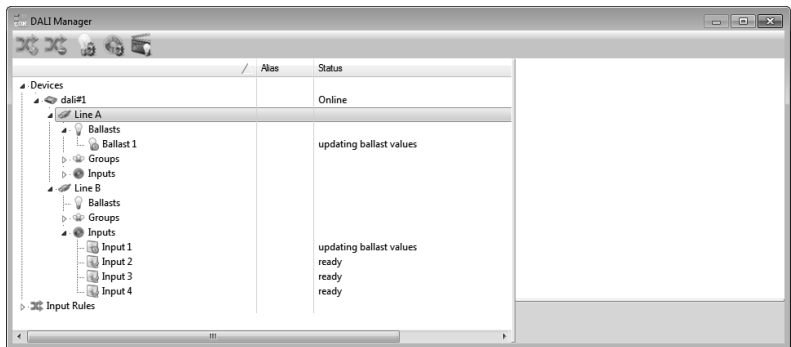
Clicking on a ballast with the right mouse button opens a context menu with four options. Either you can reset the ballast (short address stays the same), reload the properties of the ballast or assign a specific short address.
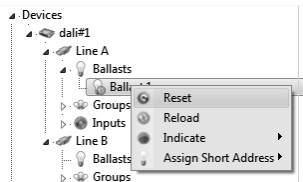
> **(i)** Unlike DMX fixtures, DALI devices are not hotplug-capable. If you add new
> ballasts or inputs, you have to re-scan the configuration to assign proper short
> addresses. Restart the ETH2DALI after configuration changes.

During installation and configuration the Indicate function is helpful. Choosing `Indicate` makes the ballast blink between maximum and minimum value, to locate the ballast. For every ballast you can now set the DALI parameters now, again with multi-select.

> **(i)** The ETH2DALI and the LAS only support Osram sensors, until standards for
> DALI sensors are available. Ballasts are supported, as long as DALI standard
> commands are used by the ballast, no vendor-specific commands..

Right-clicking the complete line with ballasts you have the options to hide or show the complete display of all ballast, scan for all ballasts, reset them, remove the assigned short addresses and select `Indicate` for all ballast on this line.

Selecting a single or multiple ballasts in a line, you can set the parameters for the ballast(s) manually.
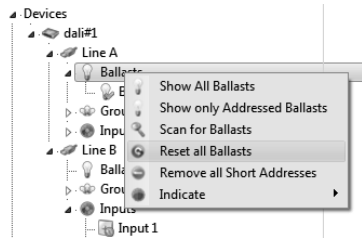
20.4 DALI ballast parameters

In the right part of the parameter area, there are white and grey fields. Greyed-out fields can not be changed and are read-only.

Parameter	Description
Alias Name	The assigned descriptive name.
Short Address	The assigned short address (read-only).
Random Address	The DALI three-bytes full (search) address.
Status	Current status of the ballast (read-only values): • Control Gear Error: error in ballast electonics • Lamp Error: defective lamp • Lamp Arc Power On: error energy-saving settings • Fade Running • Reset State • Missing Short Address
Current Level	Current dim level.
Last On Level	Last intensity value before last dim step
Power On Level	Intensity level when lamp is switched on
System Failure Level	Intensity level in case of a system error (emergency light setting)
Min Level	Minimum intensity that can be dimmed to
Max Level	Maximum value that can be dimmed to
Fade Rate	The number of steps in the fade run per second.
Fade Time	The default fade time. Click on the field to see a drop-down list with predefined values.
Member in Group	Assign this ballast to one or more of the 16 goups in one DALI line.
GTIN	Global Trade Identification Number of the product.
Serial No.	Serial number of the ballast.
Firmware Version	The firmware version of this ballast.
Scenes	Assign predefined scenes to be stored in this ballast.

Assigning groups the other way

You can also assign ballasts to groups when clicking on one of the groups in the group display of the DALI Manager. For all ballasts in one group you can again define parameters like Min Level or Max Level.

Additionally, you can define two values:

• Off Level: intensity which represents the ballast switched off.

• On Level: intensity when ballast is in on state.

20.5 Inputs and Input Rules

Inputs are switches (keys,also over DALI couplers), light sensors and motion detectors at the moment. After scanning the inputs, they are provided with short addresses like ballasts. The DALI Manager identifies the type of input device and marks them with different icons in front of the input address, either with a switch, a circle for motion sensors, and a circle with a bulb for light sensors.
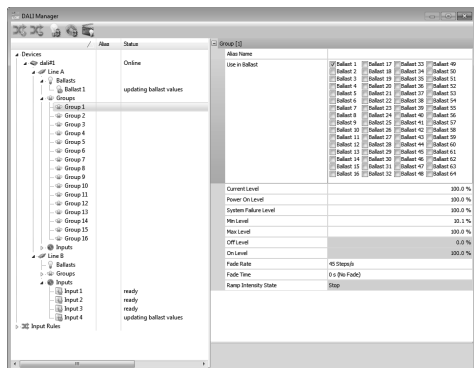
These inputs also have a set of parameters. Again, greyed-out parameters can not be edited here.
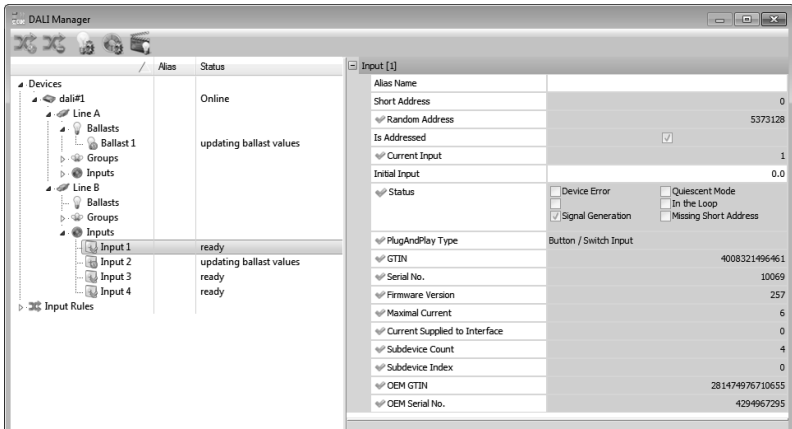
Parameters for inputs

Parameter	Description
Alias Name	The assigned descriptive name.
Short Address	The assigned short address.
Random Address	The DALI three-byte full/search address.
Is Addressed	Device has a valid short address.
Current Input	Current input values sent by sensor. Check the keys documentation which values are provided by switches and motion sensors. Light sensors 0 until 255.
Initial Input	Input level when device gets active.
Status	Current status of the input: - Device Error - Signal Generation - Quiescent Mode - In the Loop - Missing Short Address
PlugAndPlay Type	Button/Switch, Motion Detector or Light Sensor.
GTIN	Global Trade Identification Number of the product.
Serial No	The internal serial number of the device.
Firmware Version	The firmware version of the device.
Maximal Current	The maximum current the device requires.
Current Supplied To Interface	The effective current used by the device.
Subdevice Count	Number of devices in this input system, e. g. 4, if a converter includes four switches.
Subdevice Index	Index of the subdevice in the input system.
OEM GTIN	Global Trade Identification Number of the product.
OEM Serial No.	

Input rules

As motion detectors and light sensors are handled differently, you can define input rules, how input from these sensors is used. Select the line Input Rules and click one of the icons in the top menu to add or remove an input rule.
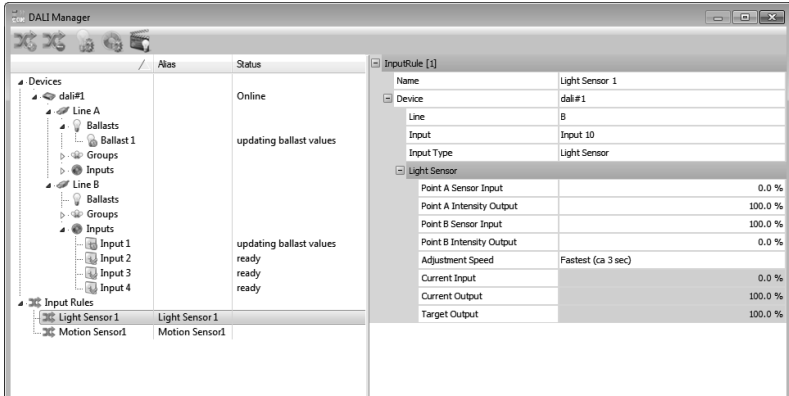
Select the input rule by clicking on it. You can now edit the parameters for this input rule, or with multi-select for several input rules. Parameters are different for light sensors, motion detectors and switches.

Input rule parameters for light sensors

Parameter	Description
Name	Descriptive name for this devices.
Device	Interface for this input.
Line	The DALI line, where this input is connected.
Input	Name of the input.
Input Type	Light Sensor, Motion Detector or Switch/Button
Point A Sensor Input	Value in percent (see graphics below).
Point A Intensity Output	Value in percent.
Point B Sensor Input	Value in percent.
Point B Intensity Output	Value in percent.
Adjustment Speed	The speed of value change with external influence. Click to see a drop-down list with values.
Current Input	Current input, read-only
Current Output	Current output, read-only
Target Output	Target value, read-only

With Point A and Point B you can define a vector as a control function for the light sensor:
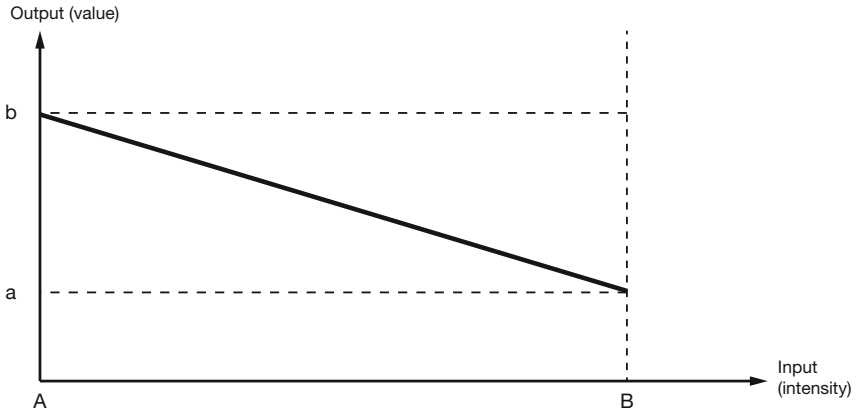
Point A and B are the states with the given percentage of light to the sensor. For these two states you can define the output value in percent that is returned. In this way, you can set the sensitivity of the light sensor and which output will be returned over the light intensity range.

> ⓘ **Dimming in DALI lamps is not a linear dimming, but relative dimming. This way the lower range of light output will react more sensitive to dimming changes than the upper range.**

Input rule parameters for motion detectors, switches/buttons

Parameter	Description
Name	Descriptive name for this devices.
Device	Interface for this input.
Line	The DALI line, to which this input is connected.
Input	Name of the input.
Input Type	Motion Detector or Switch/Button
End Event Time	After an event set the input to on, after this number of seconds the input returns to off.
Retrigger Start	Select if another external event re-triggers the above time frame. If not selected, the input will return to off after this time anyway.

> ⓘ **When renaming an Input Rule, do not forget to adapt the Action, that works with this Input Rule"**

Property states

When editing/changing values for DALI devices, there are several icons used for the state of the property.
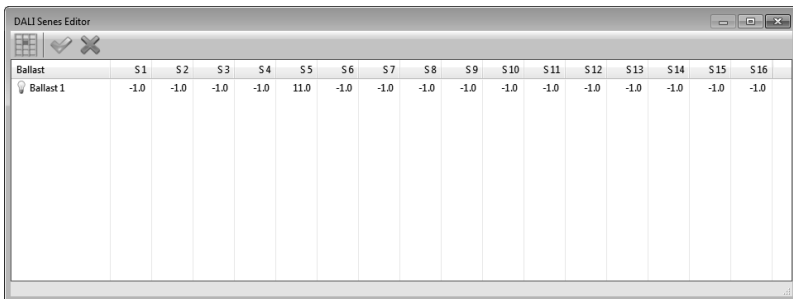
✔	Property valid and transferred.
✎	Property modified, waiting to be transferred to device.
⌛	Waiting for confirmation from device for property.
⣿	Multi-selected properties have different values.

20.6   The Scenes Editor

DALI ballast can store scenes, that can be recalled. A scene is simply a set of dimming values. Scenes can be recalled for a single ballast or for a group of ballasts. The Scenes Editor can edit and transfer the set of scenes upon next parameter transfer. To assign scenes to ballasts, select a single or multiple ballasts (multi-select) in the DALI Manager. There are two types of multi-select. Click the first ballast of a set and click the last ballast in a set keeping the Shift key pressed. All ballasts in between will be selected and sorted ascending in the Scenes Editor. Or keep the Cntl key pressed and click ballasts. The ballasts will be sorted in the sequence you Cntl-clicked the ballasts.
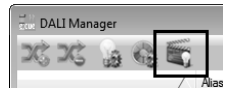
Now open the DALI Scenes Editor with a click on the clapper board in the top menu.

Ballast	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16
💡 Ballast 1	-1.0	-1.0	-1.0	-1.0	11.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0

A value of -1 is the ignore value and means that no value is available. To edit a value click the value and adjust it with the mouse wheel, the little arrows right of the value or enter a value by the keyboard. Press Enter to assign the value. Do this for all scenes.

To edit a complete column for multiple ballasts make sure that no value is selected. Click the table symbol in the upper left of the main menu. Now select a scene value and change it. The new value will be used for all values in this column for all ballasts in the Scenes Editor.

To save the scenes, click the green tick, click the red cross to cancel. You can recall a scene later using a DALI Action for the ballast and the command Goto Scene.

20.7   DALI automation and control

DALI devices are integrated into the Programmer and can be source of a Trigger for automation and target of an Action. Supported DALI input devices are keys, motion detectors or light sensors. DALI output devices are ballasts. A mix between the available infrastructure in the Programmer and DALI devices are possible. So can a DALI input device generate a Trigger, that acts on cuelists or the sequencer. Or Triggers like time/date or other Trigger sources can call Actions working on DALI output devices, which are ballasts. For details about DALI automation, see „Automation with DALI devices" in chapter „16 Automation".

20.8   A working DALI example: intensity control

Connected to the ETH2DALI is a DALI ballast, an LED, a key coupler and a light sensor on DALI line A.

Values for the lamp are rather standard, a minimum intensity of 0.1%, a maximum intensity of 100%, a fade rate of 358 steps per second. The input is connected to DALI line B, the interface has a light sensor, also connected is a key coupler with four switches. Which is not used here. For the light sensor an input rule was defined.

The control function curve uses the full range of input and output: 0% light gives 255, 100% light gives an output of 0. For this example the Adjustment Speed was set to Fastest, in real applications we would use a longer time, so the control would not react to spurious light chances.

In the lower grey fields you can see the current values.

To realize control, we define a Trigger and an Action for the sensor and the ballast.
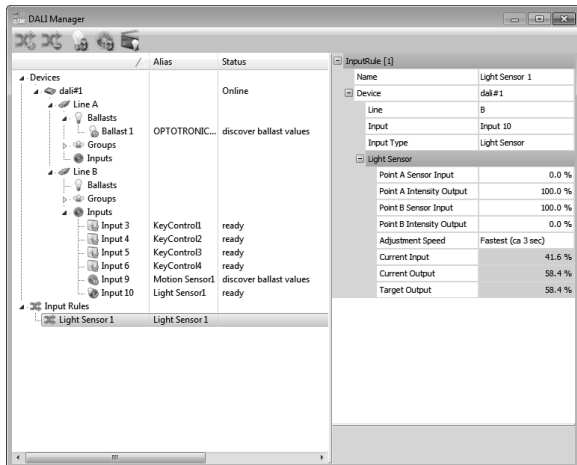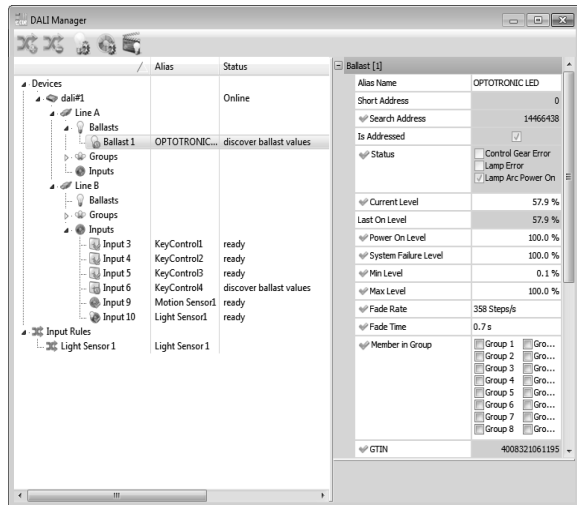
We keep the Trigger and Action simple, as this is just an example.

As Trigger we use a DALI Event, the event source is the DALI Rule, defined in the DALI Manager. It is just the Input Rule Light Sensor1. The Action is also quite simple.

It addresses DALI line A with the ballast Ballast 1, which is the DALI ballast. The command is Set Intensity, the intensity value comes from the Input Rule, this is the Value Source. The Fade Time again was set fast, to see changes for the light sensor nearly as soon as they happen.

As soon as a value change comes from the sensor and the Input Rule, the executed Action sends now a command to the ballast to set the intensity to the resulting output value of the Input Rule.

In the configuration dialog on the previous page, you can see that this is a combined sensor, a light sensor and a motion detector.

When online, use the Fade Time in the Trigger Rule only in cases, where it is necessary. This fading requires a lot of system resources.
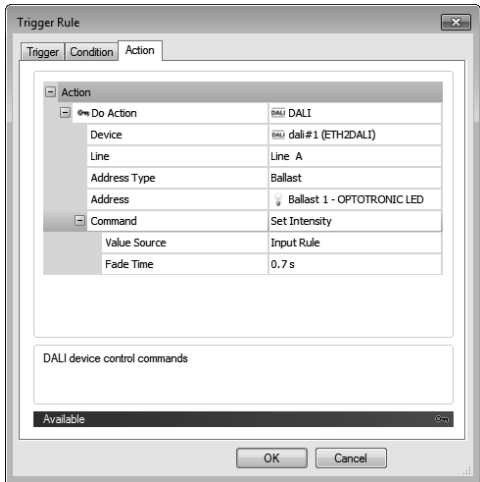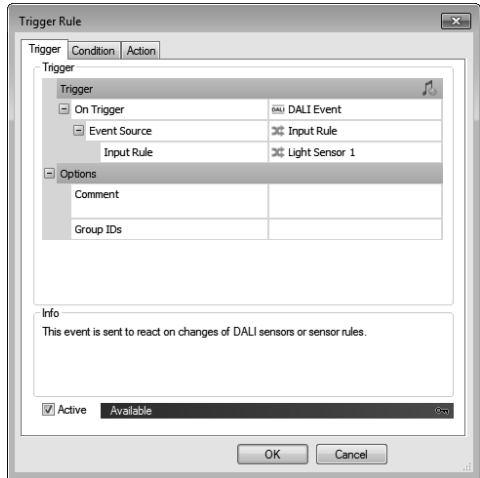
Creating an Input Rule for the motion detector, you could use this as a Trigger, as Action toggling a play of a show:
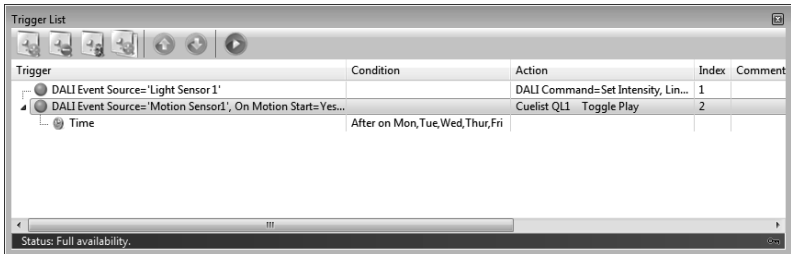
21 Clustering

When you want to execute a standalone installation, e. g. for cost reasons, where more than two DMX universes are required you can cluster Butlers. Clustering means that one Butler XT2 acts as a master and controls and synchronizes several Butler S2 running as slaves. In this way you can realize up to 32 DMX universes with a maximum of 16 engines. The master cares for synchronization.

All engines, master and slaves, are connected via an e:net/ Ethernet path over a switch. The master is the main control unit, it also handles the selection of cuelists played on the slaves. The whole configuration is transparent, you see and control only the master engine, the Butler XT is one case. The master provides all necessary control for the slaves.

Possible clusters are Butler XT2 as master and Butler S2 as slaves, or Butler XT as master and Butler XT as slaves.
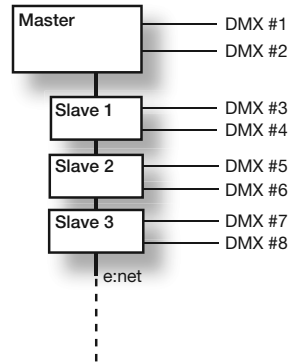
21.1 Configuring Butler XT

At first configure all Butlers XTs, master and slaves, assign proper and unique IP addresses and adjust all other parameters as shown in the previous chapter. Connect all engines with an Ethernet switch to the control server running the Programmer. Do not select the engines in the Device manager! If they are present in the Device Manager remove them from the configuration.

Now do the following:

• Select the Butler XT in the Network tab of the Programmer and call for configuration.

• Set the checkmark »Enable Sync« as active.

• Assign a Group ID, this will later give an identification for the cluster, all engines with the same Group ID belong together. The »Enable Sync« parameter defines this Butler XT as the master.
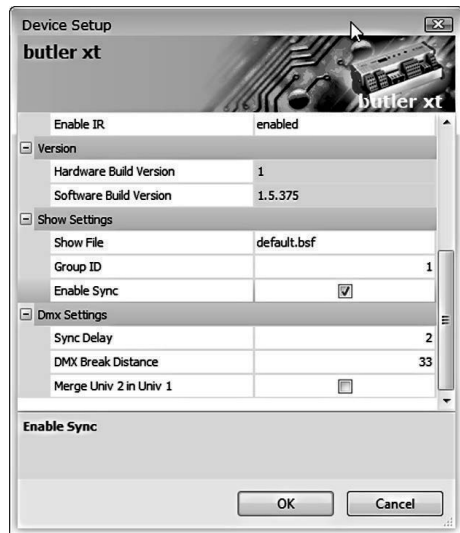
Close the configuration dialog, the changes will be transferred to the later master Butler XT. The slaves do not need special configuration except proper IP addressing and they have to have the same Group ID for clustering. Now open the Device manager and search for all connected devices. Here one Butler XT and two Butlers are present:
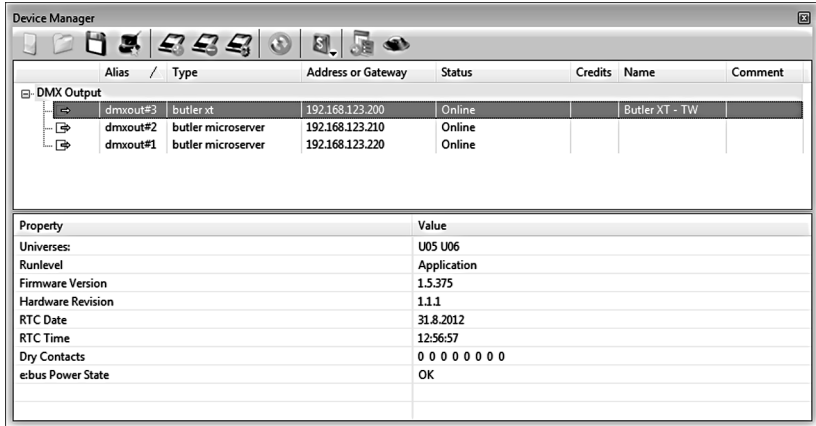
Drag and drop (keep left mouse button pressed over the engine and move) the two Butlers to the master Butler XT. They will now be shown in a tree to reflect the master/slave configuration.
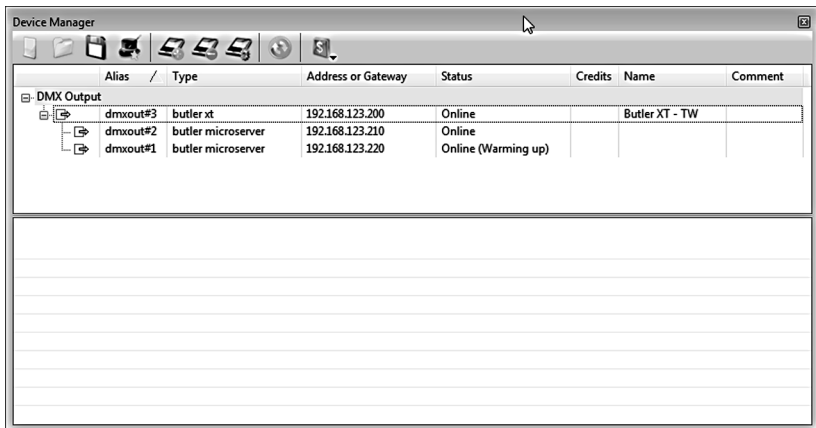
Now the network and device configuration is complete. Make sure that the DMX universe distribution and assignment is correct. To change double-click the engines in the Device Manager and assign the correct DMX universe addresses for your configuration.

Creating and exporting the show

Now create your show. Create a patch file with Patchelor, import the patch file, use effects and all other tools to set up the show, record your show in cuelists. Set the triggers and actions for the master Butler XT, do not forget Triggers and Actions for »System Startup« and »Entering Stand-alone Mode«. Run a Quick Update in the Device Manager to transfer the Triggers and Actions.

As a next step export the cuelists representing the show with the Export Show to Device in the main Icon Menu. This open the Export Dialog.

The Export function sends all cuelists for all engines in the cluster. You can limit the start index and the number of transferred cuelists.

Click `Ok` to execute the upload. Another message window shows the results of the upload.
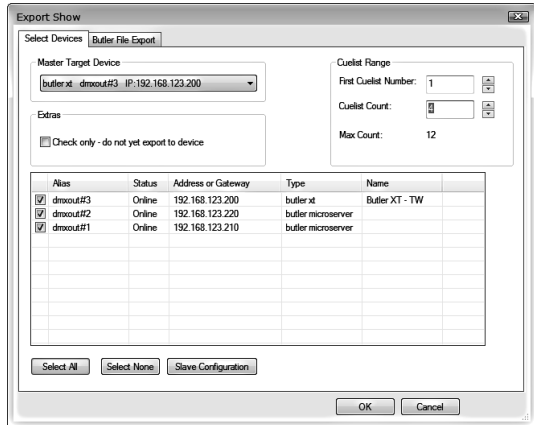
21.2 Clustering with Butler XT2 and Butler S2

The basic principles and procedures are the same, only the dialogs and names look different.

The main difference is a functional one: the Butler XT2 and S2 can run up to eight cuelist in parallel, while Butler XT and Butler can only run two cuelist in parallel.
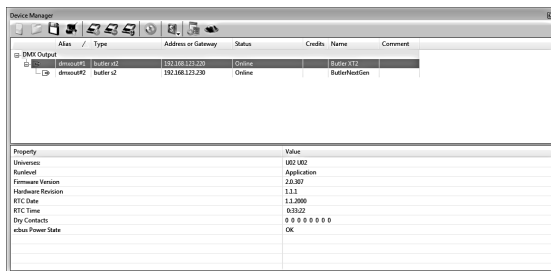
Watch the following rules:

• Slaves can not have slaves themselves.

• A Butler XT can have as children Butler XT devices or Butler Microserver devices.

• A Butler Microserver can have Butler Microserver devices as children.

• A Butler XT2 can have Butler XT2 devices as children.

The Cuelist range configuration of the master device is used for all slave devices. e:bus devices can also be moved in the device tree between Butler XTs and Butler XT2s.

22   Little Helpers

There are some Programmer functions which can be helpful at some places.

22.1   The Quick Patch tool

To distribute DMX addresses over your configured fixtures there is an additional tool, the Quick Patch tool. The patch icon in the main window activates this function and a dialog will appear, Ctrl-P works the same way.

Select the DMX universe and the start address from which on the fixtures should be patched. Additionally you can give new names to the fixtures that were changed with the Quick Patch. To do this check "Rename clicked fixtures" and enter a new screen name. Confirm the dialogue with. The dialog closes, but the Programmer is now in Quick Patch mode, as visible by a different cursor and a reminder in the status window.
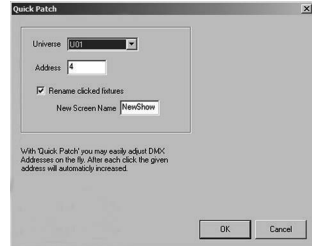
The reminder also lets you know the DMX address which will be assigned at the next mouse click.

Now click fixtures, either in the Programmer View or in the Preview window. After a fixture has been clicked, the next free DMX address is automatically calculated (based on the number of channels that each fixture needs). To end Quick Patch mode, click on the reminder in the Status Window or click. Alternatively, press ESC.

22.2   DMX output window

The DMX Output window is opened by clicking the looking glas icon or by pressing F4. It shows the programmer s DMX output and input values. The DMX Output Window shows the generated DMX values for all channels in an DMX universe. Additional functions support editing the patch.

If you hold the cursor over a fixture element it shows the corresponding fixture element and its address under the control buttons for the DMX universe. Click to load that fixture element into the Programmer View. All of the other channels belonging to this fixture will be shown by boxes around them.
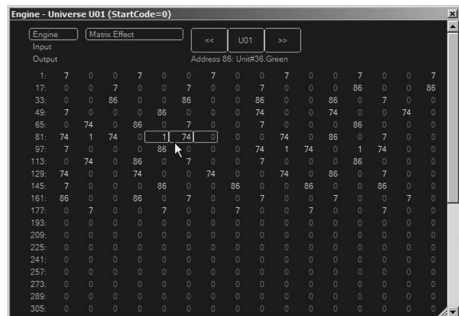
With the left buttons you can select the source: Show internally calculated DMX, show incoming DMX (e.g. via Excite+) or show outgoing DMX (In case the Excite+ is in Merge mode, this will be a combination of Input and Engine). With `Matrix Effect` you can select the display mode, with the right buttons you select the viewed DMX universe.
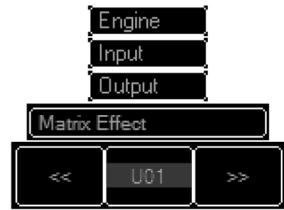
22.3 Blind mode

Shortcut key B. By default the Programmer View overrides the DMX output played back by the cuelists. This can be changed using Blind mode. When Blind mode is active the Programmer does not generate any DMX output.

22.4 Highlight

Shortcut key H. Highlight helps to see which real fixture is connected to the representation onscreen. When Highlight is active, the selected fixtures are lit just plain white (effects and colors are momentarily set back). Highlight Mode doesn't change the current cue, it is a temporary function.

Pressing N always selects the next fixture. This is especially useful when Highlight is activated (press H), because it makes it easy to find the position of a real fixture. How a fixture behaves when it is affected by the Highlight function is defined in its library entry.

22.5 Freeze

Freeze pauses the current show and freezes the DMX output at the current values. All effects created with Live FX are paused as well. Editing the values within the Programmer is still possible.

22.6 Clear

Shortcut Ctrl-Y. Clears the content of the Programmer View. As the Programmer always has highest priority for the DMX output, cues running with a different configuration cannot output. Press Clear to reset the Programmer View.

22.7 Reset

Shortcut Ctrl-F9. The reset button does the following: Stops all cuelists, sets all DMX output to zero and deactivates the Automation for five seconds.
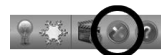
22.8 The Flightcase

The Flightcase at the right of the Patch Window, reachable via the spotlight icon, is intended for removing fixtures from a patch without actually deleting them. It is useful for copy and paste actions.

Moving Fixtures into the Flightcase

Select one or more fixtures and click the right arrow. Fixtures contained in the flightcase show up in the fixture view with the additional remark <unpatched>. Fixtures with the <unpatched> remark can be used in scenes, but they will not send DMX.

Moving Fixtures from the Flightcase

In the Flightcase, select the fixtures that you want to insert back into the patch, then click the left arrow. You are asked for a DMX address at which you would like to insert the fixtures.
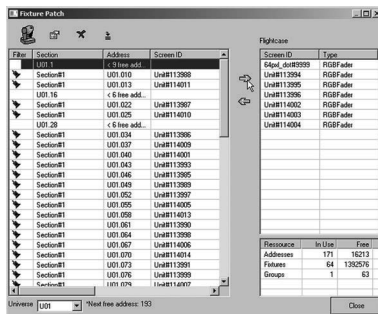
23 The Patchelor

For simple configurations with some fixtures and one or two DMX lines patching an application in the Programmer is possible, and in many cases may be done this way. If you have much more complex configurations, like video or media walls with many matrix boards, or a complex stage setup with loads of head washs and spotlights the Quick Patch is not sufficient.

For these cases the Lighting Application Suite has a better tool: the Patchelor. In all cases where the location of a fixture is important, it necessary to use the Patchelor.

The e:cue Patchelor is a software application for creating patch files that are used by the e:cue Programmer. Such a patch file contains all necessary information about the fixtures that are used in a lighting installation, including DMX addressing, fixture type and physical location. The Patchelor simplifies patching for large-scale installations with complex layouts and great fixture count but is also very suitable for small and simple settings with a low count of installed fixtures.

When installing the Lighting Application Suite the package installer is a composite installer package that contains the e:cue Programmer and several additional software tools, including the Patchelor. If you did not install the Patchelor at the first step you will find it on the installation CD or download it from www.ecue.de/download

23.1 Patchelor main window
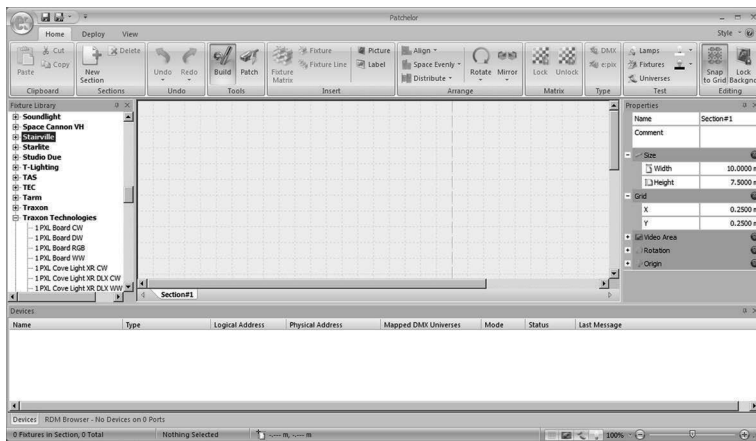
The Patchelor's patching process is based on physical fixture placement and cabling. You have sections of certain (adjustable) sizes and place the fixtures directly into a section, just like they are arranged inside the real installation. The fixtures are displayed with their correct physical dimensions. This concept allows the e:cue Programmer to exactly "know" where the real fixtures are located.

This information is used to display the fixtures correctly inside the Programmer preview window and to calculate effects and the display of videos in a proper way. The Patchelor main window is separated into various sections. These sections are described below.

The patching and configuration for the Video Micro Converter will not be shown here, for complexity reasons. See the VMC Setup Manual for this topic.

23.2   Ribbon Bar

On top of the main window you can find the ribbon bar:

The ribbon bar contains buttons for the different tools and functions the Patchelor offers. The functions are categorized under different ribbons to offer a clear arrangement.

On the top-left of the Patchelor window the application button is located. Here you will find all operations like loading and saving Patchelor documents, exporting the document as a patch file or printing. To the right of the application button, you see the quick access toolbar. By default, you find two different operations there (save and export). You can add and remove the icons for different functions and this way customize the quick access toolbar just like you need it to optimize your workflow. All this works similar as other Windows applications.

Two very important functions of the main window menu are the Build and the Patch functions. With Build you place fixtures on the workspace and organize your setup. With Patch you create the interconnections between the fixtures.

On the left side of the Patchelor window the fixture library pane is found. In this pane, all of the fixtures from the e:cue fixture library, already used in the Start Small chapter, are visible. The fixture library is installed along with the e:cue Library Editor, handled in a separate chapter.

The workspace, where you place and arrange fixtures, is located in the middle of the Patchelor window. It takes the most space as it is the area where you are working on. Fixtures are dragged from the fixture library into the workspace. You can have multiple sections in your workspace. The sections are ordered in tabs. At the bottom side of the workspace, there are tab selectors for each available section. Each section can have its own dimension and canvas.

Let us try this with a little example: creating a media matrix which we can use for other functions and experiments later. We keep it rather small, so we do not have to do more than necessary.

23.3   Creating a media wall

As a little example how easy patching with the Patchelor is proceed as follows:

• With the standard settings of the Patchelor (the zoom factor in the lower right corner of the main window should be around 180%, depending on your display), select a matrix element in the Fixture Library, e.g. a Traxon Technologies 1PXL Board RGB.

• Click Tools/Fixture Matrix in the top menu, this calls a function to create an area of fixtures.

• Move the mouse cursor over the workspace a 2x2 matrix with four elements becomes visible.

• Press the left mouse button and draw a 6x6 elements matrix, the size is shown in the fixture matrix. Release the mouse button again.

What you have created now should look like this:

This is our video matrix, the zig-zag lines connecting the 1PXL Boards is the DMX line to which the boards are bound. So our media wall look fine. Only the cabling is a little bit unusual, we would prefer a horizontal cabling, as this clearer and more realistic. This is done rather easy re-patching the matrix. Click the Tools/Patch icon in the top menu, this calls the patching function where you can change the cabling, and the DMX address distribution at the same time:
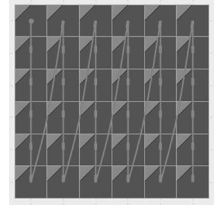
• Left-click in the middle of the top-left board, keep the mouse button pressed and move it to the next board on the right, release the mouse button.

• In this way connect the secord fixture with the third in reading direction.

• When you reach the end of a row, connect the line to the left-most board in the next row.

• Repeat this until you reach the bottom-right board.
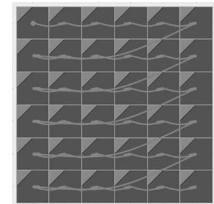
Now you matrix should look like this:

We have now a matrix that uses 6 rows x 6 columns x 3 colours = 108 DMX addresses. As one DMX universe has a maximum of 512 addresses, this is ok. All 1PXL Boards belong to one DMX universe.

If you now raise the zoom factor with the glider in the right-bottom part of the main window (e.g. to ca. 400%) the DMX addressing becomes visible also.
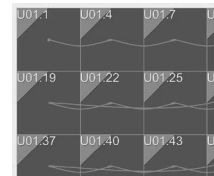
As you can see each 1PXL board eats three DMX addresses on DMX universe U01. The first board starts at address 001, the last one uses 106, 107 and 108, as we expected. You can now save this patch for later use in the Programmer. Use the system menu, select 🖳 Save, and save it as an .patx file.

The Properties Pane

On the right side of the Patchelor window the Properties Pane is available. By default, the section properties are visible, where you can adjust the size and position of a section. You can also manipulate the video canvas here if you are working with video visualization. See the table below for a list of the available section properties.

Main	Name	The alphanumeric name of the section
	Comment	An additional comment characterizing the section
Size	Width, Height	The size of the section in meters. This affects where fixtures can be placed.
Canvas	Left, Right, Top, Button	The location of a video canvas in relation to the top-left origin of the defined section. The video canvas can be larger that the section, which allows clipping of the video.
Canvas	Width, Height	The size of the canvas in pixels.
Rotation	X, Y, Z	Rotates the sections in the three dimensions.
Origin	X, Y, Z	The global position of the section. This affects mainly the display in the Imagine tool.

The video canvas marks the area where a video is located when it is displayed on fixtures through the Video Micro Converter (VMC). When you have a single fixture selected, the pane will switch to that fixture's properties. You can edit position and DMX mapping of the fixture.

All the different windows, like the fixture library or the properties window, are highly configurable. Each of them can be docked to every side of the main application window, completely disabled, automatically temporarily hidden and even placed freely anywhere on the windows desktop. This allows you to adjust all views to exactly fit your needs.

23.4   Section configuration

The first step in creating a patch file is to adjust the section that you are working with. In detail, you should adjust the size of the section to fit the physical size of your installation. This is done using the properties window.

If your installation is not of rectangular shape, just use the outer bounds of the installation size. This way all fixtures that you want to use fit into the section. When you want to display videos using the Video Micro Converter, you also have to adjust the video canvas. You should pay attention to the aspect ratio of the canvas, as it should fit to the aspect ratio of the videos that you want to play. Otherwise you will encounter distorted video display on the fixtures. It is possible to add images as a background into a section (even more than one per section).

This is not (only) for optical reasons but can be of great help when adding fixtures to the section. You could e.g. add a picture of the project site or a cad drawing of the installation. To add a background image, press the 'Insert Bitmap' button. In the dialog that opens, browse to the appropriate folder, select the image file that you want to add. Supported image files are bmp, gif, jpeg and gif. Press Open and the image will appear on the workspace. Then, resize the image to the proper size by dragging its anchors or setting the size inside the image properties (these are visible inside the properties window as long as the image is selected. This allows putting the fixtures right to the position on the image where they belong on the image.

In most cases there is no need to adjust the rotation and origin of a section. If you, however, use more than one section and also want to use the e:cue Imagine for a proper 3D visualization of the installation, you should adjust these values. The rotation values specify the rotation values around the particular axes in degrees. This, of course, affects all fixtures on the section, too. The origin is an offset to the global origin and will move all fixtures of the section the section around in space.
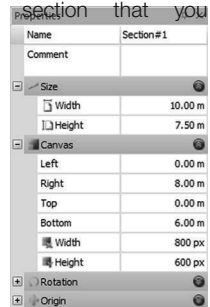
To add a new section, press the 'New Section' button in the ribbon bar. To remove a section, activate the section by clicking its tab and then press the 'Delete' button in the ribbon bar.

23.5   Fixture selection

Once the section configuration is complete, the next step is to add fixtures to the project. This is a simple task, as we have seen before:

• Search for the fixture type that you want to add inside the library tree on the left. If a particular fixture type is not present, you will have to add it into the fixture library using the Library Editor 5.0. To refresh the fixture library inside the Patchelor, an application restart is needed. The first fixture has been added to the workspace.

• Drag the fixture to the desired position on the workspace. Select the fixture by performing a mouse click on it. An active selection is indicated through a blue frame around the fixture. Once a fixture has been selected, configuration options for the fixture will appear inside the properties window. The fixture properties in detail.

• Inside the fixture properties, you can fine-adjust the position and change the rotation. The Patchelor does perform auto-addressing to every fixture upon creation, but if you are not satisfied with that, you can also change universe ID and DMX address.

The following table shows the properties that are available to configure a selected fixture:

Main	Name	Name of the fixture (not editable)
	Manufacturer	Manufacturer's name (not editable)
	Base fixture	The base fixture from which this fixture was created.
	Comment	An optional comment for this fixture.
Position	CenterX, CenterY	The physical position of the fixture.
	Width, Height	Physical dimensions of the fixture, only for generic fixtures.
	Rotation	The optional rotation of this fixture in degrees.
DMX mapping	DMX Universe ID	DMX universe where the fixture is connected.
	Address	DMX start address of fixture.

You can change the fixture rotation roughly by selecting the particular fixture and then dragging the rotation anchor that is located on the top side of the selected fixture. Of course, it is also possible to move fixtures around by dragging them to a new location using the mouse. You can even select multiple fixtures and then drag them around altogether. Detailed view of a selected fixture with the rotation anchor on top. As can be seen, fixture count in both directions is displayed graphically. The DMX addressing is also visible.

Cut, copy & paste operations are possible through the ribbon bar buttons, the right-click context menu and the keyboard shortcuts Ctrl-X (cut), Ctrl-C (copy) and Ctrl-V (paste).

23.6   Adding fixture lines and matrices

The drag & drop patching system is easy and suitable for smaller installation, but for installations with great amounts of fixtures, patching might not be easy enough, even with help of copy & paste operations. To solve this issue, the e:cue Patchelor offers another way of adding fixtures to an installation: Fixture lines and matrices can be used to quickly add a great amount of fixtures to the workspace. Both are groups of fixtures that belong together in different ways.

First of all, DMX addressing is linked between the single fixtures by default. In addition, the fixture positions and rotation are by default performed grouped. You can, however, still manipulate the single fixtures inside the line/matrix. The only limitation is that a fixture line or matrix can only consist of one type of fixture. To add a fixture line or matrix into the workspace, perform the following steps:

• Select the fixture type that you want to use inside the fixture library window.

• Press the `Add Line` or `Add Matrix` button on the ribbon bar.

• Press and hold the left mouse button while the cursor is located on the workspace. Then, move the mouse around and the line/matrix will be drawn. The bigger the item is dragged, the more fixtures will be added to the line/matrix.

• When you are satisfied with the result, release the mouse button and the item will appear on the workspace.

There is no real difference between a fixture line and a matrix as soon as it has been created. A fixture line is nothing else than a fixture matrix with fixture count of one in either horizontal or vertical direction. To keep further explanations simple, no further distinction between the two will be made. When you have done this, you can select the matrix by clicking on it. In the properties window, properties for the fixture matrix will appear. In addition to the properties that are available for single fixtures, the following configuration options are available:

Layout	Columns	Fixture count vertically.
	Rows	Fixture count horizontally.
	Start edge	The edge where the DMX addressing begins, the DMX starting address.
	Direction	Direction von address assignment, horizontal or vertical direction.
	Snake mode	If snake mode is enabled, DMX addressing will flip with each column or row change, depending on Direction.

When a fixture matrix is selected, a bordering frame is drawn around all fixtures that belong to that matrix. Several anchors are located on that frame. You can drag these anchors to resize the grid.

Detailed view of a selected fixture matrix with surrounding frame and anchors. When you perform a double click on one of the fixtures that belong to a fixture matrix, the particular matrix switches to single edit mode. You can then select the fixtures one by one to edit them separately. The fixtures will act just like a standard single fixture. This behavior persists until another double click is performed on one of the fixtures that belong to the grid.
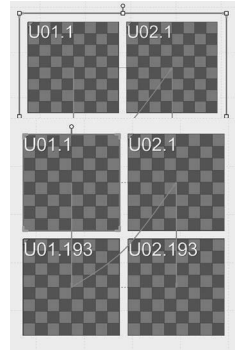
The same fixture matrix as shown above, this time toggled to single edit mode.

Single edit mode is extremely useful in situations where single panels inside a large installation like a big LED matrix wall have been mounted improperly.

23.7 Generic fixtures

All fixtures inside the fixture library have a certain physical size. This allows the fixtures to be displayed in correct proportions inside the Patchelor. Fixtures that are categorized as "generic", however, do have a certain size as well, but can be resized as a flexible way to cover many different fixture types. This way, if you need to patch a fixture that e.g. consists of exactly one RGBFader, you do not have to add it into the fixture library but can instead just use the generic RGBFader fixture and resize it to fitting dimensions. This adds more flexibility to the patching process.

To resize a generic fixture, select it by clicking on it with the left mouse button. On the selection frame, several anchors are located, like on the frame that appears around a selected fixture matrix. Drag these anchors to resize the fixture. You can also type in the size in horizontal and vertical direction inside the fixture properties window when the fixture is selected, what is more accurate than dragging.
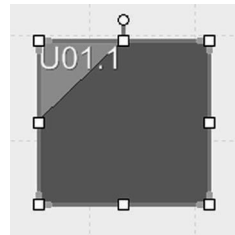
23.8 DMX mapping

The Patchelor offers different ways of DMX addressing. Upon fixture creation, the Patchelor assigns DMX addresses continuously. Since the automatic assignment is not always applicable, universe and DMX address can be changed in the fixture properties. There is also another, graphical way of assigning universe and DMX address: The wiring tool allows connecting the fixtures on the workspace with virtual wires. The virtual wires are to reflect the physical cabling between the fixtures in the real installation.

To access the wiring tool, select the Patch ribbon inside the ribbon bar and press the Connect button. Now, the wiring mode is active. In wiring mode, it is no longer possible to move or select fixtures. Instead, wires can be drawn from one fixture to another. To draw a wire, press and hold the left mouse button while the mouse cursor is located on a fixture. A green wire will appear, fixated on the fixture.

Move the cursor to another one and release the left mouse button. This will connect the two fixtures. The mapping is determined by the wiring path. The fixture where the wiring starts determines the start address and the Patchelor will automatically assign the following addresses to the fixture that follows its predecessor in the wiring.

Assumed you have four fixtures of type Traxon Tile 64 PXL RGB on your workspace. The addressing of these fixtures inside your installation starts at universe 4, channel 1. The wiring procedure would be as follows:
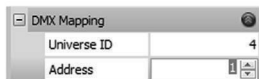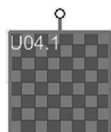
Set the target DMX universe and the DMX start address.

We will now connect the fixtures with ascending DMX addresses. Dont care about the changing DMX universe numbers, this is just a representation of the configuration, not a wiring diagram.

(i) Be aware that the fixture view is front view. Later, when mounting and putting cables this happens from the rear side, which may cause confusion.

For the first tile, enter the correct DMX addressing inside the fixture properties window. The DMX mapping has been edited inside the fixture properties and is now visible on the fixture.
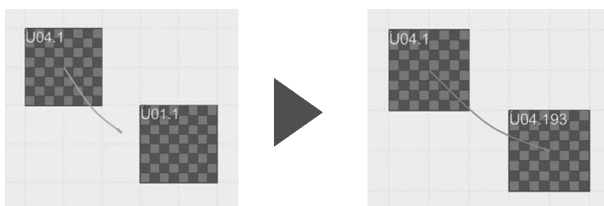
• Activate the wiring tool as described and draw a wire from the starting tile (the one with the correct address) to the next tile. Once you have connected the tiles, you will notice that the addressing of the second tile changed. As a Traxon Tile 64 PXL RGB uses exactly 192 DMX addresses, the next free address in universe 4 is 193, so the second tile gets universe 4, address 193 assigned.
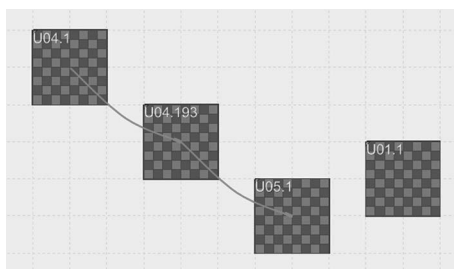
• Now, connect the second tile with the third one in the same way. The third tile will receive universe 5, address 1. This is because in universe 4, there are not enough DMX addresses available for another tile. (512 addresses are available per universe; the two tiles use 192 addresses each, so only 128 free addresses remain, which is not enough for the next tile).
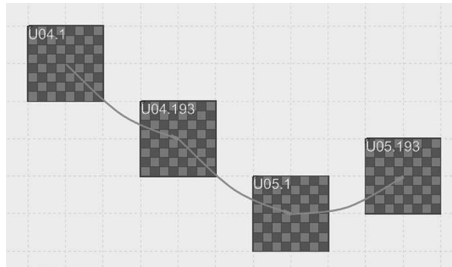
- Once you have connected the last remaining tile, the whole process is finished and the tiles have received the new addresses.

Fixture matrices are wired by default. The direction of the wiring is determined by configuration options inside the fixture properties. In single edit mode, wiring can be manipulated.

23.9   Using background images

When patching a configuration for a real application it might help to place a picture or a drawing in the background of your workspace. Use Insert -> Picture from the top menu for this purpose.

With Insert -> Label you can place text labels in your drawing for navigation or commenting.

23.10 Setting section and video size

After your patch is complete you should set the correct section size and Video Area size to match the real dimensions. The section size is used in the Programmer for calculation effects and other automatic settings. If the section size does not correspond to your fixture configuration these functions will not work properly, e.g. in Imagine.

The Video Area size is important for pixel mapping when working with pixel to fixture mapping.

- Set the section size in the right Properties dialog to the real dimensions of your patch.
- Set the Video Area size to the same values.
- Select a single tile in the configuration display by double-clicking on it. Use the right mouse button context menu and select Use pitch for video area.
- Enter the video media size of your video as width and height in pixels.
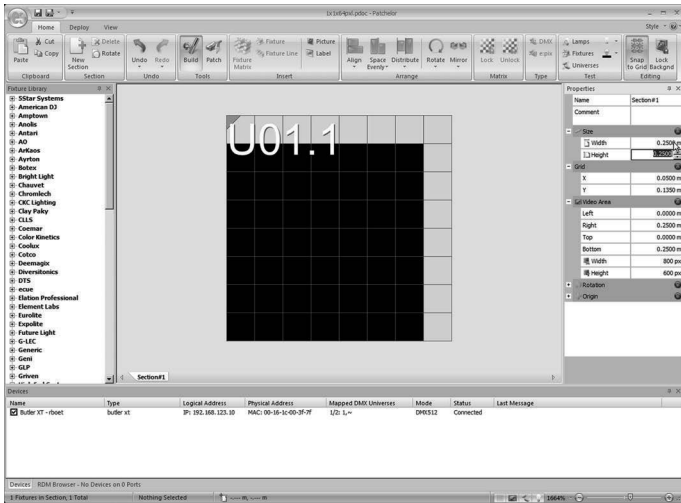
Now, when mapping pixels to fixtures the resolution of the video will be mapped to the matrix properly.

23.11 Saving files and patch export

The Patchelor differs between a native Patchelor document and patch files. The native document format (with extension .pdoc) is used to save your project for later work. Patch files, in contrast, contain the patching information for other e:cue applications like the e:cue Programmer. The distinction between document format and export format was made to avoid redundancies and therefore prevent file sizes getting too big. Please note that the Patchelor is not able to open created patch files again. To continue your work on a patch, you must use the native document format!

To save a Patchelor document, just hit the application button at the top left corner and select Save (or Save As…) from the menu that opens. You can also directly press the Save button on the quick access toolbar, which resides to the right of the application button.

Exporting patches

As soon as you have placed and configured all the fixtures you need in your installation, the only remaining step is to create a patch file. This works quite similar to saving a Patchelor document. You only need to mind that there are different patch formats available:

- The 'old' 3.8 patch file format (with the extension .patch) is currently supported by Programmer 3.8 and 5.x, Emotion and UFGM Player 3.8.

- The 5.0 patch file format (with the extension .patx) is supported by Programmer 5.0 and later. You may need to update your application to the latest build to be able to import the new patch format. Software updates are available at www.ecue.de for free.

Both file formats have an Imagine 3D visualization script embedded. To export a patch file, you can open the application menu, press Export as... or directly press the Export Patch button on the quick access toolbar. In either case you then have to select the desired file format. Subsequently, a dialog will appear where you can pick a location and save your patch file.

After you have finished the patch export, you are ready to make use of your newly created patch inside the e:cue application of your choice. In addition, the Patchelor can upload patch information directly into the Traxon Video Micro Converter (VMC) device. No patch file is needed for this as the Patchelor will communicate directly with the hardware.

The Patchelor assumes auto-addressing as default. If you want to use manual addressing you have to assign your specific DMX address scheme manually.

23.12 Tips on wiring

The wiring must reflect the later real installation. If you have a larger matrix a horizontal lining is the most acceptable as it allows the shortest run lengths.

Do not care about the changing DMX universes, the Programmer will map the single pixels on the right addresses and DMX lines.
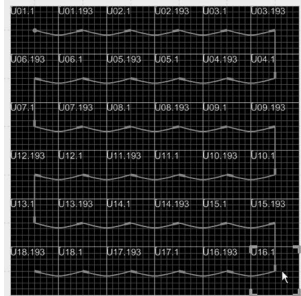
23.13 Using the created patch file

After you exported the patch file, usually as a .patx file type, you can use the configuration in the Programmer. Select from the main menu File | Import | Patch and the fixtures including the created wiring and the DMX universes are available in the fixtures window.

There are several patch file types to choose from. The most used type today is the .patx file format, which can be imported in LAS versions from 5.1 and onwards.
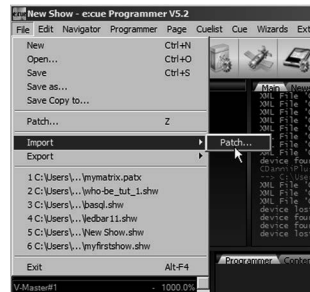
The patch import can be configured to work additive instead of clearing the current patch. A combobox in the "Import Patch" file dialog selects between the two modes. Fixtures that are not touched by the imported patch will stay in the show. Also the import function will not reset the "Show Options" during import.
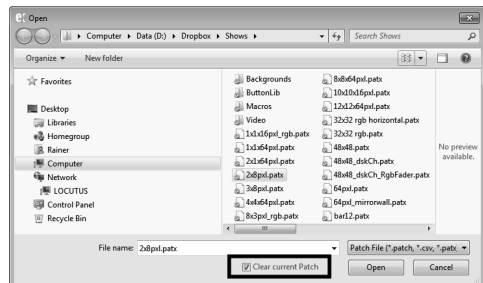
23.14 Testing and verifying your configuration

Another helpful feature of the Patchelor is the possibility to check your configuration. This way you can see if the addressing scheme and the mounting of the tiles is correct.
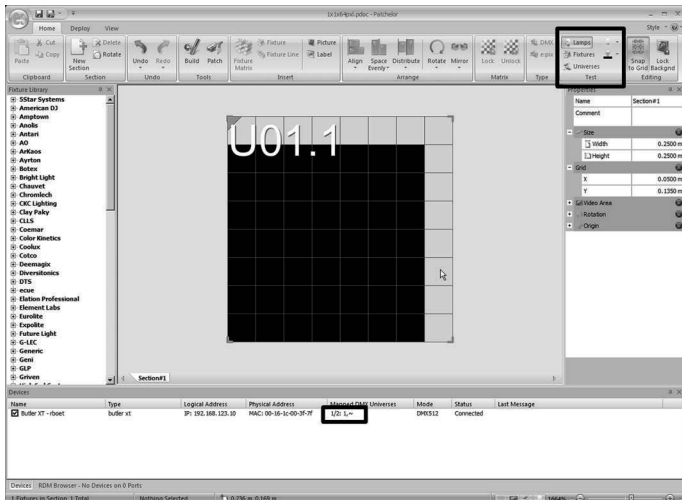
- Select the Test function in the main to menu, select Lamps.

- Pick a foreground and a background color.

- Configure your DMX engine, e.g. Butler XT or Butler, for the correct start DMX universe assignment. The DMX universe can be assigned to the Butler in the Properties menu.

Now, left-clicking on a dot in the matrix fills it with the foreground color, and the LED in the matrix will light up. Right-clicking the dot will fill it with background color. Keeping the mouse button pressed, you can even draw patterns on the fixtures. Using Fixtures you can fill complete fixtures, with Universes complete DMX universes.

23.15 Testing RGBx fixtures

You can also test fixtures with more than three channels, e. g. RGBA or RGBW. Also supported are fixtures like Dskch, CWFixture, WWFixture or RGBWA/RGBAW.

23.16 Naming conventions

When you create Patchelor files and patches a certain naming convention is useful and often used in the LAS. A patch for 4 x 4 x 16pxl tiles should be named as 4x4x16pxl_comment.pdoc, a 8 x 8 x 64pxl configuration as 8x8x64pxl_frontside.pdoc. This way files can be distinguished easily.

23.17 Firmware updates

The Patchelor is also the tool of choice if firmware updates in Butler, Butler S2 or Butler XT2 are necessary. It is also possible to upload new firmware to the I/O subsystem of the LCE2.
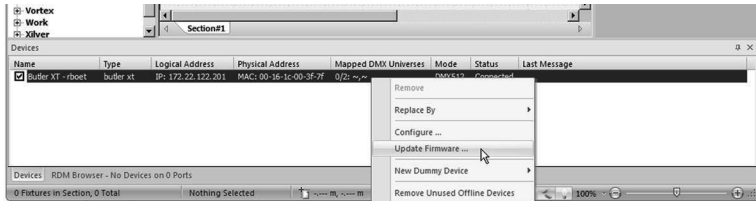
Select the device in the Device Manager list, click the right mouse button on it and select Update Firmware.... Select the firmware file in the following file dialog and the new firmware will be uploaded to the device.

> (i) The upload of a new firmware to the I/O subsystem of the LCE2 is only possible from local drives or USB devices, not from network drives. Copy the necessary files to your local drive for upload or use an USB stick.

24   The Preview Window

24.1   About the Preview Window

The Preview Window is just what the name says, it gives you a preview of your configuration as well as shows and all other applications. The preview shows fixtures which are currently used in the Programmer View, including a simulation of colors, which is a kind of simulation of the real application. Preview Window and the Live FX dialog are combined since LAS 6.0 SR1.

To show currently running cuelists in the preview window, the main window needs to be switched to Stage Output view (do not forget to clear the Programmer view). But the preview window can also be used to select fixtures or to assign colors to them by drawing, or to assign DMX addresses (when in QuickPatch mode).
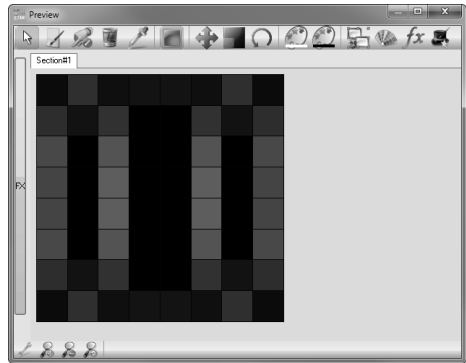
• Activate the Preview Window by clicking the eye icon in the Programmer's icon menu or by pressing CTRL-F5.

• While the preview window is active you can zoom in and out by using either the mouse wheel or the key combination CTRL plus the up and down arrow keys. The third way are the three magnifier icons in the bottom menu of the Preview Window.

• The icon menu is divided in four segments: preview tools, select/move, colours and Programmer tools. Which tool is currently selected is displayed in the title bar of the Preview Window.

• In some cases tools are combined, e. g. using the

The icon menu offers the following tools and functions:

	This is the default position, you can select single or multiple items or preview shows.
	The drawing tool, keeping the left mouse button pressed you can draw rectangular areas on the fixtures; the colors are selected with the palette tools. Left mouse button is foreground color, right button background color. The RGB channel values are set to the selected colors.
	Untouch tool, the selected items are untouched = deselected.
	Dropper tool, pick a color as foreground (left mouse button) or background (right mouse button) color.
	Select mode, toggle between single selection or drawing curves of fixtures, or rectangular mode. This also controls the way the tools in the first section of the tool bar work.
	Moving mode, if enabled the selected fixtures (all, rectangles or single) can be moved on the canvas.

	Select an area of the fixture view, drag to zoom.
	Click a point in the fixture view, keep mouse button pressed and rotate.
	Select the foreground or background color for filling.
	Calls the Programmer's Show Properties dialog.
	Calls the Fixture Sections tab of the Show Properties.
	Fill items, opens the Color Picker, the selected items are filled with the selected foreground color.
	Apply an effect on the selected fixtures, opens the Live FX dialog. Also clicking the thin button on the left side of the Preview Window calls Live FX.
	Preview Window wizards, auto-arrange or convert 2D for older shows (see the dialog that is displayed).

24.2   Zoom functions

With the zoom icon area in the lower left corner of the Preview Window you can apply several zoom functions. From left to right:

• View fixtureas as alias names or as DMX addresses.

• Zoom-in

• Zoom-out

• Zoom to 100%

• Fit display to windows size.

24.3   A working example

To see what to do with the preview window create a working patch that is useful for this purpose.

With the Patchelor create a video matrix; use the Traxon 64PXL Boards. Create a matrix with 6 x 6 boards, give them a proper wiring. Save this patch as .patx named matrix64.patx in your workspace. Close the Patchelor, start the Programmer. Select in the main Menu File | Import | Patch and load the matrix64.patx.

Now you have all RGB elements of the 64PXL Boards as RGBFaders in the Fixtures Window. We will now create an effects display. Just follow these steps:

• Open the Preview Windows either by clicking on the eye icon in the top icon menu or press Ctrl-F5. The Preview Windows opens.

• With the window borders resize the window so you can see all matrix elements, you can also use the zoom icons in the bottom line of the Preview Window.

- Click the `Select Single/Rectangle` icon, keep the left mouse button pressed and draw a rectangle around all elements, now all elements are selected and displayed in the Programmer view.

- Click the ⊞ (white mode) icon in the bottom icon menu of the Programmer, this touches all channels of all fixtures.

- From the top menu select `Wizards` | `e:script Wizards` | `Full show generators` | `Color creators`. Your 12 cuelists will be filled with shows. The Programmer view will be cleared automatically.

- Press Play on any cuelist.

- In this kind of application the Preview Windows serves as what it is meant: a preview of a show, which can be a self-programmed, a converted video or any other content. This preview does not only work with matrices, but also with single fixtures like RGB pars or RGB liners.
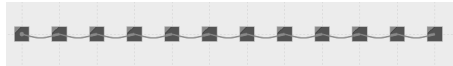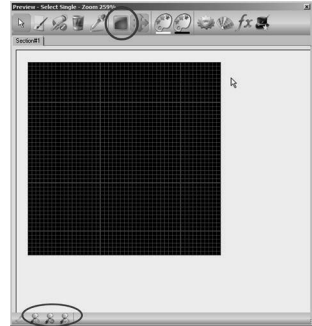
- Use the Patchelor again, use the Generic RGBFader instead, place 12 RGBFaders in a line as shown above, create a serial wiring and save it as bar12.patx

- Select `New show` in the Programmer, ignore all changes to the last show and import the bar12.patx patch file.

- Proceed as with the RGB matrix, generate your cuelists. Now you will see the RGB elements in the Preview Window.

- With a cuelist still running, select all elements in the Preview Window.

- The elements will be shown in the Programmer view, with their RGB values and the corresponding colors.

25   Live FX

Live FX is a very powerful tool to create effects and complex shows, and it is an important function in the Lighting Application Suite.

You can apply mathematical or audio/video controlled effects to single or multiple channels, distribute effects over several fixtures and channels, and you can store and recall effects as templates and much more.

Since LAS 6.0 SR1 the Live FX window is a single window and was combined with the Preview Window. So when applying effects so the selected fixtures you always have a preview of the effects. You can show or hide the Live FX window part with the vertical button between Preview Window and effect settings.
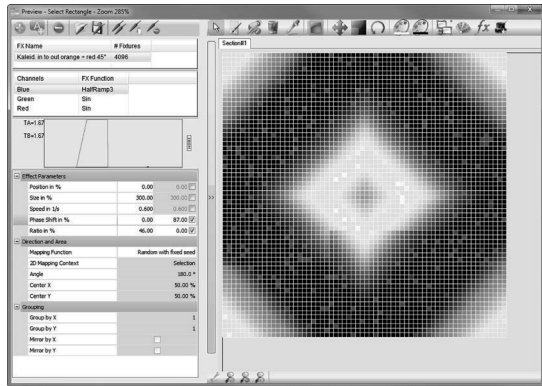
(i) Compared to LAS 5.2 and earlier the behavior of the Live FX dialog has changed (from modal to non-modal mode). So if you are familiar with the pre-5.3 dialog take a closer look how these changes alter the way to use this dialog.

25.1   Icon toolbar for Live FX

Let us first explain the main toolbar of the dialog to have the terms at hand:

⊕	Add an effect for the selected channel(s), this or selecting a scrolltext effect is always the first action when entering the dialog without effects assigned to channels.
⊖	Remove the effect.
A+	Add a dynamic scrolltext effect.
📂	Apply an effect preset to the selection.
💾	Save the selected effect as a preset.
✎	Copy the current effect settings to the clipboard.
✎	Paste the effect parameters from the clipboard.
✎	Clear all effect settings.

25.2   Mapping effects to channels

As the Live FX dialog is a non-modal dialog there is a close interaction between the Programmer and the Live FX dialog. This is especially valid for fixture/channel selection. The general workflow for assigning effects is:

• With the Fixtures and Groups Window, select the fixtures to use.

• In Programmer View select the fixtures and channels to assign the effect to.

• Right-click in Programmer View on the selected fixtrues and select `Create FX` from the right mouse button context menu, or press X on the keyboard, or click the pepper icon in the Mini Toolbar or the red pepper in the main window icon list. This opens the Live FX dialog.

• Press the + icon to create an effect entry, click the entry to select it.

• Assign an FX function and set parameters or use the predefined effects. The changes are stored without further actions.

• To add another effect for another color channel of the same fixtures, select another channel in the FX dialog

• To add another effect for other fixtures, change the selection of fixtures/channels in the programmer view, the current element in the FX List gets deselected

• If a selected fixture and channel already has an effect assigned, you will get a notification message if you want to remap the effect to the already used fixtures.

• Press the + icon to add a new entry in the FX List, select it and edit again.

• With the Preview Window or with Imagine you can inspect or preview the effect.

As the Live FX dialog is a non-modal dialog the changes in the FX dialog have an immediate impact on the show. To give an entry in the FX List another name, make a slow-doubleclick (select entry and make a second click, but not a double-click), a default description is used at first, you can also type your unique FX title into the name field. Clicking on an existing entry in the FX List recalls the effect settings to the dialog. Changes again are recorded automatically.

25.3   A working example

Just a step-by-step example how to create an effect and how the results look like.

• Create a patchfile with 8 x 8 x 64PXL board wall (something that you should always have at hand for trying and testing), import this in the Programmer.

• In the Fixtures & Groups Window use the right mouse button, execute `Use All` to get the fixtures to the Programmer View. Click into a channel to touch all channels. Click into the red channel to select it for FX assignment.

• Choose `FX Create` for the Live FX dialog. Click the + icon and select the red channel in the channel overview. You can now choose the effect function.

• Now set the following fields: Touch: Effect Function = Sin;
enable Touch Position, Position = 49; Size = 49
Speed: enable Spread by the second checkbox, 1st value = 0.30, 2nd value = 0.35
Phase Shift: enable Spread, 1st value = 0, 2nd value = 45
Ratio: leave default = 50
Direction and Area: Mapping = Radar (2D).

• Select the blue channel in the Live FX dialog, also select the sinus function.

• Change speed spread to 0.20/0.25.
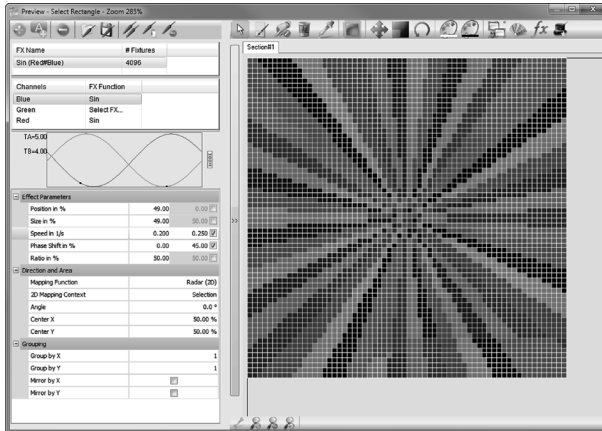
• More? Click into the green channel in the Live FX dialog, select a Polar (2D) mapping, spread speed = 0.1/0.05, deselect the phase spread.
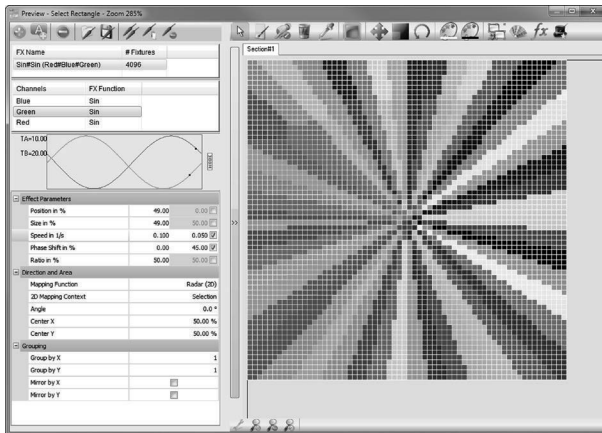
Press R to record it to the cuelist. Close the Life FX dialog.

With the folder&pepper button you can apply predefined effects, you can also save your own effect settings into the Live FX dialog.

25.4   The Live FX dialog

The Live FX dialog consists mainly of   four parts from top to buttom:

- The effects name, at first with automatic naming, can be edited.

- The effected channels, usually R, G and B and the assigned function. This is the function after which the effect is calculated – or an equalizer band for sound to light control, in this case the parameters are named differently.

- The function preview of the used effect, either as a statistical graph or graphcal. Switching between the two display modes is made with the small `Mode` button on the right. .

- The effect parameters, separated in various areas.
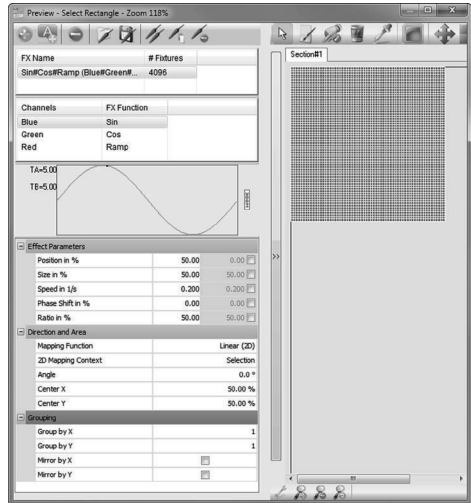
> You can turn the mouse wheel in parameter fields to adjust the value more quickly. If you are using the faderunit, you can press + and use the jog dials for adjusting parameters. This works for nearly all input fields in the LAS.

When coming from Programmer View, after selecting a fixtures/channels and adding a new effect, these color channels have no functions assigned. Selecting and setting an effect and changing the channel selection assigns the current FX setting to the newly selected channel! When the effect parameters are changed, the changes are stored immediately. This handling is necessary because the FX dialog is now a non-modal dialog and the settings made have to be saved.

25.5   Icon menu of File FX

	Add an effect to the current fixture selection.
	Add a scrolltext effect to the selected fixtures. All channels are used.
	Remove effect from the current selected channel.
	Load an effect template.
	Save effect settings as a predefined effect.
	Copy the effect settings.
	Paste the copied effect settings.

	Remove all effects from the selected channel.

25.6 Effects and parameters

Effects are mathematical or audio/video functions used to created dynamic lighting effects. Typical functions are sinus or cosinus, ramp or triangle. Audio functions are Equalizer Bands or Peaklevel Meters, also BeatSync.

The Programmer has an integrated software audio DSP to analyze frequency ranges and to measure beat rates for controlling effects. Also video signals from Media Players or from external video sources can be used to create effects.

The effects can be modified by numerous parameters:

• Position: Usually the baseline for an effect is zero. If Touch Position is activated Live FX will add this value to the baseline. For sin/cos as well as Pan and Tilt channels it can be useful to set Touch Position to 50 and use an effect size of 50.

• Size: determines the amplitude for the function in percent.

• Speed: determines the speed of the function in Hertz.

• Phase Shift: determines the function's temporal offset in percent. This parameter becomes especially interesting if Spread is activated with several fixtures selected and different values are used.

• Ratio: modifies the X/Y relationship for the base function, deforming the curve.

To describe all possible effect types is out of scope of this manual, because Live FX is a very powerful and flexible tool. The best way to discover Live FX is to play with it. Use your 8 x 8 x 64 PXL video wall and the Preview Window or Imagine and start a voyage of discovery through the many effects and parameter influences. Some special applications of effects will be shown on the next pages to give examples for dynamic effects.

25.7 Spread effects

With spread effects the same function is distributed twice over the fixtures, usually with different parameters like different speed or phase. To use spread effects check the Spread checkbox right to the parameter selection fields. The example at the beginning of this chapter is a typical example of a spread effect.

Direction and Area

The Mapping Function controls how the effects are spread over the fixtures and channels. The standard mode by screen number and random are plain mapping modes without 2D effect. Random values are needed for some effects, as for example the sparkle effect. To create a sparkle effect you would use a speed value spread from 0 to 4 and a randomizer mapping.
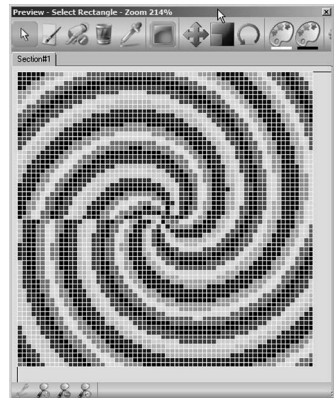
The mapping modes marked with 2D create, as the name implies, 2D effects. The screen shot above is an example of a Spiral (2D) mapping, Polar (2D) creates a centered mapping, center to

borders, Linear (2D) bars from right to left. With the 2D Mapping Context you choose the mapping area, the current section, the entire video canvas or only selected areas. With Angle you can rotate the mapping, e.g. with Linear (2D). Two additional parameter areas are available:

- Center Position: in addition to the context the effect has now an origin from where the effect starts. Use polar mapping function for maximum visibility of this parameter.
- Grouping: it is possible to create groups for the effect aligned or mirrored by the x/y axes. The effect will start anew for each group. Either from the first fixture in the group or from the last fixture if mirrored.
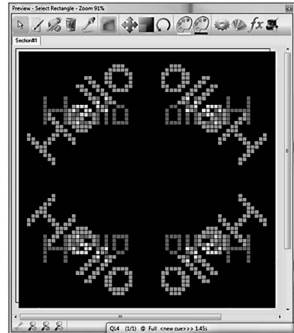
The mapping is also stored when saving a setting in the FX list.

> You can assign a Versatile Master to the FX Speed in the Cuelist Properties dialog. This way you can control the FX speed with a master after the effects have been set and recorded to a cue in a cuelist.

25.8 Multiple effects

It is possible to select a fixture set which belongs to an existing FX and create a new FX on top thus removing the channels from the existing FX. The existing FX will be copied into the new FX.

If the position mapper had a "selection" context, the new FX will respect that and add the selection of the existing effect to its own selection, so there will be no visual change in the existing effect. In this way you can modify the parameters of a subset of fixtures without changing the whole effect.

25.9 Edit an FX

After recording a Live FX the settings are stored in the cue. You can edit these FX setting later.

- Double-click the involved cuelist in the Cuelist Window to open the Cuelist Dialog.
- In the Cuelist Dialog click on the cue with the recorded FX to select it and right-click for the context menu ,the select Load and the cue including the FX settings are reloaded to the Programmer and the Live FX dialog. or use the the Load Cue icon in the Cuelist Dialog.
- Call the Live FX dialog with the red pepper icon or the icon for the Preview and switch on the FX dialog.
- Select the effect in the Live FX dialog, change the parameters of the FX.
- Click the Save Cue icon in the Cuelist Dialog. The changes are saved.

25.10 FX Templates

An FX template is a parameter set for multiple channels without a selection. You can save settings from the Live FX dialog as permanent FX templates. Just select an entry from the FX List and press the Save Template button. To recall templates later select a FX, which can be empty, but should contain the same channels as the template and use the Load Template button. If the fixtures in the template are not the same as in the FX, the Programmer will try to map the channels by name.

25.11 Audio2Light

The Programmer has an internal audio DSP. This is able to measure the beat rate and to analyze frequency ranges, which then can be used to create lighting effects. Here is an example for a simple audio2light effect:

- First, ensure that the audio signal is routed to the proper audio bus in your sound control and the sound source is enabled.
- Open the Audio DSP dialog, e.g. in the main menu with `View` | `Audio DSP`, or with the icon with the frequency range. Click `Setup`.
- Select the Sound Source and a Peaklevel Fallback Speed of 30%, close the dialog.
- Open the Life FX dialog.
- Select the blue channel, no Touch Position, use Equalizer Band 1 as function, Size = 40. Press the plus icon in the FX list.
- Select Red now, change Function to Equalizer Band 4, press Add in the FX list.
- Select Green, change Function to Equalizer Band 7, press Add again.
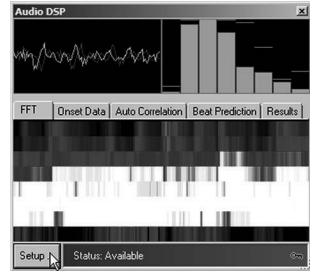
Now you have a simple Sound2Light application. Assigning the three equalizer bands only to parts of the fixtures or creating concentric areas for the three channels extends the range of possible patterns. In this case grouping selected fixtures in the Fixtures & Groups window is helpful, this makes it easier to select fixtures and then assign effects.

Audio2Light for chaser cues

If you have created a cuelist in chaser mode open the cuelist properties, go to `Extras` and tick the checkbox marked `Chaser auto speed from Audio DSP`. To control whether a cuelist is visible by AudioDSP, open the cuelist's properties. You can make the programmer keep the submaster down unless a beat is recognized by the AudioDSP, under Submaster Control, Submaster Automatic select `High if beat valid`. To make the programmer take the submaster down as soon as a beat is recognized by the Audio DSP. Select `Low if beat valid`.

25.12 Dynamic Scroll Text

With the Dynamic Scroll Text you can create dynamic scrolling text in an installation. This function replaces the former e:script scrolltext wizard and has far more possibilities.

To create a scrolltext first select the used fixtures as before in the Programmer. Use the right mouse button or the pepper icon in the main menu to call the Live FX dialog. Click the scrolltext icon in the icon menu to add a scrolltext effect. The Scrolltext Wizard works always on all color channels. After the effect has been created click the FX Name in the top list to edit the scrolltext effect. Click on one of the channels to edit the global effect settings.

The text to be displayed can be fetched from various sources, it can be static text, come from a file or from remote systems like web servers.
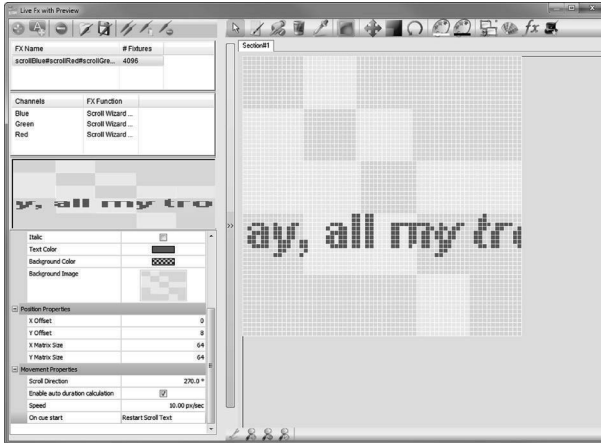
The are several parameters to choose from to create the text and the way it is displayed.

Text Properties	
Select source	Select the source of the text to be scrolled. Can be Dialog Source (static text), Web Source (HTTP or XPath) or File Source (text read from text file).
Text	If Dialog Source was selected: static text to be displayed. This may have up to 1000 characters. Use Ctrl + Enter for newline. The additional checkbox allows Autotext to be used (system and network variables) and is parsed and substituted. Works the same way as for buttons in Action Pad. Example here: <nicetime %X> provides the system time as hh:mm:ss. See appendix Autotext for an overview.
Enable Autotext	If set, the static text can be Autotext (system and network variables) and is parsed and substituted. Works the same way as for buttons in Action Pad.
Web Source, XPath	If Web Source was selected: give any web address or web feed address (e.g. http://www.google.com) this address is periodically fetched. Or a feed address as XPath expression to parse its contents and show only the items from the feed you want. (see http://www.w3schools.com/xpath/xpath_syntax.asp for examples how to use XPath).
File Source	If File Source was selected: a path in your file system for a plain .txt text file, this is watched for changes. As soon as the text file changes it will be read again (so make sure it is readable and in a directory where you as a user have enough rights to read it) and its content will be shown.
Font Properties	
Type	The font type or family to be used.
Size	The font size in pixels.
Bold	Tick for bold text.
Italic	Tick for italic text.
Text Color	Select the font color for the text in a color picker.

Background Color	Background color via color picker. The transparency in the background color works with background images. It does not mean, that the background of the FX will be transparent. Use HTP/LTP/cue list priorities and separate cue lists for that.
Background Image	An image file to be used as a background. The background image can also be used as an additional bitmap wizard.
Position Properties	
X/Y Offset	You can add an offset to the scrolltext in pixels horizontally and vertically.
X/Y Matrix Size	The size on which the text is mapped in pixels. Also if your matrix does not have the usual pitch of 0,06 m you will have to give the matrix size to get a correct mapping of the preview to the actual fixtures. So for a 64PXL Board use 8 and 8.
Movement Properties	
Scroll Direction	The direction in which the text is moving. 270 means to the left.
Enable auto duration calculation	If ticked, all scroll parameters are calculated from the Speed parameter below. Enter the speed in pixels per second as scroll speed. If auto calculation is disabled, select the duration of the scroll text with Duration in seconds below and the number of passes with Passes count.
On cue start	Select if the scrolling resets with cue start or continues from the state before.

The result of the scrolltext effect is displayed in the preview of the effect dialog. When finished close the Scrolltext dialog with the upper right close function and record a cue with this effect settings, e. g. with the keyboard shortcut R.

To modify the effect later you can use the same procedure as shown in the chapter "Edit an FX".

25.13 Live FX Autotext

To use Autotext in the text field of the scrolltext, place the cursor in the text edit field and press the right mouse button. Select the Autotext and the tag gets inserted in the text field.
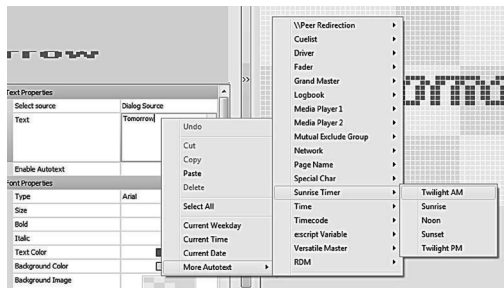
25.14 Examples

Autotext

Place the cursor in the text field for the scroll text, press the right mouse button. Select `Current Time` or `More Autotext | Time | Current Time`. The tag <nicetime %x> is inserted.

Do not forget to enable Autotext with the checkmark below the text field. The same way you can use all of the other Autotext tags in the system.

The tantalizing sparkling wall

Very simple, but effective. Use a video wall with as many pixels as possible. Select all fixtures and open the LiveFX dialog.

- Blue channel: Touch Position = 47, Function Ping Pong, Size = 50, Speed with Spread = 0.1/0.15, Phase Shift with Spread = 0.0/0.5, Ratio = 50, Mapping Function = Random with fixed seed. Press plus icon in FX list.
- Select the green color channel, set Speed = 0.15/0.20, press plus icon.
- Select the red color channel, set Speed = 0.20/0.25, press the plus icon.

The mad kaleidoscope

This is an example using an FX Template.

- Use your 8 x 8 x 64PXL wall again.
- Select all fixtures, touch all channels.
- Open the Live FX dialog.
- Add an FX in the FX List, select it and press `Load Template`. Ready.
- Select the blue channel, change the Mapping Function to Kaleidoscope.
- Repeat this for the green channel.

25.15 Common pitfalls

When coming from and being used to LAS 5.2 and earlier, the change from the modal to a non-modal dialog is essential. The main advantage is that you now can see all changes in effect settings directly in the show. The dangerous aspect is that all changes are stored as effect settings at once.

So if you edit effect settings for the blue channel and you change the color channel in the FX dialog to the not FX-driven red channel the current FX settings are valid for the red and the blue channel! If the red channel had FX settings before it will stay as it was.
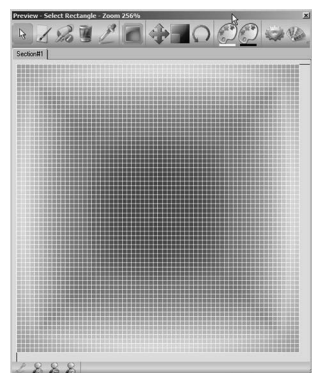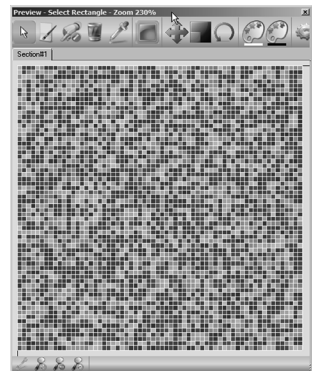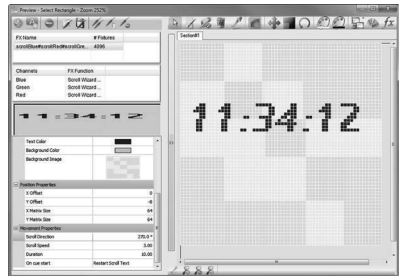
So if you completed to edit an effect for a channel first deselect the current entry in the FX List or select new fixtures/channels in the Programmer view. This also deselects the current FX List element.

Effect mapping to screen IDs or coordinates

When creating a patch with the Patchelor, room coordinates are included in the patch file. When patching an installation in the Programmer, you should use the Auto Arrange Wizard to give all fixtures a physical size and position. You can even later rearrange the positions in the Preview Window.

The mapping functions of Live FX relate to the coordinates of the fixtures. The mapping to Screen IDs should not be used anymore.

26 The Wizards

26.1 Basics

Wizards are small ready-made applications that realize special versions of shows, or generate cuelists. All Wizards can be called via the main window navigation, `Wizards`.

26.2 Chaser Wizard

A chaser is a single spot "chasing" from element to element. The Chaser Wizard makes it easy to create a chaser from one or more fixtures. To use the wizard follow exactly these steps:

- From the Fixtures & Groups Window select the fixtures for the chaser which are used for the chase in the Programmer view, or use the right mouse-button to select all.
- In the lower toolbar click Open White ▦ (SHIFT-W) to "touch" all channels.
- The chaser wizard uses ScreenIDs. The offset describes the number of ScreenIDs of which the current values of the channels are moved in every step, the ScreenIDs are set according to their position.
- Now select only the first fixture and set its intensity or color (or all channels that you want the chaser to use).
- Now select all the fixtures in the chaser in the Fixtures & Groups Window, click Open White ▦ (SHIFT-W) again to select all channels of all fixtures.
- Select an empty cuelist.
- From the main menu select `Wizards` | `Chaser Wizards`. Enter the number of fixtures you are using under 'Steps'. If you want the chaser to skip fixtures you can enter a value in the field 'Offset'.
- Close the dialogue with OK. Now the Programmer view is cleared, the Stage Output view is shown and the chaser will be played.

As you created a usual cuelist now, you can still modify the cuelist in the Cue Properties or Cuelist Properties dialog. Here you e.g. add a speedmaster to control the chaser's speed.

26.3 Scroller Wizard

This is a shortcut to the Scrolltext Wizard in the Live FX function. See »Live FX« for a complete description.

Checkit Wizard

The Checkit Wizard generates a cuelist which tests every DMX channel of the selected fixture, setting it to different values. By exporting such a cuelist e.g. into the Butler you have a small fixture testing device.

To generate a test routine:

• Put the fixtures you want to test into the Programmer view.

• Select an empty cuelist.

• From the main menu select `Wizards` | `Checkit Wizard`.

• Specify the intensity level during the test.

• For each group of channels you can specify how long the fade between testing steps should be and how long testing steps should take.

• Confirm by clicking `OK`.

Now the Checkit Wizard fills the cuelist with testing routines.
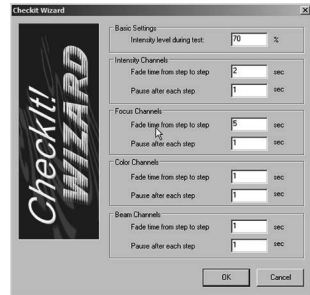
Number	Repeat	Name	In Delay	Fade In	Out Delay	Fade Out	Control	Action#1	Action#2	Action#3
•1		Blue at Full		1.000s		0.000s	2.000 s	--	--	--
2		Blue back to default		1.000s		0.000s	2.000 s	--	--	--
3		Green at Full		1.000s		0.000s	2.000 s	--	--	--
4		Green back to def...		1.000s		0.000s	2.000 s	--	--	--
5		Red at Full		1.000s		0.000s	2.000 s	--	--	--
6		Red back to default		1.000s		0.000s	2.000 s	--	--	--

TRACKING, HTP, dimm auto

release time 1.00s

Learn Timecode

26.4 Bitmap Wizard

The Bitmap Wizard creates animated graphical output on matrix DMX devices. For input the Bitmap Wizard uses Windows bitmap graphics (BMP files) or the current Programmer content. For example you could draw something on the matrix and then animate it.

Bitmap Wizard animates graphics using the following tools: horizontal and vertical shifting or moving, rotation, zoom, soft start/stop modes and randomizer.

Bitmap (source)   Animation (zoom)
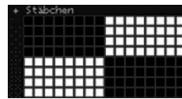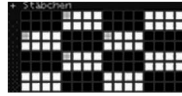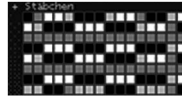
To create an animation:

- Select the fixtures which make up the matrix.

- Select an empty cuelist.

- From the main menu select Wizards | Bitmap Wizard.

- Select the fixtures & the section that you want to use.

- Click and choose a file to open as the source bitmap or the current Programmer content.

- Set whether the animation should be displayed using the intensity channels or the color channels.

- There are several parameters for rotation, zoom and movement twice – before and after the animation.

- Define the parameters for a state at the beginning and a state at the end:
  - Rotate: Rotation in degrees, may be negative value
  - Zoom: Zoom in percent.
  - Offset X: horizontal shifting of graphic
  - Offset Y: vertical shifting of graphic
  - Randomize: sets the values to random numbers.

- Set the number of cues that should be used ('Render ... Cues') for the animation, also the time it should run, this can also be set to 'Manual'. Movement offers various modes with soft fades between single frames to make the animation appear smoother.

- Click OK. The animation is rendered and you are asked if you want to watch it now in the Stage Output view.
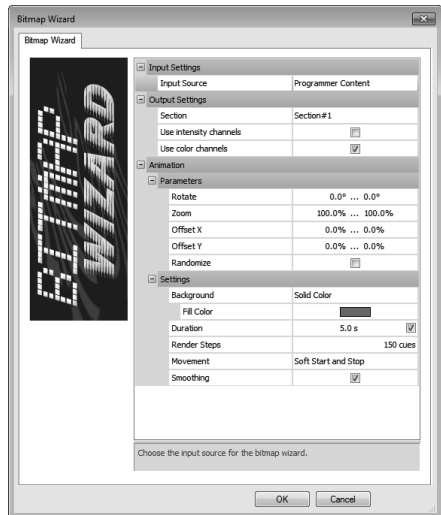
To add another animation step: Put the fixtures which were used before into the Programmer View again, open the cuelist, select the last cue and run the Bitmap Wizard again. The newly generated cues will then be appended at the end of the list.

26.5   Video Wizard

The Video Wizard generates a single cue to show videos which are played in the internal Media Player, usually on LED matrix systems.

- Choose an empty cuelist.

- Select Wizards | Video wizard from the main menu.

- Select the internal video player, usually Player #1

- Select the clipping areas for the video.

- Select the patched section to use.

- You can add a play action in the cuelist at the start to start playback immediately. You can also select if the video is stopped at the end and the cuelist ends. Otherwise the cuelist play will be continued.

- Select the video source file. The video is added to the selected cuelist.
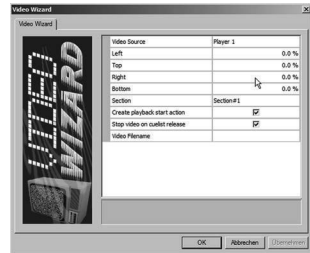
Activate the Media Player window and the Preview Window to see the translation and press Play for the video cuelist.

26.6   e:script Wizards

There are several e:script Wizards which either work only in online mode with PC/LCE or fill your cuelists with shows with different patterns. The Sound2Light and Single Cue Generator Wizards are only usable online, you cannot export them to engines like Butler or Nano+. The Full Show Generator fills your 12 cuelists with shows, which can be exported to Butlers.

Most of the Wizard function are intended for use with LED matrix systems. Some are also usable with liners and pars, but with limited use.

Sound2Light Wizard

The Sound2Light Wizard creates an active (not exportable) cue where the channels of the fixture are controlled by the input of the audio channel in your system, so a kind of color organ. First, you have to choose from two different equalizer settings to emphasize frequency ranges or use a flat equalizer setting. As a second step you can select the used colors for the effect.

If you want to create a specialized sound to light effect see the description for 'Sound-2Light Effects' in the Live FX chapter.

Single Cue Generator

The Single Cue Generator creates an internal cue that is played immediately. This is again an internal cue which cannot be exported to an engine.

In the second step you can set same parameters for the generated show:
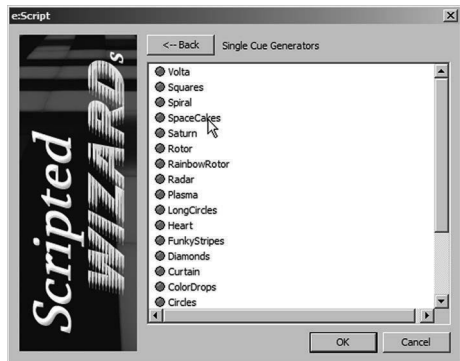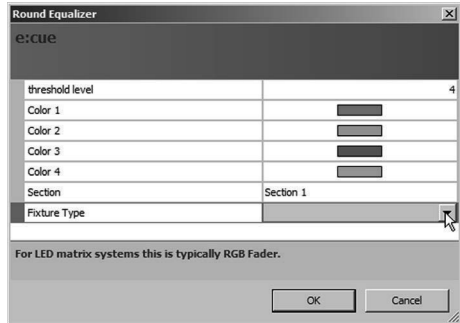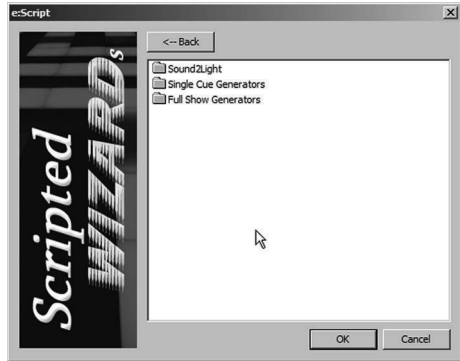
Speed	Speed of the effect
Ratio	
Turn	
Fixture type	The fixture type; this choice depends on you current fixture type and configuration
Color0	First color for the effect
Color1	Second color for the effect
Section	The section which is used for the cue
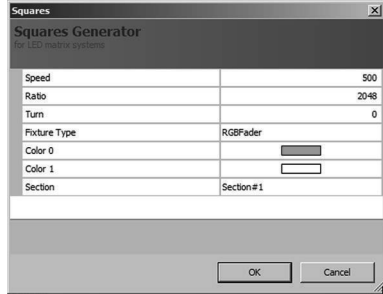
Full Show Generator

This generator fills your current 12 cues with various shows, these can be exported to an engine later. Two sets of shows are available: 'Green Frog' and 'Color Creator', these two choices generate different shows.

Some parameters can be modified to tailor your result. For 'Green Frog':

Loop count	Number of cycles.
Cue FadeIn Time	Seconds for fade-in.
Cue Wait Time	Wait time between cues.
Fixture Type	The fixture type; this choice depends on you current fixture type and configuration
Color0	First color for the effect
Color1	Second color for the effect
Section	The section which is used for the cue
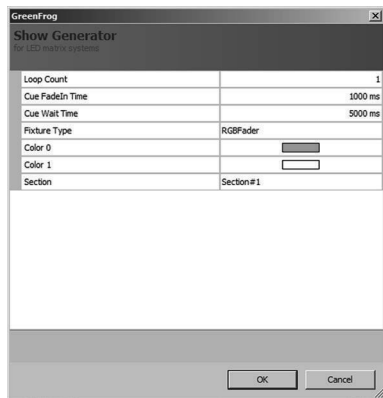
For 'Color Creator':

Fixture Type	The fixture type; this choice depends on you current fixture type and configuration
Start Cuelist	Where to start filling the cuelists
Section	The section which is used for the cue

With these wizards loads of pre-defined shows can be generated with ease, either for smaller or huge matrices. Feel free to test all the possible results.

27 The Status Window

In the upper left corner of the Programmer's main window we find the Status Window. This window delivers a lot of information about the entire system and the application as such, as well as links to dialogs and functions that are related to the displayed information.

The different chapters are reachable with the five tab selectors in the top row. After the start of the LAS the Status section always gets displayed. Let us have a short walk through the information and were the shortcuts to dialogs and functions are.

27.1 Status section

Moving the mouse cursor over the single lines and words changes the text to a link, clicking the link leads you to the dialogs where the settings can be changed. E.g. clicking network information opens the Device Manager, clicking an engine opens the devices properties dialog and so on. This works in all tabs of the Status Window.

The Status section gives general information about the basic settings.
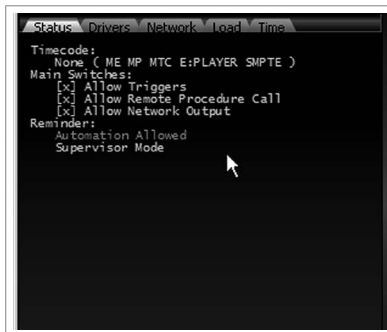
Timecode	Timecode sources that are enabled in the Programmer, e.g. SMPTE or MIDI; the link opens the Timecode Dialog in the Show Properties.
Main switches	As one example you could enable or disable network output here.
Reminder	If the show has been modified, and on which level you are logged in. So various types of things that you should know.

The three lines for triggers, RPCs and for network output can be unchecked or checked to control these system functions. Disabling network output stops all communication to devices connected via e:net, engines will go offline. This is a method to test downloaded shows without physical disconnection of engine line Butler or Butler XT.

Clicking the Supervisor mode allows to switch from Supervisor to User mode.

27.2   Drivers section

Not only device drivers are meant, but also interface drivers like a MIDI driver.
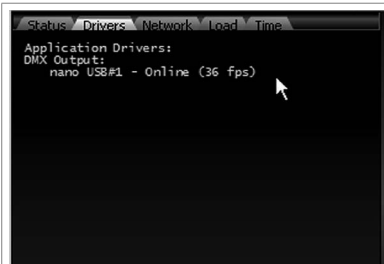
At the moment only the Nano+ is available as an active driver.

Other possible drivers are drivers for engines, special user terminals or interfaces.

Clicking on the lines in the window opens the Device Manager dialog where you can add, delete and modify drivers and their settings.

27.3   Network section
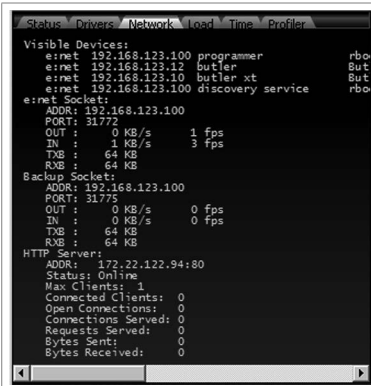
The Network section gives you a complete overview over the network you are working in. This includes the node types and their IP addresses, and the system names. The last lines show the addressing settings of your own instance of the Programmer, including backup socket (IP address blurred with intent).

Devices, that can be configured, have a link behind the device name. Clicking this link open the Device Configuration dialog to set parameters like network or device properties.

27.4   Load section
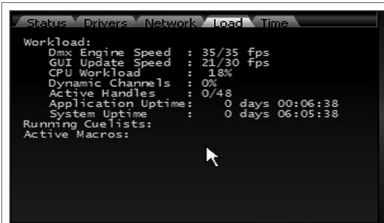
Some information about your own system, the current system load, output load etc. Also which cuelists are running and how long the system and the application are active.

Clicking on the cuelist area opens the Cuelist Properties dialog.

27.5   Time section
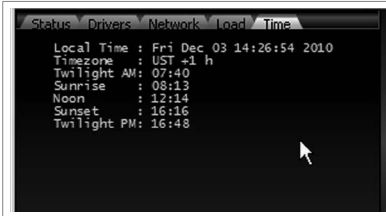
An interesting list. Not only local time and timezone but some more times that also used to trigger actions: sunrise and sunset plus twilight times. It would be possible to start a cuelist at sunrise, or at twilight AM, when there is only twilight, not daylight.

Otherwise information, no clickable links.

The Status Window provides information, and in some cases brings you to dialogs to change something. Together with the News Window there is always all information presented to see what is happening in your network and in your system.

28   Fixtures and Groups Window

The Fixtures and Groups Window has two tabbed areas, as the name says, one for all fixtures used in your patch, and one for groups of fixtures. It does not matter if the fixtures were insert with a manual patch or with a patch file.

Clicking on the tab selectors open the Application Options Dialog, where you configure your user interface again, as well as all other parameters for the complete application.

28.1   The Fixtures tab

The main purpose of the Fixtures tab is to select fixtures for the workspace of the Programmer. If you click a device in the list it will enter the Programmers workspace. Using the right mouse button context menu it is also possible to select all fixtures or to select a range, which is the index of the fixture in this list.

28.2   The Groups tab

You can make selection of the fixture in a group. This is helpful when you want to modify or control a certain selection of all fixtures. To create a new group or manage an existing one use the right mouse button context menu.

Creating a New Group

New groups can be created either from the entire content of the Programmer view or only from the currently selected fixtures. The fixtures that you want to group have to be in the Programmer view.
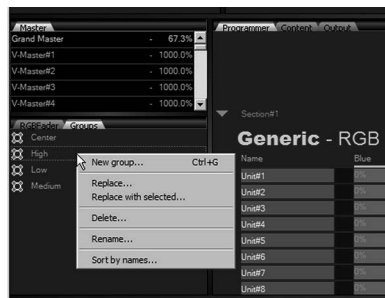
There are two ways to create a new group:

- In the Fixtures & Groups Window select the tab Groups, right click to bring up the context menu and select New Group or press Ctrl-G.

- A dialogue appears in which you can enter a name for the new group.

- There is a checkbox labeled `Include only selected fixtures`. If only the currently selected fixtures should belong to the new group, leave the checkbox ticked.
- If the new group should contain the entire contents of the Programmer View, untick the checkbox.

Replacing a Group

To replace the content of a group, while right-clicking on a group there are the commands `Replace` and `Replace with selected`. `Replace` replaces the group with the entire contents of the Programmer View. `Replace Selected` replaces the group with only the currently selected fixtures.

Using a Group

Double-click a group to load its contents into the Programmer View.

29   The Logbook

The Logbook shows various logging messages, separated in four tabs:

The `Main` tab is the place for all system messages like events, network changes and system messages. `News` collects messages from Twitter and other social network sources. `RDM` shows RDM messages incoming from the RDM system. In the fourth tab the `HTTP Server` shows startup and shutdown messages as well as errors and faults. There may come up more areas if private logbooks are selected for drivers and system functions.

> Keeping the Shift or Ctrl key on the keyboard pressed will suppress automatic scrolling.

30   Settings

This chapter describes the basic settings of the e:cue Programmer. Any necessary settings procedures related to specific devices will always be included in the device-specific manuals, so this chapter is only deals with the Programmer.

The e:cue Programmer settings follow the following concept: Application Options contains settings which concern the system of the Programmer, as well as that of the computer which runs the application. Show Properties contains settings which concern only the actual show and not the entire system.

  The HTTP server was a driver in previous versions of the LAS, now it belongs to the Application Options.

30.1   Application options

To adapt application options click on the icon in the main window, or select Extras | Application Options, or press Shift+F6.

Basic	Show splash screen	Show the e:cue logo when Programmer starts.
	Reload last saved show	Load the last saved show when Programmer starts.
	Dont save anything	Dont ask to save actual or new show.
	Always ask before closing	Ask for confirmation when closing the LAS.
	Start application with Windows	Automatically start the Programmer when Windows starts. Only available for Elements and Enterprise editions.
	Autostart delay	When Autostart is enabled wait n seconds before startup, to allow loading of other components.
	Start in Kiosk Mode	Start the LAS and Action Pad in Kiosk Mode.
	Command line arguments	Additional parameters for the Programmer when starting.
	Minimize to system tray	Instead of minimizing to the Taskbar, the Programmer will be reduced to a System Tray Icon when minimized.
	Send usage data	Send anonymous usage statistics.
	Auto save	You can enter the interval at which you would like your show to be saved automatically (in minutes). To disable auto backup enter zero. It is recommended to disable this feature during a live show.
	Rotate backup files	If set, the auto save files are rotated. The files are stored with a timestamp appended to the name.
	Number of backup files	Defines the number of used backup files. If the number of rotated files is reached, the oldest file is deleted.

Advanced	e:net	Specify the network card that shall be responsible for e:net protocol. This is important when you have more than one network adapter in your PC.
	KiNet	Specify the network card that shall be responsible for KiNet protocol.
	Art-Net	Specify the network card that shall be responsible for the Art-Net protocol.
	Art-Net Default Server Poll IP	Address to use for ArtPoll packages as broadcast.
	Log e:script macro execution	Select which events in the Programmer will be logged into the logfile and logging window.
	Log Trigger rule hits	
	Log Executed actions	
	Log Cuelist starts and stops	
	Log Driver messages	
	Enable Toaster messages	
	Keep persistent log files	The Programmer can create persistent log files of all logbook output. You can specify if you want no persistent logging or if you want the main or all logbooks to be persistently saved to the hard disk. This is a perfect feature for long time event and error tracking.
	Maximum size per file	Default is 32 MBytes, define other values if needed.
	Freeze show	By default, when an e:script macro is automatically executed it will just write a warning message into the logbook. Here you can alternate that behavior. You can freeze the show and/or jump to source code each time an error occurs.
	Jump to source code	
	System access and application shutdown	e:script is a very powerful scripting language with great capabilities not only limited to the Programmer itself, inexperienced users might perform harmful operations that might affect the show file itself and even the complete system. Here you can limit the capabilities of e:script in several steps. By default, commands that can modify the current show file are allowed while file write access and system access are forbidden.
	Current show file modification	
	File write access	
	Max. number of cached files	Maximum pre-saved files for Media Players.
Sounds	(Various)	Here you can associate sounds to several program events. You can also select your own sounds, mark an event and select a sound from the file system.

Mouse	All channels except pan/tilt	Adjust the speed of the mouse for when you are setting channel values (except Pan and Tilt values). There are two speeds where the normal speed is active in general; the fine adjustment speed is active in the program when you hold the SHIFT key (this is called a shifted slide). While the upper slider determines the normal speed, the lower slider adjusts the speed of shifted slides.
	Pan and tilt	By default, Pan and Tilt channels are controlled simultaneously. This means when you touch one slider, you will automatically be able to control the other slider as well. The Pan slider is controlled by horizontal mouse moves while the Tilt slider is controlled by vertical moves. You can set a separate mouse speed for them inside the Pan and Tilt section. Shifted slide (as for normal channels) also has a separate speed here.
	Auto merge pan and tilt	Enable/disable simultaneous control of Pan and Tilt channels for a fixture. If enabled, this feature can be temporarily turned off by holding the ALT key.
Backup	Mode	Backup mode for redundancy. See the following chapter for details.
	Peer	
Main View	Windows	Select which windows are displayed in the main window of the LAS.
	Color Schema	Select color schemas for the LAS.
	Main Toolbar	Select a position of the Main Toolbar.
	Command Bar	Select a position for the Command Bar.
	Mini Toolbar	Select a position for the Mini Toolbar (with touching, selecting and display mode functions).
HTTP Server Config.	Enable HTTP Server	Set the HTTP server active.
	Max Clients	Maximum number of clients accessing the server, one automation credit per client required.
	Private Logbook	Keep a private logbook for the HTTP server.
	Home Path	Filesystem location of server Docroot.
	Username/Password	Credentials for the standard web server (open, if left blank).
	Default document	Document used if not in URL
	Network Address	IP address where HTTP server is bound.
	Port	Port address, default is 80.
	Automation Username/ Password	Credentials for remote access for automation and Action Pad (open, if left blank).
	Security Policies	Permissions to execute security critic e:script functions.
SMTP	Set mail parameters	Sets the mail parameters for the mail functions in e:script.

	Name	Set the sender's name for the FROM field.
	Email address	The sender's email address.
	Server name	The URL of the SMTP server
	Port	The mail port of the server, depends on connection type and is set to values when the connection type is defined.
	Connection security	The security type of the connection.
	Authentication method	The encryption level for the connection.
	User name	The user name used to login to the SMTP server.
	Password	The password for the SMTP server login.

30.2 Setting up a backup system

When set to backup mode, the Programmer can run on two computers to provide a degree of redundancy. For this scenario you need two computers with the same Programmer version, exactly the same show file on both systems, as well as e*net DMX output devices (such as the e:node). The second computer (the backup system) continually monitors the first computer (the main system). In case the backup system detects failure on the main system, it takes over all DMX output devices in the network and continues running the show.

- In the Device Manager, register all DMX output devices in the backup system exactly as they are registered in the main system.
- On the first computer, select the radio button for Main System on the backup page of the Application Options.
- If the backup system should mirror the main system's actions, put a checkmark next to the option Synchronize Playback status with backup system.
- On the first computer enter the IP address of the backup system under Peer.
- On the second computer, select the radio button for Backup System on the backup page of the Application Options.
- On the second computer enter the IP address of the first computer under Peer.
- Timeout specifies the time the backup system waits before taking over the show, if it detects failure on the main system.

30.3 Show Properties

To bring up the show properties, select Extras | Show Properties from the main menu or press the icon in the Main Toolbar. As the name implies, show properties are bound to a show, not to the application itself. If you create a new show, all properties everything will be set back to default values!

Settings	Cuelist Directory	Directly opens the Cuelist Directory.
	Cue Defaults	Opens the Default Cue Properties window. All newly recorded cues will start out with the Cue Properties settings you enter here.

	Cuelist Defaults	Opens the Default Cuelist Properties window to set Cuelist Properties settings. All new cuelists (generated from the Cuelist Directory) will start with the Cuelist Properties defined here. Furthermore the Cuelist Directory has a function that allows you to apply the defaults to existing cuelists.
	Versatile Master Count	Here you can specify how many Versatile Masters to have in your show. The default value is 64 but can be significantly increased.
	Auto Touch Disable	Auto Touch is a Programmer feature: Only channels which have been changed = touched by the user are saved when a cue gets recorded. Usually changing one parameter touches all channels of the same group (Intensity, Focus, Color and Beam). With this setting you can change that behavior.
	Highlight Dimm	This sets the maximum intensity for the highlight function. Highlighted fixtures will not go to 100% if you set a lower value here.
	Mutual Exclude Cuelists	Keep tracking state for a cuelist when another mutex cuelist is started (e.g. for head washs).
Timecode	Reception	Choose the timecode sources which you want the Programmer to listen to. If you deselect a source, the Programmer will disregard timecode from that source.
	Transmission	If Send To... Midi Out is activated the Programmer will mirror any current timecode to the MIDI output (as MTC).
Fixture Sections	Size	Define the size, video area and origin for the used sections.
	Video Area	
	Origin	
Audio DSP	Sound Device	Configure the the input channel for the DSP.
	Expected BPM Minimum	Define the lowest expected bpm rate for beat detection.
	Latency Compensation	Enter a value in ms for the AD/DA adapter latency compensation.
	Peaklevel fallback Speed	The time the peaklevel detectors take to fall back to zero in percent.
	Gain Low	Set the volume of the audio channel as with a three-band equalizer. This way sounds with uneven frequency range can be adapted.
	Gain Medium	
	Gain High	
Comment	-	A comment for these show settings, like customer name or application.
Alias List	Move up/down button	Move up/down an alias definitions.
	ADD button	Add an alias.
	Edit button	Edit an alias.

	Delete button	Delete an alias.
	Auto Setup	See the following chapter about alias definitions.
Sunrise Timer	Town	This dialogue is for customizing settings of the astronomical clock, you can also set the latitude and longitude individually. From this data the sunrise, sunset and twilight times are calculated.
	Latitude	
	Longitude	
	Timezone	Set the time zone as UTC time zone.
Protection	Standard	You can protect the show from unauthorized access through a protection mode. In the configuration dialog you can define a protection password and restrict access to many functions.
	Restricted	
	Change Password	
	Create Protection Mode	
	Protection Configuration	

30.4 Show protection

The Show Protection allows to block functions and access to shows to protect intellectual properties or to prevent modification by unauthorized users.

When setting the Show Protection checkmark you will be asked to enter a password. Without this password changes in the show are not possible and you can only change protection level and show components with this password. In Edit Mode you can change the protection ranges, in Protection Mode the show is protected.
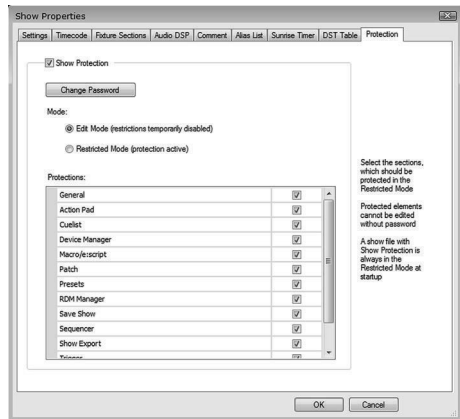
30.5 Define the Custom Menu for the LCE2

The LCE2 has an LC display and cursor keys to control the Programmer without connected monitor, mouse and keyboard. Select the Custom Menu with the cursor keys on the LCE2 front and press OK, then select one of the user defined commands.

The LCE2 pages are located in the `Show Properties` in the Programmer, in the last tab of the dialog named `LCE2 Pages`. Here you can set the name of the menu in the LCE2 front display (default is * Custom Menu *) and define pages. Each page has a guiding text and a connected Action. When the page is selected in the LCE2's front display and the OK key is pressed, the Action gets executed.
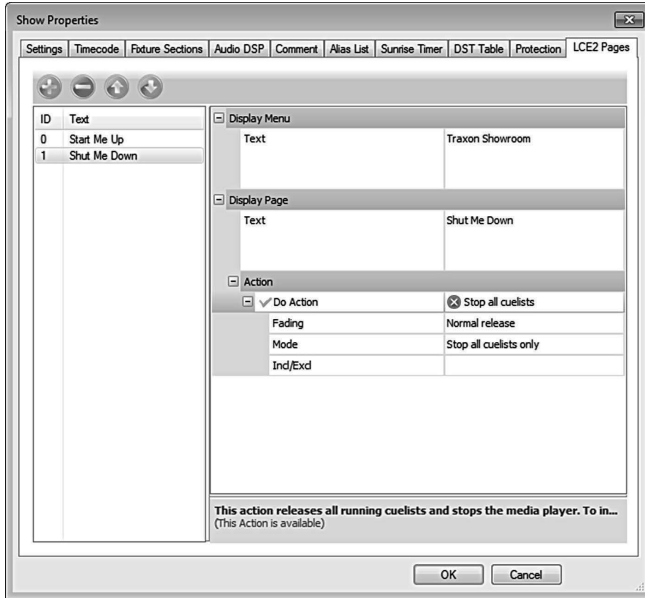
- Click on the text on the right side under `Display Menu` to change the display text for the LCE2 menu (here: Traxon Showroom).
- To create a new page press , click on the new page (`New Action x`) and define page name and Action via `Display Page` and `Action`.
- To delete a page, click on the page in the list and press .
- To reorder the sequence of pages, click on a page and use or to change the position.

After closing the dialog the changes will be transferred to the display system immediately.

30.6 Alias definitions

The Media Player commands need to contain the correct path to the media file, so that the file will also be played on the media engine in standalone. (Obviously, if you have a Media Play command telling the programmer to play c:\mp3\etc\etc.mp3 this will not work on the media engine in standalone mode.) Alias Names can contain path directions to the same media file on both the environments of the PC and the media engine, so that paths do not need to be changed before uploading a show to the media engine.

To add an alias click Add the alias tab in the Show Properties, give it a unique name and select a file in the file system selection dialog. Alias Names generally can be used instead of filenames, e.g. in the Action Media Play. A colon mark needs to precede the Alias Name, e.g. :video_11. Media files can also be played back by entering an Alias Name (preceded by a colon mark) into the command line in the Main Window.

31 Changing User Mode

The e:cue Programmer can be run in two modes: Supervisor Mode and User Mode. In Supervisor Mode it is possible to program and change everything. In User Mode only allowed are: Playing back cuelists, using the Action Pad and minor changes to the settings for GrandMaster and Submaster. In User Mode it is possible to access the Programmer View, but no cues can be saved. The current mode is shown in the status window. Click the Supervisor Mode or User Mode reminder in the status window, or the portrait icon in the icon main menu. You can also change the mode by selecting Extras | Password Protection from the main menu. Furthermore, under Application Startup Mode you can set the mode in which the Programmer starts.

31.1 Deleting the password for User Mode

In case you forgot the password it is not necessary to re-install the Programmer. It is enough to perform a reset of all settings. Caution: When resetting all settings which were made in the Application Setup are lost. To do a reset, do the following:

• Quit the Programmer.
• In the Windows Start Menu, go to Programs | e:cue Lighting Control Application Suite 5.x | Programmer | Toolbox 5.x.
• In the Toolbox application click on Restore Everything. This will also get rid of the password.

31.2 Update Check

The Programmer checks on every startup for a new version on the Traxon e:cue website. This can be deactivated the checkbox in the update dialog or in the Application Options | Basics | Search for updates.

There is also an entry for the update search under Help in the menubar and in the toolbar.

32   Imagine

Imagine is, besides the Preview Window in Programmer, another great tool for previewing shows and video on matrix systems. Imagine runs separately from Programmer and Patchelor und gets connected to the Programmer by a separate driver. The workflow with Imagine is the same as shown before. Create a matrix of tiles with The Patchelor, adapt section and Video Area size and export the patch as .patx file. One example would be a 8x8x16pxl wall, export it as 8x8x16pxl_image.pdoc, export it as .patx file.

32.1   Basic usage

(i)   When using Imagine the Programmer and Imagine may run on different systems connected by e:net. Even if both applications run on one machine, the system must have an working Ethernet connection for the data loopback!

The Imagine tool requires a device driver. In the Device Manager, select the Add Driver function and add a driver for Imagine. In the upcoming driver dialog enter the IP address where Imagine is running, your own IP, if Imagine runs on the same machine as the Programmer.

Start Imagine, use the top menu Extras | Application options and select the proper network card to use. This binds you to the right IP address automatically. The driver in the Programmer will scan for Imagine in the network and connect it to its outputs.

Everything running in the Programmer, from a cuelist or Imagine should now display the online status in the status bar, as well as the frame rate, the viewing distance and more parameters.

The mode Imagine works in is controlled by macros. You don't have to write your own macro code to see a simple LED matrix visualization in real time. The Patchelor creates source code for you automatically and embeds the code into the patch file.

32.2   Viewing settings

To change the virtual cameras focus length hold the CTRL key and move the mouse wheel. Larger angles simulate the behavior of a camera with a shorter focus length. This is like 'wide angle'. Objects appear to be larger. User a smaller angle which is a larger focus length simulates the behavior of a zoom objective. Objects appear smaller. The zooming factor is displayed in the status line of Imagine. Ambient light can be increased or decreased by holding SHIFT and moving the mouse wheel. By modifying the ambient light also the diffuse light from a virtual light source from the right is also modified for the same level.
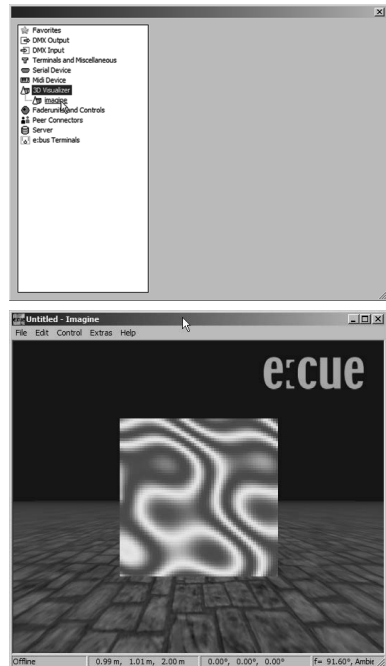
32.3   Navigation

You can change the viewing parameters with some keys. This is the so-called Doom mode, as this computer game used these keys for navigation.
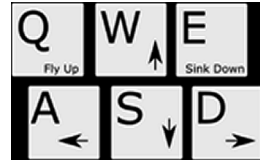
32.4   Advanced settings

If you're interested in a more complex visual output of the Imagine output, you can change the source code of the world creation script. In the Programmer open the Macro window with `View` | `e:script macros`. You will find a script named "eView". This source code was generated by the Patchelor and imported to your show file when you imported the patch. You may want to modify this code or replace it completely by your own stuff.

To do so you'll need knowledge about the e:script language in general. The "e:cue System Manual Advanced" refers mostly to this topic. More details can be found in the Help function of Imagine.

33   Autotext

33.1   What is Autotext?

Autotext are system variables which contain various values and data from the underlying operation system and from the Programmer. One example where Autotext can be used is the Dynamic Scrolltext in the Live FX dialogue. When defining fixed text in the input line, pressing the right mouse button provides a selection menu for Autotext.
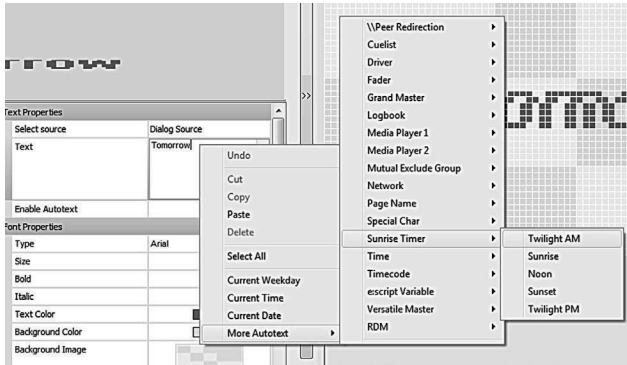
Autotext is defined and used by putting the Autotext variable name in angle brackets where the Autotext will be replaced by the requested data:

• <nicetime %x> will be replaced by current system time as HH:MM:SS.

• <nicetime $H2:$M2> will be replaced by day time for noon as HH:MM including DST.

All parameter versions for <nicetime> are listed in the Advanced System Manual for the LAS.

33.2   RDM Autotext dialogue

In the Action Pad you can setup RDM Autotext pressing the Autotext button and selecting the RDM dialogue `Create RDM Autotext`:
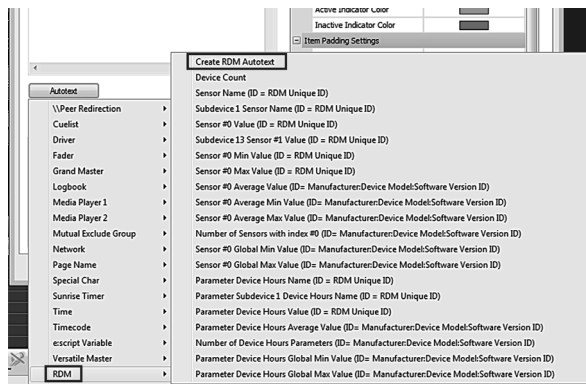
This will open the RDM Autotext dialogue where you can define the required Autotext:
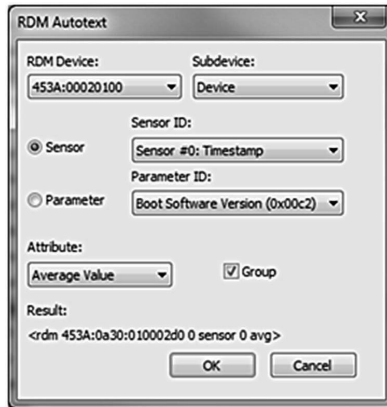
33.3   RDM Autotext

With the Programmer 6.1 and later there are several new autotext functions for RDM. With these Autotext expressions you can access the RDM subsystem interface in the Programmer. Example: the value of sensor #0 of a device:

• <rdm 0000:00000000 0 sensor 0>	0000:00000000 is the RDM unique ID of the device; 0 the subdevice index; 0 means the device itself; sensor 0 is sensor #0 of the device

  Displayed is then the value of the sensor including showing the units of the value.

• <rdm 0000:00000000 13 sensor 1 name>	Shows the name of sensor #1 of subdevice with ID 13 of device with ID 0000:00000000.

Average values of a group of sensors can also be shown:

• <rdm 1111:2222:8008000 0 sensor 0 avg min>	shows the average value of all minimum values of sensor #0 of the group of devices.

The devices are described by 1111:2222:800800:

- 1111:   Manufacturer (First part of the RDM Unique ID)
- 2222:   Device Model (from device info)
- 800800:   Software Version ID (from device Info)

For parameters instead of the index the PID is used, which can be found in the RDM specification or look it up in the Programmer RDM browser.

As an example:

• <rdm 0000:00000000 0 parameter 0x0405>	shows the device power cycles for the device with the RDM unique id 0000:00000000.

All available devices can be selected. Depending on the selection, the available subdevices, sensors and parameters can be selected. With the group checkbox the average and global values for the sensors and parameters of the same device type can be selected.

34 The Action Pad

34.1 About the Action Pad

The Action Pad is a graphical user interface for the Programmer. With the Action Pad you can build your own fully customized user interface for the Programmer, typically for end users or operators. You can place buttons, faders and more on the desktop and create a user interface for your installation, select colors and backgrounds.

This Action Pad can then be used on the display of the server, via a remote web browser, on the Butler XT2 in standalone mode or even with apps for iOS and Android on tablets or smartphones.

The default size of the Action Pad desktop is 640 x 480 pixels. You can resize the desktop, but be sure that the used display fits for these layouts.

The Action Pad has two states: the Edit Mode, to create the interface, and User Mode. In Edit Mode you can add and place:

- Buttons for starting actions, like playing cuelists, or so called Flash Buttons.
- Cuelist elements similar to the ones in the main window of the Programmer.
- Faders for Grand Masters, Versatile Masters and Cuelist Submasters.
- Displays for normal and dynamic text.
- Different pages with different content and selection of pages.
- Background images.
- Varying images for buttons and fader knobs to build a specialized user interface.

After building your interface you can switch to Normal Mode and start playing. The Programmer offers a full-screen Kiosk Mode where only the Action Pad is visible. Also, if you lock the Programmer with a password, an operator can play back the show from the Action Pad, but cannot change anything. This is done by setting the Programmer to User Mode. This will be explained in the following chapters.
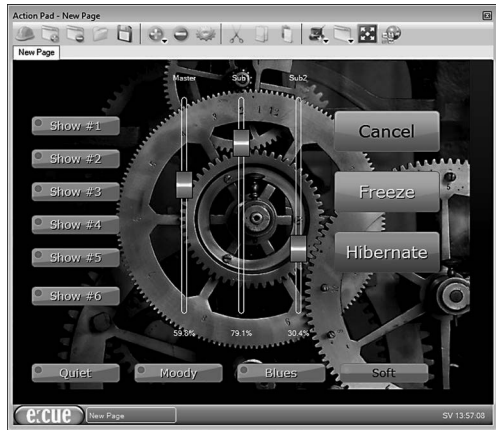
34.2   User interface

	Switch between Edit mode and action mode.
	Add a new page in the Action Pad
	Delete current page.
	Import a saved page.
	Save current page set.
	Add an element (button, fader or cuelist control).
	Delete an element.
	Edit element properties.
	Cut selected element(s).
	Copy selected element(s).
	Paste elements from clipboard.
	Adjust, arrange or position element.
	Set screen size.
	Switch to full-screen (kiosk) mode.
	Publish the Action Pad to browser.

34.3   Starting the Action Pad

To open the Action Pad select `View` | `Action Pad` from the main menu or use the Action Pad icon from the main icon menu.

- Press the `Edit Page` button to toggle between Normal Mode and Edit Mode.
- You can add elements by clicking `Add Item`, selecting an element, and clicking & dragging inside the Action Pad window.

To edit an element you can double-click it or press the cogwheel icon. The functions for elements are listed below. When you are done, or for testing purposes, you can switch back to Normal Mode by clicking `Edit` again.

34.4   Additional features

- Select several elements at once by drawing a rectangle around them – or hold Shift while clicking elements to add them to the selection.
- Delete selected elements by pressing the Delete key.
- Move selected elements by clicking & dragging them or using the arrow keys on your keyboard.
- Resize elements by clicking & dragging the handles (small black squares) in the corners of the particular element.
- Align – You can align several elements by selecting one of the available options, e.g. `Align Left` inside the `Extras` menu. The menu also shows keyboard shortcuts.
- Adjust Size – You can adjust the size of several elements by selecting one of the Adjustment options inside the Extras menu.
- Background wallpaper and background color can be adjusted for the current page by clicking the `Properties` button without having any element selected.
- Cut, Copy and Paste – you can use appropriate buttons or Ctrl-X, Ctrl-C and Ctrl-V.
- Several Pages (Tabs) – Click to add a new page to the Action Pad. You can delete a page with the delete button.
- Saving and Loading – You can save the current page of the Action Pad by using the floppy disk item. Import a page by clicking on the folder icon.
- Element Properties – Highlight an Action Pad Item and press the Properties icon to open the Properties dialogue for it. Alternatively, you can double-click the particular Item.

34.5   Action Pad items

- Generic Buttons can be used for several purposes. You can assign functions, or actions, to buttons like you do it for cues.
- Flash Buttons are not bound to Actions but only to faders. When pressed the current value of the fader is saved and the fader is set to 100%. When releasing the Flash Button, the old value is restored.
- Inserts a fader. In the properties for the element you select whether you want the fader to be a Grand Master, Sub Master, Speed Master, Network Parameter or Fader-on-current-page. Furthermore you enter the number of the master or network parameter that this element should control, or in case of Fader-on-current-page the fader number between 1 and 12. Faders always show values as percent.
- The Color Picker allows to select an RGB color value and map the value of the three color channels to Versatile Masters.
- Cuelist Control – Inserts a control for cuelists like in the Cuelist Window of the Programmer. As parameter you can select the cuelist this element should control.
- A Cuelist Play Button draws a Generic Button but is already bound to a Play Cuelist Action.
- A Media Play Button, like the Cuelist Play Button, creates a Generic Button which is already pre-configured for the Media Player.

Text Display either shows static text, like descriptions or names, or Autotext. »Autotext« is a system internal value of the Programmer like the current cuelist, cuelist name, network parameters or time/date, which is fetched and used as text element.

34.6   Item properties

To display the properties of an Action Pad item, you can either double-click the item or click the the item once and then the Item Properties icon in the toolbar. A dialog will open. The first tab is nearly the same for all elements. In this dialog you can set all parameters for the element like colors, fonts and font sizes for captions and text, also background and foreground colors. The `Scripting ID` is a symbolic value to address the element from an e:script macro. Setting the item to `invisible` only hides the graphical display of the item, not the controlling function; in this way you can use a background image as the graphical interface, e.g. a room or floor image, and assign actions to areas in the image. Only if you reset the `Enable` flag, the item becomes inactive.

• If the current item is a button, it will have two more tabs where you can define two different Actions for this button, e.g. play cuelist or execute an e:script macro.

• For a fader there are no Actions, instead you can assign a master function to it, control the Media Players or even the Windows mixer.

• Cuelist Controls have no parameters to set, they just control cuelists.

With the Item Properties you will define all aspects of the display and function of an item like a Button or a Fader. You can select colors and sizes, even transparency of the background. Using images for Buttons you can build the ideal display type as seen on the first page of this chapter, a locker-type switch that uses two different shapes for active an inactive state.

For buttons there are several styles to choose from. Note that these styles also apply to other control elements, here show for cuelist play controls.

Item Properties in detail

Caption	A caption for the particular item, displayed on the item at an adjustable position. To add Autotext, use the button below the caption window. It is possible to display Auto Text information of a connected machine using peer connectors. The syntax is like in normal Auto Text prefixed by \\peer name\. This way the information is taken from the particular peer. More about Autotext and peer connectors can be found inside the e:cue Advanced System Manual.
Image 1 & Image 2	An image as an item's background. This image will be sized to fit but will also keep its aspect ratio, except for the fader control item. To prevent uncovered item background you should always mark the item background as transparent when you are using images. A second image can also be specified. This image will only be used by some of the items: when specified for a fader item the second image will be used for the controller knob. For a Button in toggle mode the second image will be displayed when the Button has been toggled to depict its current state.
Properties	Here you can adjust advanced parameters like caption font, colors and most importantly, state control. State control will affect the behavior of the item. For Buttons you can select if the Button will be a static display, a toggle Button, a standard push Button and more. The certain State Controls will be affected differently by the State Control Parameter. See the following list of State Control Parameters.

Main properties

Tooltip Text	This help text is displayed when the mouse cursor hovers over the item.
Scripting ID	The item can be accessed and controlled via e:script. The Scripting ID identifies the item for access.
Decode Autotext	Parse and display Autotext.
Visible	The item is visible or invisible. When being invisible the control stays active, like a Button, but is not displayed.
Enable	If set the item is not active, it does not have control functions.

Item Style Settings

Background Style	Various types of backgrounds are adjustable. When set transparent the background is not displayed. This is especially useful with Buttons.
Active Background Color, Inactive Background Color ...	These four parameters define the colors for background and borders of items. An active item is for example a Button in an active state. If a Button is a toggle type and e. g. plays a cuelist, it is active.
Indicator	A small indictor showing the item's state as active or inactive. With the following two parameters you may select the colors for the states.
Item Padding Settings	The space top/right/bottom/left for the item.
Font	Font size and type of the caption.

Active Text Color, Inactive Text Color	The color of the caption text when the item is in active or inactive state.
Text Shadow	Enable or disable a shadow for the text.
Horizontal and vertical Alignment	Controls the position of the caption in the item.
Line Format	Can be Multiline, Singleline and Wordwrap. Controls the way the text is broken if longer than the display area.
Add End Ellipsis	If the text does not fit into the item it is shortened and an … gets displayed at the end.
Text Margins	Padding areas for the text at the item.

State Control Parameters

Button	Automatic	Based on the selected action, the button will try to automatically act properly.
	None	The button will not change it's state
	Push	Pressing the button will perform the first action, while releasing performs the second action.
	Toggle	Pressing the button for the first time will perform the first action, pressing the second time will perform the second action. While pressed, button is in active state. While released inactive.
	Caption	The State is defined by the last Autotext element inside the caption.
	Cuelist	The State is defined by the status of the particular cuelist, selected by State Control Parameter.
	Network Parameter	The State is defined by the selected Network Parameter.
Fader	Grand Master	The Fader controls the Grand Master.
	Cuelist Submaster	The Fader controls the selected Cuelist Submaster.
	Versatile Master	The Fader controls the selected Versatile Master.
	Network Parameter	The Fader affects the selected Network Parameter.
	Fader On Current Page	The Fader controls the particular Fader on the current page.
	Media Player 1/2	The Fader controls the volume of the selected Media Player.
Cuelist Control	Cuelist	The integrated intensity control affects the intensity of the belonging cuelist.
	Fader On Current Page	The integrated intensity control affects the Fader # on the current page.

Properties assimilation

Select several elements of the same type by clicking them keeping the Shift key pressed or by drawing a rectangle around while keeping the left mouse button pressed. When you now click one of these elements this element will become the master for setting properties of all elements. In the context menu via the right mouse button, select `Assimilate Selected Items...`

In the following dialog you can select the properties which will be assimilated from the master element to all other selected elements. Be sure to use only the intended properties to be assimilated. Otherwise you will overwrite properties which should not be modified like Actions or e:script IDs!

Some properties will be auto-renumbered.
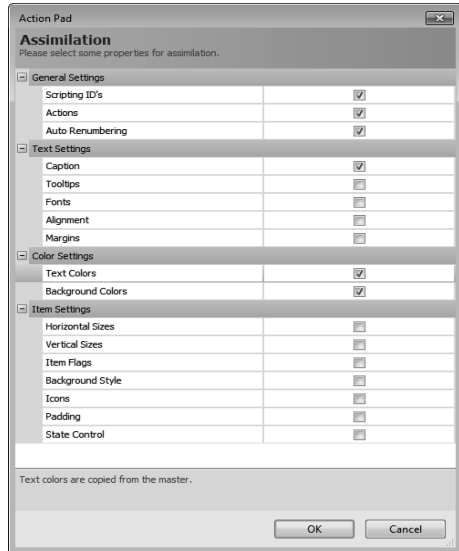
Selecting colors for items

When clicking on the color selection field of an item, e. g. `Active Background Color,` an additional small button gets visible. Clicking this button open the Color Selection Dialog. You either pick a color from the color field, or you can enter the HSL (hue, saturation, luminance) or RGB (red, green blue) value of the desired color.

The Alpha field is the alpha channel of the color. A value of 255 means full color, a lower value makes the color more or less transparent. A value of 0 hides the color area.
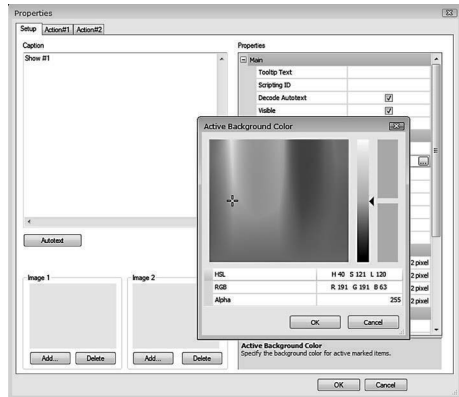
34.7   Using the Color Picker

With the Color Picker you can select a color interactively in the Action Pad and map the three RGB color values on Versatile Masters. There are two types of Color Pickers: a Color Picker Box and a Color Picker Wheel. With the Color Picker Box you select the color in the color display, the intensity with the slider. The small area on the right reflects the selected color.

The Color Picker Wheel lets you select hue by the ring, saturation and lightness by the diamond. In the Properties Dialog for the Color Picker you can define the width of the wheel and its border color and to have a preview of the selected color or not.
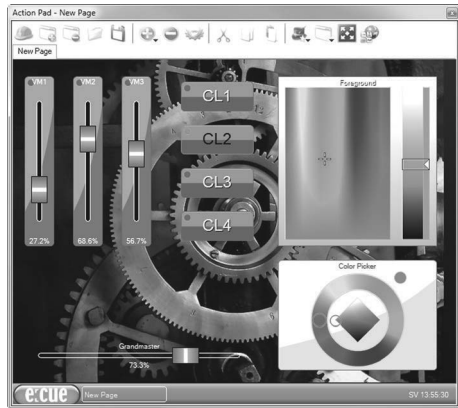
Controlling a fixture color

To use the Color Picker to control a color, proceed as follows:

- Create three identical cuelists, one with full red, one with full blue and one with full green intensity. The cuelists must be identical and have no Mutex Group, they must run in parallel.

- Use a separate Versatile Master for intensity for the three cuelists.

- Map the color channels of the Color Picker on the Versatile Masters of the three cuelists.

In blog.ecue.com you will also find a video showing how to use the Color Picker on the Action Pad.
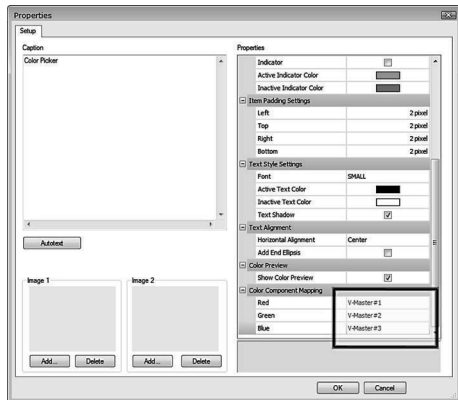
Note: the Color Picker does not work with the current firmware of the Glass Touchscreen!

34.8   Network Parameters

Network parameters are a set of 1000 predefined variables which are always present in the e:cue Programmer. Other systems or applications can read or write these parameters via TCP/IP. Network parameters can then be displayed (and changed) via a fader or display, they can influence the Actions of push buttons or they can be used even more flexibly together with the macro language of the e:cue Programmer. Please refer to the Advanced System Manual for more information about this topic, available for free download from www.traxontechnologies.com.

Fader On Current Page

Unlike cuelist elements, which always refer to a single cuelist (e.g. cuelist 19), the Fader On Current Page refers to one of the 12 cuelists on the currently active page. Usually a show in the Programmer contains cuelists 1 - 12 on Page 1, cuelists 13 - 24 on Page 2 and so on. In this normal configuration a Fader On Current Page with the parameter set to 1 refers to cuelist 1 if the currently active page is Page 1. If the page switches to Page 2, that fader would refer to cuelist 13. A Fader On Current Page with the parameter set to 3 would refer to cuelist 15 if the page is set to Page 2. The Fader On Current Page has a similarity to faders on the e:cue faderunit, as those also refer to different cuelists depending to which page is currently active. in the properties of a element you can enter AutoText in the Setup field. For example you can enter #<fader X> - replace X with the number you entered in the Parameter field.

34.9   Using codepages in Action Pad

The Action Pad works with different code pages, so it is possible to use the country specific code page for char codes higher than 127. For using this feature, please install a specific code page in Windows 7 Ultimate, or use a specific language version. It is possible to use this chars in the tablet or browser Action Pad as text. To use the correct codepage you first must adjust the codepage settings for Windows.

In the Control Panel for Windows select `Region and Language`, select `Adminstration` and set the `Locale`, which is the non-UTF character interpretation. These menu items depend of the language version of your Windows version.
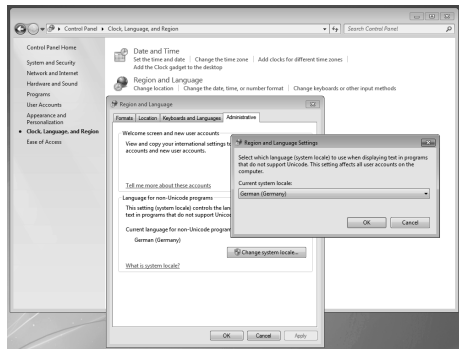
34.10 Action Pad with multiple pages

There may be several pages in the Action Pad. You can add pages with the `Add Page` icon in the main icon. menu.

To navigate between pages use a button and assign the Action `Goto Page | Action Pad Page` to it. This way, hiding the button display and placing the button in a building images as background you can call different pages for different parts of the building.

The page order can be rearranged in edit mode now by using drag and drop.
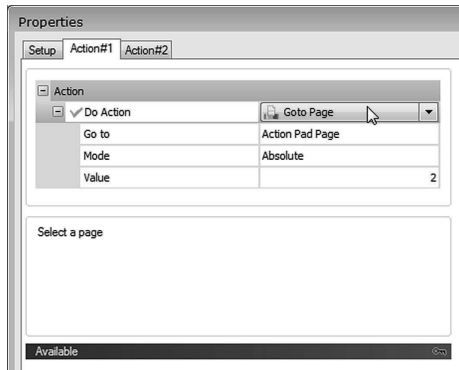
34.11 Kiosk Mode

If the Programmer runs on a kiosk computer, accessible to the public, it is not wise that users are able to access all features of the program. Users should only see the Action Pad without being able to edit the show. The Programmer can be put into a special Kiosk Mode by command line

parameters. In order to achieve this, do the following:

• First create the show as usual. Save the show and take a note of the path and filename, such as C:\Shows\KioskShow.shw.

• Go to `Application Options` in the Programmer and deactivate the option for `Reload last loaded show` (on the first page under Options), if it was activated before. Shutdown e:cue Programmer.

• Now in order to pass command line parameters to e:cue Programmer, you need to edit the shortcut on the desktop. Right-click the icon for e:cue Programmer Standard or e:cue Programmer Enterprise respectively. Select `Properties` from the context menu which appears. In the appearing dialogue click the tab for `Shortcut`.

• In this window there is a text field named `Target`. In a regular installation of e:cue Programmer with a dongle connected it should say "C:\Program Files\ecue\Programmer...\ProgrammerPlus. exe"

• Now insert a space after that text and append -kiosk. After that parameter, again insert a space and now write the complete filename of your showfile including the path, e.g. C:\Shows\ KioskShow.shw Note: If the filename contains spaces it must be enclosed by double quotes. For example: "C:\Shows\Kiosk Show.shw".

• The complete entry for Target would look like this: "C:\Program Files\ecue\Programmer V6.0\ ProgrammerPlus.exe" -kiosk "C:\Shows\Kiosk Show.shw".

After clicking `OK` to save the changes and double-clicking the shortcut the programmer should start in Kiosk Mode. This means the Action Pad will be displayed full screen and you cannot access other parts of the program. To prevent users from just exiting fullscreen, you can log out the Programmer to user mode. This can also be done inside the Action Pad menu on the bottom-left of the window. For more information about Supervisor and User Mode, please refer to the corresponding chapter.

Kiosk Mode with several pages

By default, each Action Pad page will have a link on the Action Pad menu bar at the bottom of the window. This allows switching pages even in full screen. If you want to prevent particular pages selectable in User Mode, open the page properties and uncheck `Create Taskbar Link` under `Taskbar and Menu`.

34.12 Action Pad System Menu

At the bottom side of the Action Pad window, also visible in Kiosk Mode, you find a Windows taskbar-like system bar. On the left side of the system bar, there is an e:cue button for a system menu. The menu differs depending on whether you are logged in as supervisor or not. The following table shows all available options:

Menu item	Supervisor Mode	User Mode	
Logout	yes	no	Logout/switch to User Mode.
Login	no	yes	Login to Supervisor Mode
Status	yes	yes	Show the Programmer Status Window
Logbooks	yes	yes	Show the Logbook Window
Automation	yes	yes	Show defined trigger rules
DMX Output	yes	yes	Show the DMX Output Window
Network Setup	yes	read-only	Open Network Configuration Window
Goto/leave Kiosk Mode	yes/yes	yes/no	Enable/disable Kiosk Mode
System Shutdown	yes	no	Shutdown the computer
System Reboot	yes	no	Reboot the computer

34.13 Publish Action Pad to browser

When using the Action Pad on a remote system, the HTTP server in the Application Options of the Programmer must be started. Also enter the correct server IP for the HTTP server!

The Action Pad is not only available on the local system, but also via HTTP to any other system in the network running a web browser. In this way, the Programmer can be remote-controlled from any other system. So you can place the main system with the Programmer in a save place, showing a custom-build user interface on a remote system, without harm for the central server controlling everything. To use an external system for Action Pad access: Make sure the HTTP server is started in Application Options. Publish the Action Pad with the Open in Browser button. Usually this opens the Action Pad in

```
http://serveraddress/ActionPad/ActionPad.html
```

34.14 Action Pad in remote PC browsers

When the Action Pad is used on a remote PC with a standard browser, the user interface is implemented with Adobe® Flash® elements. The client can be limited to a Group of pages by setting `Group=<identifier>` in the URL. The start page can also be given as a script ID in the URL using `Page=<script ID>`. The old way of selecting the page by index is still supported, but not recommended.
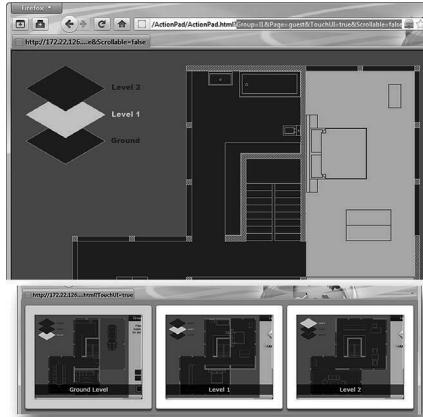
A touchscreen-optimized user interface is available that replaces the tabs and start bar and also provides a convenient thumbnail view of all directly navigable pages. This user interface can be enabled by including `TouchUI=true` in the URL. Scrolling and the visibility of scrollbars can be disabled by adding `Scrollable=false` to the URL. Since LAS 5.5 SR1 the rendering and behaviour of buttons and faders has been improved. Particularly, text layout is more correct and hidden items are now handled properly.

34.15 Automatic startup on computer start

If you want to have an autostart feature inside the Standard Programmer do this:

• Open up the Programmer Standard Exe`s properties.
• Go to the `Target` dialog and set behind the `Folder\ProgrammerStandard.exe` the parameters `/KIOSK c:\Folder\showfile`.

This will open up a showfile and if you want it will open up in Kiosk mode as well. For an automatic startup after Windows starts, simply put the shortcut into the startup menu.

34.16 Remote access with iPad/iPhone/Android

Accessing the Action Pad is also possible with an iPhone/ iPad/iPod Touch and Android devices. The Apps are available from the iTunes App Store or from the Google Play Store. Search in a search engine for "e:cue action pad iPad". To download and install the iOS client just search for "ecue" in the App Store on your iOS device and tap on the search result "**e:cue Action Pad for iPhone or iPad**". For Android look for "e:cue" or "Action Pad" in Google's Play Store. Download and install the App on your tablet or smartphone. In general both the iOS and the Android App are the same, only created for the two different operating systems.

On startup the app will try to connect to the last known server. If this is not reachable, it will show you the server selection page with already defined entries for our demo servers. Tap Edit to add, remove or edit server entries.

Tap the cogwheel to edit the entry, tap the stop sign to delete an entry. Tap Add to add a new server link.

Set the server's IP address or the full server name if using a DNS server for allocation. The port number is usually 80. Define a group number if using only selected pages for this device, Start Page is the first page that gets displayed after connection.

If the Action Pad is secured with user and password setting, enter the user name and the right password.

You can also define the display orientation here, if the display is scrollable and if Direct Fade is supported.

Click Ok when the entry is complete, or Cancel to abort settings.

Program Options

The Program Option can be reached via the top left cogwheel in both server settings pages. Here again you can set parameters for page orientation or if the pages are scrollable. If Show Device Status Bar is set to On, the Front Page displays the status bar. Show Title Bar defines visibility of the title bar, Stats are mostly needed for debugging only. Tap Ok to end setting program options.

After a server was selected from the server overview, the Action Pad connects to the server.
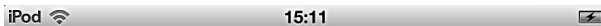
The application now loads the pages and connected images and displays the Action Pad.

Building Action Pad pages for iOS and Android

When choosing fonts for button texts we suggest to use MED, Arial or Verdana since these fonts will look very similar (but still not identical) on Windows and iOS. If you absolutely need an exact match then you will have to resort to prerendered bitmaps.

34.17 Remote access with Android devices

Since LAS 6.0 there is also an Android App available for Remote Action Pad access. Visit the Google Play Store to download the free app. Search for "e:cue" or "Action Pad".

The setup and configuration of the Android Action Pad is the same as for iOS devices.
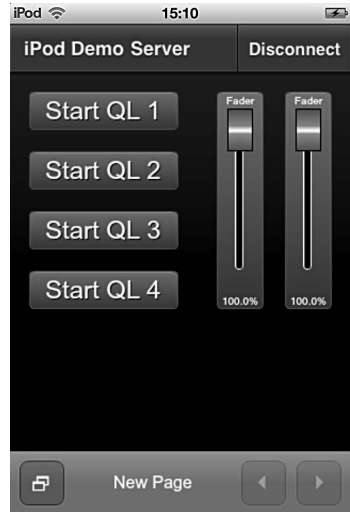
This Android App requires Adobe Air, if it is not installed please follow the redirect or go to the Play Store and install Adobe Air (free). Some very old Android versions will not be supported and the installation will abort.

Navigation between Action Pad pages can either be done with the two arrows in the lower navigation bar of the Action Pad or with the `Menu` button of the Android device.

34.18 Actions in standalone mode for Butler XT2

See chapter Actions for a description of Actions.

Cuelists:	Stop, Play, Toggle Play, Pause, Toggle Pause, Reset All, Stop All Cuelists
Set Intensity	Grandmaster, Versatile Master, Cuelist Submaster
Step Intensity	Grandmaster, Versatile Master, Cuelist Submaster
Ramp Intensity Start	Grandmaster, Versatile Master, Cuelist Submaster
Ramp Intensity Stop	Grandmaster, Versatile Master, Cuelist Submaster
Mutual Exclude Group	Stop, Play, Pause, Previous, Next
Goto Page	By Index, By Name, By Offset
Others	Reset All, Hibernate, Freeze, Trigger Label

34.19 Remote Action Pad on Butler XT2

Since firmware version 2.0 the Butler XT2 can be controlled in standalone mode with Action Pad pages on a connected PC or PC-like system. All that is needed is a system with an Ethernet connection and a Flash-enabled browser like Firefox, Chrome, Opera or Internet Explorer. Make sure that the Adobe Flash plugin is installed.
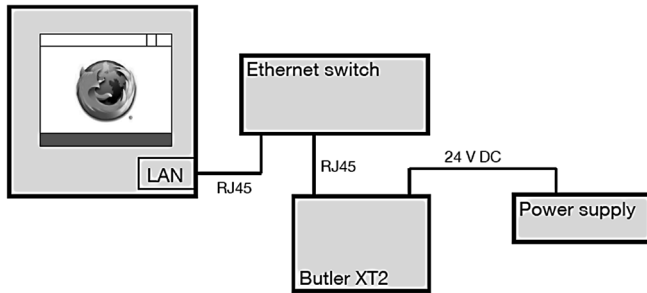
Connect the Butler XT2 via a switch with a WLAN access point. Configure the access point or the WLAN enabled switch. Make sure that no address conflicts with other devices in the network, e. g. Butlers or servers, can happen. Connect your Android device with the WLAN access point.

• Create the Action Pad pages as usual, you may use all elements like Buttons, Faders and even background images.
• Create the cuelists for the Butler XT2, if required configure the complete Butler XT2/S2 cluster.
• Set Actions and Triggers. Send them via `Quick Update` to the Butler XT2.
• Go to the `Export Show` dialog. See details in the Chapter »Exporting Shows«.
• Do not forget to set the checkmark `Action Pad Export` in the Export Dialog.
• Export the cuelists, the Action Pad pages get exported automatically.

> Do not forget to enable the Action Pad for the Butler XT2 in the configuration dialog for the Butler XT2 in the Device Manager! If the Butler XT2 misses this flag the Action Pad pages are not exported.

The Remote Action Pad can only be used in standalone mode of the Butler XT2. As long as it is in online mode, the HTTP server in the Butler XT2 is not available. So to use the Action Pad on this engine, disconnect it from the e:net network or disable network output in the Network tab of the Programmer.

- Connect the Butler XT2 with a web browser and the remote system via a switch.
- Use a so called cross cable with changed RX and TX lines, if no switch is available.
- Start the browser and enter this URL:

    `http://ip-address-of-butler-xt2/ActionPad/ActionPad.html`

35   Masters

As the Lighting Application Suite emulates a faderunit in some way, and you can in fact use USB-driven faderunits connected to the LAS, there are also Masters available in the user interface. Masters control parameters in the Programmer, either intensity, speed values or other continuous assignments. Controlling these masters can happen in the Programmer window directly, or from external sources, e.g. the light sensor in an e:bus Input Module. Masters can also be assigned to faders in the Action Pad, this way masters get directly accessible in the lighting application.

35.1   Master Window

Masters have their own section in the Programmer's main window. There is one Grand Master which controls the overall intensity in the whole show. The other masters are called Versatile Masters, they can control many parameters in the Programmer, especially in cuelists. 63 Versatile Masters are available, which can be assigned freely. Except for the Grand Master the value range for masters range from 0 to 1000%, so you can not only control parameters to the basic maximum, but to factor x 10. 100% corresponds to the basic setting of a parameter. To change a Master value in the Programmer place the mouse cursor over the percent value, keep the left mouse button pressed and move the mouse up and down.

One place, where Versatile Masters can be used, is in the Main tab of the Cuelist Properties dialog. Here you can use Versatile Masters for:

• Controlling the cuelist speed

• Controlling the FX (effects) speed

• Assigning a submaster for intensity control, only for this cuelist
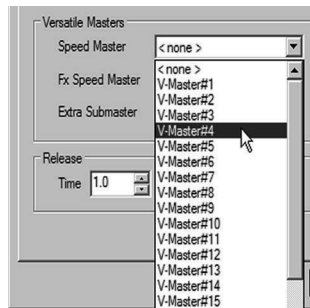
Once a Versatile Master is assigned to a function it can be accessed in the Programmer View, or a fader in the Action Pad can be connected to this Master, or an external device or signal can set the current value for the Master. One intensity submaster is always available: as a segment in the Quelist field in the Programmer View's Quelist Directory at the bottom of the LAS window. Place the mouse cursor over the Full/% segment, keep the left mouse bottom pressed and move the mouse up and down. This intensity submaster is always available and assigned automatically.
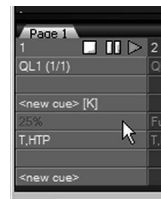
35.2   Masters and fixtures

Fixtures in the programmer View are influenced by the grandmaster in the following way:

• If a fixture lacks an intensity channels, the grandmaster will automatically affect its RGB or CMYK channels.

• Changes to the intensity channel always stay between the settings for Preheat and Limit for that fixture (`Patch` -> `Fixture Patch` -> select fixture -> `Properties`).

## 35.3   Grandmaster and Submaster influence

In the Cuelist Properties dialog you can set which channels of the cuelist are affected by Masters.

• Automatic: Submaster automatically modifies the appropriate channels (dims RGB/CMY channels if fixture lacks intensity channels). This is the default setting.

• Intensity: Submaster only modifies intensity channels.

• Focus: Submaster modifies focus channels (lowering the submaster moves focus channels towards default/home position)

• Color: Submaster modifies color channels.

• Beam: Submaster modifies beam channels (lowering the submaster moves beam channels back to their default position).

35.4   Master Context Menu

Right-clicking on a Versatile Master opens the context menus with several possibilities:

• Autofade: executes an autofade to 0 or full value in a time defined in the Master Properties (see below).

• Clear FX: removes an assigned effect.

• Reset: sets master to 100%.

• Properties: calls the Master Properties dialog.
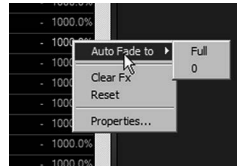
35.5   Master Properties dialog

In this dialog you can set values and parameters for the master, and you can assign an effect to a master. The Master Properties dialog has two tabs, one for the general settings, one for using an effect for that fader. For examples you can use a sinus function for the master, so the master value follows a sinus function with defined speed and offset. Additionally you can control the master via MIDI, the learn function supports quick configuration.

This offers application of nice effects, e.g. you can assign an effect to a Versatile Master, that is again submaster for an effects speed, modifying the effects speed automatically.
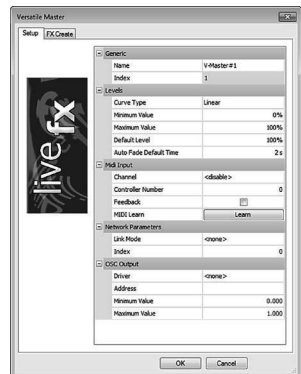
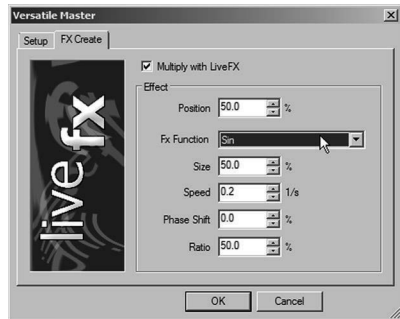| Generic	Name	You can give a free name to the master, display in the Master Window.
Levels	Curve Type	Logarithmic or linear mode, the relative increase per unit.

	Minimum Value	Usually 0%, but you can set a new lower limit.
	Maximum Value	Usually 1000%, limits the upper range value.
	Default Level	Usually 100%, this is the default leve for the as-signed parameter.
	Autofade Default Time	The time for the Auto Fade in and out.
Midi	Channel	Master sends CC messages on this MIDI chan-nel.
	Controller Number	To which MIDI controller sending messages.
Network Parameter	Link Mode	<none> or Slave
	Index	Zero-based index of the Network Parameter
OSC	Driver Address	Master sends OSC (Open Sound Control) mes-sages to selected OSC driver.
	Index	Control channel index in OSC.
	Minimum Value	The value for the master's minimum position. The fader values will be mapped into the se-lected min/max range.
	Maximum Value	The value for the master's maximum posi-tion. The fader values will be mapped into the selected min/max range.

FX for masters

As said before you can assign an effect to a master, not only mathematic functions, but also sound and video levels.

The calculated value from the effect is first mapped to the master's level. If the master is on 500%, the maximum level will be 500%. Then the value is multiplied with the cuelist's standard submaster which can again be below 100%. So effective-value = effect-value * master-value * cuelist-submaster-value.

Multiply with LiveFX	Set this checkbox to allow application of the effect.
Position	Relative position of the x-axis of the effect, see explanation for **size**.
FX Function	Select a mathematical line sinus or cosinus, Audio DSP or video chan-nel functions. This is the real effects used.
Size	Size of the effect. Example: using 50% size and 0% position uses only 25% of the effect range, the lower part is cut; using 100% size and 50% position enables 0 to 100% value range; always remember that the cuelist submaster controls still the final value limit.
Speed	Speed of the effect in 1/s = Hz.
Phase shift	Set a phase shift for the effect; this can be useful when using one ef-fect e.g. on colors and the same effect for the master.
Ratio	Ratio of the symmetry for generated mathematical curves.

The used effect will be displayed in the Masters Window. Also the generated level is shown, updated as the effect changes values.

Using input from the Audio DSP you can map frequency ranges to Versatile Masters controlling intensity or effect speed, so the limits of this function are the limits of your creativity.

35.6   Masters for single fixtures

The Grand Master works for all fixtures in the project. It is also possible to assign a Versatile Master for a single fixture or for some fixtures.

Open the Patch function from the Main Icon toolbar or select `File | Patch` or press Z. Click the fixture to assign a Versatile Master to and press the right mouse button, select `Assign Versatile Master` from the context menu (or `Remove Versatile Master` to remove it). The Versatile Master will now control intensity for the assigned fixtures.
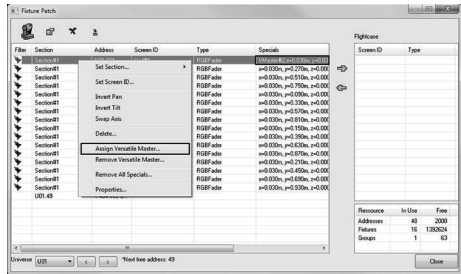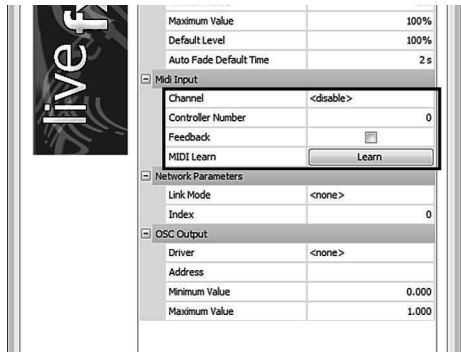
35.7   MIDI control setup for Versatile Masters

Since version 61. you can define MIDI control for Versatile Masters with a MIDI learn function. Either select in the context menu (right button mouse click) for the Versatile Master `MIDI Learn` or press the `MIDI Learn` button the Versatile Master's properties dialog.

The MIDI assignment cannot be added to a fader.

The MIDI Learn button will only listen to MIDI control change input sequences. The MIDI channel and control index are displayed, when MIDI input was configured for the Versatile Master.

The Feedback checkbox can be used for MIDI control boards with motor faders. When the Versatile Master is changed in the Programmer, the MIDI control board will receive the control change and adjust the motor fader position.

35.8   OSC control setup for Versatile Masters

Since LAS 6.1 the MIDI section was named MIDI input and OSC became OSC output. The MIDI configuration is for setting MIDI according to MIDI input and that the OSC configuration will result in output for the OSC driver.
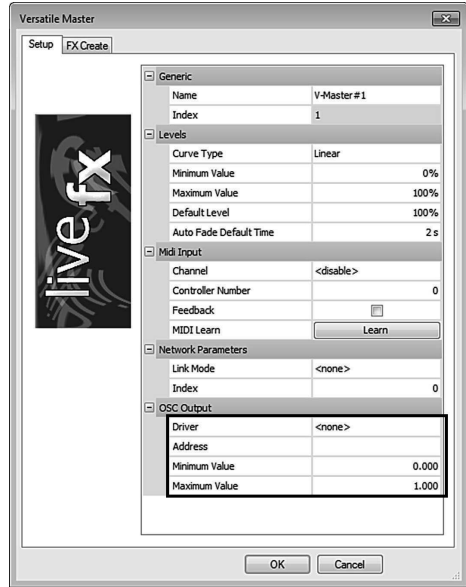
36 Media playback

36.1 Basics

The e:cue Programmer contains two integrated Media Players which allows you to play any type of media file from within the Programmer. Depending on the type of media file the system needs the proper hardware and software for playback (i.e. soundcard, video codecs...).

The Media Player also generates internal timecode as soon as a media file is started, so shows can be programmed to fit a song or video.

There are two ways of using the Media Players.

• From the main window of the Programmer open the Media Players with the two icons in the main icon menu.

• The other way to use the Media Players is via an action in a cue. Select the file to play, if normal or full-screen and the repeat mode.

The Media Player can be switched to full-screen with the context menu or via the Modus parameter when playing a media file using an action. Exit full-screen mode by pressing ALT+ENTER or Reset (Ctrl-F9).
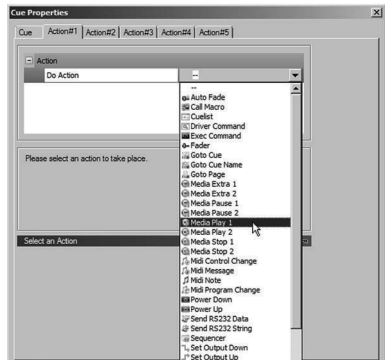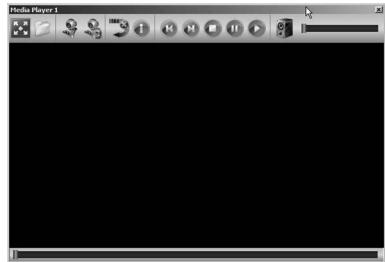
36.2 Alias list

Special care has to be taken if a Media Engine is used. Media Play commands need to contain the correct path to the media file, so that the file will also be played on the Media Engine in standalone mode. If you have a Media Play command telling the Programmer to play c:\mp3\etc\etc.mp3 this will work on the Media Engine in standalone mode.

Alias Names can contain path directions to the same media file on both the environments of the PC and the Media Engine, so that paths do not need to be changed before uploading a show to the Media Engine. Alias Names can be defined by selecting Extras | Show Properties from the main menu, then clicking Alias List. See chapter Settings for details about Aliases.

Alias Names generally can be used instead of filenames, e.g. in the Action Media Play. A colon mark needs to precede the Alias Name. Media files can also be played back by entering an Alias Name preceded by a colon mark into the command line in the main window of the Programmer.

36.3 Icon menu

	Switch to full-screen mode. Press ALT+ENTER to return to standard window.
	Open a media file.

	Capture video content from an external source, e.g. video input card.
	Set source for video capture, resolution and additional parameters.
	Turn repeat mode on or off.
	Display information about the current media file.
	Transport buttons. The first two buttons will get active if a playlist file type was opened, for example an MP3 playlist like myplaylist.m3u or a PLS file. The buttons Stop, Pause and Play work like any other button in media players.
	Mute audio output.
	Output audio volume.

36.4 Media capturing in the LCE2-fx

In order to support the capture card Blackmagic Intensity Pro the capture dialog on the media player was extended with LAS 6.1. For every capture device in the dialog additional to the resolution the Hertz are now displayed as well. There are two new drivers available after the installation of the Intensity Pro card. The `Deckling Video Capture` driver can be selected and configured in the Programmer media player dialog. The `Blackmagic WDM Capture Driver` has to be set up in the System Administration before it can be used in the Programmer.

• Open the `Blackmagic Design Control Panel` in the Windows Control Panel. Change the video standard to the same standard as your capture source.

• After applying the new settings start the Programmer. Select the `Blackmagic WDM Capture Driver`. The driver will now show the resolution in the combobox that you configured in the Blackmagic Design Control Panel.

Since a restart of the Programmer is required, the `Deckling Video Capture` driver might be a more convenient way to set up a capture device with the Blackmagic Intensity Pro.

The Blackmagic Design Control Panel is also required if you want to use the analog input instead of the HDMI input. You need to change the `Set Input` option accordingly to the inputs you want to use.

37   The Sequencer

37.1   About the Sequencer

Usually shows are created and stored as cuelists. Sometimes a finer control of playing sequences is required, especially when lighting has to be synchronized with media or other timed events. For this purpose a timeline controlled sequencer is the better choice. The Sequencer is a tool for advanced timeline based show control. Events are placed in a timeline, and are executed if a certain time position has been reached. Events are actions, all actions you know from cues or other control tools are carried out based on timed events. This timeline processing is also used in many other programs like Adobe® Flash or video editing tools.

There are two basic types of sequences, special video sequencing with Emotion FX will be handled in the next chapter. The main difference between the two basic sequence types is the association with media files and therefore the length handling. A standard sequence is purely time based. A media sequence has media as video or audio as timeline, events are placed at certain positions. The Sequencer supports multiple sequences, each one with different tracks and selectable by tabs. Every sequence runs for the defined length, visible through a timeline. There are several tracks on the timeline, and each track can contain events at specific positions along the timeline. Whenever the particular position has been reached, the event will be triggered. This way you can control complete time flows sequentially.

37.2   User interface

So the foundation are sequences with tracks and tracks with events. This structure also makes up the user interface of the Sequencer.
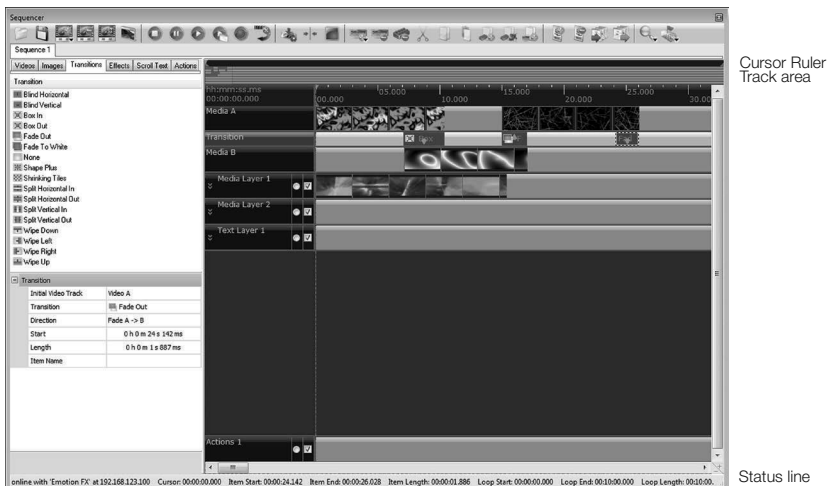
There are various navigation functions for the Track Area (all available tracks) and the Cursor Ruler (the timeline):

For the Cursor Ruler areas:

• The red markers define a section for loop start and end.

• The green marker shows the current time position.

• The marker positions can be set by a mouse move.with the left mouse button pressed.

• Keeping the right mouse button pressed and moving the mouse up/down will change the zoom level at the current mouse position.

For the Tracks Area:

• The light green area is the current time area selection of the sequencer tracks.

• The dark grey area shows the videos and action events on the tracks.

• The red line is the current focused track.

• A right mouse button click selects visual areal.

• A left mouse button click selects the visual area.

• A left mouse button double-click selects the complete visual area.

There are one or more tracks in a single standard sequence. The type of assigned action is also displayed in the event marker if you press the right mouse button over the event. The status line of the window shows the most important time values for the sequence and also the current time position when moving an event.

ⓘ Sequencer show files created with one LAS version will not work in previous Programmer versions. Sequencer show files created with earlier versions can be open and converted, of course.

37.3   Main menu

In the top icon menu of the Sequencer there are several groups. Moving the mouse cursor over an icon displays the function name after a second. Only main menu icons that are usable at that moment are clickable. The icon groups from left to right:

File		Loads a sequence set.
		Saves a sequence set.
Sequence		Add a new sequence.
		Removes a sequence.
		Edit sequence properties like name and length.
		Show Media Preview on/off
Control		Stops sequencing and goes back to start.
		Pauses sequencing.

		Start Sequencer from timeline cursor position.
		Start Sequencer from beginning of sequence.
		Record actions performed in the programmer. Press the record button in the toolbar, press OK and perform any actions that you want to record. Press Stop to end recording.
		Enable/disable looping of the sequence.
SeqControl		Auto Scroll: enable Auto Scroll in the track view, while sequence is running.
		Auto Cursor Move: enable for moving the timeline cursor automatic to the current active tracks item. The active item has a dotted frame border.
		Show Object Margins: enable for showing all objects with a green margin border frame in Emotion FX.
Track		Add a track at end of list.
		Remove selected track.
		Remove all selected track items.
Editing		Cut and copy event to clipboard. Also Ctrl-X.
		Copy event to clipboard. Also Ctrl-C.
		Paste event to selected track. Also Ctrl-V.
		Duplicate current event. A copy is placed in the track and can be moved to the expected position.
		Calls a wizard, where you can select time position, time interval and number of copies to create a series of events.
		Duplicates the selected track.
Media Pool		Add a file to the Media Pool.
		Remove a file from the Media Pool.
		Import all files into from a directory into the Media Pool, the source directory must have the name MediaPool.
		Export all files from the Media Pool into a directory, a new directory MediaPool will be created if not already existent.
Misc.		Zoom in, out, loop or all.
		Go to start, end or loop start/end.

37.4 Track view

The track area has some additional settings to choose from: the two checkboxes allow additional playing functions. The left checkbox is a solo function, if the box is set only this track gets played. The right checkbox allows selection of tracks that will be executed or disabled.

37.5 Creating a standard sequence

Select Add sequence from the main menu, and select either a standard sequence or a media sequence. There is no general difference between the two types, only the time base is different and so the properties dialog.

As the sequence can be controlled by actions/triggers and by e:script commands, the Script Name is the ID for the sequence. Use a unique ID to address this sequence.

For a standard sequence:

• Select a descriptive name for the sequence.

• The scripting ID (Script name) is necessary if the sequence is addressed by an e:script program or actions used to control this sequence.

• Define the length of the sequence in hours, minutes, seconds and milliseconds.

• If the whole sequence shall run in a loop check the Repeat checkbox.

The length, name and repeat mode can still be changed later. This is only possible if the sequence is stopped. Use the Sequence Properties icon in the top icon menu.

A Standard Sequence is purely timeline-based

For a media sequence:

• Select a descriptive name for the sequence.

• The scripting ID, see above.

• Set the media volume 0 ... 1000.

• Select which Media Player in the Programmer is used to play the media.

• Click on the empty square and select a media file. See the chapter about the Media Players for supported filetypes and prerequisites.

• You can also check the Repeat checkbox for repeated play of the file and the sequence.
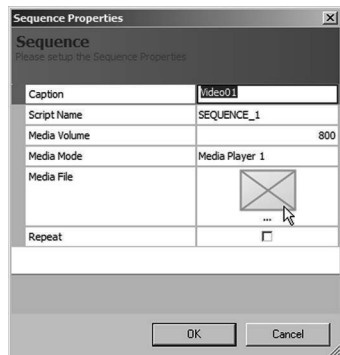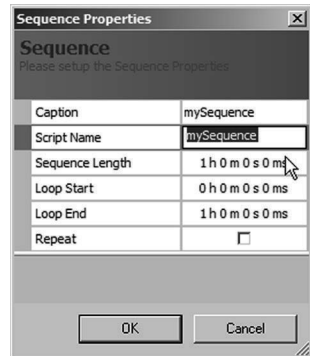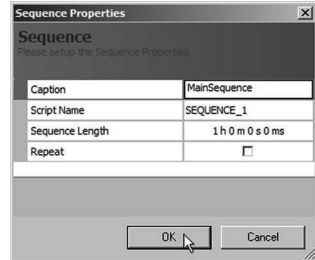
Standard Sequences can be synchronized to an external timecode source (e. g. SMPTE or MTC). The timecode synchronization has to be enabled in the sequence properties. Here you can also specify a timecode window when the sequence should start playback and when it has to stop. A button, the clock symbol in the main icon tool bar (only visible for standard sequences) allows you to temporarily disable the timecode remote controlling.

After creating one or multiple sequences you will have one default track available in a sequence. You can add more tracks with the `Add track` main menu icon. The only available track properties are the track name and the Scripting ID again.

37.6   Placing actions

Whenever you select a track in the left top window, the content window will be shown with proper elements for the state of the sequencer. To place an event in a track select the proper track by a single mouse click in the track, the content window will show the actions available. Drag and drop the selected action from the content window to the track. You can change this position later by moving the event with the pressed left mouse button. The bottom left properties window defines the action parameters when this event is reached.

You can use the same actions as for cue actions, e.g. start/stop/toggle cuelists, start or stop media players etc.

To change the time position later place the mouse cursor over the event, keep the left mouse button pressed and move the event in the track. The windows's status line shows the current time position. To change the event's action type or other settings click the event and change the properties in the properties window.
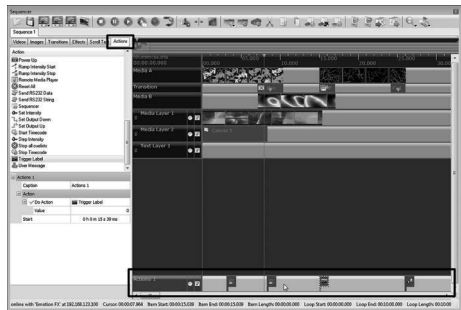
Pressing the right mouse button over the event shows the assigned action type and parameters. Working with media sequences is the same as with standard sequences. The only difference is that the timeline is created from the length of the media file. In a media sequence you can see the audio/video data as thumb images to place events corresponding to the wanted position.

To place an event just left-click an event, use the same procedure as in standard sequences. Drag and drop the action onto the wanted track. After you placed the event it is still selected and you can set the parameters for the event in the lower left part, including the timeline position where the event triggers. The same way you can edit an event. Click it and the parameters can be changed in the lower left subwindow. The timing can be either set here, or you left-click on the event, keep the mouse button pressed and move the event horizontally. All time values are displayed in the status line of the Sequencer window.

37.7   Timeline cursor and markers

By default event are placed at the position where the timeline cursor is placed. There are some more markers in the main timeline ribbon and in the track's timeline ribbon.

The timeline cursor can be positioned with the pressed left mouse button on the green triangles and moving it horizontally. So to place events at certain position in the media play move the timeline cursor to this position and then select `Add event`. Now the time position is entered automatically, if you need synchronization with media positions or changes.

There are two markers for the timeline cursor. The upper one in the long ribbon shows the time position in the entire timeline. The marker in the track's ribbon only works for the viewed segment if you zoomed in and do not see the complete timeline. So with the track's timeline cursor marker and zooming in you can position the time cursor more precisely.

The red markers are the boundaries for a loop range. Enabling the repeat function this area gets looped once the sequence ran into the loop range. Again, the upper red markers show the position in the entire timeline, in the track they are only visible if inside the current viewport.

Putting the loop marks at the beginning and end of the sequence then will loop the complete sequence.
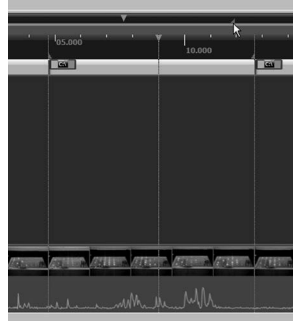
38   Emotion FX sequences

With LAS Version 5.3 sequencing with Emotion FX was introduced. You can use videos, images and text to mix, use effects, rotate and blend in the sequencer, the result of the mix is displayed in Emotion FX. Emotion FX can run on the same system as the Programmer or on any other Windows® system reachable in your network. However, Emotion FX must be installed in the target display machine.

> ⓘ Emotion FX is only available with the LCEfx system. While Emotion FX is also available in the Enterprise Edition, it is always stamped with a watermark (demo mode). This Enterprise demo mode is only recommended for beta testing.

38.1   Creating an Emotion FX sequence

To setup an Emotion FX sequence select the Sequencer, add a new sequence and select `Add Emotion FX Sequence`. In the startup dialog for the sequence you have to setup:
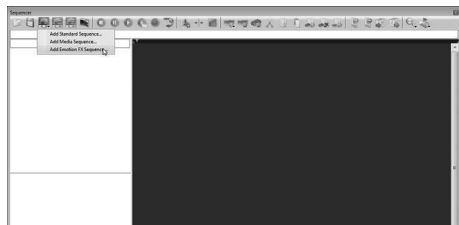
- Caption: a unique name for the sequence.
- Script Name: an identifier to access the sequence from e:script (only necessary if e:script is used, e. g. for Canvas objects).
- IP Address: the IP address of the machine where Emotion FX runs on, or use the ... button to use known addresses.
- Emotion FX Auto Close: if set and the Emotion FX sequence is closed or disconnected the Emotion FX window will close.
- Takeover Emotion FX: allows to takeover control of an already used Emotion FX window. The current user will be dropped.
- Active Color Correction: You can set the color correction parameters for Emotion FX als from the Programmer.
- Canvas Settings: These are sizes and background colors for the Canvas objects described later.
- Sequence Length: the length of the sequence in h:m:s:ms.
- Repeat: set the checkmark to repeat the sequence on ending.
- DMX Output Settings: If the results from Emotion FX are sent to a LED matrix, select a patchfile to use (must have fixtures assigned to engines!). When using RGBW or RGBA fixtures, set the channel intensity. You can have a mask on the full-size output window showing which pixels in the output are mapped to pixels in the fixtures (like the function in the Virtual Micro Converter).

After pressing Ok the sequence will be created and the sequence is available. When an Emotion FX sequence is created the Emotion FX window will be opened automatically.

38.2 Emotion FX setup

The Emotion FX window can be placed freely on the desktop or on a second display. Moving the mouse cursor over the Output field in the bottom status line shows command and actions executed in the Sequencer, and also displays status information.

The main window of Emotion FX has a small yellow icon in the top left corner. Clicking this icon opens a menu where you can enable output status display permanently, and where settings for Emotion FX may be changed. Select Options to change settings.

In the Options dialog the display adapters and their resolutions can be set, as well as the coordinates for the full-screen display mode. The first adapter is the Application Window of Emotion FX. If only this adapter is used the mix is displayed here.

If a full-screen adapter is also used, the mix is displayed on this adapter, the application adapter then shows the separate layers of the mix and the mix in the center. You can set the
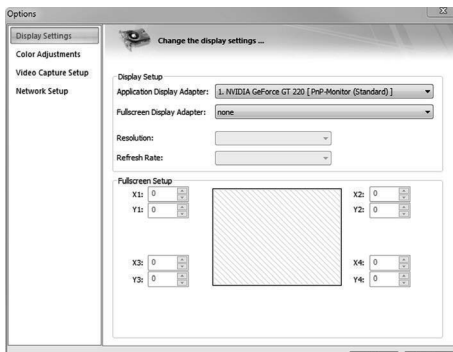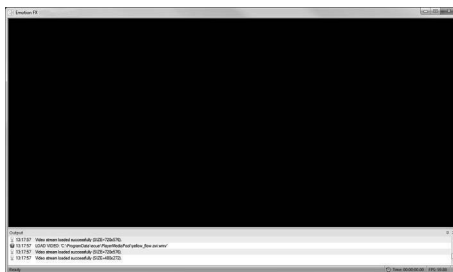
coordinates and sizes for the full-screen result, e.g. for special screen sizes or if you use the full-screen result mix for a Video Micro Converter.

Once the Emotion FX window is setup properly and connected to the Sequencer, it will be used as the output device for the Sequencer.

The area Color Adjustments in the Options dialog of Emotion FX allows corrections for brightness, contrast and colors. This can be used to adjust the resulting display content for output devices, which do not match the intended color ranges and brightness situations, e. g. if the room with the fullsize display is very dark or bright. Regarding the color mask see a following chapter.

The third area of the Options dialog is for the capture device in Emotion FX. An external video source, connected to the capture input of the LCE fx, or any other available video source, is embedded into the sequence and the output. Only capture sources available in the system are displayed. Capture devices can also be USB connetected sources like webcams or camcorders.

Select the video capture source. If the capture device support more than one video standard, the third drop-down list will be enabled to select the video mode and additional video options for a video crossbar.

With the network settings of the Emotion FX options you can bind Emotion FX to a selectable network adapter in your system. Be sure to have a proper connection to the system running the Programmer.

ⓘ The display in the application window is always a scaled-down preview. Only on the full-screen display the unscaled content is visible.
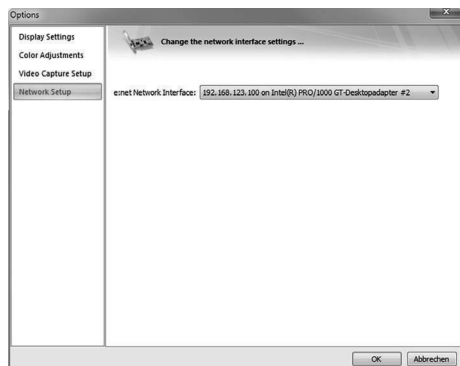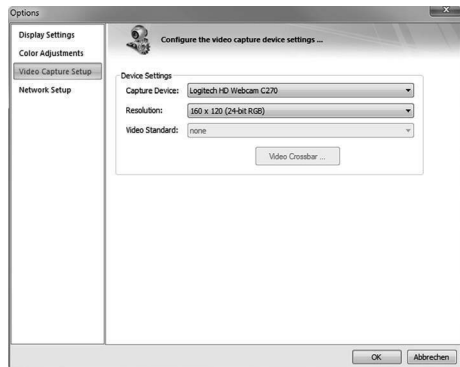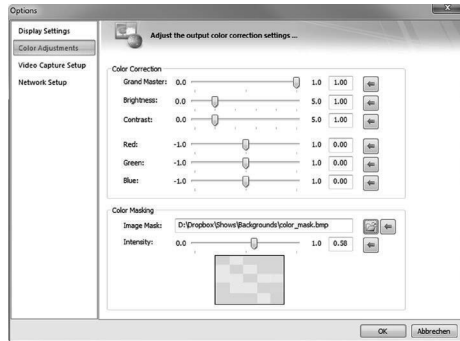
38.3 Emotion FX sequence layout

Once the Emotion FX window is available you can create complex media sequences.
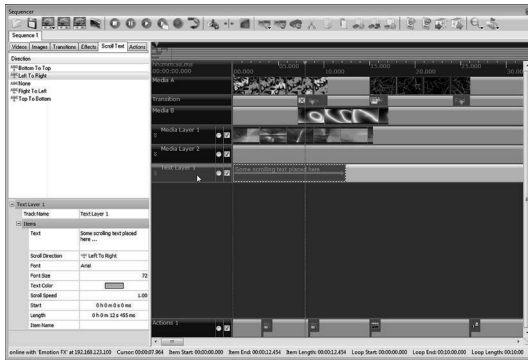
The central main part of the Sequencer contains the tracks for media and actions, like in standard sequences. The top left window has the available videos, images, transitions, effects, scroll texts and actions. When you select a specific track type the contents of this window shows the media elements that can be used, for Media tracks by default videos. The lower left window shows properties of the currently selected element, like an effect, a media element or an action.

At the top there are two tracks for media, media are videos or images. Another track for transition effects is visible between the two upper tracks, these two tracks are fixed in layout and number. The lower three tracks are by default two Media tracks and a scrolltext track. You can add more of these layers with the `Add Track` icon function, or they can be removed with the `Delete Track` icon. By clicking and dragging these layer upwards, you can change the layout of this track area (media and text). The lower the position of a track, the higher the priority.

All these tracks can be filled with videos or images, modified by effects for images, the text can be placed and moved, elements can be faded with an alpha channel function or can be rotated. The result, the sequence mix, is then routed to the Emotion FX window and gets displayed.

Of course, also events can be placed in the Actions track at the bottom of the main window, to execute the known actions like starting or stopping cuelists, sending data over RS-232 or start/stop additional media playing with the Media Players. There are now additional actions available for the Sequencer like Play, Play From Cursor, Play From X or Seek To X. These actions are available system-wide and allow to control the Sequencer from e.g. cue actions.

We will now have a closer look at the track types, how to assign effects and transitions. We will not explain every function or effect in detail, as most of them are known from applications like Photoshop or media applications.

> (i) Make sure that the system running Emotion FX is not locked by WIN+L! Otherwise Emotion FX cannot start there.

38.4   Placing elements in Media tracks A/B

As soon as one of the Media tracks is clicked, the content overview on the left changes to show available media files. To import a video file to the MediaPool click on the `Add To MediaPool` icon, select a video file, the file will be transcoded to the WMF video format and copied to the MediaPool. To insert videos and a transition:

- Click and drag a video file from the content window to the upper media track.

- After placing the video in the track, the track element stays selected, visible by a frame around the element.

- Set the start position and length of the element. Lowering the Length parameter of the element plays only a part of the video, from 0:00:00 to the selected length.

- In the same way place another video in Media track B.
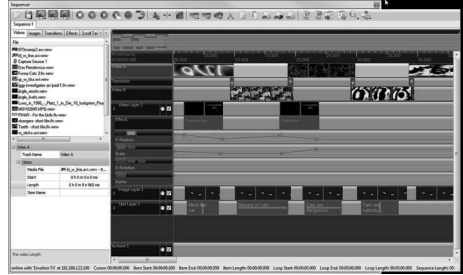
- To use a transition between the two videos select the Transition track and click and drag a transition effect from the content window into the Transition track.

- Set the start and length parameters for the transition in the lower properties window.

The priority of the videos is determined by `Intial Video Track` in the `Transition Track Properties`. The transition direction is show by the small green triangle in the transition. Make sure that there is enough overlap of the two videos, so that the transition can complete without break. When dragging a transition to the Transition track the transition length is adapted to the overlap region automatically. To avoid this keep the Ctrl key pressed while placing the transition.

If you want to modify videos or the transition single-click on the element so that it gets framed, then use the properties window to change position or length. You can also change the position by clicking and dragging the element in the track, or moving the left frame border of the element. The length can be changed by dragging the right frame border. This is valid for the videos as well as for the transition effect. To delete a transition or a video select the element and press DEL. All track heights in the window can be changed dragging the lower or upper borders of the tracks.

Which video band will start with priority is determined by Initial Video Band, available after clicking the transition event. Both media tracks, A and B, have a lower priority than the following layers for media or text. So Media A and Media B can be seen as a kind of background. Videos in tracks A/B will always get played full-screen, or truncated, if too big.

Please be aware, that the Media A/B tracks are always scaled to full window size, while videos in Video Layer tracks are scaled to their real physical size.

38.5   The Layer tracks

The three layered tracks for videos, images and text have much more possibilities than the two standard tracks. Each of these layers has a button on the left side, pressing this button opens an additional track parameter line. The layered tracks, if using more than the actual window size can display, can be scrolled, the Video A/B tracks stay resident.

38.6   Media Layers

The Media Layers can have a video clip or an image, placing a video is done the same way as for the standard video tracks. Also modifying start position and length is done the same way. Opening the parameter tracks with the chevrons for the video shows eight additional timelines in four tracks. In these parameter timelines you can:

• Change the X and Y position of the video. Click the red tab for X and the green tab for Y.

• Scale or change the aspect ratio for the video, rotate the video in the X, Y or Z axis.

• Change the alpha channel value. With the alpha channel you can realize fade-in and fade-out effects.

• Loop a video by dragging its right borders.
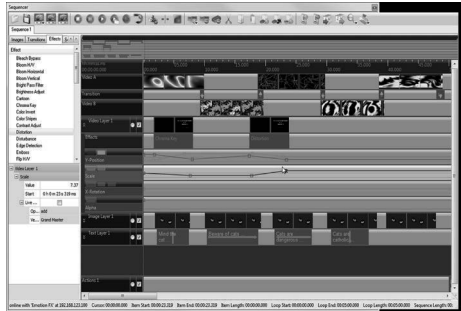
To place changes in the parameter timelines right-click on the timeline and a marker will be set. Click and drag the marker in any direction to change position and value. Click the marker to select it and set its parameters in the properties window on the bottom left. Selecting a marker and pressing DEL deletes the marker. Keeping the right mouse button pressed on a marker gives a fine control by moving the mouse up or down.

There is always one default marker at position 0:00:00, this cannot be moved or deleted, but its value can be changed. If you select the starting marker for the alpha channel and set it to 0, set another marker with a value of 100 anywhere else, you will get a fade-in effect. While moving markers the cursor will be a rectangle, as long as the position is in a valid range, and change to a crossed rectangle, if the position exceeds the range to be valid. If you select the Effects track of a Media Layer, you can place an effect for the Media Layer. Again you can set the position and length in the properties window or by dragging borders.

Since LAS 7.0 it is possible to let a video loop automatically. Resize the video item on the timeline. The video will loop until the end of the video item has been reached.

38.7   Text Layers

Text Layers behave a little bit different compared to Media Layers. They realize scrolling and moving text, which can be scaled or rotated. Text Layers can not have an effect, the other parameter timelines are identical to Media Layers.

To create a Text Layer:

• Select the Text Layer track by clicking into it.

• From the top left content window drag a scroll text type to the Text Layer track.
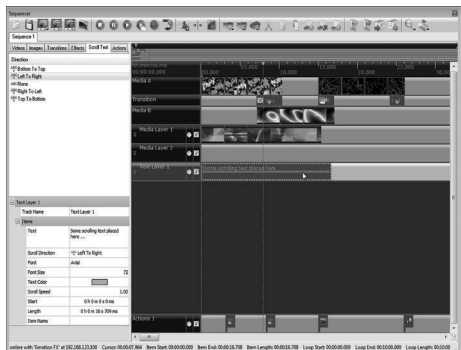
- When the text element is selected you can set all parameters in the properties window on the bottom left.
- Again, the text element can be positioned and resized like other layer elements.

38.8   Action track

The Actions track can have events executing actions like in standard sequences. Selecting the Actions track brings a list of available actions into the content window. Placing events is done the same way as in all other sequences by dragging and dropping. After selecting an event by a click you can modify parameters, placing an properties.
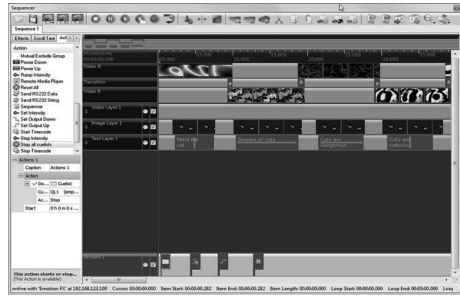
 When executing a seek or repeat command in the Sequencer, it is possible, that it takes some time until content in the Emotion FX window is prefetched.

38.9   Effects and transitions

Many effects in the Sequencer can be applied to videos and images, as well as transitions. Transitions can only be used with Media tracks A/B and most times allow a blend between the two tracks. Effects can only be used with Media Layer tracks. To apply an effect, select the Effects section in the left part of the window and drag the effect to the Effect line of the Media track. Adjust the effect length and start by dragging the left and right borders of the effect.
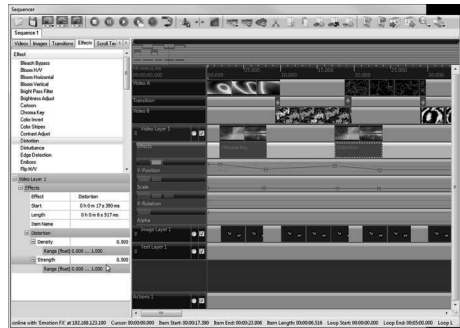
The same way transitions for Media Tracks A/B can be placed. Use the Transitions tab in the left upper window and drag it to the transition line between tracks A and B. If the videos in the tracks overlap, the Sequencer automatically calculates begin and end of the transition.

Effect parameters

Parameters for effects can be changed. If you click an effect in the effect line of a layer track, the lower left window shows the effect parameters and in which ranges the effect settings can be changed. This way you can use the effect in various settings to adjust it to your needs. This is possible only for effects, not for transitions. Transitions can only be adjusted in blending type, blending direction, start and length.
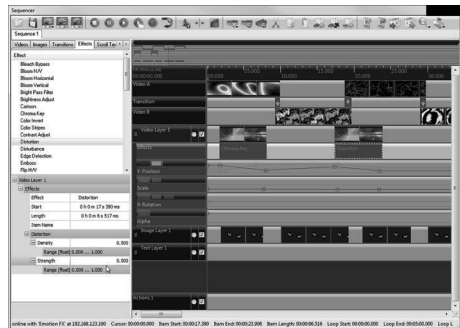
38.10 Masters for Layers

It is possible to manipulate a Layer Track parameter, e. g. for positioning, directly by a Versatile Master. Choose a parameter marker in a settings line by clicking it, enable `Live Operation` for manipulating the current value and choose a Master. Changing the Master will manipulate the associated value of the track parameter now in live mode.
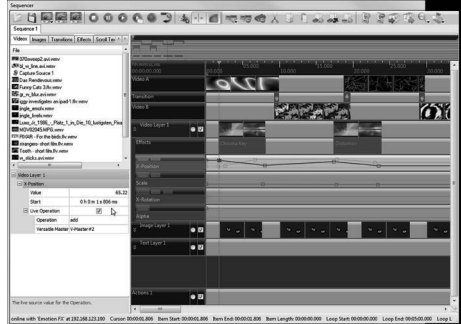
The parameter timelines in the Layer Tracks can be set visible or hidden. Clicking the small red/blue/green parameter selection buttons twice shows or hides the parameter lines. However, the parameter settings are kept and remain unchanged.

38.11 Navigation in the Sequencer

There are many navigation functions available, as well as zooming and moving items in the Sequencer. Here is a summary of possible functions:

- The mouse scroll wheel in the tracks area scrolls the tracks vertically.
- Keeping the `Ctrl` key pressed and using the mouse scroll wheel in the tracks area zooms the tracks at the current position.
- Keeping `Ctrl` and `Shift` keys pressed and using the mouse scroll wheel in the tracks area zooms the tracks at the Time Cursor position.
- Using the mouse scroll wheel in the horizontal scrollbar scrolls the timeline on x position.
- Keeping the left mouse button pressed and moving the mouse in a free track area makes a selection area.
- Keeping the left mouse button pressed in a track item like video, transition or action event and moving makes drags/drops to the selected items. Multiple selections are possible.
- Cursor keys up/down] focuses on a track, the focused track is orange.
- Cursor keys left/right] focuses and selects a track item of the focused track.
- Cursor left/right with pressed `Shift` key focuses and selects a track item range of the focused track.
- Keeping `Ctrl` pressed and using cursor keys left/right changes the focus of a track item of the focused track.
- `Space` key toggles the Play/Pause mode.

Focused items have always a dotted border. Selected items have always a orange border. Selected and focused items have always a orange and dotted border.

38.12 Media Preview

The Media Preview is able to show the video or image and canvas content in an extra preview window. After setting the Media Preview active an additional window will be opened and will stay on the desktop. The Media Preview has two modes to be used. After selecting an image or a video in the Media Pool you can preview the video or image. An image will be displayed, a video can be played.

This allows to ckeck contents of media files before placing them in a track.

When selecting a Media Track you can preview the content of the Media Track. As soon as you move the timeline cursor the Media Preview will show the current contant at the chosen timeline position.

Effects and transitions are not displayed as you only preview the content of the Media Track, not the result of track mixing.
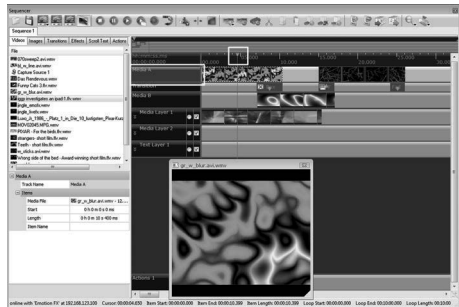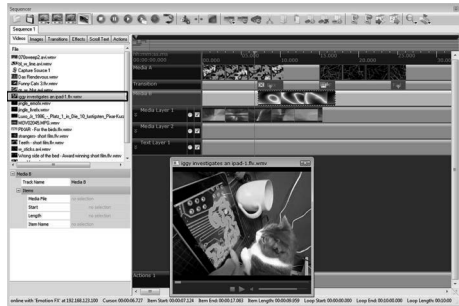
38.13 The Canvas object

In the Media Pool in the Images section there are five Canvas objects. These Canvas objects can be used like images. Using e:script and the functions for Canvas objects you can draw on the Canvas with various possibilities. From the Programmer level there is no access to the contents of the Canvas objects except for the length of the Canvas objects in the Media Track. The size and background color for the Canvas objects are defined in the initial dialog when creating an Emotion FX sequence. See the LAS Advanced System Manual for details about Canvas object functions.
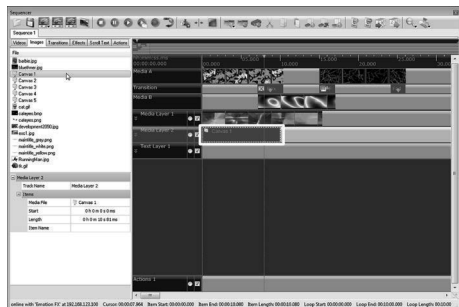
38.14 Video capturing

If there is a video capture source in the system, either a USB webcam or a video input card, this content can be used as a video source, the results can be embedded in Emotion FX. Set up the video capture source in the options dialog of Emotion FX. Now, in the left upper video list in the Sequencer, there is a device named `Capture  Source`. This capture device can be used as any other video and can be placed in Video Tracks A/B as well as in Video Layer tracks. While the sequence runs the captured video content is used like a common video, allowing to integrate live video streaming in Emotion FX. Also the effects for Layered Tracks and the transitions for Video Tracks can be used.

There is only one video capture device available, but this can be shared across multiple tracks at the same time.

38.15 Saving sequences and Media Pool

Sequences are stored with shows by default. You can, and should, save sequences in a separate step to be able to return to a previous stage of development.

The Media Pool is not connected with shows directly. If the development and production system are different, you have to make sure that the Media Pool contents are also available in the production system.

There are two functions in the main icon menu for exporting and importing the MediaPool. Use these functions to save or import contents and files. Note, that these functions always work with a directory name `mediapool.`

38.16 Advanced sequence control

The Sequencer can be controlled with the standard Play or Stop buttons, but there are far more possibilities to work with it. The Sequencer can be target of triggers and actions, you can start or stop sequences with actions. For example you could start or stop sequences depending on the time of day or with user terminals or other events.

There can be more than sequence in a show. These various sequences can then be used in different cuelists. As you can place action in a sequence, you can use one sequence as a master sequence controlling other sequences, e. g. with the Media Players for playback of media. The only thing you should be aware of, using the Media Players, is a race condition coming up, if two sequences try to use the same Media Player.
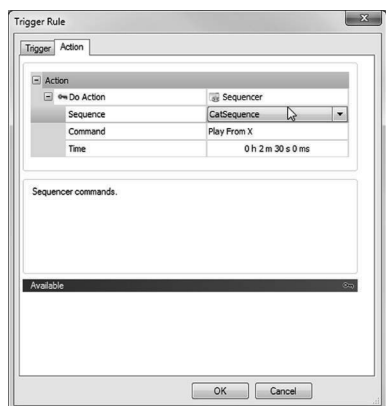
38.17 DMX output to RGBx LEDs

The Sequence Properties Dialog has two options now to adjust the amber and/or white level for RGBAW, RGBWA or RGBW LED's.

Adjust the intensity in a range of 0 to 1.

Sequence Properties	
Sequence Please setup the Sequence Properties	
Caption	Sequence 1
Name	SEQUENCE_1
IP Address	192.168.123.100
Emotion FX Auto Close	☑
Takeover Emotion FX	☑
⊞ Activate Color Correction	☐
⊞ Canvas Settings	
⊟ DMX Output Settings	
Patch File	D:\Dropbox\S...\1x1x64pxl.patx
⊟ Enable DMX Output	☑
White Channel Intensity	0.00
Amber Channel Intensity	0.00
Import RDM Devices	☐
Sequence Length	0 h 5 m 0 s 0 ms
Loop Start	0 h 0 m 0 s 0 ms
Loop End	0 h 5 m 0 s 0 ms
Repeat	☐
White Channel Intensity Adjust the intensity of additional white lamps.	
	OK Cancel

39   Emotion FX DMX Output

39.1   Basics

With LAS version 6.0 a new feature was introduced, the Emotion FX DMX Output. The Programmer has a limit of 128 DMX universes it can handle. If more universes are needed, like in configurations with huge media walls, Emotion FX can be used to control the DMX output for engines like Butlers. Instead of the Programmer, now Emotion FX sends e:net packets to the DMX engines, not the Programmer. Emotion FX does not have the 128 universes limit. Here is the principle configuration for the VMC Simulator.
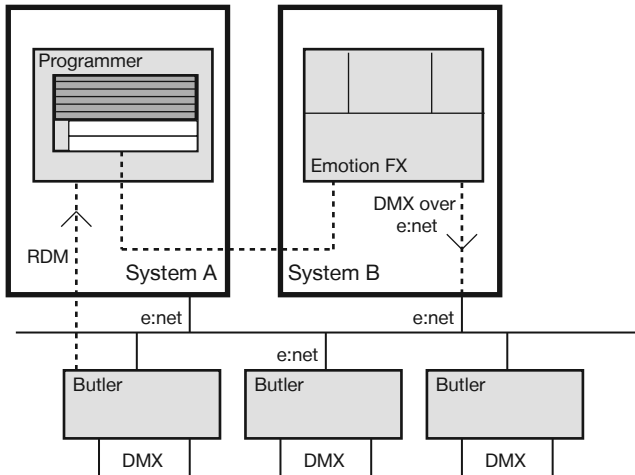
Emotion FX as subsystem of the LAS gets controlled by the Sequencer for creating the content. Emotion FX sends this result not only to the monitor outputs but also works as a frame grabber, scans the pixels and routes this information via e:net as DMX to the fixtures.

The following preconditions must be met:

• The Emotion FX DMX Output only runs with the LAS Ultimate fx Edition, so only with the Lighting Control Engine fx. The sequencer mix must run as fullscreen display, this is only possible with the LAS Ultimate fx Edition.

• The Programmer and Emotion FX must run on two different systems as the Ethernet interfaces are used exclusively.

• Emotion FX must run in fullscreen mode.

The structure of the fixture set is defined and created with Patchelor and used by Emotion FX. Like with the VMC remember to define the video section. RDM can still be used but is not handled by Emotion FX. RDM is fed back to the Programmer, therefor the DMX engines must be configured as RDM-only for the Programmer for this case. Usually, Emotion FX does this automatically from the patchfile. Still all components work on the same network segment, where engines and servers are reachable. Use a separate network segment and do not use the enterprise network, this would disturb the transmission of DMX frames over e:net.

39.2   Setup and configuration

As a first step, like for the VMC, create a patchfile with the Patchelor for the layout and addressing scheme. Save this patchfile as a usual .patx file as for the Programmer. This patchfile tells Emotion FX how the fixtures are distributed and connected. For this reason the DMX universes have to be assigned to the DMX engines while creating the patchfile.

Creating the sequence is the same as described in a previous chapter, in general there are no limitations up to here as Emotion FX works in the same way as with video devices. Refer to the sequencing chapter for details.

In Emotion FX click the Sequence Properties in the main icon toolbar at the top.

Sequence Properties	
Sequence	
Please setup the Sequence Properties	
Caption	Sequence 1
Name	SEQUENCE_1
IP Address	192.168.123.100
Emotion FX Auto Close	☑
Takeover Emotion FX	☑
⊟ Activate Color Correction	☐
Grand Master	1.0000000000
Brightness	1.00
Contrast	1.00
Red	0.0000000000
Green	0.00
Blue	0.00
Color Mask	
Color Mask Intensity	1.00
⊞ Canvas Settings	
⊟ DMX Output Settings	
Patch File	D:\Dropbox\Shows\1x1x64pxl.patx
⊟ Enable DMX Output	☑
White Channel Intensity	0.00
Amber Channel Intensity	0.00
Import RDM Devices	☐
Sequence Length	0 h 5 m 0 s 0 ms
Loop Start	0 h 0 m 0 s 0 ms
Loop End	0 h 5 m 0 s 0 ms
Repeat	☐

Select the patchfile that defines the fixture layout and addressing schemes for the fixtures. Turn on the Enable DMX Output to enable the Emotion FX DMX Output. If the checkbox for RDM Import is set this enables the RDM scheme to be taken from the patchfile and all included engines will be configured as RDM-only.

39.3   Using a color mask

To correct color deviations, e. g. due to different binnings of fixtures, you can use a color mask for the fullscreen output. Create a color mask as BMP image and apply it to the output via the color adjustments of in the area `Color Adjustments` in the options dialog of Emotion FX.
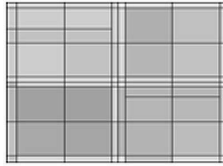
| Source picture → | → Color mask → | → Resulting picture |
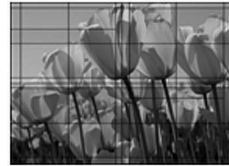
Select the file and the correction factors in the dialog. These values from Emotion FX are also visible in the Properties Dialog of the sequence in the Sequencer of the Programmer.

39.4   Resizing the output screen

You should define the video output area for the configuration anyway. Additionally you can resize the output window size in the Options Dialog of Emotion FX:
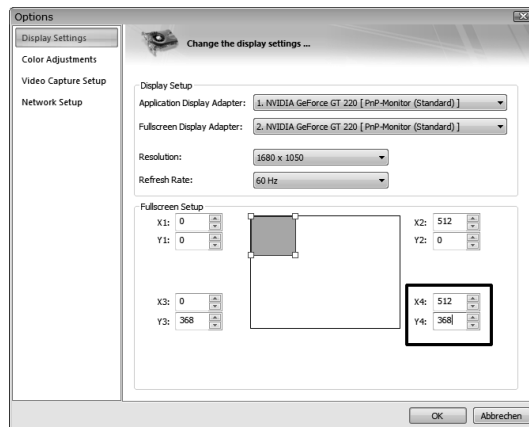
Set the output window size to the pixel configuration of the media wall with the upper left corner at coordinates X = 0 and Y = 0.

39.5   Manual RDM-only mode

Only the Butler XT2 and S2 are able to run in RDM-only mode. In any case there must be another instance that provides the DMX traffic. In most cases the RDM-only mode is set by Emotion FX when setting RDM Input from the Emotion FX options. It is also possible to set this mode manually in the Driver Properties in the Device Manager. Get the DMX engines in the Device Manager and set them to plain RDM use: Double-click the engine in the Device Manager to see the Configuration Dialog for the driver:
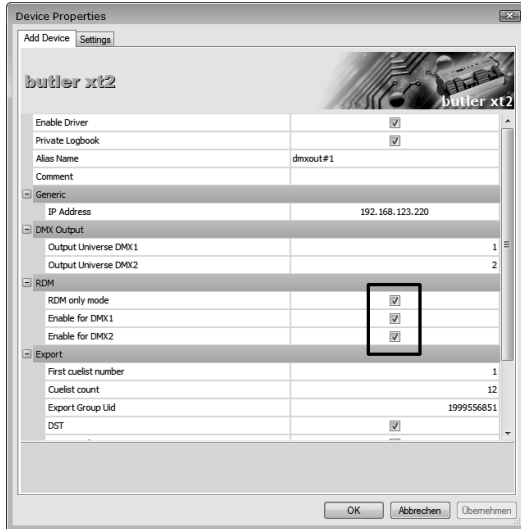
Enable the RDM-only mode for the engine and enable the outputs that are used for RDM. This way the engine is accessible for RDM but does not send DMX. If you do not need RDM feedback to the Programmer the engines must not be mounted in the Device Manager.

Remember that there must be another source for the DMX output, usually Emotion FX. Setting engines to RDM-only without a DMX source results in an endless `RDM Init ...` in the Device Manager with error messages in the drivers' logbook. The RDM-only mode is supported by Butler XT2 and Butler S2. Butler XT does not support this mode, the Butler does not support RDM. For this reason the Butler XT and Butler cannot be used for RDM feedback in this configuration.

40   Timecode

In many cases shows run with fixed, static speed and there is no specialized synchronization. But is is also possible to control a show with so-called timecode.

40.1   Supported timecode

The Programmer offers the following timecode inputs:

• MIDI Timecode

• SMPTE (Society of Motion Picture and Television Engineers)
  Linear Timecode via sound card

• Internal Media Player

SMPTE timing can be assigned to single cues, cuelists and actions. SMPTE times can be assigned to the cues manually or by teach-in. Working with timecode is nor possible in all Editions of the LAS.

By default the Programmer reacts to all available timecode sources, but this can be adjusted:

Open the Show Properties by clicking the red icon or select Extras | Show Properties from the main menu. Click the Timecode tab. Under "Reception", choose the devices which the Programmer should listen to.

• Internal Media Player: as soon as a media file is played back in the internal media player timecode is automatically generated.

• SMPTE LTC (via Audio DSP, Line IN): You can input timecode by connecting a timecode source to any PC soundcard or audio interface. In case you have more than one soundcard, you should select it in the options window which you can call from the AudioDSP window. AudioDSP needs to have been started and switched on. Apply the same procedures as if using AudioDSP for sound to light (see sound to light chapter).
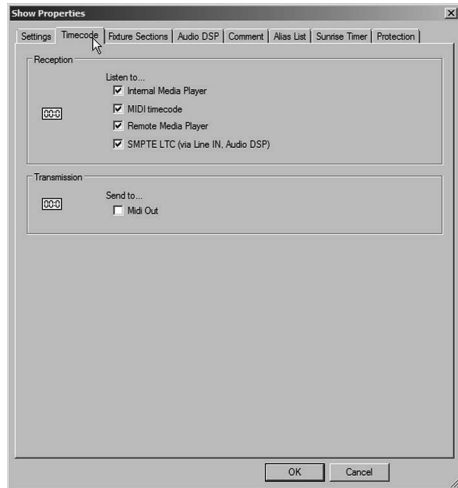
40.2   Generating internal timecode

The Programmer allows you to generate your own simulated internal timecode. Use the Action Start Timecode to start generating timecode. You can start the action from a cue's Action Tab or by using a trigger rule in the Automation. Internal timecode will also be sent out as Midi Timecode (MTC), if so defined in the Show Properties.

40.3   Playing back timecode controlled cuelists

You can manually assign timecode to each single cue in a cuelist. To do that double-click a cue, then click the timecode symbol and enter a SMPTE time.
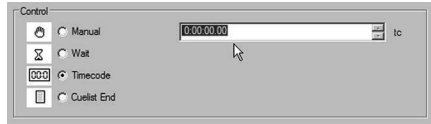
Note that the SMPTE times are Wait Until times!
That means the cue runs until the entered SMPTE time is reached. So a cue is started when the SMPTE time of the previous cue has been reached.

40.4   Learn timecode

If the Programmer is receiving timecode you can "teach-in" the cue timing on the fly by checking Learn Timecode and pressing Play while Timecode is running. For this all the cues have to be set to `Manual`.

• Connect the timecode source. For example, to generate internal timecode, open the Media Player, load a file and hit Play.

• Active timecode will be shown in the status window right on top. The timecode source is followed by the current position, e.g. SMPTE > 0:00:08.15.

• When timecode has been setup correctly, open the cuelist which you would like to control.

• All cues need to be set to `Manual` timing. If this has not been done yet, select all cues, open the cue properties and select `Manual` timing, which is the first checkbox.

• In the cuelist window, activate Learn Timecode at the right bottom of the window.

• Restart the timecode or let it start at the desired position.

• Now press the Play button in the cuelist window (for better timing, use the F12 hotkey) each time you want to link the next cue to the current position in timecode.

• When the last cue has been given timecode timing the cuelist will loop very fast. Press the stop button and deactivate Learn Timecode.

In order for the timecode synchronization to work properly, a few settings have to be adjusted in the Cuelist Properties, under the tab Extras. Open the Properties Dialog for this cuelist and select the Extra tab.

• Timecode Master: Activate this setting if you wish the cuelist to synchronize to timecode – i.e. to skip back if timecode skips back.

• Timecode Auto Activation Window: Activate this setting if you would like the cuelist to automatically start when timecode reaches a position that you specify.
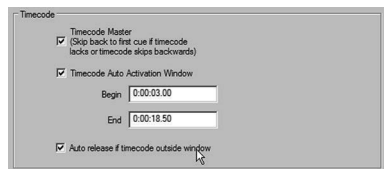
Enter the following settings:

• Begin: This value should typically be a little smaller than the timecode value which has been assigned to the first cue.

• End: This value should typically be a little larger than the timecode value which has been assigned to the last cue – unless the last cue is in MANUAL timing mode – then this value should be a little larger than the timecode value which has been assigned to the cue just prior to the final cue.

• Auto release if timecode outside window: Activate this setting if you would like the cuelist to stop when a timecode releases a position that you specify (see 'End' above).

In all cases you need to additionally set the `Auto release on end` parameter for the timecode cuelist, tab Main.

40.5 Pitfalls

Cuelist hangs at the last cue: When playing back a cuelist which is synchronized to timecode, the cuelist runs through without problems for the first time – but when pressing Play again the programmer jumps to the last cue and stays there.

Solution: Either set "Timecode Master" in the cuelist's properties or set the timing of the first cue to Wait.

Explanation: when timecode is stopped it takes a short time (a few frames) for it to jump back to 0:0:0:0. So if a cuelist is simply restarted, the timecode resets, but the cuelist starts again while timecode still is at its old position. Since the cuelist tries to keep up with timecode it will immediately jump to the last cue, and get stuck in a loop. A wait time for the first cue is a good workaround since it gives timecode enough time to reset to zero position.

The cue's SMPTE timing isn't right: cues with SMPTE timing are started at a time which is different from the time that was entered.

Solution: A cue with SMPTE timing is started when the SMPTE time in the previous cue has been reached ("Wait until"-timing)

41   The Library Editor

41.1   Before editing

With the Library Editor you can edit the Programmer's library of fixtures and DMX devices, you can also add your own fixtures and create adaptions of generic devices. The programmer's library file is usually located in C:\Program Data\ecue\Library Vx.x\MainLibrary.xml. The user library with your own fixtures is in C:\Users\yourusername\AppData\Local\ecue\Library Vx.x\UserLibrary.xml. You can immediately access the libraries from the `Library` menu item.

It is a good idea to make a backup copy of the library before making any changes, and making more backups of the working copy later, before you add fixtures again. Save early, save often.

The Fixture Library has a Main Library and a User Library section, one group for single fixtures and one group for tiles like LED matrices. In the Main Library the predefined models are stored, in the User Library you can place your own fixtures and tiles. In the left part of the window there is an Explorer-like navigation area, in the right part information is displayed. The navigation hierarchy is Manufacturer -> Model -> Channels.

The Generic models are market-standard, universal devices which are rather common and a good start for your own creations. For practical reasons the fixtures are separated in two more sections: fixtures and tiles. Fixtures are linear or spot devices, tiles are matrix systems based on fixtures. When browsing through the Main Library and clicking on devices or channels the parameters and parameter ranges of the fixture gets displayed:

The fixtures in the Main Library can not be edited, they can be used in the Programmer as ready-made devices. If you need fixtures with adapted channels and properties, or completely new ones, you have to create a fixture in the User Library.
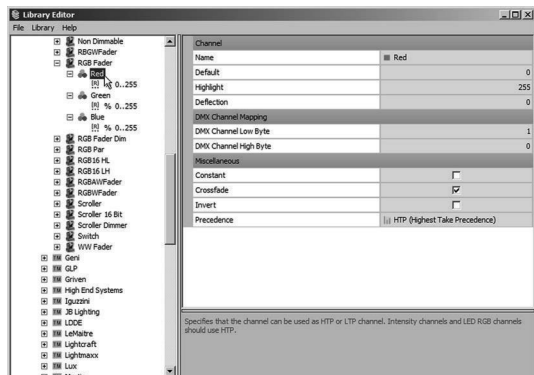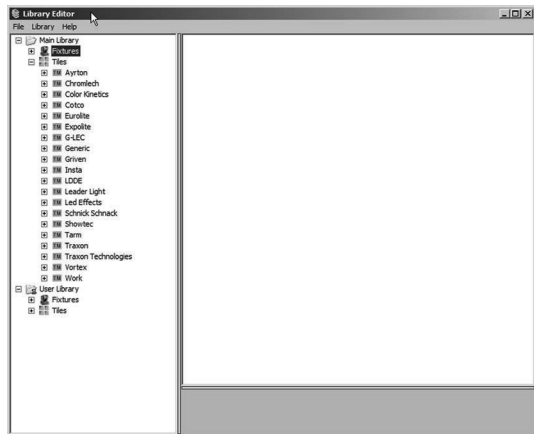
41.2   Creating custom fixtures

You can either use generic (or other) fixtures as templates, or start from scratch. Here an example for a user defined fixture based on a generic RGB fader.

• If not already available, create a manufacturer folder in the User Library: right-click on the Fixture level and select `Add | Manufacturer`.

• In the Main Library select the RGBFader in the Generic Fixtures section. Right-click on the fixture and select `Copy to clipboard` from the context menu.

• Return to the User Library, click on the new manufacturer, press the right mouse button and select `Paste from clipboard`; the copies fixture will be inserted here.

• Rename your new fixture, names of fixtures have to unique in the whole Library! The new RGBFader is a plain copy of the Generic RGBFader now.

 The properties of user defined fixtures can be changed to your needs. However, the name must be unique, if not you will get an error message from the Library Editor. The right part of the windows is now a display-and-edit area, clicking a value enables an editing mode where values can be changed. In this case we have only a simple RGB fader with its three channels for the three colors.

If you own fixture has more channels for control or intensity they can be added now. Right-click on the fixture name in the left window part and you will get another context menu.

Now you can create additional channels for your fixture, e.g. new color channels or beam channels. The context menu for new channels is available from the fixture level as well as from the channel entries. For all channels range values can be given to limit the possible values sent via this channel. Channels can also be moved, deleted or duplicated. The key to working properly here is using the context menus with the right mouse button. Do not forget to save your work from time to time.
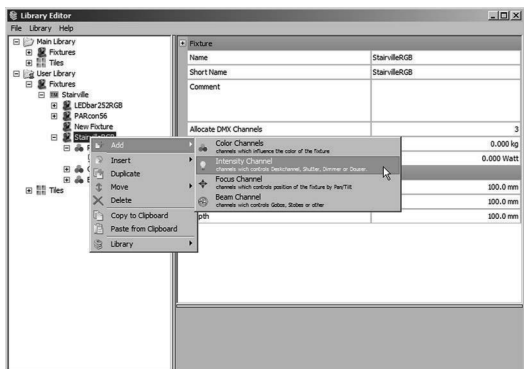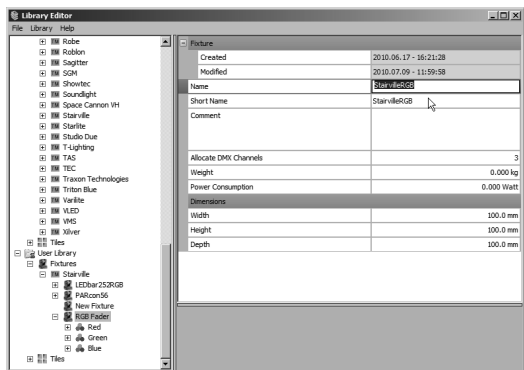
Here is an overview of the various functions on various levels:

Right-click on:	Action
Highest Level (Fixtures)	Add new manufacturer Paste manufacturer
Manufacturer Name	Add new device Paste device Delete device
Device Name	Add new channel Paste/Copy/Delete channel Change device's manufacturer Export device as a .vfx file
Channel	Add range Insert new channel Paste/Copy/Delete range

41.3   List of fixture settings

Manufacturer	Manufacturer	This specifies the manufacturer's name. It is needed for alphabetical sorting in the device list.
	Comment	A comment for the manufacturer.
	Homepage	An optional homepage URL.
Fixture	Name	The name for the fixture. This will show up in the patch.
	Shortname	Unique abbreviated name for the device. This determines how the device will show up in the Programmer View (e.g. DskChan). A Short Name must be unique. If you change a fixture's Short Name it is possible that previously saved shows will not work. Only change the Short Name for newly added fixtures and do not change it afterwards.
	Comment	An optional comment.
	Allocate DMX channels	Specifies how many DMX channels the device will use in total.
	Weight	Device weight (optional).
	Power consumption	Device power requirements (optional).
	Width, Height, Depth	Dimensions of the fixture (optional).
Channel	Name	Channel name (Pan, Tilt, Color etc.). The following naming conventions have to be kept, otherwise some things won't work: Pan, Tilt, Cyan, Magenta, Yellow (subtractive CMY color mixing,

		typical for Movinglight and Scanners), Red, Green, Blue (additive RGB color mixing, typical for LEDs and neon), Intensity. Note also how the channels will be sorted when displayed in the Programmer: First sorting key channel group (Intensity, then Focus, then Color, then Beam). A second sorting key within the channel group is the name.
	Default	Default value which is sent before any changes have been made to that channel. Please note that the default value needs to be 16 bit if the channels of this fixture are 16 bit. I.e. if you want a movinglight with 16 bit Pan/Tilt to have a default home position of 50% you need to enter 32767 (216/2) as default.
	Highlight	This value specifies how the fixture should react to the Highlight (HL) function. Since Highlight does not affect focus channels the value is not relevant for focus channels.
	Deflection	Optional entry for maximal rotation angle of the fixture. This should be set to sensible values for focus channels.
	DMX channel low byte	DMX channel address, begins from 1.
	DMX channel high byte	DMX channel address for addresses > 255, otherwise 0.
	Constant	Channel will have a constant value which cannot be changed by the user.
	Crossfade	Specifies whether the channel should allow fade when there is a change between two scenes. If this function is not active, the channel will jump to the new value when blending into a new scene. (this makes sense for gobo channels, but not for Pan/Tilt).
	Invert	Inverts the output value of a channel.
	Precedence	Specifies that the channel can be used as HTP channel if the corresponding cuelist in the programmer has been set to HTP. Intensity channels and LED RGB channels should get this.
Ranges	Name	Specifies a name for the range. When you predefine ranges (for example Gobos) you can later directly access the range via the context menu in the programmer (then Auto Menus must be activated).
	Start	Specifies the beginning of the range.

	End	Specifies the end of the range (1 is for undefined, i.e. up to the next entry). Note that if you use ranges in 16 bit channels, you will have to enter 16 bit values for them, i.e. from 0 ... 65536 (you can just multiply your values by 256, though, and it will be fine).
	Use for auto menus	Activate this so you can later directly access the range via the context menu in the programmer.
	Centre	Defines whether, when a predefined range is selected from the Programmer's context menu, the value should be centered into the middle of that range. Activate for ranges on static wheels; deactivate for ranges on continuous wheels.

41.4   Creating custom tiles

Looking at a tile in the Main Library, here Traxon's 64PXL Board, the parameters for tiles are different from those for fixtures.

Tiles are matrix systems of simple fixtures, this 64PXL Board is a matrix of 64 RGBFaders, the Patch parameter describes how this tile is constructed: 8x8 elements with three channels each, making up 192 channels in total.

Also dimensions are defined, so creating a patch considers even the physical size.

Creating your own tile is nearly as simple as creating fixtures. As a first step create a new manufacturer entry in the User Library, give it a unique

name. The most simple way is to select a similar tile from the Main Library, use the right mouse button context menu and copy it to the clipboard, return to the User Library and use the right mouse button menu to insert a copy from the clipboard and edit the new tile like shown below.
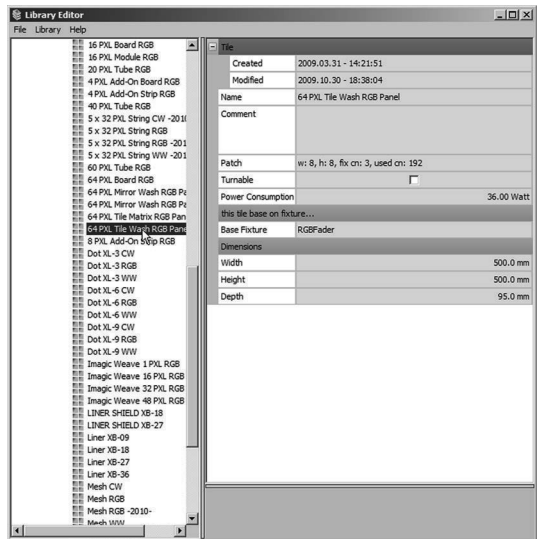
To create a completely new tile:

- Use the right mouse button context menu to add entries in the left navigation window.

- Create a new manufacturer in the User Library, if not already available, give it a unique name.

- For this manufacturer create a new tile, in the right part of the window click the Name to change it.

- Change dimensions or weight also in this dialog.

- Click the right button in the Patch field
  to change the layout and configuration for this tile.

- Grey fields are calculated, not changeable values, click in the white fields to change settings.
  You can even select single elements in the shown matrix display to see the configuration for this element.

- Adapt the tile to the properties of your custom tile, all parameters will be shown in a following table.

- If in Custom Mode you can disable a tile element with a right-button mouse clock.

- Close the dialog with OK, the User Library will be updated.
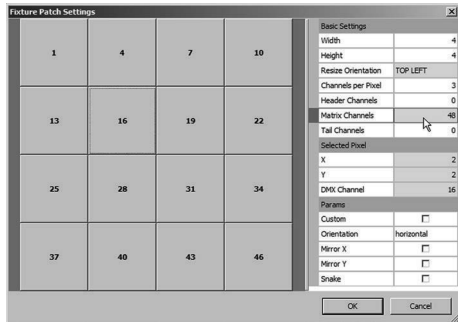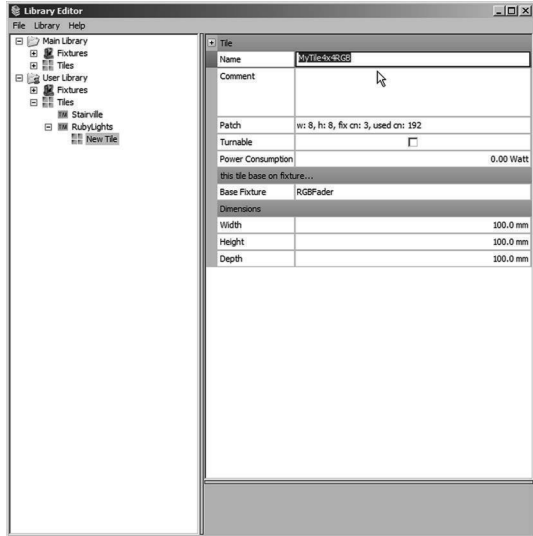
41.5   List of tile settings

Main	Name	Unique name for his tile.
	Comment	A descriptive text for this tile.
	Width, Height, Depth	Dimensions of this tile.
Patch	Width, Height	Number of fixture element in this tile.
	Resize Orientation	The orientation for resizing the tile can only be changed if the Custom box is checked. Used in Patchelor.
	Channels per Pixel	Number of DMX channels used by one element
	Header channels	Number of DMX channels reserved before tile addresses are assigned. These could be Mode oder Shutter DMX channels.
	Matrix channels	Number of DMX addresses used by the tile elements.
	Tail Channels	Number of DMX addresses reserved after tile DMX addresses.

	X, Y, DMX Channel	Location and DMX start address if element selected in left part of the window.
	Custom	If checked the orientation, mirroring and resizing will be done with the Patchelor, otherwise the parameters are fixed.
	Orientation	Direction of distribution of DMX addresses, horizontally or vertically.
	Mirror X	If checked distribution of DMX addresses is mirrored for the Y axis.
	Mirror Y	If checked distribution of DMX addresses is mirrored for the X axis.
	Snake	Snake mode, if checked distribution of DMX addresses is changing from left-to-right to right-to-left for each end of row, otherwise only left-to-right distribution (Snake mode gives shortest DMX cable lengths).

41.6 Main window menu

File	Exit	Leave the Patchelor.
Library	Main	Reload the Main Library (you cannot change the Main Library).
	User	Reload to restore the previous state, or Save to save your changes. This is what you usually do after editing the User Library.
	Extern	You can create more sections with fixtures and tiles beyond User and Main Library with New. All data is stored as XML structures in an external file, select the location where to create it. With Load/Convert... you can integrate such an external Library in the Library Editor.
Help	Help contents	The Help file
	About	About the application, shows also where Main and User Library are located in the filesystem

You can also exchange tiles and fixtures via the clipboard.

41.7 Using the Libraries

Patchelor

The Patchelor merges Main, User and Extern Libraries into a single view of fixtures and tiles. So all devices are visible and usable.

Programmer

In the Programmer you can only patch with fixtures, not with tiles. Tiles are not visible in the selection dialog of the Patch Manager. If you want to use tiles as maxtrix systems you have to create a .patx patch file with the Patchelor first, then import this patch into the Programmer.

42   Exporting shows to devices

42.1   Basics

After creating your show and defining the necessary settings for standalone mode you want to export your show to an engine with standalone capability like Butler S2 or Butler XT2.

Basically, show export works like a DMX recorder. All output will be directly rendered to the particular device's memory. This allows fades to be contained and e.g. even video wizard cues to be rendered.

> Do not forget to define at least one trigger for Butler and Butler S2 which tells the engine what to do when leaving online mode or when the engine is switched an. Otherwise the engine may stand still and do nothing.

From the main menu select `Extras Export to Device` or click the Export icon to bring up the »Export Show« dialog. The dialog consists of two tabs: A Select Devices tab and a Butler File Export tab with another export methods for show export to the engines.

• Master Target Device: Here you select to which devices you want to export the show. You can only select devices that are registered in the Device Manager. For simplicity the buttons `Select All` and `Select None` will select and respec-
tively deselect all registered devices. In case of a cluster configuration you can select the target master of the cluster and you should always export the cuelists to all engines.

• Cuelist Range: In this section the range of cuelists to be exported is specified. This range has to be continuous, so every cuelist from the starting point to the end will be exported.

• Action Pad Export: Set the checkmark to export Action Pad pages to the Butler XT2. Only the Butler XT2 supports the Remote Action Pad, see chapter »Action Pad« for details.

• Extras: To check if an export would be possible, mark `Check only – do not yet export to device`. This way the show export will only be tested, but not performed.

With `Cluster Configuration` you can set the export options for all slaves of a cluster. Slaves disabled in the sub configuration are not longer available in the main dialog. This simplifies the configuration when more than one master and many slaves are present in a configuration.
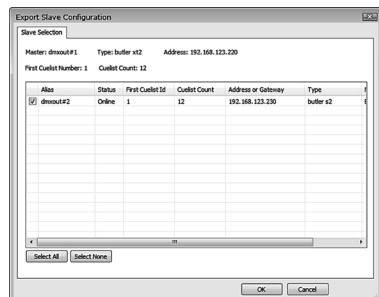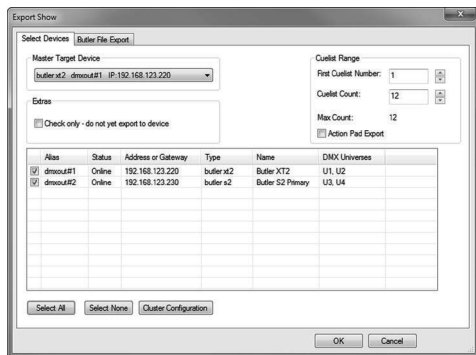
The second tab for Butler File Export has three selectable functions: either no show file on the local disk will be created, or the show will be exported and a file will be created.

After exporting the shows disconnect the e:cue Programmer from the Butler or disable Network Output in the Status Window. About five seconds later the Butler will automatically enter standalone mode.

Please refer to the Butler XT or XT2 System Manual for further instructions.
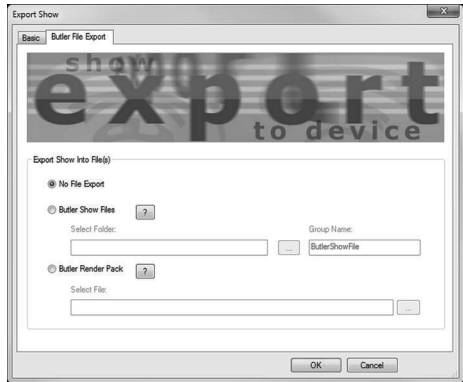
When the `Action Pad Export` flag is not set, no Action Pad pages are exported for the Butler XT2. If using the Remote Action Pad be sure to have ticked the field if any pages have changed.

42.2 Exported file types

There are two types of exported files during show upload:

• `Butler Show File`: The group name is used as a folder name. For every device a new folder in the directory is created with all files that are required on the SD card of the device. The content of a folder can be copied to the SD card of a device. After rebooting the device it works without any differences to the stream export.

• A `Butler Render Pack` is an image file and meant for the Butler Classic. It contains all exported shows. As the SD card in a Butler Classic does not have a logical filesystem, the Render Pack must be written with a packet writer program like Launchpad Imagewriter (https://launchpad.net/win32-image-writer).

• With the option `SD Card Export` a show can be exported directly to SD cards using a SD card drive connected to the computer. (Butler XT, S2 and XT2 are supported).

When exporting a show file with the Butler File Export only DMX data for the SD card are exported, not triggers or actions. To also transfer these to the engine use the `Quick Update` function in the Device Manager.

42.3 Errors on exports

When exporting Actions or Triggers that are not supported by the engine, the export log window shows which Actions/Triggers could not be exported.

42.4   Device capabilities

Please note that not all standalone devices by e:cue support all of the features offered by the Programmer. Check the following table.

	ETH2DALI	Butler	Butler S2	Butler XT	Butler XT2
DMX channels	512	1024	1024	1024	1024
DALI lines	2	-	-	-	-
Cuelists	99	99	99	99	99
Simultaneous cuelists	8	1	8	2 (on different outputs)	8
Delays	yes	yes	yes	yes	yes
Fade	yes	yes	yes	yes	yes
Fade softmodes	yes	yes	yes	yes	yes
Loops (not nested)	yes	yes	yes	yes	yes
Mutual Exclude Groups	yes	no	no	no	yes
Versatile Master as cuelist Sub-master	yes	no	no	no	yes
Cue Actions	yes	no	no	no	no
Cue step control	wait time/ manual	wait time	wait time/ manual	wait time/ manual	wait time/ manual
Automation	start cuelists at set time/ date triggers, RS-232, UDP, digital inputs, DALI event	no	no	start cuelists at set time/ date triggers, RS-232, e:bus	start cuelists at set time/ date triggers, RS-232, e:bus
Labeled Events	yes	no	no	no	no
Sunrise Timer	yes	no	no	yes	yes

43   Presets

Presets are used to save and apply channel settings for a single or for multiple fixtures. After presets are stored, they can be applied again. So presets are channel templates that are used allover again, or to have settings to return to in certain situations. One example would be to set moving heads or beamers to a base position.

43.1   Preset types

Single Fixture: saves one or more channel settings from one fixture. Settings for one fixture can be applied to many fixtures. It's is also possible to apply settings to other fixture types (if their channels match). Useful e.g. as a template for colors, gobos etc.

Multi Fixture: saves several fixtures plus their individual channel settings. Activates its own group of fixtures when called, and cannot be applied to any other fixtures. Useful e.g. as a template for positioning several moving lights.

43.2   User interface

	Record a preset.
	Delete a preset.
	Rename a preset.
	Load a preset for editing (Clears Programmer view).
	Save a preset (Clears Programmer view).
	List preset usage.
	Insert a row.
	Delete a row.
	Sort presets.
	Adjust grid.
	Apply preset to selected fixtures.
	Apply preset to all fixtures.

43.3   Recording a preset

To record a preset:

• Select the fixtures from which you want to record the preset.

• Click in the toolbar or press F8 to bring up the preset window. Click the Record button.

• Now specify which channel groups should be recorded. E.g. if you want to record a color preset, place a checkmark there.

• Choose between single or multi fixture preset.
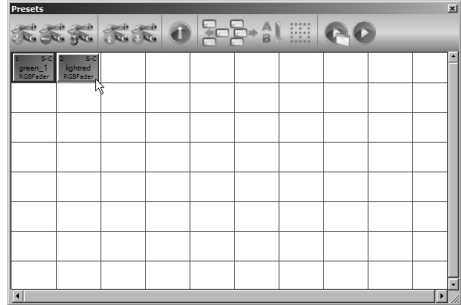
When recording a Multi Fixture Preset the checkbox `Record only selected fixtures` means you can either record the entire contents of the programmer view or only the fixtures you had previously selected.

43.4   Applying a preset

There are two buttons for using a preset: `Use complete` and `Use on selected fixtures`. Use on selected fixtures uses the preset on the fixtures that are selected in the Programmer View. Use complete is for multi fixture presets. It activates fixtures that have been saved in the preset if they are not present in the Programmer View. If you want to use part of a multi fixture preset on fixtures in the Programmer View (which have to be part of that preset), select them and click Use on selected fixtures. You can also double-click a preset to assign it to selected fixtures.

In Programmer view the channel segments, that use a preset, wear the preset name as <presetname>.

43.5   Editing a Preset

Use the `Load Preset` button to load a preset into the Programmer view and the `Save Preset` button to update the preset. Pressing the load button clears the Programmer view!

43.6   More functions

Show Preset Usage

Click a preset and then show which cuelists use this preset. The output is shown in the Main tab of the Logbook Window.

Change Grid Size

Here you can the grid layout and sizes of the presets.

Sort presets

Sorts the presets by type.

Insert or delete row

Inserts a new row for presets in the grid. Before deleting a row this row must be empty.

43.7 Create a Single Fixture Preset

Making a preset for a specific color:

- Select fixtures and set the color you want.
- Bring up the Preset window (F8), select a free preset position, or an already used preset if you want to overwrite this. Press `Record`.
- Give the preset a name.
- Set the channel groups you want to record (in this case just Color, since we only want to record the values from red, green and blue).
- This setting is left at Single Fixture Preset since the preset is supposed to contain the same values for each fixture.

Using the preset:

- Select the fixtures that you want to apply the preset to.
- Select the preset you want to apply
- Press `Use on selected fixtures` or double-click the preset. The preset name is shown in those channels.

Press in the lower toolbar `123/pre` if you do not want the preset names to show in the Programmer view.

43.8 Create a Multi Fixture Preset

Bring the moving lights to their proper positions.

- Bring up the Preset window (F8).
- This preset is only to save the position and to leave everything else untouched. Thus only `Focus` is selected.
- Select a name.
- `Multi Fixture Preset` is selected, press `Record`.
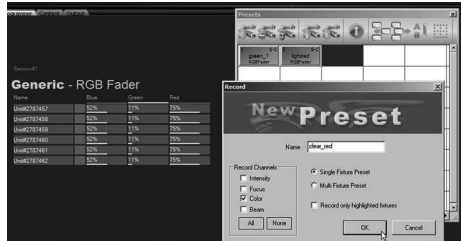
44   e:script

If the built-in functions, tools and wizards are not enough to realize a show or an application, you can use e:script to create macros that realize special functions. This chapter is not an introduction to e:script, but will only show the very basic principles. There is a complete introduction to e:script, the Advanced System Manual, for download from the e:cue website www.ecue.com, of course for free. This is also available in the Programmer under `Help | Advanced System Manual`.

44.1   About e:script

The e:script language is a macro language embedded in the e:cue Programmer. Based on the C programming language and equipped with lots of special language commands, the e:script language offers great possibilities for advanced control of the e:cue Programmer. Most of the features, that the e:cue Programmer offers in its graphical user interface, such as cuelist control and fixture manipulation, are accessible via particular e:script commands. This enables advanced users to benefit from the full potential of the e:cue Programmer when creating shows.

These commands in e:script not only give access to the Programmer, but also to all drivers, to the Action Pad, to the Sequencer and all other elements used in the LAS, including MIDI and RS-232 interfaces.

Language features are:

• Based on ANSI C

• Local and Global Variables: Integer, String, Arrays

• Control Loops: while, for

• Program Control: if, switch/case/break, return, exit

• Allows nesting

• Arithmetic operations: sqrt, radius, sin, cos, tan, etc…

• Custom user functions

Access is possible to (examples only):

• Cuelists

• Single Cues

• Masters

• Read/write access to all fixture channels

• Live FX

• Sequencer

• Read/write access to e:cue Programmer sections (cluster size etc.)

• Access to Programmer view: select / deselect fixtures, set values, clear programmer view

• Read backup mode and status of operation

• Read/write access to Action Pad

• Read faderunit jogdials

• Read DMX input data

• Read/write access to all MIDI data (note/controller/program or binary)

• Start and stop Timecode

- Read/write access to all RS-232 data (string or binary)

- Read/write access to all Network Parameters for communication with other applications

- Remote PC shutdown and restart via e:cue Terminal Emulator

- Send WakeOnLAN packets to power up remote PC's

- Read the system time and access Sunrise Timer

- Shut down and reboot the system

- Play sounds

- Start external applications via system command interpreter

- Create modal dialogues for user interaction with images, text input fields, value input fields, password input fields, Color Picker input fields, checkboxes etc.

- Present system message boxes to the user – OK, OK/CANCEL, YES/NO etc.

44.2   How to create and run

e:script macros can be used in many places in the Programmer. Use the e:script Macros button on the Main Icon menu, or press Shift+F2 or `View | e:script Macros` from the main menu. Here you can create, edit, delete, and run macros.

Macros are activated by Actions, Actions can be used e. g. for cues or for Triggers. See the chapter about Actions and Triggers for more information on Actions and Triggers.

e:script code, building macros, is not meant to realize complete programs or applications like you would do it in C or Java. Macros are executed as one-time "code snippets": The runtime of a snippet is usually less than 0.01 seconds. To run longer, more "continuous" macros, it is possible to store global values and repeatedly call a macro to run a kind of "state machine". In this case the macro is called again and again, using persistent variables to store and recall a certain condition or state in the show or in the application.

Usually a macro inside a show would be called either by a Trigger rule or by a Cue Action. An example of the first would be "On a certain time or when an Action Pad button is pressed down, run macro X".
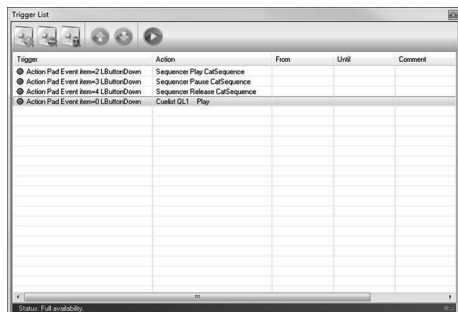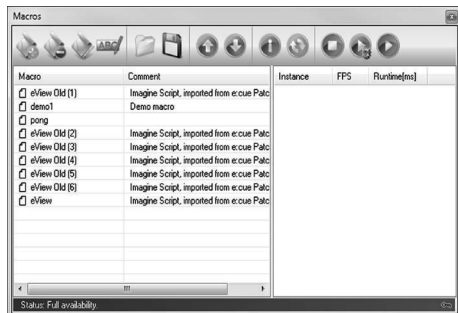
Another example would be a cuelist with a single cue that calls macro X via a Cue Action.

If you want to create a kind of continuously running program, e. g. an animation or a game, you would write a macro that saves its state in global variables and call this macro from an Action in a single cue in a cuelist. Set the cuelist to loop mode, control timing by wait time, fade-in and fade-out timing and the macro is executed again and again.

See the **Advanced System Manual** for a complete language description including examples for programming and interfaces.

45   Selected chapters

45.1   Sunrise Timer

The Sunrise Timer lets you control actions depending on the position of the sun. Since it calculates the position of the sun in three modes the results are consistent throughout the year and area. The Sunrise Timer is used by creating rules with Sunrise Timer events in the Automation window.

To adjust settings for the Sunrise Timer go to the Show Properties, select Extras | Show Properties from the main menu and then click the tab Sunrise Timer. To work properly the Sunrise Timer needs to know the geographical position of where it is installed. This position can be entered as latitude and longitude. For quick access, the geographical positions of the world's largest cities are already available from the drop down menu.
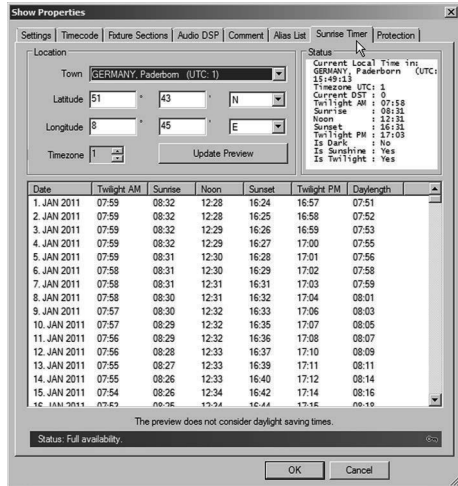
The second most important setting is the time zone in which the system is located. The time zone is needed so GMT (Greenwich Mean Time) can be calculated. GMT is needed to calculate the sun's angle to the earth. The table at the lower side of the Window shows a yearly overview of event times. Note that it does not consider the changing of the clocks for daylight savings in summer/winter.

The settings for the Sunrise Timer are saved with the show file. They have to be entered again when a new show file is started.

Available Sun Events

Apart from sunrise and sunset the Sunrise Timer also knows the times when twilight sets in. These times are available as twilight AM, twilight PM events. The twilight events are useful for northern regions where the dawn comes long before the sun actually rises, and where it does not become fully dark until sometime after the sun has gone down. Furthermore there is a noon event which calculates the highest position of the sun, which is not always 12:00. The following table gives a quick overview:

Twilight AM	Beginning of dawn, when the center of the sun disc is 6° below the horizon.
Sunrise	The uppermost edge of the sun becomes visible on the horizon.
Noon	The sun has reached its highest point in the sky.
Sunset	The sun has completely sunk below the horizon.
Twilight PM	End of dusk. The center of the sun disc is 6° below the horizon, it has become completely dark

Using the Sunrise Timer

After setting the Sunrise Timer it can be used via the Automation.

- Create a new trigger rule in the automation window.

- From the pull down menu on the left, select Sunrise Timer.

- Further parameters appear. The parameter Day allows you to choose whether the rule should apply every day, or only on weekdays.

- Under Event you can select one of the five Sun Events described in the previously.

- Offset Min allows you to specify an offset to the actually calculated time in minutes. For example, if you would like to start something 10 minutes after sunrise, set offset to 10.

- Now select an action from the right.
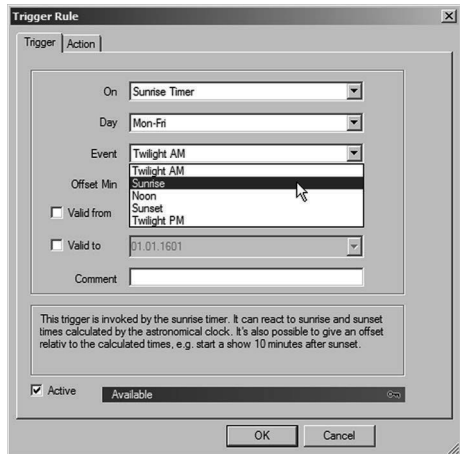
45.2   RS-232 Automation

The e:cue Programmer offers direct access to the serial ports of the PC. For RS-232 transmissions the Programmer only uses the TxD, RxD and GND wires. Hardware handshake (RTS/CTS) and Software handshake (Xon/Xoff) are not supported. Thus only the wires 2, 3 and 5 need to be connected on the 9-way RS-232 connector, in general you can also use a standard RS-232 cable. You should, however, have a look at the device with which you want to communicate using RS-232, and check how its connector is allocated.

Required Settings

To access the PC's serial connectors with the e:cue programmer you need to adjust some settings in the Application Options page. First you need to make sure the COM port is not in use by other devices within the e:cue Programmer. Furthermore make sure no other Windows applications have opened the COM port. This could be for example PDA programs or modem dialers. Open the device manager and add a Generic Serial Device. In the upcoming dialogue adjust the following settings:

- 1. Select the COM port you would like to use.

- 2. Set an appropriate bit rate.

- 3. Apply the correct values for data bit count, parity and stop bit. They have to absolutely match the settings of the device on the other end. Otherwise, communication will not be possible.

You can change the logbook view to monitor the serial ports and see if any communication takes place. To do this, select the correct tab inside the logbook window.

Sending RS-232

- Sending by Cue Action: Go to any cuelist and select the cue from which you want to send an RS-232 message. Click the Action#1 column. In the window which appears now select Send RS-232 String or Send RS-232 Data. Send RS-232 String transmits ASCII data. Example: Type Hello into the data field.

- Send RS-232 Data transmits binary data. Example: 'H 'e 'l 'l 'o 13 10. This sends the word Hello, followed by a Carriage Return and a Line Feed. 'H tells the programmer to send the ASCII code of the character H. Furthermore it is possible to use Hex codes by prefixing a number with 0x. Example: 0x0d 0x0a also sends CR, LF.

- Sending from Triggers: The Automation uses the same actions as the cue, Send RS-232 String or Send RS-232 Data. By creating a trigger rule you can make an RS-232 transmission depending on an event.

See chapter Automation to get more information about how to create a trigger.

Receiving RS-232

When receiving RS-232 commands the Programmer needs to have them in a clearly defined format: Character, Number and Carriage Return. Examples for valid commands: K10, A143, J2333. Here, K10 means the ASCII code of K, the ASCII code of 1 and 0. A carriage return has to follow (ASCII code 13). An additional Line Feed (ASCII code 10) is optional. In binary format, the K10 command would look like this: 75 49 48 13 10.

Receiving with Automation: By using the Automation you can assign any desired action to a RS-232 message:

- From the main menu select View | Trigger Rules .
- Click Add to create a new trigger.
- As trigger select Serial Port, select the correct serial port. Do not forget to have the desired device added in the Device Manager.
- To use the command KL, select the ASCII code of K (75), select the number 76 for L.
- Now you can assign any desired action to this command in the second tab.

As soon as you have confirmed the dialogue, the new rule will appear in the list and will be functional. Make sure that Automation is allowed (It should say so in the Status window). You can also use abbreviated commands, i.e. leave out the number and just send the character and a Carriage Return. In this case you have to set Value B to Any.

45.3   Remote Device Management

Basics

Remote Device Management (RDM) is an extension to the DMX protocol. It allows bidirectional communication between a RDM compliant fixture and a lighting controller. The e:cue Programmer can communicate with fixtures via RDM to display available device information. What kind of information is available depends on the particular fixture type.

To open The RDM manager window, press the button in the main toolbar. The following window should appear:
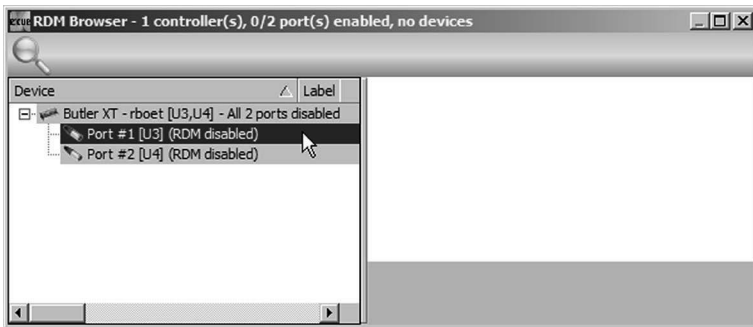
RDM discovery starts as soon as an RDM-ready device like the butler xt is connected, even if the RDM window is closed. However, if e.g. new RDM fixtures have been connected you can restart the discovery manually by pressing on the RDM manager window toolbar.

The RDM manager window consists of three parts: on the left, there is a list of all available gateway devices. There you can select any device that you want to have more information from. In the middle window you can see the found fixtures, ordered by universe in different tabs. Fixtures that are marked yellow have been found but still have no information available, while fixtures marked green are completely discovered.

When you select a fixture, information about that fixture is visible in the right part of the RDM manager window. The information is divided into 3 parts:

• Generic: Displays general information about the fixture like Device ID, DMX Start Address or Sensor count.

• Sensor Info: Shows the different sensors that are available for the fixture as well as sensor value ranges.

• Sensor Status: Displays the current Sensor Status of the fixture.

When no device is selected in the middle area, the tabs Sensor Info and Sensor Status on the right will display merged information, which is average values for all sensors. Below the three main areas in the RDM manager window, you can find various quick info about gateway device, Universe and more. This includes a small status display during discovery process: as long as as the discovery is not finished, you can see a small text noting Discovering: followed by a number that is the count of universes that is currently worked on.

Device Properties

Select one or more fixtures and click with the right mouse button to open a context menu. `Select Modify Device Properties`... . This will open the RDM Remote Setup, where you can change several properties for the selected fixture(s), like the DMX address.

45.4   MIDI

You can register MIDI devices in the device manager. A generic MIDI device contains options for an input and an output as well. After you have closed the dialogue you will see a message in the main logbook, telling you whether the MIDI devices could be successfully opened.


Furthermore you can see incoming MIDI messages if you select the logbook tab of the desired midi device.

45.5   OSC Client

The Open Sound Control (OSC) is a protocol for network-based communication between software or hardware devices, mainly for sound-related purposes. OSC is an open protocol and has been developed at the University of California in Berkeley. The Programmer can send messages to an OSC client using macro language. Configuration In the Device Properties, enter the IP address of the OSC client as well as the port where to the messages are sent. There are two possibilities to send messages to a connected OSC client:

With several macro commands you can send e.g. integer or float values, strings, colors and more. This method requires knowledge of the protocol syntax as you have to create a correct address pattern. A good start in finding information about the OSC syntax is the official homepage: http://archive.cnmat. berkeley.edu/OpenSoundControl/

The second possibility is to connect a versatile master to the OSC driver. This is done inside the master's configuration dialog. Inside the master view, double click the master that you want to connect to the driver. On the tab Setup you can find a topic OSC where you can configure the connection.
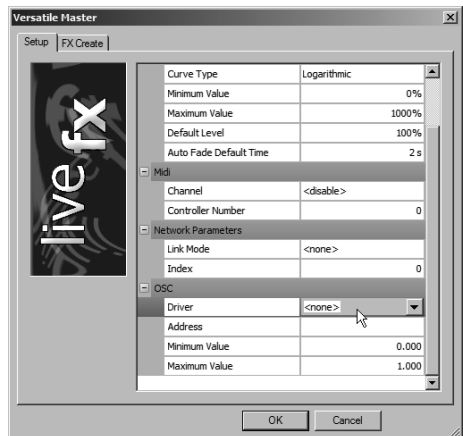
45.6   Programmer HTTP remote control

Via the HTTP server in the LAS you can access functions in the Programmer from a remote system. First, you have to configure and start the HTTP server in the Application options. When the configuration is finished, the HTTP server is ready for access. As there is no webpage in the server home path, you cannot see anything. But you can already trigger actions in the Programmer using a web browser. This is done through special tags inside the URL.

The basic syntax of an HTTP request is

```
http://ServerAddress/xmlget?RequestType=Request
```
or

```
http://ServerAddress/get?RequestType=Request
```

where ServerAddress is the IP Address or domain name of the HTTP server, RequestType is the type of request you want to send and Request is the request itself. As you can see, the only difference between the lines is the use of get and xmlget respectively. This affects the style of the results that the Programmer sends back to the browser after a request. Using get, the result is in plain text. With xmlget, the result will be sent in XML, with the following layout:

```
<?xml version="1.0" encoding="utf-8" standalone="yes"?>
<xml_ecue version="1.0">
<request value="..." tag_id="..."/>
<result value="1" error="0" message="OK"/>
<result_list>
<result_entry value="the first entry" />
</result_list>
</xml_ecue>
```

XML-Tag Description

• <?xml … standard XML header

• <xml_ecue> protocol version number for e:cue HTML

• <request> the request like it arrived at the Programmer

• <result> 'value' – an integer value for the result, 'error' – nonzero value if an error occurred, 'message' – error description in plain text

• <result_list> holds a list of <result_entry> - tags

• <result_entry> holds an attribute 'value' with results

Using get requires less result decoding effort but has a worse error handling. With xmlget, in contrast, decoding is not as simple but you can see more easily what went wrong in case an error occurred. Empty spaces and various special chars are not allowed inside an HTTP request. You will have to transcode the request string to conform with the HTTP protocol. The JavaScript command XmlHttpRequest automatically transcodes forbidden characters into the correct format. You should use this command when you build your own website for remote access.

HTTP Request Types

The CallMacro request will execute a macro in the programmer. The macro must exist inside the show.

```
http://ServerAddress/xmlget?CallMacro=Name
```

You can also pass up to 5 numeric parameters, separated with commas. Examples: http://ServerAddress/xmlget?CallMacro=MyMacro   or   http://ServerAddress/get?CallMacro=MyMacro,2,4,6

The ExecCommand request will execute a single line e:cript command in the Programmer:

```
http://ServerAddress/xmlget?ExecCommand=CommandString
http://ServerAddress/get?ExecCommand=CommandString
```

In CommandString you can add any valid e:script command (or command sequence) like you would use inside the Programmer. You can also define global variables. Examples:

```
http://ServerAddress/xmlget?ExecCommand=StartCueList(QL(1));
http://ServerAddress/get?ExecCommand=if (undefined(_x)) int _x;
_x=10;
http://ServerAddress/xmlget?ExecCommand=printf("%d\n",_x);
```

The AutoText request sends e:cue autotext to the Programmer. The Programmer sends back decoded autotext to the web browser as a result.

```
http://ServerAddress/xmlget?AutoText=AutoTextString
http://ServerAddress/get?AutoText=AutoTextString
```

Example:

```
http://ServerAddress/xmlget?AutoText=<cuelist 1 status>
```

Using the HTTP requests by typing them directly into the browser's address bar is too complicated for real practical applications. It is of course possible to embed the requests into a website. This is what it's all about: create your own website with your own control elements and put it online using the Programmer's integrated HTTP server. You can also refresh any status displays or control elements without having to reload the entire page. This is typically realized using the AJAX web development techniques.

45.7   Example: Powerpoint control

It is possible to control the Programmer via Microsoft Powerpoint.

• In Powerpoint options | Popular enable the Developer Ribbon.
• Place an object in your presentation, e. g. a square like a button. Right-click the object, select Hyperlink.
• In the Action Settings dialog, select Run macro and define a macro name, e. g. StartShow1. In the Ribbon, select Macro in the PP Ribbon, create a macro, here StartShow1, go to edit mode. Place this code:

```
Sub StartShow1()
Set objHTTP = CreateObject("MSXML2.ServerXMLHTTP")
URL = "http://192.168.123.123/xmlget?ExecCommand=StartCuelist(
QL(1));"
objHTTP.Open "POST", URL, False
objHTTP.setRequestHeader "User-Agent", "Mozilla/4.0 (compatible;
MSIE 6.0; Windows NT 5.0)"
objHTTP.send ("")
End Sub
```

• Click Ok, close macro view. Dont forget to enable the Web server in the Programmer.

46   The HTTP Client

With the new HTTP Client driver you can connect the Programmer to HTTP servers and get pages or update a status on them using the HTTP commands GET/POST.

In the Add Driver dialog in the Device Manager add the HTTP driver. Beside the standard properties you can configure the address of the server you want to connect to.

Accessing the HTTP server you need e:script. In e:script you can use the driver handle to send requests (POST/GET or other) and receive responses using the following commands:

HttpRequestCreate
HttpRequestCreateFrom
HttpRequestDestroy
HttpRequestSend
HttpResponseGet
HttpResponseGetAndWait

See the LAS Advanced Manual for examples and details.

47   KiNET configuration

KiNet is a protocol used by Color Kinetics to control their LED fixtures and power supplies. It is a lightweight Ethernet-based protocol and uses UDP on port 6038. Be sure that no hardware or software firewall blocks this port. As said for e:net a separate network segment should be used, at least a separate segment for all fixture communication.

There are two protocol generations over time, KiNET v1 and KiNET v2. KiNET v1 is also called DMXOUT and v2 is PORTOUT. The various products of Color Kinetics support one or both protocol versions.

To use KiNET components there are two steps necessary: configuration of the KiNET power supplies including the control functions, and setup of the Programmer for KiNET communication. For the first step you have to use Color Kinetics programs, these programs are available from the Philips/Color Kinetics homepage.

Note: as I dont have CK products at hand, this is a kind of dry run. If it does not work in your case please contact e:cue support via the e:cue Forum (www.ecue.com/forum/).

• Visit www.colorkinetics.com and follow Support, then Downloads from the main and left navigation.

• Download the Light System Composer, unzip it and start the installer. The LCS installer places a folder on your desktop, this contains links to several tools, one is the Management Tool, this program is used to configure the KiNET power supplies.

•

•

- Use `Light View | Discover Interfaces` for allocate the power supplies, assign a unique IP address.
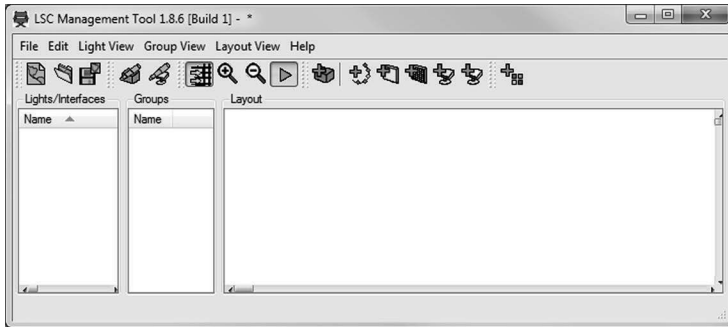
The next step is to configure the Programmer. The KiNET devices are used with a special driver available in the Device Manager. So in Programmer, open the Device Manager, select Add Driver and add a driver for DMX Output, use the KiNET DMX-Node and click Add.

After the driver was added the configuration dialog for the KiNET node opens automatically.

- Assign a unique name for the device.
- Enter the assigned IP address, the output universe in Programmer
- Select the correct KiNET protocol version, see the following table for the protocol versions supported by the CK devices.
- DMX Start Channel allows a DMX address shift if any other DMX addresses are placed before the target fixture.
- ChromASIC is autoadressing mode, usually not used.
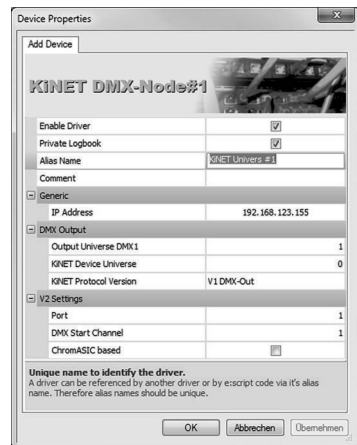
Click OK to enable the driver as DMX output device.

Product	KiNET v1 (DMXOUT)	KiNET v2 (PORTOUT)
PDS-150e	Yes	No
PDS-500e	Yes	No
PDS-60 24V Ethernet	Yes	No
PDS-60 24V DMX/Ethernet	Yes	Yes
PDS-60ca 12V Ethernet	Yes	No
PDS-60ca 7.5V Ethernet	Yes	No

| Product	KiNET v1 (DMXOUT)	KiNET v2 (PORTOUT)
PDS-60ca 7.5V DMX/Ethernet	Yes	Yes
PDS-70mr 24V Ethernet	Yes	No
sPDS-60ca 24V DMX/Ethernet	Yes	Yes
sPDS-480ca (7.5V, 12V, 24V)	No	Yes
Data Enabler Ethernet	Yes	No
Data Enabler EO/iColor Accent Powercore	No	Yes

48 The Toolbox

48.1 System settings and restores

The Toolbox allows modification of various parameters and settings in the e:cue Programmer, as well as setting back parameters to default values.

Some settings, especially in the Expert Setup, are crucial to the working state of the Programmer and should not be touched except you are aware, what effects these changes may have.

The Toolbox is available from your Windows desktop via an icon, which is creating during Programmer installation. Otherwise you will find it in the start menu of Windows in `All Programs | e:cue Lighting Control | Application Suite 5.3 | Programmer`.
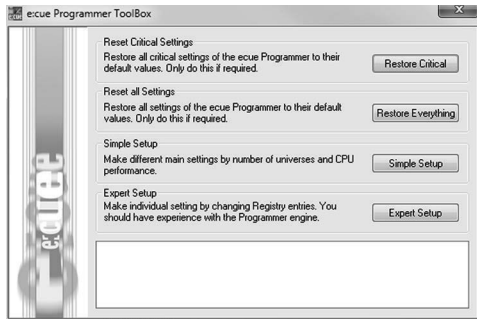
If you have any problems using the e:cue Programmer, you can either try restoring some critical settings, Restore Critical, or if this fails restore all Programmer configuration options to their default values, Restore everything for troubleshooting.

Reset Critical Settings

Resets all passwords and all Application options.

Reset all Settings

This resets all values in the Programmer to their initial values, including password protections and DMX parameters.

48.2 Simple Setup

Under Simple Setup you will find a slide control to change the maximum number of universes the Programmer will support and one to adjust the approximate CPU speed of your machine. This will automatically tweak some internal settings to let the Programmer make use of the provided CPU power.
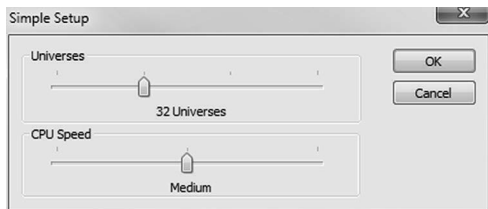
48.3 Expert Setup

The Expert Setup changes several Windows registry configuration values concerning the e:cue Programmer. Please keep in mind that tuning up the values can also have negative side effects on the performance.
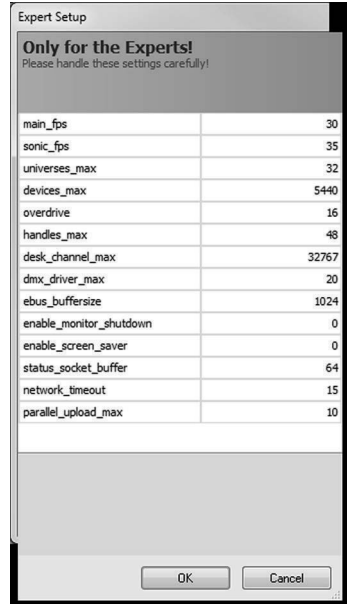
The e:cue Programmer default settings refer roughly to a PC with 2 GHz CPU speed and 512 MB of RAM.

These are the possible parameter settings: (Def: default value, Max: maximum value, Min: minimum value)

Parameter	Values	Influence
main_fps	Def: 30 Max: 35 Min: 10	This entry defines the Programmer GUI speed in frames per second. Higher values accelerate the e:cue Programmers user interface at the cost of more CPU power. Lower values save CPU resources, giving more power to the DMX engine. If you want the e:cue Programmer to work with a very large number of universes and DMX output devices, you may want to decrease this value to save CPU resources.
sonic_fps	Def: 35 Max: 35 Min: 1	This entry defines the DMX engine speed. That is how often per second new DMX frames are calculated and sent to the DMX output devices. Lower values save CPU resources but result in a sticky DMX output. Higher values than 35 fps are not useful as DMX is not capable of transferring more frames per seconds on all 512 channels.

universes_max	Def: 16 Min: 16 Max: 512	Maximum number of DMX output universes. Increasing it costs a little CPU power and RAM, even if there are no fixtures mapped to all universes. You should only increase this value if you really have a demand for it. Decreasing the value below the default value of 16 DMX universes is generally NOT useful and not recommended.
devices_max	Def: 32*170 Min: universes_max*170 Max: universes_max*512	Defines the maximum number of fixtures the e:cue Programmer can handle. Default value is the number of universes multiplied by 170, as you can map no more than 170 RGB faders to one DMX universe. If all your DMX universes are in use and you want to use desk channels on all 512 channels the default value may be too small. Increasing the value will help.
overdrive	Def: 16	Do not change this value!
handles_max	Def: 48 Min: 1 Max: 256	This defines the maximum number of simultaneous running cuelist. Increasing this value costs a little more CPU power and more RAM.
desk_channel_max	Def: 16*512	Defines the maximum number of desk channels. A desk channel is not exactly the same like a DMX channel. However, to keep things simple, you should always use m_so.universes_max*512 here.
dmx_driver_max	Def: 20	Defines the maximum number of DMX output drivers, i.e. how many DMX output devices can be addressed in the e:cue Programmer device manager.
ebus_buffersize	Def: 1024	When using the Glass Touchscreen in online mode with many and long cuelists, increase the e:bus buffer size (e.g. when button captions get lost).
previes_updates	Def: -1 Min: -1 Max: 50000	Update speed of preview, 1500 is the usual fixture count. Reduce updates if you have a slow graphics adapter. Set to 0 if you want no limit on the update count. The preview will update all fixtures in this case. Set -1 if you want adaptive count, it will update the maximum number of fixtures without influencing the engine speed.
enable_monitor_shutdown	Def: 0	If set to 1 = true, a monitor shutdown (powersave mode) is allowed.
enable_screen_saver	Def: 0	If set to 1 = true, the activation of the Windows screensaver will be enabled.

status_socket_buffer	Def: 64	Minimum size for communication socket buffers, for DMX devices buffer sizes will be increased automatically.
network_timeout	Def: 15	Not used anymore.
parallel_upload_max	Def: 10	Number of parallel show uploads to Butler/ Butler XT.

49   Tweaking your Workflow

49.1   Programmer and cues

- As long as you hold down the SHIFT key, the logbook will not be updated. If there is much output in a logbook window, you can suppress updates for a while this way. This simplifies reading the text.

- You can merge multiple Cues in the Programmer View like this: Open the Cuelist window, select a Cue and press the Load icon. Select another Cue, and press the Merge icon. Now the content of both Cues is merged in the Programmer View and can be saved as a new Cue.

- You can also merge further Cues into the Programmer View in the same way. Instead of loading a Cue in the first step, you can also populate your Programmer View from the patched fixtures as usual, and then merge an existing Cue into it. Please note that this is not a HTP merge, but an LTP style merge. All touched channels of the other Cue will become valid, regardless if their value is higher or lower.

- You can select multiple groups in the Programmer View by holding the CONTROL key when selecting the groups with the mouse.

- You can move presets in the preset window by selecting them and then pressing CONTROL and the cursor keys.

- To modify channel values more slowly, hold down the shift key when moving with the mouse. (At "Application Options / Mouse", you can define the mouse sensitivity).

- To spread channel values select some fixtures and hold the CONTROL key when modifying the channel's values.

- A channel value in the Programmer View, which is loaded with a preset, will not change when turning any of the wheels, except when you hold the ALT key on the keyboard. This re-enables modification of the channel value.

50 Addendum

50.1 Lighting specific terms and expressions

Cue A theatrical cue is the trigger for an action to be carried out at a specific time. In lighting technology a cue is the complete set of commands to be sent to all involved devices in a configuration, e.g. commands for setting intensity, focus or tilt/angle for fixtures, to reach a defined state.

Cuelist The cuelist presents all recorded cues in numerical order with all their cue attributes. Playing a cuelist means sending the recorded cues with a defined timing and speed to the configuration, realizing a show, playing a pattern or a color chaser on a wall or fixture matrix.

Fixture General expression for a lighting system, usually equipped with LEDs, but also laser driven. Like LED liners, head washs or video matrix panels.

DMX DMX512 (Digital Multiplex) is a standard for digital communication networks to control stage lighting and effects such as fog machines and moving lights. DMX512 employs EIA-485 differential signaling at its physical layer, in conjunction with a variable-size, packet based communication protocol at 250kBit/s. It is unidirectional and does not include automatic error checking and correction. DMX is the most used connection type in lighting control.

DALI Digital Addressable Lighting Interface (DALI) is a standard for control lighting in buildings. It was established as a successor for 0-10 V lighting control systems, and as an open standard alternative to Digital Signal Interface (DSI), on which it is based. The DALI standard, which is specified in the IEC 60929 standard for fluorescent lamp ballasts, encompasses the communications protocol and electrical interface for lighting control networks.

KNX KNX is a standardised (EN 50090, ISO/IEC 14543), OSI-based network communications protocol for intelligent building automation. KNX is the successor to, and convergence of, three previous standards: the European Home Systems Protocol (EHS), BatiBUS, and the European Installation Bus (EIB or Instabus). The KNX standard is administered by the KNX Association.

RDM Remote Device Management, a protocol based on DMX512 with bidirectional communication capability between a lighting controller and RDM-capable lighting fixtures or devices. In this way information from fixtures can be given back to controller, a feature that standard DMX does not support.

e:net An Ethernet-based e:cue protocol used as the backbone communication standard between most e:cue engines and interfaces.

e:bus The e:bus is a 2-wire, polarity-independent bus system for communication between lighting components and engines. Due to the free topology design and capability to wear data communication and power supply voltage at the same time, it simplifies cabling and installation costs. e:bus has a maximum cable length of up to 400 m,

e:pix e:pix is a protocol based on DMX, developed by e:cue, for an improved communication between the VMC and TRAXON e:pix-ready LED products.

Engine An engine is a standalone-capable device that controls fixtures, receives signals and reacts on input from external devices like terminals or switches.

Interface	A device that converts interfaces or protocols, e.g. from USB to DMX, from DMX to DALI, or from KNX/EIB to DMX.
Terminal	Any device that transfers user interaction or commands into a lighting system, e.g. Glass Touches, switches or Fader Units.
Gobo	The gobo is one of the oldest stage lighting effects. Traditionally a piece of metal, with shaped holes cut into it, that produces a pattern of light. The design of the pattern can be anything, from abstract shapes to a sign or logo, and is inserted into a spotlight at the focal centre (known as the "gate") between the lamp (bulb) and the lenses.
Pars	Sometimes also called Parcans, are LED-equipped spotlights to light a greater area on stage or in clubs. In former days equipped with conventional bulbs, today with 52, 78 or more RGB-LEDs.
Liner	Also called stripe or strip. As the name says a number of RGB-LEDs mounted in a single line, or in two or three lines, going up to 252 or more LEDs in one system. Sometimes divides in two or more individually controllable sections. In most cases used to illuminate walls or flat surfaces.
Washer	Similar designed as pars but in rectangular form and with a low profile. To illuminate parts of or complete buildings.
Head wash	Either similar to a par or a laser beam but mounted on a bracket. The braket is controlled by electric servo systems, horizontally (pan) and vertically (tilt). Used as a follower, or to create dynamic lighting on walls and stages.
Pixelboard	A rectangular board wearning 2n RGB-LEDS, e.g. 8, 16 or up to 64. Often equipped with a diffusor in front. For playing color chasers, pattern lighting or videos an large surfaces like walls or building fronts.
Universe	Means DMX universe. A DMX universe are all devices connected to one DMX line, so a maximum of 512 addresses.
OSC	The Open Sound Control (OSC) is a message based protocol for network-based communication between software or hardware devices, mainly for sound-related purposes, flexible enough to cover a great area of application. OSC is an open protocol and has been developed at the University of California in Berkeley.

51 Reference

51.1 Menus

File Menu

New	Creates a new, empty show
Open…	Opens a show
Save	Save the current show
Save as...	Save show with a new name
Save Copy to…	Save a copy of the current show file
Patch...	Open Patch window
Import	"Patch…": Imports a Patchfile that was created by the e:cue Patchelor.
Export	"Show Script as Textfile": Exports a textfile with the current cuelists, Trigger settings and Patch as show plan. "Patch": Export a textfile containing the list of patched devices.
Exit	Exits the programmer

Edit Menu

Select All	Selects all devices
Select None	Deselect everything
Select Even	Selects all devices with even ID
Select Odd	Selects all devices with odd ID
Select Every…	Select every n-th element, starting from a certain fixture. Stopping after a configurable selection count
Select Next	Selects the next device within the programmer
Invert Selection	Inverts the current selection
Take Snapshot	Saves content of programmer View for Restore Snapshot
Restore Snapshot	Sets the programmer View content back to last snapshot
Command	Jumps to the command line

Programmer Menu

Clear	Clears (empties) the programmer View
Blind	Suppresses the output of the programmer View. The programmer View stays active but won't send output to any connected devices (or override cuelist output)
Highlight	Temporarily switches the selected fixture(s) to full brightness (intensity)
Freeze	Freezes the DMX output at one point, including LiveFX – editing is still possible.
QuickPatch	Activates QuickPatch mode, where fixtures can be assigned to new DMX addresses by clicking them on screen
Color Picker…	Brings up the Color Picker.
White	Selected devices colors are set to white
Open White	Sets "touch" and default values for the selected fixture(s)

Home	Sets the focus channels (Pan, Tilt) to default values
FX Create	Opens the Live FX dialogue for selected channels
FX Cut	Removes FX from the selected channel and puts them on the clipboard
FX Copy	Copies FX from the selected channel to the clipboard
FX Paste	Inserts FX from the clipboard to the selected channel
Untouch Full	Sets all parameters of the selected fixture(s) to untouched
Untouch Channel	Sets one parameter of the selected fixture(s) to untouched
Channel Menu	Opens a menu with preset values for the selected channel
Fetch Incoming DMX Data	Loads the current DMX input into the programmer View
Fetch Stage Output	Loads the current stage output into the programmer View

Cue Menu

Record	Saves the current content of the programmer View into the selected cuelist.
Record Incoming DMX	Records the current DMX input into the selected cuelist.
Record Stage Output	Records the current stage output into the selected cuelist.
Save	After "Edit": Saves the content of the programmer View back into the cue
Load	Loads the content of the selected cue into the programmer for editing
Cue Defaults	Loads the Cue default values
Merge	Merge content.

Wizards Menu

Chaser Wizard	Opens up the Wizard for programming chasers
Scroller Wizard	Opens up the Wizard for programming scrolltext on a matrix
Checkit Wizard	Opens up the Wizard for generating fixture testing sequences
Bitmap Wizard	Opens up the Wizard for displaying and animating graphics on a matrix
Video Wizard	Opens up the Wizard for displaying videos on a matrix
e:script Wizards…	Opens up a dialog for several e:script effect macros

Extras Menu

Auto Backup Now	Performs a backup of the show ("Backup of [Showname]")
Password Protection	Opens the Password Protection Window for protecting the Programmer against unauthorized access
Show Properties	Brings up the show's Properties dialogue
Application Options	Brings up the dialogue with the programmer's options
Restart Device Drivers	Restarts all active Device Drivers of the e:cue Programmer
Export Show to Device	Exports a show into a standalone e:cue DMX output device
Execute Instant Action	Brings up a dialog to choose an action, which will be executed instantly.

Dongle Upgrade	Generate an Upgrade Order ID or Upgrade your dongle from (*.duf) file.

View Menu

Programmer	Shows the programmer view
Content	Shows the Content view
Stage Output	Shows the Stage Output
Device Manager	Opens the Device Manager window
RDM Manager	Opens the RDM Manager
Live FX	Opens the LiveFX window
DMX	Shows DMX output monitor
Sequencer	Opens the Sequencer window
Cuelist	Shows the Cuelist window
Trigger List	Opens the Trigger Rules window
Presets	Brings up the Presets window
e:script Macros	Shows the dialog for all defines macros
Macro Editor	Open the editor for e:script macros
Media Player 1	Opens the first Media Player
Media Player 2	Opens the second Media Player
Audio DSP	Brings up the AudioDSP window
Action Pad	Shows the ActionPad window.
Preview	Opens the Preview window.
Hide All	Hides/brings back all windows
Statusbar	Shows/hides the status bar
Command Line	Shows/hides the Command Line bar
Mini Toolbar	Shows/hides the Secondary Toolbar
Main Screen Setup…	Opens up the Screen Setup
Reset Window Layout	Resets the window sizes and positions to factory state
Switch Kiosk Mode	Switches to Kiosk Mode

51.2 Icons

Main toolbar

	Create a new show	CTRL-N
	Open a show	CTRL-O
	Save current show	CTRL-S
	Password protection	

	Patch	Z
	Show show properties	Shift-F5
	Application options	Shift-F6
	Export show to a standalone device/DMX output device	Ctrl-F4
	Open Device Manager	
	Open the RDM Manager	
	Show the Presets Window	F8
	Show the Live FX Templates window	F3
	Show the Cuelists window	F6
	Open Sequencer window	F5
	Open DMX Output window	F4
	Show Media Player 1	Shift-F7
	Show Media Player 2	Shift-F8
	Show controls for Media Remote Player	Alt-F5
	Show the Audio DSP window	Shift-F9
	Show the Action Pad	Ctrl-F2
	Open Automation for Trigger Rules	T
	Open the Macro Window	Alt-F7
	Open the Preview Window	Ctrl-F5

	Show/hide all windows	Ctrl-Tab
	Record a new cue	
	Activate Quick Patch mode for assigning DMX addresses	Ctrl-P
	Blind Mode, suppress output of Programmer View	B
	Highlight, switch all selected fixtures to FL temporarily	H
	Freeze, freeze the DMX output including FX, editing is still possible	Ctrl-E
	Clear Programmer	Ctrl-Y
	Clear Programmer, stop all cuelists, deactivate triggers for five seconds	Ctrl-F9
	The About page	

Second Toolbar

	? [▼] [↵]	
	Here you can type commands from the macro language, select and set fixtures, enter media file alias names	TAB
ALL	Selects all fixtures	CTRL-A
NONE	Deselects all fixtures	
EVEN	Selects fixtures with even numbers	
ODD	Selects fixtures with odd numbers	
NEXT	Selects the next fixture	
INVERT	Selects the unselected fixtures	
	Assign a color with the Color Picker	J

⬤	Set all selected fixtures to white	
	Opens the Live FX dialogue for selected channels	X
	Removes FX from the selected channel and puts them on the clipboard	SHIFT-X
	Copies FX from the selected channel to the clipboard	SHIFT-C
	Inserts FX from the clipboard to the selected channel	SHIFT-V
	Sets one channel of the selected fixture(s) to untouched	U
	Sets all channels of the selected fixture(s) to untouched	SHIFT-U
	Sets "touch" and default values for the selected fixture(s)	SHIFT-W
	Sets the focus channels (Pan, Tilt) to default values (moving heads only)	SHIFT-Q
HEAD	Deactivates headlines in the main screen.	
MAN	Deactivates manufacturer names	
IDLE	Switch for showing/not showing idle fixtures	
	Switches off the channels and only leaves fixture names and colors	
123 -PRE-	Stops displaying Preset names in the channel field.	
50% -x+f-	Stops displaying live FX formulas and only displays the resulting values.	
255 -%-	Switches between percent display and DMX value display	

51.3 Keyboard Shortcuts

Faderunit

Command	Shortcut
Play	Right
Pause / Go Back in Cuelist	Left

Choose Cuelist	Choose
Previous Channel	UP
Next Channel	DOWN
Blind Mode	Glasses
Stop current cuelist	STOP
SkipForward	e:cue+Right
SkipBackward	e:cue+Left
Highlight Mode	e:cue+Glasses
Previous Page	e:cue+UP
Next Page	e:cue+DOWN
Stop all cuelists	e:cue+STOP
e:cue+Chilli	Map Live FX Parameters to Jogs (UP/DOWN selects Channel)
F	Map Focus Channels to Jogs
C	Map Color Channels to Jogs
B	Map Beam Channels to Jogs
Chilli+F1..F10	Set Live FX function (sin,cos,etc.)
Chilli+Stop	Remove Live FX
Choose+Jog1	Modify Chaser Speed
Choose+Jog2	Modify Chaser Fading
Choose+Jog5	Modify Speed Master

While „Cue Properties" window is open

Modify Timing	hold e:cue and turn Jogs
Modify Fade Time	hold UP and turn Jogs
Modify Delay Time	hold DOWN and turn Jogs

Standard Keys

Command	Shortcut
Insert Item	INS
Delete Item	DEL
Use Item	ENTER
Change Item Properties	F2 or Alt+Enter
Copy	Ctrl+C
Cut	Ctrl+V
Insert	Ctrl+X
Select All	Ctrl+A

File Menu

Command	Shortcut
New	Ctrl-N
Open	Ctrl-O
Save	Ctrl-S
Patch	Z
Exit	Alt-F4

Edit Menu

Command	Shortcut
Select All	Ctrl-A
Invert Selection	I
Select Next	N
Snapshot	Ctrl-B
Undo	Ctrl-Z
Enter Command	TAB

Programmer Menu

Command	Shortcut
Clear	Ctrl-Y
Blind	B
Highlight	H
Freeze	Ctrl-E
Quick Patch	Ctrl-P
Color Picker	J
White	Ctrl-J
Open White	Shift-W
Home	Shift-Q
FX Create	X
FX Cut	Shift-X
FX Copy	Shift-C
FX Paste	Shift-V
Untouch Full	Shift-U
Untouch Channel	U

Cue Menu

Command	Shortcut
Record	R
Save	Shift-S

Load	Shift-L
Merge	Shift-M

Cuelist Menu

Command	Shortcut
Play	F12
Pause	F11
Stop	F10 or Space
Skip Forward	Ctrl-F12
Skip Backward	Ctrl-F11
Stop All	Ctrl-F10 or Ctrl-Space
Increase Brightness	+
Decrease Brightness	-
Full Brightness	*
Dark	/
Properties	Ctrl-Enter

Extras Menu & Wizards Menu

Command	Shortcut
Export to Device	Ctrl-F4
Chaser Wizard	Shift-F3
Scroller Wizard	Shift-F4
Show Properties	Shift-F5
Application Options	Shift-F6
Execute Instant Action	Ctrl-Q
Dongle Upgrade	-

View Menu

Command	Shortcut
Programmer	Ctrl-F6
Content	Ctrl-F7
Stage Output	Ctrl-F8
FX Templates	F3
DMX	F4
Sequencer	F5
Cuelist	F6
Trigger Rules	F7
Presets	F8
Media Player 1 / 2	Shift-F7 / Shift-F7
Audio DSP	Shift-F9

Action Pad	Ctrl-F2
Preview	Ctrl-F5
e:script Macros	Alt-F7
Hide All (Toggle)	Ctrl-TAB or F9

More Shortcuts

Command	Shortcut
Device Manager	Ctrl-F3
Clear programmer	Ctrl-Y
Reset (Stops Cuelists & clears programmer)	Ctrl-F9

Programmer View while Programmer View is in focus (press ESC)

Command	Shortcut
Highlight Mode	H
Select Next	N
Previous Channel	Left
Next Channel	Right
Channel Value Up fast	Alt-Up
Channel Value Up slow	Shift-Alt-Up
Channel Value Down fast	Alt-Down
Channel Value Down slow	Shift-Alt-Down
Channel Value 0%	Ctrl-0
Channel Value 10%	Ctrl-1
Channel Value 20%	Ctrl-2
Channel Value 30%	Ctrl-3
Channel Value 40%	Ctrl-4
Channel Value 50%	Ctrl-5
Channel Value 60%	Ctrl-6
Channel Value 70%	Ctrl-7
Channel Value 80%	Ctrl-8
Channel Value 90%	Ctrl-9

Mouse over Fixture Name

Command	Shortcut
Select Fixture	Left Mouse Button
Add to Selection	Hold Left Mouse Button (Drag Rectangle)
Context Menu for Selected Fixture	Right Mouse Button

Mouse over Channel

Command	Shortcut
Modify Channel Value	Left Mouse Button
Slowly modify Channel Value ("Shifted Slide")	Shift-Left Mouse Button
Spread Channel Value	Ctrl–Left Mouse Button
Context Menu for Channel	Right Mouse Button

Fixtures Page

Command	Shortcut
Insert Fixture	INS
Use Range	ENTER
Use All	Ctrl-A

Groups Page

Command	Shortcut
Create Group	INS
Delete Group	DEL
Use Group	ENTER

Cuelist Page (while Cuelist page is in focus, press Q)

Command	Shortcut
Submaster Up (+10%)	Ctrl-Up
Submaster Down (-10%)	Ctrl-Down
Next Bank	Ctrl-Right
Previous Bank	Ctrl-Left

51.4   RDM parameters

Parameter	Support	Update
BOOT_SOFTWARE_VERSION_ID	Inspection	Always
BOOT_SOFTWARE_VERSION_LABEL	Inspection	Always
CAPTURE_PRESET	Inspection (Limited)	(Write-Only)
CLEAR_STATUS_ID	Inspection	(Write-Only)
COMMS_STATUS	Inspection	Always
DEFAULT_SLOT_VALUE	Inspection	On Personality Change
DEVICE_HOURS	Inspection	Always
DEVICE_INFO	Inspection	Always

DEVICE_LABEL	Inspection	Always
DEVICE_MODEL_DESCRIPTION	Inspection	Always
DEVICE_POWER_CYCLES	Inspection	Always
DISC_MUTE	Internally	(Internally)
DISC_UN_MUTE	Internally	(Internally)
DISC_UNIQUE_BRANCH	Internally	(Internally)
DISPLAY_INVERT	Inspection	Always
DISPLAY_LEVEL	Inspection	Always
DMX_PERSONALITY	Inspection	Always
DMX_PERSONALITY_DESCRIPTION	Inspection	Once
DMX_START_ADDRESS	Inspection	Always
FACTORY_DEFAULTS	Inspection	Always
IDENTIFY_DEVICE	Inspection	Always
LAMP_HOURS	Inspection	Always
LAMP_ON_MODE	Inspection	Always
LAMP_STATE	Inspection	Always
LAMP_STRIKES	Inspection	Always
LANGUAGE	Inspection	Always
LANGUAGE_CAPABILITIES	Inspection	Once
MANUFACTURER_LABEL	Inspection	Always
PAN_INVERT	Inspection	Always
PAN_TILT_SWAP	Inspection	Always
PARAMETER_DESCRIPTION	Internally	Once
PERFORM_SELFTEST	Inspection (Limited)	Always
POWER_STATE	Inspection	Always
PRESET_PLAYBACK	Inspection (Limited)	Always
PRODUCT_DETAIL_ID_LIST	Inspection	Once
PROXIED_DEVICE_COUNT	Inspection	Always
PROXIED_DEVICES	Inspection	Always
QUEUED_MESSAGE	Internally	(Internally)
REAL_TIME_CLOCK	Inspection	Always
RECORD_SENSORS	Inspection	(Write-Only)
RESET_DEVICE	Inspection	(Write-Only)
SELF_TEST_DESCRIPTION	Inspection	Once
SENSOR_DEFINITION	Internally	Once
SENSOR_VALUE	Internally	Always
SLOT_DESCRIPTION	Inspection	On Personality Change
SLOT_INFO	Inspection	On Personality Change
SOFTWARE_VERSION_LABEL	Inspection	Always
STATUS_ID_DESCRIPTION	Internally	Once

STATUS_MESSAGES	Internally	Always
SUB_DEVICE_STATUS_REPORT_ THRESHOLD	Inspection	Always
SUPPORTED_PARAMETERS	Internally	Once
TILT_INVERT	Inspection	Always
Manufacturer-specific parameters(0x8000-0xFFDF)	Inspection	Always

e:cue

LIGHTING CONTROL

For more information visit www.ecue.com or www.traxontechnologies.com