PREFACE

1.   Introduction

500ML Software version 2.15 introduces major changes to the Cuelist and Playback System. The Cuelist, Programmer and Playback Backend has been redesigned to better meet customer needs.

2.   Overview

The new software includes:

New Cuelist System

- Point Cues and the ability to Move/Copy Cues and reorganize Cuelists more easily
    - A hierarchical Parameter Timing System with three Levels of Timing:
        - Cue Default Timing with the ability to split them into In- and Out Timings
        - Parameter Group Timings (IFCB)
        - Individual Parameter Timings for each Parameter of each individual Fixture
- Individual Configuration Options for each Cue:
    - Name and Comment
    - Timing
    - Trigger and Trigger Options
    - Move in Black (MiB) Cue, Delay and Fade Time

New Cuelist Playback Options

- Real A/B Crossfade
    - Live Infade Update and Live morphing between multiple Cuelists
    - Configurable Master Speed and Fade Fader
    - Global Effect Size and Speed Master Faders
- New Effects Engine
    - Many new options such as group count, buddy count, wings, direction, shot count, individual fade and delay timing
    - The ability to auto-generate random parameters in a given parameter range in order to create random-looking effects
    - An Effects Library with pre-defined effects
    - Ability to run multiple effects on the same Parameter
    - Auto-Synchronization of multiple effects
    - Automatic morphing between effects
   - Global Effect Size and Speed Masters

3.   Showfile Compatibility

Software Version 2.15 showfiles are incompatible with V1 showfiles.

To run V1 shows, users must downgrade the console back to V1.21. The console software can be up and downgraded at any time.

PROGRAMMER

The Programmer Window top row mode setting buttons now include Fade and Delay Timing Modes. The Effects Button opens up the new Effects Editor.
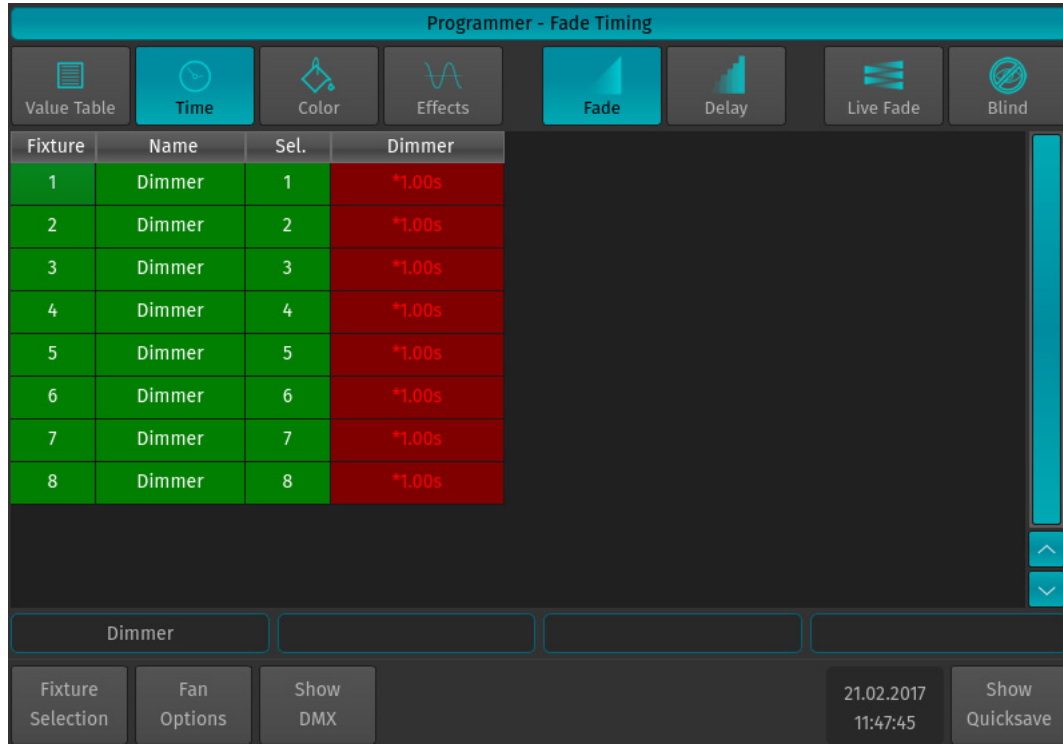
1.   Value Table Mode

The value table mode is used to enter DMX Values. This mode functions the same as V1.

Time Mode

The new "Time" Mode allows the user to set Individual Delay and Fade Timings for each individual parameter or every fixture. These individual parameters override Cue default Timings.

Note: Setting individual time values for parameters will disable MiB for these parameters.

Effects Engine

The effects engine is a new implementation working differently than in version 1. An Effect consists of:

· A given parameter (e.g. Dimmer)
· A Function Type (e.g. Sine Curve)
· A Fixture Selection
· Size, Speed, Offset and Duty Cycle Parameters
· Grouping, Buddying and Wing Count
· Directions
· Shot Count
· Infade and Indelay timing

Size, Speed, Offset and Duty Cycle

Effect	Parameter	Type	Fixtures	Size	Speed	Offset	Duty Cycle
*Dimmer Wave	Dimmer	Sine	8	100.0%	10.00cpm	0.0-360.0°	100.0%

The Size, Speed, Offset and Duty Cycle options are similar to the V1 effects engine, but have changed in their behavior as follows:

1. V1 did store an individual value for Size, Speed, Offset and Duty cycle for each individual fixture. Changing the fixture count would lead to a distorted effect look. V2 now stores these 4 parameters in a more general sense inside the effect and then applies these to the current Fixture Selection of the Effect. Changing the Fixture Count will make the playback engine re-calculate the individual Fixture parameters without any manual changes.

2. Size, Speed, Offset and Duty Cycle Parameters have a new settings dialog with options to give a specific value or to set a range of values (e.g. 0-360 degrees Offset). If a range is given the "Random" option will generate random values for each individual fixture for this parameter within the given range of allowed values. This can be used to quickly generate random looking and unique looks.

3. The V2 effects engine allows the user to have more than one effect per parameter. If multiple effects are used then the output of all effects is added and used as a combined effect result. Some of the pre-defined effects use this function together with the above mentioned "Random" function to create very unique results.
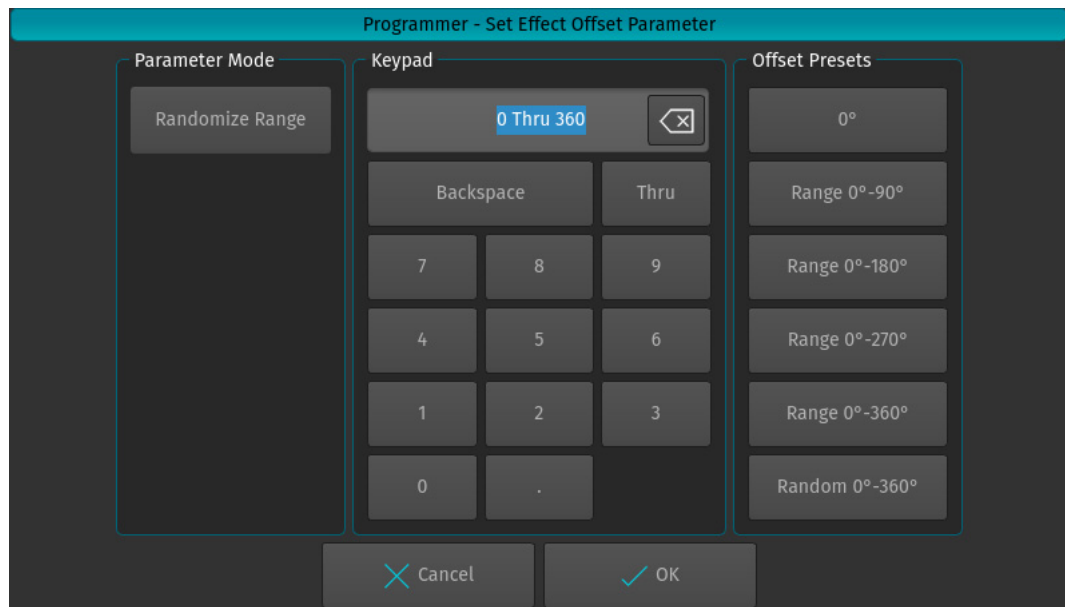
Grouping, Buddying and Wings

| Grouping	Buddying	Wings	Direction	Shots	Infade	Indelay
Off	Off	Off	Forward	Endless		

Grouping and Buddying works similar to the Value Programmer when using the Fan Option. The difference is that these values are applied to the values of the Size, Speed, Offset and Duty Cycle parameters when the individual fixture parameters are calculated.

The wing parameter will divide the fixture selection into a number of individual wings. Each wing will mirror the parameters of the previous wing with a reversed fixture order.

Grouping, Buddying and Wing values will only affect parameters where the value has been set to a range (e.g. 0-360 degrees). Single values cannot be fanned and thus won't use these settings.
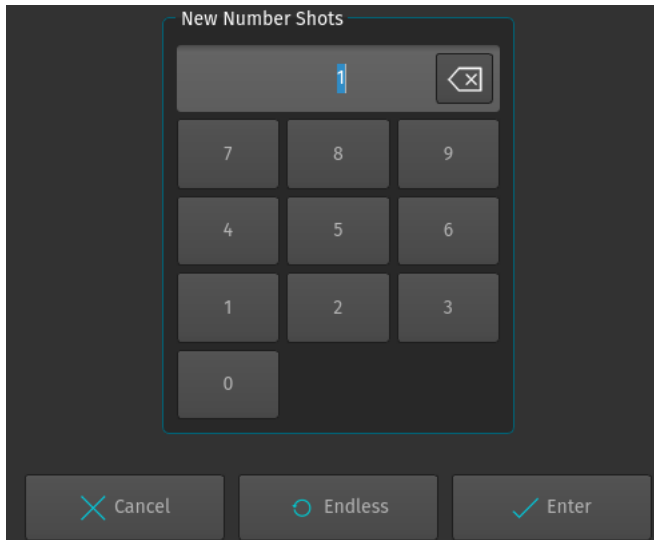
Direction

The direction setting allows the user to choose from between 4 options: Normal repetitive mode or bouncing mode combined with Forward or Backward operation.
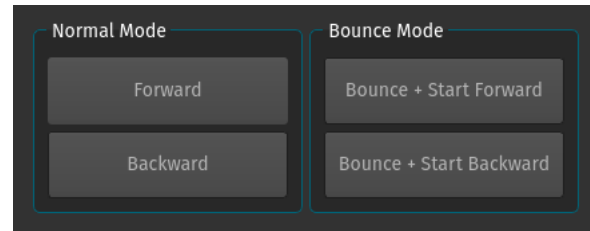
Shots

The "Shots" settings allows the user to change from endless repetition (default) to a limited number of effect cycles. The effect will stop automatically after the given number of cycles.

Infade and Indelay

Infade and Indelay are individual Effect timing parameters. If these are not specified the effect will be started with the default Cue Infade and Indelay timings.

Effect Tracking

Cuelists do track effects similar to the tracking of values. If multiple effects are running on the same parameter of fixtures all of them will be tracked to the next Cue, if tracking is enabled. If a new Cue starts new effects then the console will determine all previously running effects on the same parameters and crossfade from the currently running effects to the newly started effects. This means that subsequent effects in following Cues will turn off previously running effects from previous cues.

Turning Off Effects

When tracking is enabled then there is no automatic way for the console to determine when to stop running an effect (at least not, if its is set to run endlessly – see Effect Shot Count option). In order to stop an effect the user needs to program a new effect with the "Off" Curve. This basically works as if a new effect without output has been started which then makes the old effects fade to 0.

If tracking is not enabled then effects will the stopped when the next Cue is started.

Effect Synchronization

Keeping effects in sync is an important functionality when effects on multiple parameters are combined to create the desired result. Examples are combined Pan/Tilt Effects (e.g. a Circle) or Tilt/Dimmer Effects such as Fly In/Out Effects.

Therefore we have added specific functionality which automatically make sure that effects always stay in sync within a playback unit. The Programmer and each Cuelist is considered to be a playback unit within which the effects engine will performs auto synchronization.

Auto Synchronization will always guarantee that effects with the same timing settings (speed and fadetime) will stay in sync. Examples are:

- An additional effect is added to the programmer while another effect is already running. The console will sync both effects during fade-in and make them stay in sync, if timing setting are compatible. So no need to blind/unblind the programmer anymore in order to sync effects.

- Whenever new effects are started in subsequent Cues the console will make them sync to previously running effects of the same Cuelist. So for example Cue 1 could start a Pan Sine Effect and Cue 2 might add a Tilt Cosine effect, if timings are similar then the result will always be a circle.

- Sometimes multiple fixtures will start running an effect, a second Cue might stop that effect for some fixtures and in the third Cue the user adds the effect from the first Cue again. The stopped fixtures will then fade back into that effect. The fixtures which were still running the old effect will be morphed into the new effects. Since old and new effect match 100% there will be now visible crossfade on stage – the internal morphing engine will perform a crossfade keeping the result stable. The only visible change will be that the added fixtures will fade back into the running effect.

Effects running in different playback units will not be synced. So running a Pan Sine Effect in Cuelist 1 and a Tilt Cosine Effect in Cuelist 2 only result in a circle if both Cuelists have been started a the right time (so in general this won't work).

Two special cases are exempt from this rule:

1. The Programmer loads a Cue from a currently running Cuelist and no effect is running inside the programmer at the time of the loading. In that case the console will sync the Programmers' playback unit to the Cuelist before loading the effect resulting in no visible jump of the effect on stage.

2. The Programmer records a Cue into a currently running Cuelist and no effect is running inside that Cue at the time of the recording. In that case the console will sync the Cuelists' playback unit to the Programmer before recording the effect into the Cue resulting again in no visible jump of the effect on stage.

CUES

Compared with V1 there are a lot of changes regarding Cues. Cues now consist of individual Parameter Values (Base Values, Base Timing and Preset Links) as well as a list of effcts that are part of the Cue.

Cue Setup has drastically changed and the Cuelist table now contains 25 columns with all the settings for each individual Cue. These settings include:

- Name and Comment
- Trigger Type and Trigger Time
- In and Out Fade and Delay Timings
- Snap Time
- IFCB Timings
- MiB Settings (Cue and Timing)
- Remote Commands and Command Delay
- Info Columns for Split Timing and Effect Count

Cue ID	Name	Trig Time	Trigger	In Fade	In Delay	Out Fade	Out Delay
1	Entrance		Manual	1.00s	0.00s		
2	Introduction		Manual	1.00s	0.00s		
2.001	Lights on		Follow	2.00s	0.00s		
3	Part 1		Manual	1.00s	0.00s	1.00s	

1. Cue Numbering

In V1 Cue number were automatically generated and reflected a "step number". V2 now introduces individual Cue numbers in the format of point Cues. Cues are numbered in sequence, but not in step numbers anymore. A Cuelist can thus start with Cue 5, followed by Cue 8, Cue 8.1, Cue 8.2 etc.

The format of Cue numbers is "xxxx.yyy". So we have up to 4 digits in the first part of the Cue number and 3 digits in the second part. The highest possible Cue number is thus "Cue 9999.999".

By default when recording a Cue the console will add a new Cue with an auto-generated Cue number. Manually recording specific Cues is also supported (see Numberblock section of this document).

When using the numberblock to address Cues typing "Cue 1.1" will result in Cue "1.001".

"Cue 1.100" corresponds to "Cue 1.100".

2. Cue Name, Comment, and Color

Cues already ha names in V1. V2 now also introduces an additional field for a Comment and the ability to color code individual Cues. Name, Comment and Color can be set by selection one or more fields in the Cuelist Table and then hitting the "Set" button. Alternatively single cells can also be double clicked to modify the value. For more details see Chapter "Cuelist View Table" below.

In order to change color the Set button (or double click) needs to be performed in the first column (Cue number). The Cue number itself cannot be changed by using the Set button – instead use the "Cue Move" function which is explained in the Numberblock Section of this document.

3. Cue Triggering

V2 now allows to set an individual Trigger for each Cue.

Manual Go

Manual Go cues will only be triggered when the user manually issues a GO command.

Wait

A wait Cue is similar for the "Next Time" which has been used in V1. However a Wait Time of 2 seconds in Cue 2 now means that Cue 2 will start 2 seconds after the previous Cue. In V1 the Next time told the console to start the next Cue after the Next Time has passed. The Time to Wait will be set in the "Trig Time" Column.

Follow

The Follow Option is similar to the Wait Time. However the time to wait will be automatically calculated by looking into the contents of the previous Cue. The Follow Time will be calculated by adding Delay and Fade times for each parameter in the Cue and using the highest of these values.

The "Trig Time" parameter defines an offset that is added on top of this calculated Follow Time. This offset may also be a negative value. So a "Trig Time" of -1s will make the next

Cue start 1 before the longest of all Delay and Fade Times have finished.

Timecode

This Cue will be run when the current timecode input actively crossed the given timecode value.

Speed Master 1–4

The Cue will be run if the associated Speed Master sends out a GO command.
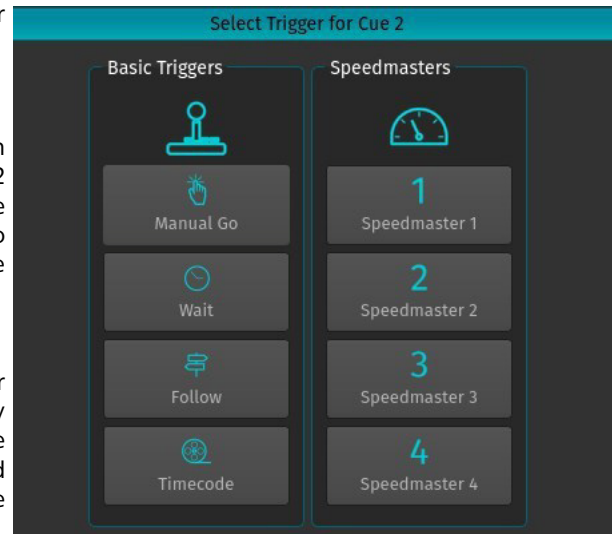
4.   Cue Timing

Timing for each parameter is divided into a Delay and a Fade Time. Delay time represents the time to wait after the Cue has been started. Once the Delay Time has passed the Fading into the new position with the given Fade Time is started.

Parameter Timing is divided into 3 Levels with different priorities. The highest priority Delay and Fade Values for each parameter will be used to determine cross-fade behavior:

1. In-Fade and In-Delay Timing do have the lowest priority

2. Out-Fade and Out-Delay will override In-Fade and In-Delay Timing, if set. They only apply to dimmer values which decrease in value. For all other parameters and values this timing is ignored.

3. Delay and Fade Timings per Feature Group (Intensity, Focus, Color and Beam) have a higher priority than In-Timings. By default these timings are not set.

4. Individual Fade and Delay Timings per Parameter can be configured inside the Timing Mode of the Programmer Table. These values do have the highest priority and will override all other timings. Please note that setting individual Fade and Delay Timings will turn off MiB for these parameters.

InFade and InDelay Timing

InFade and InDelay Timing is the default timing for all Cue content (Base Values and Effects). They will be applied as long as no other higher priority timings are configured.

OutFade and OutDelay Timing

Out-Fade and Out-Delay will override In-Fade and In-Delay Timing, if set. They only apply to Dimmer Base values which decrease in value. For all other parameters and values this timing is ignored.

In order to determine if a Dimmer value decreases the console needs to be able to look at previous values inside the Cuelist. So it is good practice to Record a Dimmer level for each Fixture into the first Cue in order to have a starting point for its calculations. The Out-Fade and Out-Delay Time cannot be calculated if no Dimmer value from a previous Cue within the same Cuelist is present. In that case the InFade and InDelay Values are applied.

Related to this function is the new "Add Blank Cue" Option in the Cuelist Setup menu. It auto-generates a "Dimmer @ 0" value in a virtual Cue 0 for all Fixtures that are used within a Cuelist.

Other Feature Fade and Delay Timings

In and Out Timings will be overridden by Feature Group Fade and Delay Timings, if these are configured. Individual Feature Group Fade and Delay Timings exist for:

- Intensity
- Focus
- Color
- Beam

Snap Timing (Percent Value)

The Snap Timing Value is used to calculate a default "Snap" time for parameters that are marked as "Snap" Parameters inside the Fixture Library. Snap parameters are all parameters that normally don't crossfade (e.g. Gobo or Color Wheels).

The Console uses the Cue Default Infade/Indelay Times or – if set – the IFCB Delay/Fade times which apply to a snap parameter to calculate the the real snap time by using the Snap Perent Parameter.

A snap value of 50% leads to the snap parameter jumping to its new value at 50% of the given Fade.

The formula used to calculate the snap time is:

Snap Time [sec] = Cue Delay Time [sec] + (Snap Time [%] * Cue Fade Time [sec])

The Cue Timings that are used for this calculaton are either the Infade/Indelay or – if given – IFCB Fade/Delay timings.

If programmed, individual Fade and Delay Values will override the Snap Time. The only way to make a Snap Parameter crossfade through its value range is thus to use individual timing parameters in the programmer table. Otherwise the console will use the Snap % value to calculate a custom Snap time for a snap parameter.

Individual Parameter Timings

Individual Fade and Delay Timings per Parameter can be configured inside the Timing Mode of the Programmer Table. These values do have the highest priority and will override all other timings.

Please note that setting individual Fade and Delay Timings will turn off MiB for these parameters.

5. Move In Black

V2 now adds "Move in Black" functionality to Cuelists. MiB is used to execute Parameter Values and Effects earlier than programmed. MiB therefore needs to be enabled on a per Cue basis. For each value inside each MiB Cue the console searches backwards through the Cuelist in order to find an appropriate Cue to execute the Value.
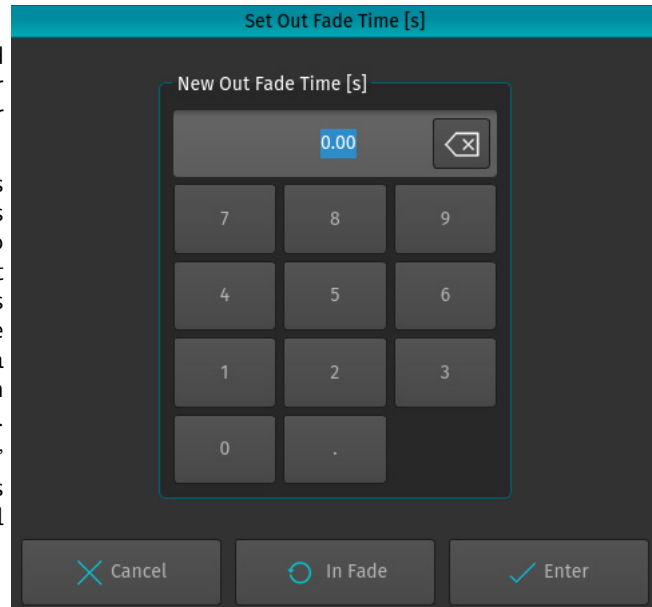
When searching backwards the console will only accept Cues a possible destination for the execution of a value, if it can determine that the corresponding Fixture has a Dimmer Level of 0. If no Dimmer value is given, then the console will assume that the Fixture is not dark and not execute MiB values earlier than programmed.

MiB Errors

There are several cases in which the MiB will not be executed for a given Parameter:

1. A Fixture does not have a Dimmer parameter. In this case MiB cannot be used at all for this Fixture.

2. The Cuelist does not contain any Dimmer Value for a Fixture. In this case the console doesn't know about the Dimmer value and will assume that a Fixture it lit up and thus won't execute MiB values earlier than programmed.

3. The previous Cue(s) do have a Dimmer value greater than 0%.

4. Dimmer Values are never move to other Cues – they are the reference for MiB calculation and so they always stay in the Cue as programmed.

5. Non-Dimmer Values will only be treated MiB, if the are marked as either "Mark" or "Mark Zero" in the Fixture library. Otherwise MiB will be ignored for these Parameters.

6. Enabling MiB for the first Cue of a Cuelist won't work since there are no previous Cues where values could be executed.

Whenever MiB is enabled for a Cue, but a MiB value cannot be executed before that Cue due to one of the limitations above, the Cuelist will execute the Value in the programmed Cue as if MiB wasn't enabled.

MiB Limitations

In V2.15 Dimmer effects are not taken into account when calculating MiB Cues. This means that a Dimmer base value of "0% + Dimmer Effect" will be treated the same as if the Fixture was dark.

Cue MiB Modes
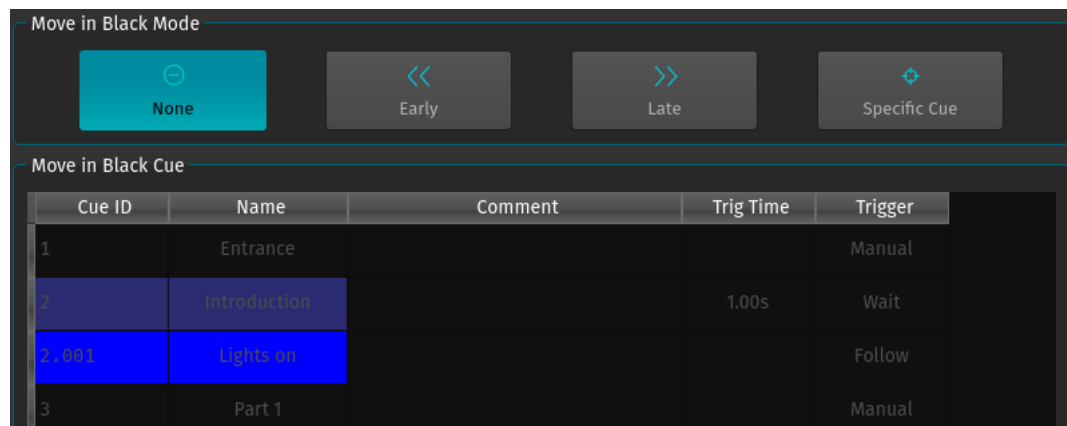
Editing the MiB cell in the Cuelist Table will open the MiB editor for a Cue. Here the user can set the MiB search mode. The MiB search mode determines the earliest possible Cue to execute a MiB Value:

1. "None" – MiB is disabled for this Cue

2. "Early" – MiB will go back as far as possible (back till the first Cue).

3. "Late" – MiB will go back to till the previous major Cue number. E.g. MiB Late on any Cue between 4.0 and 4.999 will result in going back till Cue 3.0.

4. "Specific Cue" – MiB will go back till the specified Cue, but not any further.

Mark and MarkZero Parameters

MiB can only be performed on Parameters which have been configured to be either "Mark" or "Mark Zero" inside the Fixture Library.

1. "Mark Zero" – This parameter doesn't need to use a Fade Time when executed and thus MiB on this parameter will be executed only using the MiB Delay Time with 0s Fade.

2. "Mark" – This parameter will use the MiB Delay and Fade Timing of the destination Cue in order to perform its Move in Black. This is useful for example if a slow and thus less noisy movement is desired to move to the

destination value. The console takes these timings into account when searching for a possible MiB destination Cue in order to perform the MiB in order to assure that the MiB move is finished when the light on the specific Fixtures turns on again.

MiB Fade and Delay Timing

MiB Fade and Delay Timings will be applied for all MiB Values that are executed on a Fixture Parameter which has been set to MiB Type "Mark" in the Fixture Library. "Mark Zero" parameters will use the MiB Delay Time, but not Fade Time.

The MiB Delay represents an offset (which may also be negative) to the Fixtures Dimmer@0 time (if present in the destination Cue).

So for example if a Dimmer closes in 10s on a Cue then the console might choose to execute the MiB value of a subsequent Cue in the same Cue by applying a total MiB Delay Time of 10s (the Dimmer Closing Time) plus the Cue MiB Delay time.
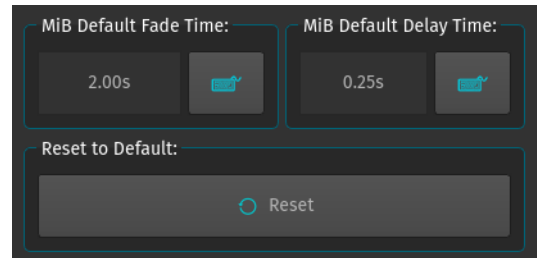
MiB Default Timing

If no Cue MiB Fade or Delay Time is specified within the Cue where the Value will be executed the console will use MiB Default Timings which can be configured in under Show Setup→Timing Setup→MiB Timing

MiB Cue Timing

It is also possible to define individual MiB Fade and Delay Times for each Cue. If set, these timings override the show default timing. The console always uses the MiB Fade and Delay Cue time from the Cue where the value will be executed – not the MiB Timings from the MiB source Cue.

6.   Cue Commands and Command Delay

Cue Commands are run as soon as a Cue is started. This functionality already existed in V1 of the software. The available list of remote commands has been extended to incorporate additional function such as the global Effect Size and Speed Master Faders.

V2 now introduces an additional column "CMD Delay" which can be used to delay the execution of the linked commands after the Cue has been started.

When a Cuelist is released any pending delayed commands will be canceled.

7.   Split Time Column

The Split Time Columns will show a "Yes" text to indicate that this Cue contains individual Parameter timings for at least one parameter. Hitting Set or double clicking the cell will ask the user to, if he wishes to clear these individual timings.

8.   Effects Column

The effects columns shows the number of effects which are part of this Cue. This cell only has informational purpose and neither the Set button nor the double click function will perform any action.

RECORDING CUES

The fundamental concept how Cues are recorded hasn't changed since V1, but there have been a few extensions:
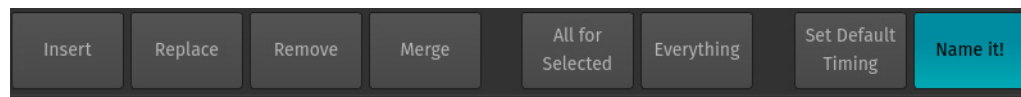
1. Recording a Cue into a Specific Cue Number

Now that the console uses Point Cues it makes sense to add the ability to record the Programmer content into a specific Cue number. The best way to perform this is to first select the desired Cuelist (see "Working with selected Cuelist below") and then use the Numberblock to record into the desired Cue number:

Record → Cue 1.4 → Enter

Alternatively the console also offers to record into a specific Cuelist and Cue number using the following syntax:

Record → Cuelist 1 → Cue 1.4 → Enter

| Insert | Replace | Remove | Merge | All for Selected | Everything | Set Default Timing | Name it! |

Both commands will take the "Replace", "Remove" and "Merge" options from the Record Toolbar into account and work accordingly.

2. Cue Default Timing

Whenever a new Cue is recorded the Console will initialize the Cue timing using one of the following 2 default timings:
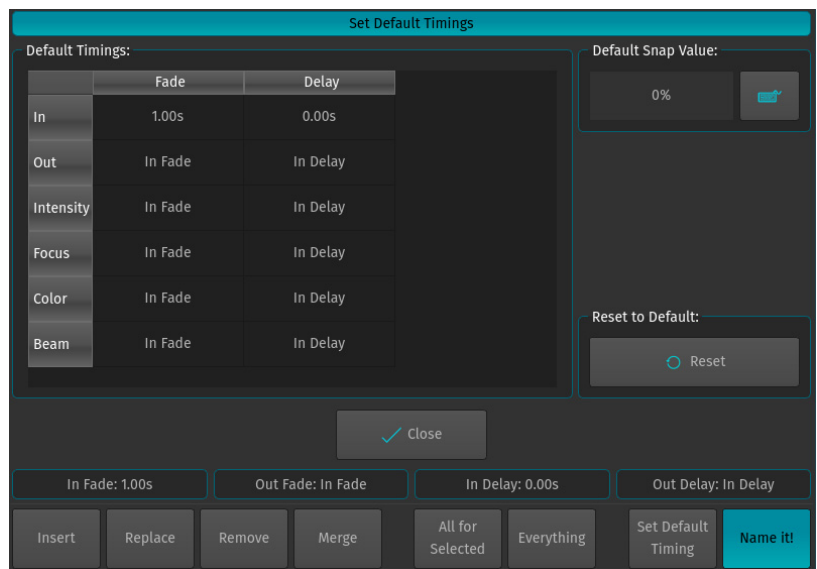
- Global Show Cue Default Timing
- Current Programmer Cue Default Timing

The Global Show Cue Default Timing can be configured using a custom Editor Window. This Editor window can be opened either through the Show Setup Menu using Show Setup → Timing Setup → Cue Timing or by clicking on the "Set Default Timing" in the Record Toolbar. The Show Default Timing will be stored inside the Showfile.

The Programmer Cue Default Timing can be modified using the encoders while the Record Toolbar is open or by clicking the encoder label which will open a Keypad Dialog. The Programmer Cue Timing will override the Show Default Timing when new Cues are recorded.

The Programmer Cue Default Timing is not persistent and will be cleared whenever the Programmer is cleared or when the Show Default Timings are modified.

Set Default Timings

Default Timings:

	Fade	Delay
In	1.00s	0.00s
Out	In Fade	In Delay
Intensity	In Fade	In Delay
Focus	In Fade	In Delay
Color	In Fade	In Delay
Beam	In Fade	In Delay

Default Snap Value: 0%

Reset to Default: Reset

Close

| In Fade: 1.00s | Out Fade: In Fade | In Delay: 0.00s | Out Delay: In Delay |

| Insert | Replace | Remove | Merge | All for Selected | Everything | Set Default Timing | Name it! |

3. Working with the Current Output on Stage

V1 contained several functions which allowed to load and record the current output on stage. In V1 the console would have loaded a Snapshot of the current output and effect value from the highest priority playback while throwing away things such as Presets, Custom Timings or Destination values (e.g. when a Snapshot was taken within an Active Fade it would have only used the current output value).

In V2 these functions have been completely reworked in order to trace back any current output to figure out the real source values. V2 will now resolve:

- Presets

- Source Timing
- Destination Values
- Effects
- Combinations of multiple partly active Cuelists (see Infade Fader section of this document)

When Effects are resolved there are 2 options:

1. The request of resolving the current output includes all Fixtures which are part of an effect. In this case a copy of the entire effect will be returned as programmed.

Effect	Parameter	Type	Fixtures	Size	Speed	Offset	Duty Cycle
*Dimmer Wave	Dimmer	Sine	3	Custom	Custom	Custom	Custom

2. The request of resolving the current output does only a fraction of the fixtures inside the effect. In this case returning the effect with a modified fixture selection would not lead to the desired result, since Effect Parameters would be re-evaluated and the look on stage would differ. So for example if 8 Fixtures run a Tilt Wave 0- 360° and the current output of Fixtures 1-4 would be requested then returning the full effect with just Fixtures 1-4 would not look the same as before since the console would recreated Fixture Parameters 0 – 360 ° on those 4 fixtures. In order to solve this problem we have introduced so called "Effects with Custom Parameters". These are Effects with Custom Sets of Parameters which can only be created through the console. Its a special kind of effect to make sure that loading of partly effects can be performed in a way which doesn't change the look on stage. Changing any of the custom parameters of a Custom Effect will transform it back to a normal effect and the user will need to re-adjust parameters as required.

"All for Selected"

"All for Selected" is a recording option from the Recoding Toolbar. If this button is checked then the console will resolve the current output on stage for all selected Fixtures and record the result into a Cue.

"Everything"

"Everything" is a recording option from the Recoding Toolbar. If this button is checked then the console will resolve the current output on stage for all available Fixtures and record the result into a Cue.

Shift + Load

"Shift + Load" is a hotkey to load the current output on stage into the programmer. The Function is similar to the "All for Selected" function, but it doesn't store the result into a Cue. Instead it loads the result into the Programmer for further editing.

MOVING AND COPYING CUES

V2 now understands Cue Move and Copy commands. In total there are more than a dozen variations of these commands which is why we will explain the copy and move function in a more abstracted manner. Both Copy and Move commands share the same syntax (just replace Copy with Move).

The basic command structure is (things in "[]" are optional):

"Copy [Cuelist x] Cue c1 [Thru c2] [Cuelist y] [Cue c3] Enter"

If the "Cuelist x" is not specified by the user then the console will assume you work on the currently selected Cuelist. If no Cuelist is selected you will receive an error message.

The source Cue(s) can be a single Cue or an extensive list of Cues. Valid lists are for example

"Cue 1.1 Thru 1.20"

"Cue 10 Thru" (meaning all cues from Cue 10 on and higher)

"Cue 1 + 3.4 + 10 + 20 Thru 40 – 4 Thru 6 – 10.59"

These Cues from the source Cuelist will then be copied or moved either to the same Cuelist with an offset (this is the "Cue c3" parameter) or to another Cuelist (specified by Cuelist y). If no other Cuelist is specified then this implies that the Cues will be moved or copied inside the source Cuelist. In this case you need to specify the Cue offset. This Cue offset will then be used to offset all Cues from the source list.

Some examples:

"Copy Cuelist 1 Cue 20 Cuelist 2 Cue 10 Enter"

"Move Cue 1 Cue 10 Enter" (requires a Cuelist to be selected)

"Move Cue 1 Thru 10 Cue 5 Enter" (will increase Cue number by 4 for the given Cues inside the selected Cuelist)

"Move Cuelist 1 Cue 1 Thru 4 Cuelist 10 Cue 6 Enter"

CUELIST CONFIGURATION

One of the main changes of V2 is the complete redesign of what a Cuelist is and how it works. V2 keeps most of V1 Cuelist functions and adds a lot more.

Changes include:

· The Introduction of "Chasers" and corresponding behavioral changes (see Chaser Chapter below)

· A reworked priority system with the ability to partly mix multiple active LTP Cuelists (see Cuelist and Chaser Playback Chapter below) and with more configuration options.

· MiB related functions

· The addition of global Effect Size and Speed Master Faders

· Trigger and Timing Changes

1. Edit Cuelist Dialog

In order to configure the new functions the "Edit Cuelist" Dialog has been reorganized and extended with the new functions. The Setup is split into the following Tabs:

· Basic Setup

· Advanced Setup

· Cuelist / Chaser Setup

· Off Trigger

The third Tab will show specific setup functions either for Chaser configuration or Cuelist Configuration. Its availability depends on the Chaser/Cuelist Selection on the Basic Tab.

Basic Setup Tab
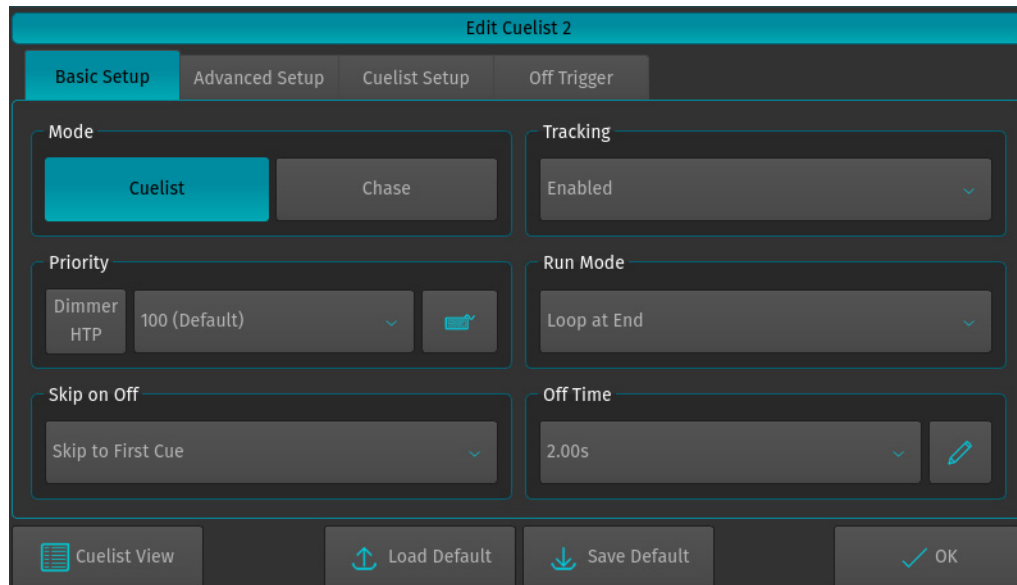
The Basic Tab includes the most important Cuelist Options. Most of these were already present in V1.

· Cuelist/Chase – will configure whether the Cuelist behave as a Cuelist or a Chaser. Selecting Chase mode will significantly alter playback functionality (see Chaser Chapter below)

· Priority – The Priority Settings now allow to turn HTP Priority On/Off for Dimmer Parameters and to select a custom LTP Priority in the Range of 0-1000. The Dropdown already contains pre-defined Priority Levels for quick selection.
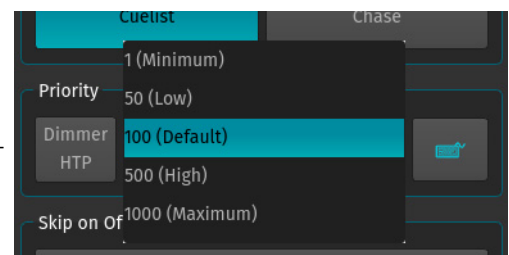
- Tracking – Set Tracking Mode to one of the options: "Off", "Enabled", "Enabled + Track Thru End"

- Run Mode – Specifies what happens when the Cuelist has finished running it last Cue. Options are "Loop at End", "Release ad End", "Stop at End". The "Release at End" function sometimes is unable to determine the end of a Cuelist (e.g. when the last Cue is configured as a Follow Cue). It then reverts to releasing the Cuelist after the longest Fade+Delay Time of the last Cue has finished.

- Skip on Off – Specifies a Cue Skip behavior after a Cuelist has been released. Options are "Skip to First Cue", "Skip to Next Cue", "Don't Skip"

- Off Time – This time is used for 2 purposes: The most important one is that this time defines the duration of the Outfade when a Cuelist is released. If a Cuelist is non-tracking then this time also defined the release fade time of each parameter which is released when transitioning from one Cue to another.

Advanced Setup Tab
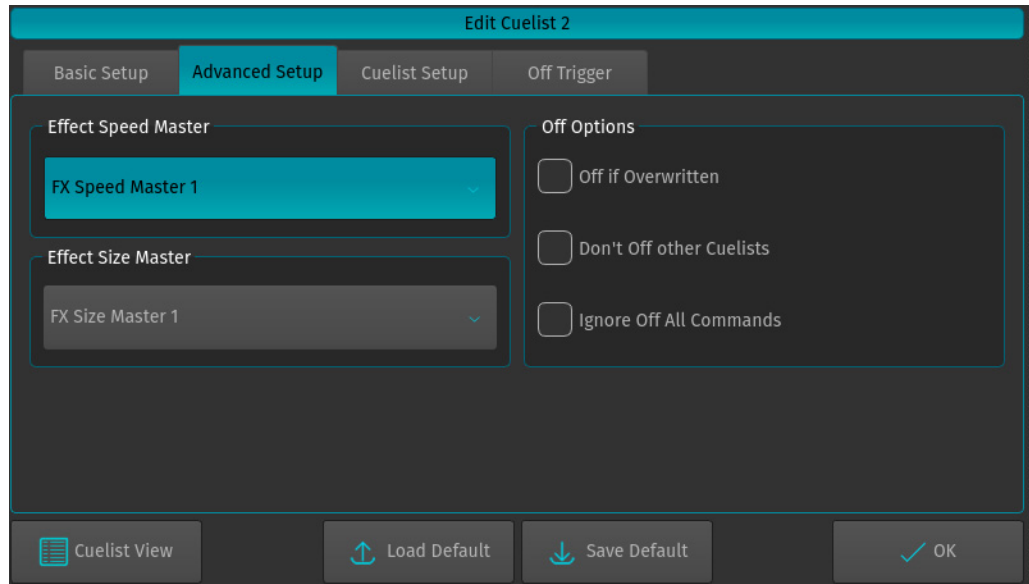
The Advanced Setup Tab offers additional functionality for Cuelists and Chasers going beyond the Basic Setup Functions:

- Effect Speed Master – Use this function to scale the Effect Speed according to one of the 4 global Effect Speed Master Faders. "None" disables the Effect Speed Master Function.

- Effect Size Master – Use this function to scale the Effect Size according to one of the 4 global Effect Size Master Faders. "None" disables the Effect Size Master Function.

- Off Options – These options have been kept from V1.

  - "Off if Overwritten" – Cuelist will automatically released, when its output is overwritten. Please note that in V2.15 this function is a bit too aggressive – See Known Issues at the end of this document.

  - "Don't Off other Cuelists" – This Cuelist will not be taken into account, if it overrides another Cuelist which has enabled the "Off if Overwritten" function.

  - "Ignore Off All Commands" – This Cuelist will not respond to the Off all Cuelists command (Shift + Off or "Release Cuelists" / "Release Everything" buttons from the Off toolbar)
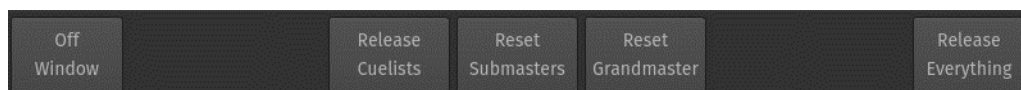
Cuelist Setup Tab
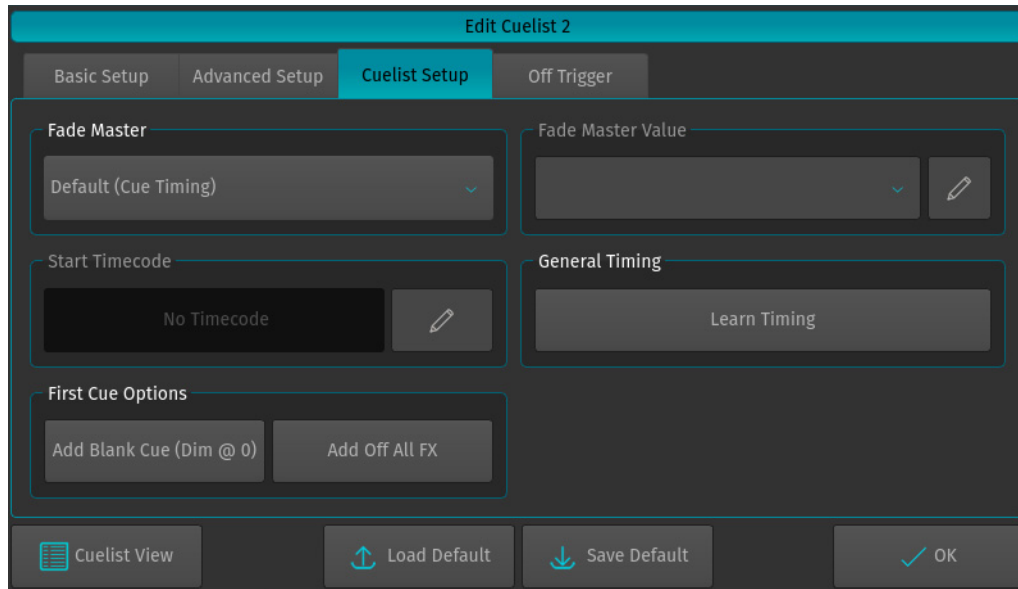
The Cuelist Setup Tab is only available, if the Cuelist Option has been selected on the Basic Setup Tab. It contains Cuelist specific functionality.

Fade Master and Fade Master Value Settings

The Fade Master Combobox allows the user to choose different Fade Time sources to be applied to the playback of a Cuelist. The "Default" Option uses the Values which have been programmed into the Cues. Choosing a different Fade Master Settings will modify the crossfade behavior between Cues.

There are 2 different types of Fade Masters:

· Relative Fade Masters

· Absolute Fade Masters

The "Percent" option is a relative Fade Master and the value of the relative Fade can be set using the "Fade Master Value" Combobox.

The "Seconds" option is an absolute Fade Master and again the value of the absolute Fade can be set using the "Fade Master Value" Combobox.

Master Fade 1-4 can be either relative or absolute. In V2 this can be configured for each Master Fade Fader in the Show Setup Window:

Setup → Timing Setup → Fade Master Setup

Relative and absolute Fade Masters behave differently when used with a Cuelist:

A "Relative Fade Master" will scale the Fade and Delay Values which have been programmed into the Cues according to the Fade Master Value which can either a fixed Percent Value or a Value that is set from a relative Fade Master Fader.

An "Absolute Fade Master" will act differently. The console will use the absolute Fade Master Value and treat it as an alternative Infade Value which overrides the Cue Infade Value. Custom Group Timings (IFCB) or individual Parameter timings will not be affected by this value. It only replaces the fadetime of all Parameters that use the Cue Infade time.

Start Timecode

The Stat Timecode Function can be used to enter a new timecode value for the first Cue which has been programmed to activate on Timecode trigger. All other Timecode Cues will be shifted by the same amount of frames as the first timecode Cue.

Learn Timing

The "Learn Timing" Button will activate the Learn Timing Function on a Cuelist. The screen will switch to the Cuelist View Window and reset to the first Cue in order to Learn a user- given timing. The user will need to manually step through all Cues. Each time the user starts a Cue which is configured to trigger on a "Wait Time" or "Timecode" the Cuelist will record the manual timing into the specific Cues. Cues with different trigger types will not be affected. The Learn Timing function stops, if the last Cue has been finished or if the Cuelist is manually released.

First Cue Options

V2 adds 2 more functions which modify the content of the first Cue:

1. "Add Blank Cue (Dim @ 0)" – This function will automatically generate a "Dimmer

@ 0" value inside the first Cue for all Fixtures that are used inside the Cuelist provided they do support the Dimmer parameter.

If the first Cue already contains a Dimmer value for a Fixture than this takes precedence over the generated values.

This function is particularly useful, if the user wishes to use MiB or Outfade time since it guarantees that the console will always be able to find out the current Dimmer level for all Fixtures that are used inside a Cuelist.

2. "Add Off all FX" – This function will automatically generate Off Effects in the first Cue for all Parameters of all Fixtures that are used within a Cuelist. It can be used to make sure that whenever a Cuelist is started no other Effects from other Cuelist will continue to run.

Effects that are part of the first Cue will always take precedence over the automatically generated Off effects.

Off Trigger Tab
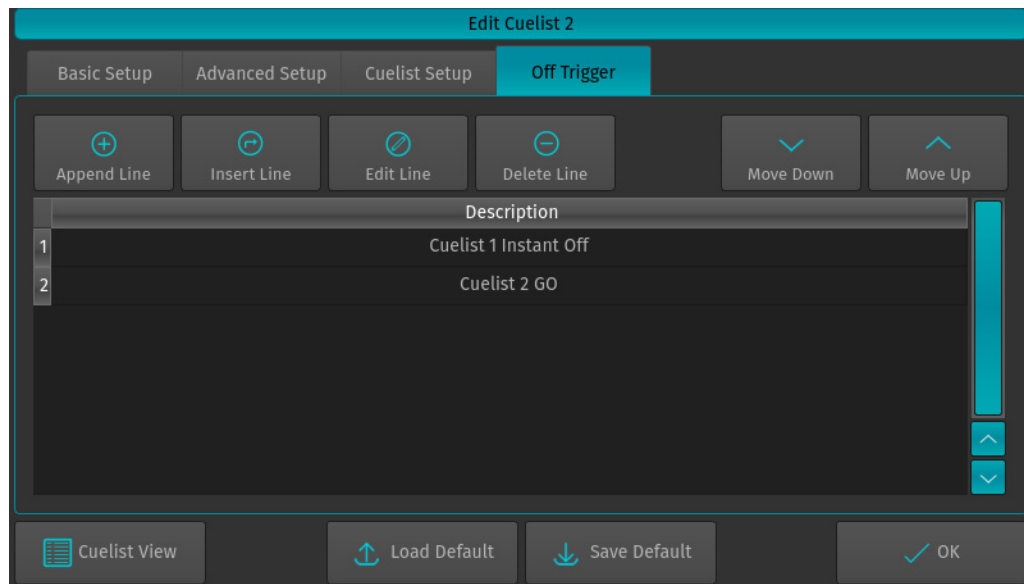
The "Off Trigger Tab" offers an editor for a list of commands which will be executed whenever a Cuelist is released. This command editor works the same as in V1, but it has been extended with some additional command which are now available.

2. Cuelist View Table

The Cuelist View Table shows the individual Cues and all Cue settings in a Table representation. Selecting one or more cells of a column and hitting the Set button will open an editor window to change the settings of the Cues. The user can also use the double- click function on a single cell to change settings. The available settings have been explained in the Chapter "Cues" above.

The "Link Selected" button will always link the Cuelist View window to the currently selected Cuelist (see "Selecting a Cuelist" below).

The "Auto Scroll" function will automatically scroll the Table in order to keep the currently active Cue visible.

The "Edit Cuelist" button will open the Cuelist Editor Dialog (see "Edit Cuelist" Dialog above).

3.   Working with Selected Cuelist

One Cuelist can be selected to be the preferred Cuelist the user is currentl working with. Selecting a Cuelist will enable multiple shortcuts to quickly access Cuelist Edit and Playback Functions.

Selecting a Cuelist

A Cuelist can be selected by using one of the following functions:

1. Via a number block command "Cuelist 1 Enter"

2. By using the "Select" mode of a Cuelist Pool Window and clicking the Cuelist to be selected
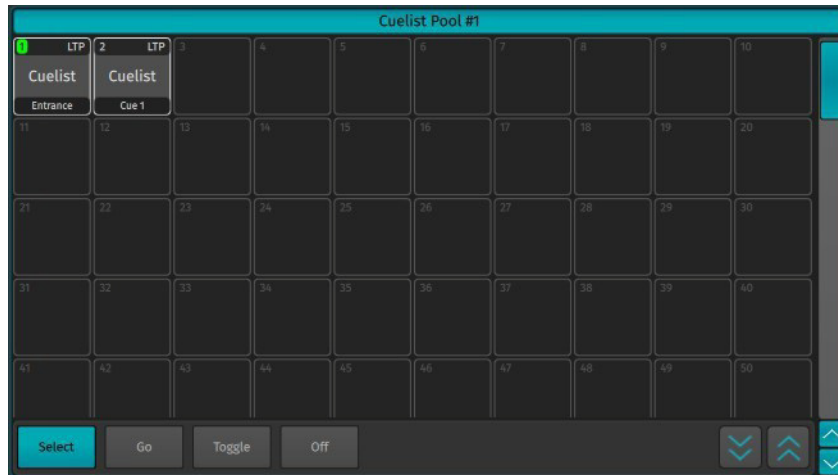
The currently selected Cuelist will be marked with a green rectangle around the Cuelist number inside the Cuelist Pool Window.

Available Shortcuts for the selected Cuelist

The following number block shortcuts are available for the selected Cuelist:

- "Open Enter" – Will open the Cuelist inside the Cuelist View Window on the internal screen
- "Edit Enter" – Will open the "Edit Cuelist" Dialog
- "Record Enter" – Will record a new Cue into the selected Cuelist (depends on the Record Toolbar Settings)
- "Record Cue x Enter" – Will record into Cue x of the selected Cuelist (depends on the Record Toolbar Set-tings)
- "Delete Enter" – Will perform a Delete command on the Cuelist (depends on the Delete Toolbar Settings)
- "Load Enter" – Will open the "Load Cue" Dialog for the selected Cuelist
- "Move Cue x [thru x2] Cue y" – Will move Cues within the selected Cuelist
- "Copy Cue x [thru x2] Cue y" – Will copy Cues within the selected Cuelist
- "Off Enter" – Will release the selected Cuelist
- "Cue x Enter" – Will issue a Cue Goto Command to Cue x for the selected Cuelist

CHASERS

Cuelist can now be configured to behave as a Chaser instead of a Cuelist. Chasers have different Timing settings, a different set of columns inside the Cuelist View Table and different playback options compared to Cuelists.

1.   Basic Information

In order to create a Chaser the User must first create a Cuelist and then configure the Cuelist to behave as a "Chaser" using the Basic Setup Tab of the "Edit → Cuelist" Dialog.

2.   Simplified Cue Options

Once configured as a Chaser the following changes will occur:

- Certain Cue settings will be ignored
  - All Cue Timings will be ignored – the Chaser will use global Chase Timings for all Parameters
  - Cue Trigger Settings will be ignored
  - MiB will be turned off
  - Command Delays will always be 0s
- Cuelist Specific Options will be disabled
  - Cuelist Fade Master Settings
  - Timecode and Learn Timing Functions
  - "Add Blank Cue" Function
  - "Add Off All FX" Function
- Chaser Specific Functions will be enabled
  - Chase Trigger Master and Value
  - Chase Trigger Sync Function
  - Chase Fade Master and Value
  - Chase Snap Value
  - Chase Playback Order
- The list of function columns inside the Cuelist View Window will be changed to the available Chaser functionality

3.   Specific Chaser Options
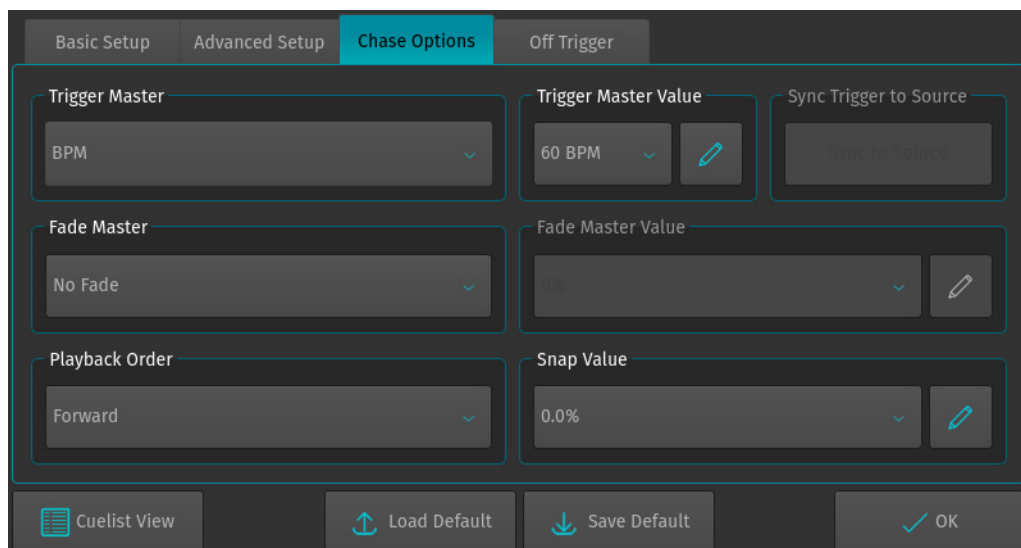
Chase Trigger Master

The Chase Trigger Master Combobox can be used to select the Chase Trigger source to be used to go from Cue to Cue. Available Options are:

- "BPM" – A Fixed BPM Time will be used. The BPM count can be set through the Trigger Master Value Box. If a Fader has been assigned to work as Speed Master for this Chaser then the Speed Master Fader will become a BPM Fader changing the BPM Time of the Chaser.

- "Seconds" – A Fixed Time in seconds will be used. The seconds between 2 steps can be set through the Trigger Master Value Box. If a Fader has been assigned to work as Speed Master for this Chaser then the Speed Master Fader will become a Seconds Fader changing the BPM Time of the Chaser.

- "Master Speed 1-4" – The Chaser will use the corresponding Global Master Speed 1-4 output for its trigger time. Global Master Speed 1-4 can be configured to either BPM or Seconds Speed Master in the Show Setup (see below). If a Fader has been assigned to work as Speed Master for this Chaser then the Speed Master Fader will be a relative 0-100% Fader scaling the Trigger Time of the selected Global Master Speed Fader.
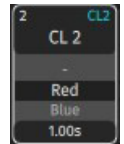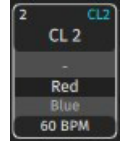
When a Chaser is set to trigger on a Master Speed Fader it will use the Master Speed output time to trigger Cues, but it will not sync to the Master Speed Tapsync output. So if 2 Chasers trigger on the Same Master Speed Fader they will not necessarily trigger at the same time. This then depends if they have been started at the same time or not. This behavior is usually desired to be able to slightly offset multiple Chasers using the same global trigger time.

V2 also allows a Chaser to hard sync to the Master Speed Tapsync output, if a different behavior is desired. This Synchronization can be achieved by activating the "Sync Trigger to Source" button.

Chase Fade Master

The Chase Fade Master Combobox allows the user to choose different Fade Time sources to be applied to the playback of a Chaser. The "No Fade" Option will start all Cues with 0s Fadetime. Choosing a different Fade Master Option will modify the crossfade behavior between Cues.
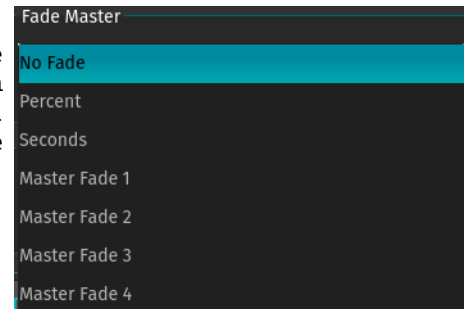
There are two different types of Fade Masters:

- Relative Fade Masters
- Absolute Fade Masters

The "Percent" option is a relative Fade Master and the value of the relative Fade can be set using the "Fade Master Value" Combobox.

The "Seconds" option is an absolute Fade Master and again the value of the absolute Fade can be set using the "Fade Master Value" Combobox.
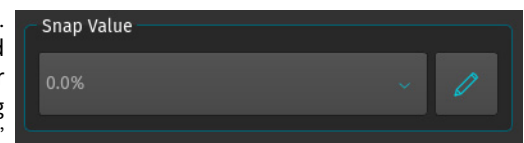
Master Fade 1-4 can be either relative or absolute. In V2 this can be configured for each Master Fade Fader in the Show Setup Window:

Setup → Timing Setup → Fade Master Setup

The resulting Fadetime of a Chaser will be applied to all Parameters that have been marked as "Fade" Parameters (e.g. Pan/Tilt).

Chase Snap Value

Parameters which have been marked as "Snap" Parameters (e.g. Gobo Wheels) will not use the Fadetime to crossfade. Instead Values for Snap Parameters will instantly snap to their destination value after a given Delay. This Delay is being calculated from the Fadetime (see above) and the "Snap Value" which is a value in Percent that can be configured inside the Chase Options Tab. A Snap Value of 0% will switch Snap Values of the beginning of a Fade. 50% in the middle and 100% at the end of the Fade.

Chase Playback Order

The Chase Playback Order Combobox can be use to alter the playback order of a Chaser. If Random Order is selected the Chaser will play back all Cues once in a Random order, then reshuffle its Random order and play back again all Cues. This assures that all Cues will be called in equally.
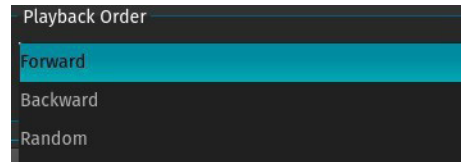
PLAYBACK PRIORITY SYSTEM

The basic principles of the Priority System of V1 still apply V2. We distinguish between LTP and HTP Priorities and the playback engine will generate an appropriate output based on its rules and the users configuration. V2 extends these principles in multiple ways:

- Base Values and Effects now have their own priority stacks and will be treated separately.

- The Playback Engine has received a new mechanism of crossfading seamlessly between multiple active Cuelists during Playback. This function can be best described as a mechanism to morph between multiple running Cuelists which result in output values being generated as a mix of multiple Cuelist values at the same time.

1. LTP and HTP Priorities

One of the most important concepts of priority management in a lighting console is the division between LTP and HTP Priorities.

- "LTP" stands for "Latest takes Precedence"

- "HTP" stands for "Highest takes Precedence"

Most lighting consoles defined this on a Parameter basis in the Fixture library. The Strand Lighting 500ML extends this concept and allows the user to additionally define HTP operation by setting the "HTP Flag" within a Cuelist or Chaser Basic Setup Tab. The 500ML treats a value HTP if:
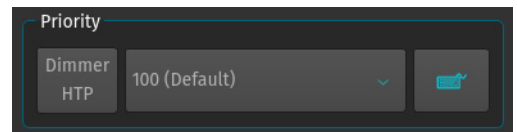
1. The Parameter has been defined as "Dimmable" inside the Fixture Library. Usually this only applies to the Dimmer Parameter, but sometimes this may also apply to other Parameters.

2. The Cuelist or Chaser which will execute a Value has the "Dimmer HTP" setting enabled.

Since the HTP flag can be set on a per Cuelist basis it is possible to have multiple Cuelists active with some being HTP and some being LTP which leads to the question how the console will deal with such a configuration.

In such a case the console will first resolve all LTP Cuelist values in order to find out the latest LTP values and then compare this result to all HTP results. The Programmer Values are always treated LTP and will always override HTP or LTP Cuelist results.

The user can assign a custom LTP Priority Value in the Range of 1-1000 in order to prioritize certain Cuelists over others. This will affect the resolving of the LTP stack, but won't have any effect on dimmable Parameters in HTP Cuelists or Chasers.

Any Parameter which is not configured as a dimmable Parameter inside the Fixture library (usually all non-Dimmer Parameters) will always be treated LTP – not matter what the "HTP Dimmer" setting is.

2. Combining Base Values and Effects

V2 distinguishes between Base Values and Effect Values. Both are treated separately in different ways depending whether the results will be treated LTP or HTP.

Combining Base Values and Effects LTP

If a Cuelist is set to LTP or if a value affects a non-dimmable Parameter then any value on such a Parameter will be treated LTP. During LTP treatment the result of combining a Base Value and an Effects result is the sum of both. So a Base Value of 50% with a Sine Wave will result in a Sine Wave circling around the 50% value. The Base Value thus can be described as the Center Value of the Effect.

Combining Base Values and Effects HTP

If a Cuelist is set to HTP and dimmable Values and Effects need to be combined then the console will use the maximum of the Base Value and the Effect result. So for example if a Dimmer Sine Wave is active with a Base Value of 50% then the Cuelist will output 50% as long as the Sine Wave result is smaller than 50% or the Sine Wave result, if it higher than 50%.

The resulting value will later be compared HTP to the possible output of other Cuelists on the same Parameter to calculate the final output of the Fixture.

3. Mixing Multiple Cuelists

When multiple Cuelists are active on the same Parameters the LTP/HTP priority engine will decide on how to combine the output.

Mixing LTP and HTP Output

HTP Cuelists will be treated separately – each dimmable Parameter of a HTP Cuelist will have its own result being calculated as the maximum of Base and Effect Value.

LTP Cuelist instead will be treated using two separate LTP stacks:

- One LTP Stack for the Base Values
- One LTP Stack for Effect Values

So for example if multiple Cuelists will generate Base Values and Effect Values on a LTP Parameter (e.g. Pan) then the console will first determine the highest Priority Base Value (e.g. the Latest or the one with the highest LTP Priority set). Then it will do the same for the Effect Value and finally add both values together in order to create the LTP result.

This LTP result then again will be compared to possible HTP results creating the overall Playback Result of a Parameter.

Infade Fader and Auto-Infade

The above paragraph explains how the console decides which Base Value or Effect Value will be put onto the overall DMX output based on different Priority Settings. This is basically a yes/no decision for each available value and only one value will win in the end.

V2 however has received an entirely re-designed playback engine and we though it might be really cool, if it was able to have something in between the all or nothing choice for Priority Management. This is why we have created our so-called "morphing engine". This engine actually is able to run LTP or HTP Values from multiple Cuelists on the same Parameters while mixing them at different percentages – Live!

If you take a look on a sound mixing console then its totally normal that each fader will mix a certain source partly into the output. The morphing engine can be explained as doing the same thing, but for lighting. We won't go into detail how this works (its hard enough to explain the all or nothing solution), but we will show you how to use it and where it is applied:

1. Infade Fader – The most obvious use of this function is the so-called "Infade Fader". This Fader works as the cited sound mixing fader. It tells the console that a certain Cuelist is on at a certain level. So for example Cuelist 1 maybe on 50% and Cuelist 2 may have 75%. The console then will create a smart live mix of all of these values in order to seamlessly crossfade between all output.

2.When you start a new Cuelist and this Cuelist fades automatically into its first Cue then the console will treat this Fade-In automatically as if the Infade Fade was pulled slowly up from 0-100% for each single Parameter with their individual timings.

Once this first Infade has finished the Cuelist then crossfades its values from Cue to Cue.

3.When a Cuelist is started with A/B Crossfade then the Fade into the First Cue again is treated as an Infade into the Cuelist while any subsequent Cue will later be crossfaded from the last Cue.

If you want to try this out then we suggest to create two (or more) Cuelists with Base Values and Effects and put them all onto Faders which should be configured to behave as "Infade Fader". Then start running the first Cuelist, add a second one maybe at 50% and so on – the console will always create a useful live mix of all active Cuelists weighted with their Infade Fader Settings.

CUELIST AND CHASER PLAYBACK

1.   Manual Cuelist A/B Crossfade

V2 introduces real A/B Crossfade Faders for Cuelists. These Faders can be used to manually crossfade between Cues.

·   The A-Fader controls the Infade of Up-Fading Dimmer Parameters and all other fadeable Parameters

·   The B-Fader controls the Outfade of all Down-Fading Dimmer Parameters

It is possible to use either a combined A/B Fader or separate A and B Faders for splitting up A/B Crossfade into 2 Faders.

A manual Crossfade to the next Cue will start automatically when all of the following conditions are met:

·   A and B fader are both either in 0 or 100% position. If not they need to be moved to either 0% or 100% position first.

·   The next Cue is a manual Go Cue. Manual crossfade does not work with automatically triggered Cues.

·   The Cuelist is not set to "Learn Timing"

·   The Cuelist is not configured to be a "Chaser"

The Crossfade function will run the next Cue exactly as it would run automatically with its internal timings. This means that it will take into account all delay and fade timings - even if they are individually given fade and delay parameters and scale them accordingly across the 0-100% Fader range. 100% corresponds to the longest Delay+Fade Time of all parameters that are affected by a Fader.

Pressing Go while crossfading manually will cancel Manual Crossfade for that Cue and complete the current Cue in the remaining time - based on the current fader position.

Note: Using only A or B fader won't work since the Cuelist can only advance to the next cue during crossfade if A and B faders are moved to the end of fader track. So separate A/B Faders always need to be used in conjunction with each other.

Configuration of Fader as A, B or combined A/B Crossfade Fader is done through the "Edit → Fader" Dialog. Therefore Cuelist has first to be linked to the Fader and then needs to be configured to the corresponding Function.
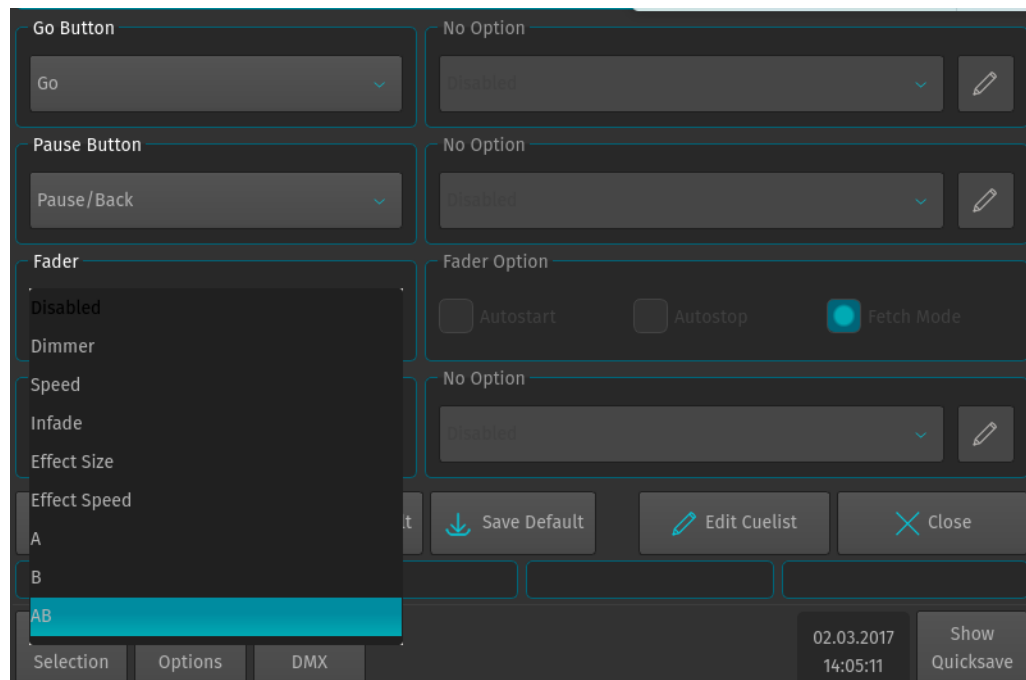
Cuelist vs. Chaser Mode

Cuelists can be configured to "Chaser Mode" in the "Edit → Cuelist" Dialog. Chasers offer a reduced functionality and behave differently in some several cases compared to Cuelist. A Chaser will:

- Disable Cue Timings such as In/Out Fade and Delay Timings. All timings will be replaced with global Fade and Snap Timings which are part of the Chaser configuration options.
- Disable Cue Trigger configuration. Instead global Chaser Trigger Options from the Edit Menu will be used.
- Disable Move in Black functions
- Disable Command Delays (will always use 0s command delay)
- Ignore Timecode and Learn Timing Functions
- Disable "Add Blank Cue" and "Add Off All FX" Function
- Enable Chase Master Trigger Selection and Sync Functions
- Enable Chase Fade and Snap Settings
- Enable different options for Chase Playback Order

For more details, see "Chasers" on page 20.

2. Speed Master Operation

Speed Master Fader are used to synchronize Cuelists and Chaser to a given Master Speed clock. The console supports up to 4 Master Speed Faders. Master Speed Faders can either be counting in Seconds or BPM (see Setup Chapter below).

It is important to note that Speed Master Operation of Chasers and Cuelists differs:

For Cuelists individual Cues have their own trigger settings. If a Cue is set to trigger on a Master Speed Fader Event then the Cue will trigger whenever the next tap event from a Master Speed Fader is generated. If all Cues of a Cuelist are set to trigger on a Master Speed then the Cuelist will stay in sync with the Master Speed. If multiple active Cuelists are configured this way then all these Cuelists will stay in sync with each other and with the Speed Master.

For Chasers there are no individual Cue trigger settings. Instead the Chaser has a global Trigger source for all Cues which can be selected in the Chaser Setup Menu. If a Chaser is set to trigger on a Master Speed then each time a Cue has been started the Chaser will update the timing of the next Cue with the current Master Speed Trigger Time. So in essence the Chaser will run with the same speed as the Master Speed, but won't sync to it. If multiple Chasers are being run which trigger on the same Speed Master then these Cuelist will all run with the same speed, but will be offset depending on the time they have been started.

To the Chaser behavior intentionally differs from Cuelists behavior regarding Speed Masters. If the user wishes to change the Chaser behavior to match the Cuelist behavior then it is also possible to configure a Chaser to Sync to its trigger source. The Chaser therefore has a custom setting "Sync to Source" to brigde the gap between Cuelist an Chaser trigger behavior.

3. Fade Master Operation

Fade Master Fader are used to modify the crossfade behavior from Cue to Cue within a Cuelist or Chaser. The console supports up to 4 Master Fade Faders. Master Fade Faders can be configured to either be relative or absolute (see Setup Chapter below).

It is important to note that Fade Master Operation of Chasers and Cuelists differs. Behavior is also different based on the type of Fade Master: Relative or Absolute. Thus there are 4 possible combinations:

- Absolute Fade Master for a Cuelist
- Absolute Fader Master for a Chaser
- Relative Fade Master for a Cuelist
- Relative Fade Master for a Chaser

In general absolute Fade Master will replace or set the default Fadetime (In-Fade) of a Cue to a fixed value. Relative Fade Masters will scale a given Value according to a reference value. The reference Value will be different for Cuelists and Chasers: For a Cuelist the reference Value is the given Cue Timing. For A Chaser the reference Value is the Master Trigger Time.

More details about the Master Fade behavior can be found in the "Cuelist and Chaser Playback" and "Chasers".

4. Effect Size Master

The Effect Size Master Combobox select the global Effect Size Master for a Cuelist. Use this function to scale the Effect Size according to one of the 4 global Effect Size Master Faders. "None" disables the Effect Size Master Function.

All Effects within the Cuelist will be scaled according to the Size Master Value. Note the Size of the Effect will also depend on other parameters such as the current Infade Fader (if configured), Dimmer Fader (if Effect is Dimmer Effect) or current A/B Crossfade Status.

5. Effect Speed Master

The Effect Speed Master Combobox select the global Effect Speed Master for this Cuelist. Use this function to scale the Effect Speed according to one of the 4 global Effect Speed Master Faders. "None" disables the Effect Speed Master Function.

The Speed of all Effects within the Cuelist will be scaled according to the Speed Master Value.

Please not that the Effect Speed will also depend on other Faders such as the Cuelist Speed Master.

SHOW SETTINGS

The Show Settings Menu has been changed to incorporate a new Sub-Menu Column for generic Show "Timing Setup".
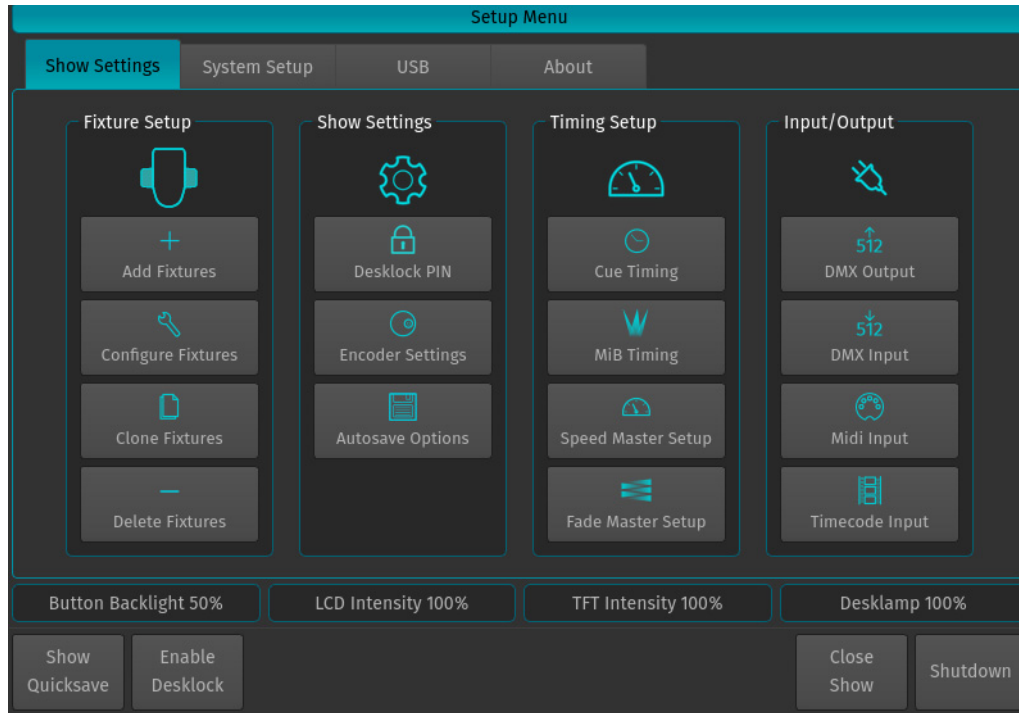
1.   Cue Timing

The "Cue Timing" Button will open the new Editor Dialog for Changing Cue Default Timings. These timings will be used for all new Cues that are recorded afterwards. The Cue Default Timings will be stored as part of the Showfile. Cue Default Timings may be overridden by temporary Programmer In and Out Timings which can be set through the Record Toolbar. These temporary Programmer Timings will be reset whenever the Programmer is cleared or when the Cue Timings for the Show are being edited.
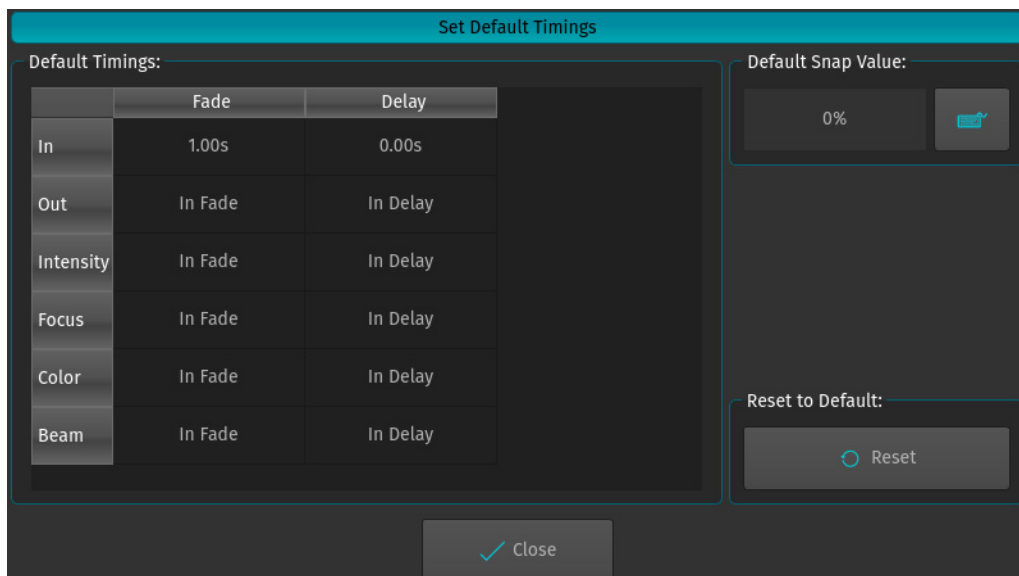
Selecting a Cell and hitting the Set Button or double-clicking a Cell will open a keypad Dialog to configure each timing.

The Default Snap Value can be edited using the Keyboard Button in the top right corner. The Reset Button will reset all Cue Default Timings to the Show Default.

2. MiB Timing

The MiB Timing Button opens the new Editor Window for setting up the Move In Black Default Fade and Delay Times. These timings will be used by all MiB Cues as long as the user hasn't specified custom MiB Fade and Delay Timings inside the MiB Cue.

The keyboard buttons next to the timing label will open a keypad Dialog to change the MiB Fade or Delay Timings.

The Reset Button will reset both timings to Show Default.
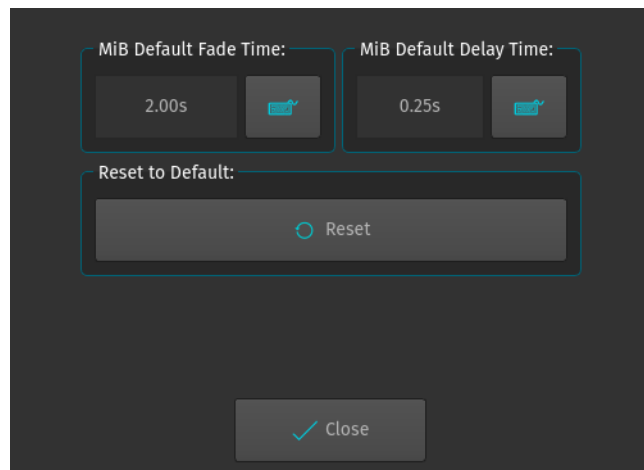
3. Speed Master Setup

The Speed Master Setup Button will open the new configuration Dialog for Speed Master Setup 1-4. Each Speed Master may be configured to either count in seconds or BPM. For each setting a Minimum and a Maximum value can be set. These Minimum and Maximum values will be used by Faders that have been linked to the according Speed Master as their Min and Max values.

Settings and Timings can be changed by selecting a Cell and hitting the Set button or by double-clicking a Cell.

The "Reset All" button will reset all Settings to Show Default.
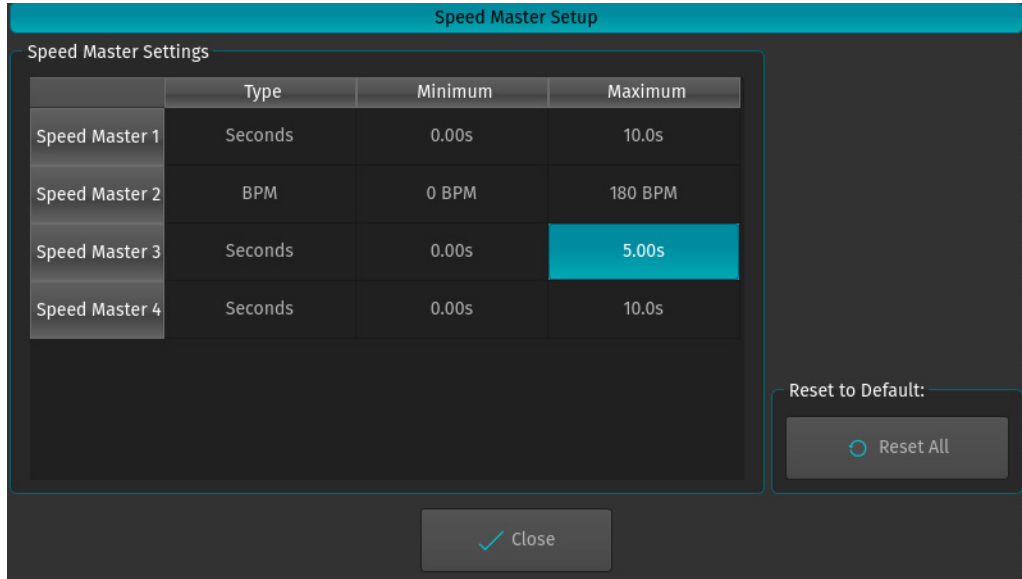
4.   Fade Master Setup

The Fade Master Setup Button will open the new configuration Dialog for Fade Master Setup 1-4. Each Fade Master may be configured to either be an absolute or relative Fade Master. For each setting a Minimum and a Maximum value can be set. These Minimum and Maximum values will be used by Faders that have been linked to the according Fade Master as their Min and Max values.

Settings and Timings can be changed by selecting a Cell and hitting the Set button or by double-clicking a Cell.

The "Reset All" button will reset all Settings to Show Default.
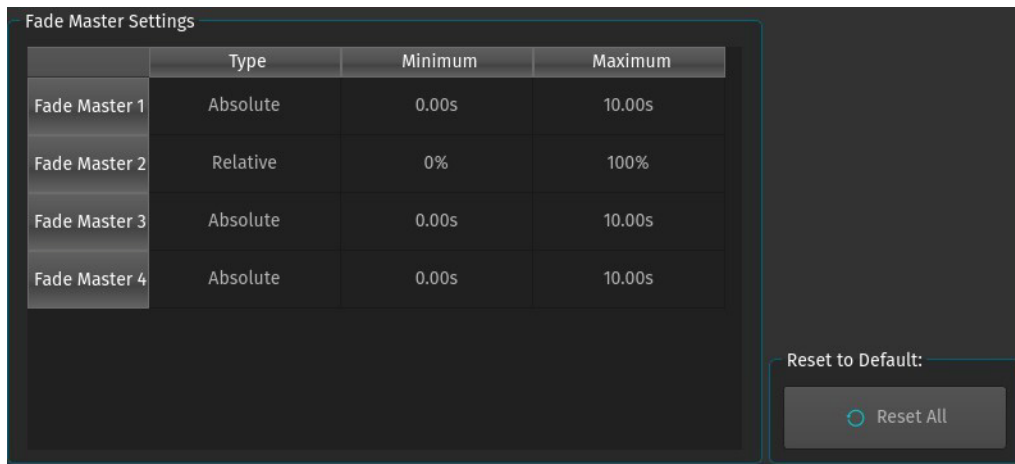
NUMBERBLOCK CHANGES

1.   Referring to Cues

All Numberblock commands that refer to Cues have been changed in order to now work with Point Cues and Cue ranges. E.g. "Delete Cuelist 1 Cue 1.1 Thru 10.9 Enter". Cues may be addressed as

- Single Cues – e.g. "Cue 1" or "Cue 1.12"
- A Range of Cue – e.g. "Cue 1 Thru 5.5"
- An unlimited Range of Cues – e.g. "Cue 1 Thru"
- A mix of the above using "+" and "–" – e.g. "Cue 1 Thru 5 – 2.8 Thru 3.3 + Cue 7"

2.   Moving and Copying Cues

Please refer to Chapter "Moving and Copying Cues" above.

Shift + Open = Close

"Shift + Open" is a new hotkey for closing the currently active Window on the internal touchscreen.

FIXTURE LIBRARY

The new software release contains an extended Fixture Library Editor and an updated Fixture Library containing many new Fixture Profiles.

1.   Library Editor

V2 extends the Fixture Library Editor with 2 new columns for MiB Settings and a new Range Editor.
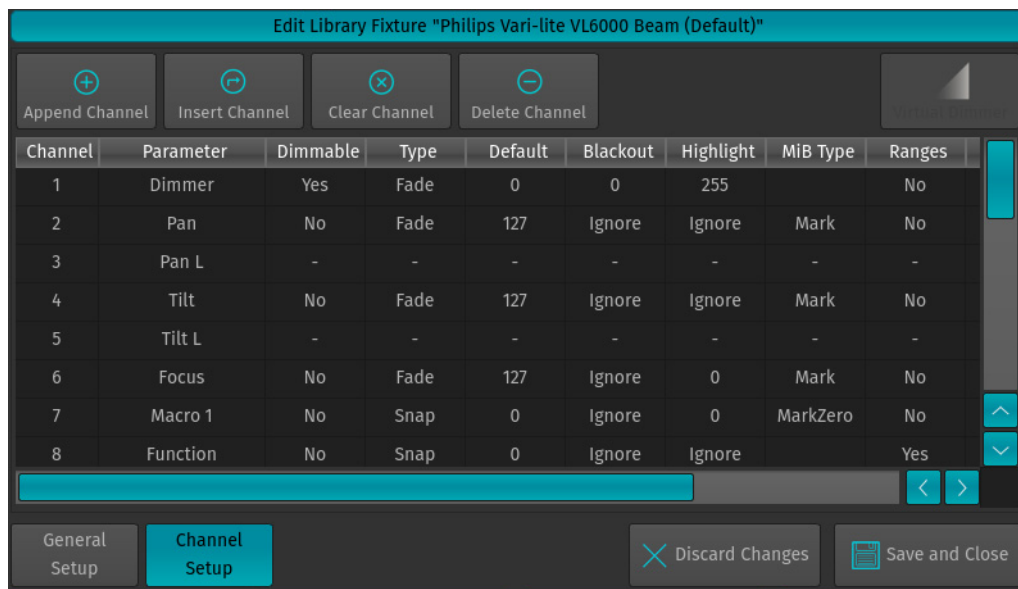

MiB Editor Flags

The Fixture Library Editor has been extended with a new column indicating the MiB Type of a Parameter. Available Settings are:

- "Empy Cell" – MiB will not be performed on this Parameter.

- "Mark" – MiB is active for this Parameter. The Parameter will use MiB Fade and Delay Times.

- "Mark Zero" – Mib is active for this Parameter. The Parameter will use the MiB Delay Time, but won't per-form any Fade afterwards to go to its destination Values. Instead it jumps direktly to the destination value once the MiB Delay Time has passed.

The MiB Type can be changed by selecting one or more Cells of the "MiB Type" columns and hitting the Set button to cycle through the available options.
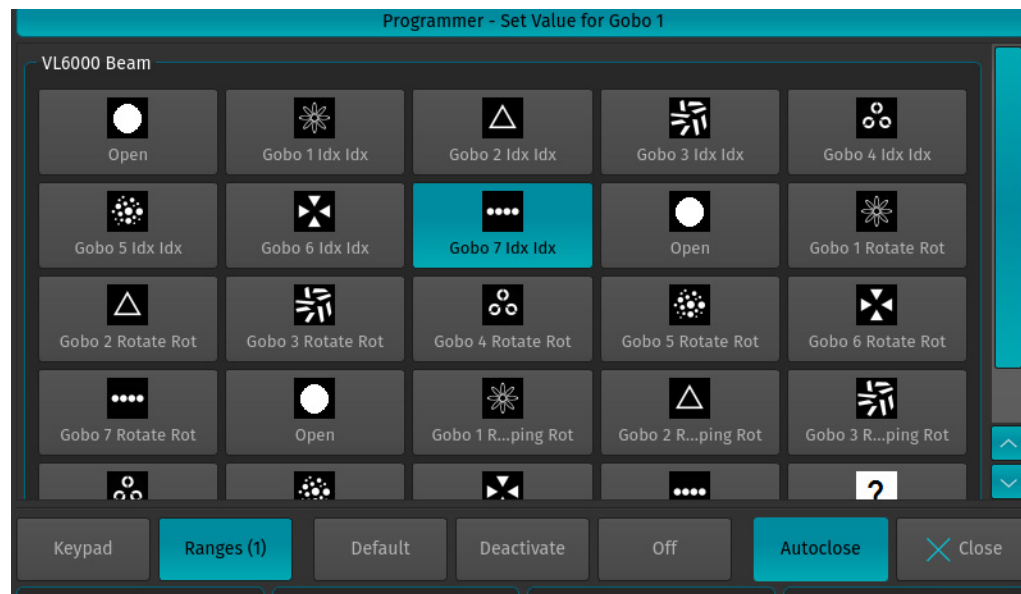
Range Editor

The Fixture Library Editor has been extended with a new column indicating the availability of "Ranges" for a Parameter. Possible values are "Yes" and "No". Ranges can be edited by selecting a Cell and hitting the Set button. This will open the Range Editor for a Parameter.
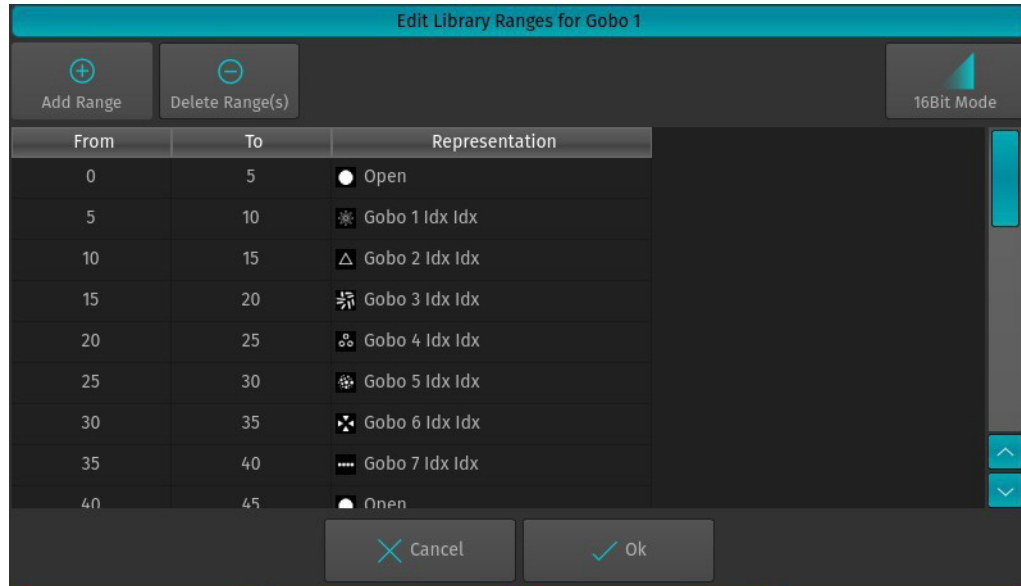
The Range Editor will automatically sort all ranges in ascending order of their DMX values. Ranges are used for visual representation and user friendly editing of DMX Values. Currently ranges are evaluated in the following windows:

- Programmer Table
- Programmer "Set Value Dialog" which can be opened by pressing the Encoder Button or by clicking the Encoder Label inside the Programmer Value Table.
- Output Window

A more detailed description about ranges can be found in the Document "500ML V1.21 RC1 Software Release Notes".

16-Bit Mode

The Range Editor window can be set to 16-Bit DMX Value representation using the "16-Bit" button in the top right corner. In 16-Bit Mode the DMX values will be represented in the Format:

"16-Bit Decimal" ("8-Bit Decimal High Byte", "8-Bit Decimal Low Byte")
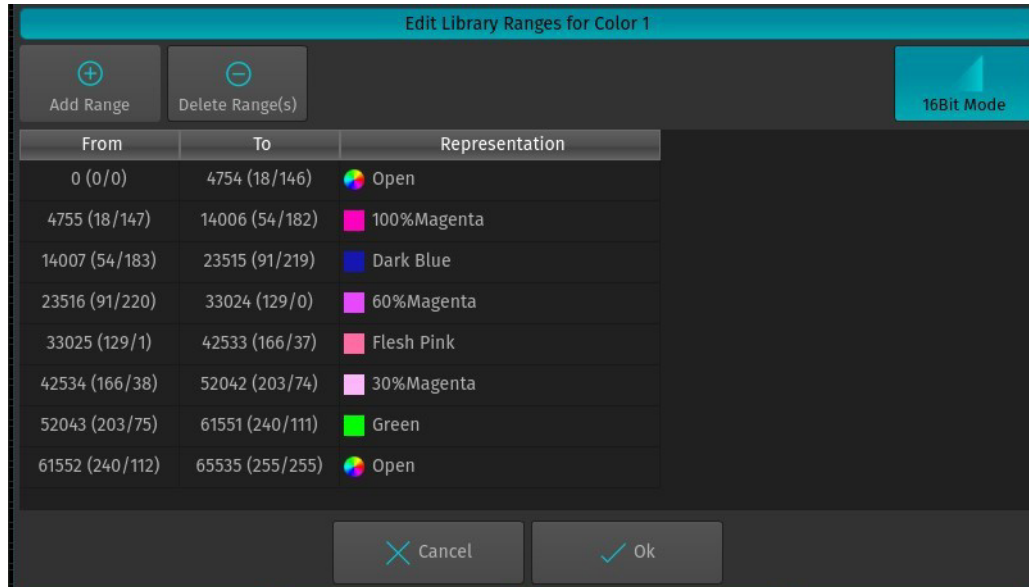
Adding and Deleting Ranges

Ranged can be added or deleted by using the "Add Range" or "Delete Range(s)" buttons in the top left corner. It is possible to delete multiple Ranges by selecting more than one row before hitting the Delete button.

When a new Range is added the "Add Range Dialog" will pop up asking for the range parameters.

Range Min/Max DMX Value

The DMX Min/Max Value will define the range of DMX Values that is covered by this Value representation. If the user later uses the "Set Value Dialog" inside the Programmer Window to select one of the ranges of a Parameter (e.g. by clicking a Gobo Thumbnail) the Console will calculate the center value between DMX Min and Max Value to be set inside the Programmer.

Ranges cannot overlap. If a new range is added which overlaps an existing range then the existing range will be deleted.

Range Name

Every range should be described with a Name. The name will be used throughout all visual representations of the range. I may be left blank, but we strongly suggest setting it to a descriptive name.

Icon Representation

Every range can be optionally also represented with an Icon. This Icon will be either selected from a list of available Icons (e.g. Gobo Thumbnails) or generated by the console (Colors). The Icon representation type has the following settings:

- "None" – No Icon will be used
- "Icon" – The user has to select one of the available Icons
- "Single Color" – The range is represented by a single Color (e.g. Full Color of a Color Wheel)
- "Dual Color" – The range is represented by two Colors (e.g. A Split Color of a Color Wheel)
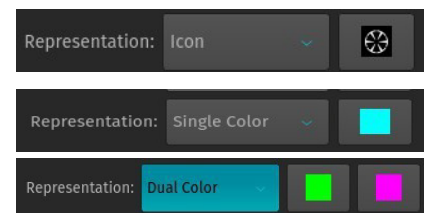
The List of available currently contains more than 5000 available Icons. Uploading of user– defined Icons is not supported.
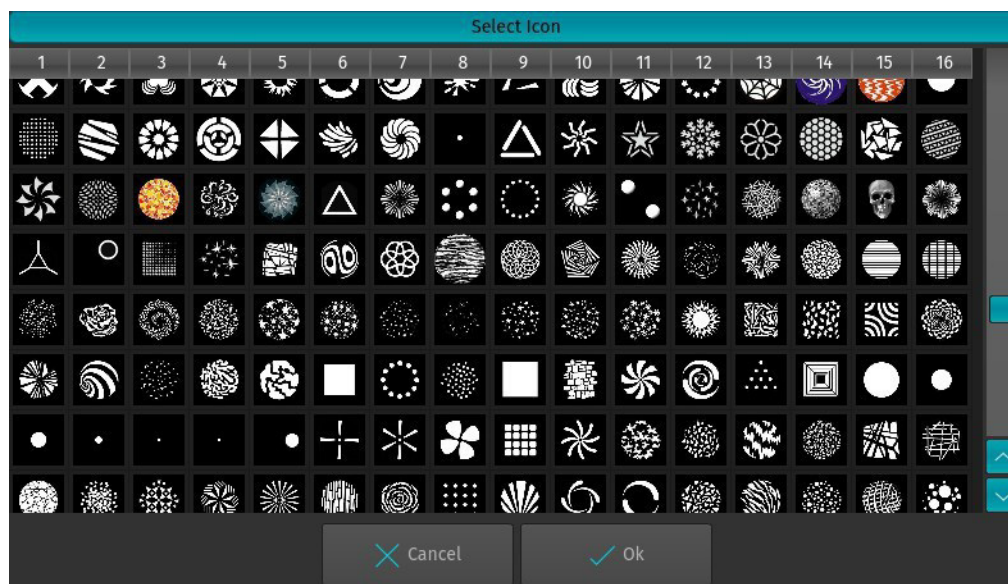
Editing Ranges

Ranges can be edited by selecting a row inside the Range Editor an hitting the "Set"button.

2. Library Content

Fixture Library has been updated to latest version from 23.01.2017 Manually added VL6000 Beam
The library contains a total of 9635 Fixture Profiles.