

PHOENIX4 Pro/ProPlus

manual



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Version of this instruction manual: PHOENIX4 Pro/ProPlus

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1 Introduction

PHOENIX Showcontroller was created from laser software developed during the 90s which was successively further developed by us in order to combine the programming of music, laser, light and video technology. Our and our customers' intent from the beginning was to be able to create **laser shows** and direct output them with a single PC or laptop – affordably and with as little effort as possible.

Progress in computer technology let us approach our goal quickly. Create **multimedia shows** in a very short amount of time, with or without a **laser show** that will thrill your audience.

With a single PC control hundreds of DMX controlled devices, lasers, video screens, pyrotechnics etc. The advantage of **PHOENIX4** is that you can completely program the laser show in advance on your computer even without laser hardware.

Thanks to the **PHOENIX4 3D Visualization** you can simulate complex 3D stages incl. laser, video and light effects on your PC and view them in video quality. Show your customers what your laser show will look like in reality – on your notebook as if you were on location.

Similar to a video editing software you can move around and change the length of all laser figures, animations, lasers and DMX scenes, all effects and movements in real time for a perfect laser show synchronized to music. All changes are immediately displayed without time for pre-calculations as output in the **laser show**.

Select a short musical piece that you want to illustrate with effects. (Generally, we recommend not using more than 10-20 seconds of music) Then let it run permanently in a "loop" (a repeating loop). Simply insert all "events" (The global term for all effects, animations and scenes) in the timeline of the **laser software** and adapt all "events" perfectly, with regard to time and visually by changing the parameters.

With the "loop function" you don't need to restart the already programmed laser show sequence every time. Simply change the events "LIVE" during loop play. Once the short music segment is created, you simply open the loop and shift it by 10-20 seconds to continue programming. This type of laser show programming is extremely efficient and allows you to program a laser show in no time.

Alternatively and/or additionally, it is possible to insert previously created and stored effects / DMX scenes etc. using drag 'n' drop into the timeline of the laser / multimedia show or to insert them with the help of a MIDI keyboard / PC keyboard to the beat of the music - while the show is running.

"Record-Programming" is the perfect method for effectively programming particularly fast pieces of music in a short amount of time – e.g. with single beams of your laser and fast animations. Once the actual show framework is assembled, you can continue to jump to any place within the show for fine tuning and to make corrections.

1.1. Philosophy:

PHOENIX Showcontroller is a multimedia control program focused on controlling laser show projectors. In a multimedia show that uses lasers programming light and video projections with precision is important. A laser show tolerates no movements asynchronous to the music and improper show programming will immediately be apparent to even inexperienced viewers. This was even more of an incentive for the PHOENIX4 developers to create software that is extremely easy to operate and very effective.

The laser software PHOENIX4 allows the user to combine up to 32 individual laser projectors, as well as more than 16,000 DMX channels (32 x DMX512 circles) and one video on a single timeline and lets them operate in perfect sync with the music.

A clean structure for programming is indispensable which is passed on to the user quickly in PHOENIX4. We deliberately chose not to use traditional "lighting control panel methods" for the typical laser show use, but integrated additional features for live situations to be able to react to unforeseen changes. PHOENIX4 PRO is primarily NOT A LIVE controller – even if PHOENIX4 offers more options during LIVE uses than many of the "standard software solutions". PHOENIX4 PRO/PROPLUS was developed mainly for shows with time code synchronization (e.g. music) that are programmed in advance and frequently refined to absolute perfection many days, weeks and months in advance. For pure LIVE applications we created PHOENIX4-LIVE to provide you with all the imaginable options in laser software for interactive operation.

1.2. Hardware Concept

A special USB and network interface was developed for the PHOENIX4 laser software which is suitable for all monochrome and color standard ILDA (RGB) laser projectors. It does not matter whether the laser was made in the USA, China or Europe – the only thing of importance is that it is 100% ILDA compliant. It should be noted here that the micro USB interface only outputs 3 colors + intensity aside from DMX-in and DMX-out and the X/Y signals. That means that color crystals that are mainly used with gas lasers or high end laser projectors with multiple diodes can only be properly addressed in part! For this clientele the use of the PHOENIX-NET interface is necessary. This interface outputs 5 color channels + intensity. The scanners are accessed with 12 bits in the USB version. For the network interface it is 14 bits which results in a higher resolution of the scanned objects. The maximum scanning speed for animations is limited to 50kpps with the PHOENIX Micro-USB-Interface. PHOENIX-NET, however, allows scan rates of 200kpps – which may be required for raster frame illustrations. Finally, the more convenient connection of the LAN interface (that can also be easily operated via W-LAN) makes the switch to this professional solution worth it for many users. An advantage of the USB interface, on the other hand, is the somewhat faster setup and the simple connection. In addition, no additional external power source is needed for the USB Micro Interface!

Note: All PHOENIX interfaces can be temporarily disconnected from the PC during laser output and reconnected without causing a laser interruption or software error – as e.g. could happen during use via a W-Lan connection when the signal is interrupted within the Windows network.

1.3. Design of PHOENIX4

PHOENIX4 has a very simple design and can be intuitively operated after a brief training period. As is common in professional programs, the basics are quickly learned, however, deeper program understanding and tricks require more time and dedication than you might assume in the beginning. The "average" user later distinguishes himself from the

“professional” in the perfection of the output animations for which most viewers cannot guess how this or that was programmed.

The PHOENIX4 Showcontroller is being further developed daily and with our customers' help – that is, you – new effects and options are constantly made available. Most good ideas (not to say 90%) come from our customers' comments and requests. Therefore, good communication with our customers is very important. We always make sure that our programming philosophy is implemented such that our users immediately understand, without much training, how and what is possible with a new effect and how to use it.

2 Installation

2.1. Hardware requirements for the laser software

All statements are absolute minimum requirements and are valid only for the version released by 01.01.2010! Development continues constantly and the requirements increase accordingly. Therefore, please ask your dealer or us, if appropriate, in advance whether the performance is still adequate if you still wish to use an older PC.

- Windows PC with Windows XP, VISTA or Windows 7 (It is recommended to use XP and Windows7)
(No official support for virtual environments and the Mac platform)
- min. 2 GHZ (recomm.: Duocore 2x2 GHZ), 2GB RAM internal memory (recomm. 4GB), 10 GB hard drive, 128MB graphics card (recomm. 512MB) with OpenGL and DirectX 9.0 (or higher)
- 15" monitor with min. XGA (1024x768) resolution (recomm. 1240x1024), however, it is best to work with 2 monitors.
- Keyboard, mouse

Optional:

- External DMX controller
- Midi keyboard etc.
- Joysticks
- Touchscreen
- DMX devices of any kind

2.2. Installation of the PHOENIX 4 laser control software

Since we continuously update the PHOENIX4 laser software, you are best off, downloading the latest version from our homepage. You can retrieve the latest version at <http://www.phoenix-showcontroller.de> in the “Updates & Downloads” area.

After inserting the CD or downloading the latest kit from the website, please run Setup.exe. If you already have an old version of PHOENIX on your computer, you must UNINSTALL it beforehand, and manually delete the entire folder “PHOENIX Showcontroller” after uninstalling it. (Of course, you should save any personal shows, audio files etc. separately somewhere else beforehand). After successfully uninstalling the software, you can perform the software installation as usual. Follow the common Windows input prompts and install the software on your hard drive. After completing the download, you can start the software from your desktop using the “Phoenix Showcontroller” icon.

Note for learning – PHOENIX4

To quickly understand PHOENIX4, you should read all the way through these instructions once – without having opened PHOENIX4. Once you have internalized the theory, repeat this step while trying it on your PC. The past has shown that this style of learning is faster and more efficient than when you try out the program at the same time as you read it the first

time around. In addition, you can watch our video tutorials that were created in conjunction with this manual. Please check our website for further information about it. The video tutorials are being added over time.

Exceptions for Windows Vista / Windows 7

Note: For Windows VISTA / Windows 7 versions the software MUST be run in administrator mode. This is set as the standard default.

2.3. Hardware Installation

The PHOENIX4 laser software can operate USB interfaces as well as network interfaces, so it is capable of controlling up to 32 lasers even with only network interfaces. If the lasers are supposed to be individually operated, then you need one interface per laser.

2.3.1. Hardware installation (USB interfaces)

Connect and install the interface only **AFTER** successfully installing the laser software! The drivers for the USB interface can then be found in the directory “..\Program Files\Phoenix Showcontroller\Interface Drivers”.

Installation of the USB interface:

1. Plug the USB cable into the black interface and the PC
2. A Windows installation pop-up window will open
3. Select to **NOT** search in the Windows Update (internet) for a driver...
4. Install the driver **MANUALLY!!!** Choose to select the driver from the known source. Otherwise Windows will not find the correct driver during installation of the first interface.
5. Enter the proper path for the driver:
...\Program Files\PHOENIX Showcontroller\Interface Drivers

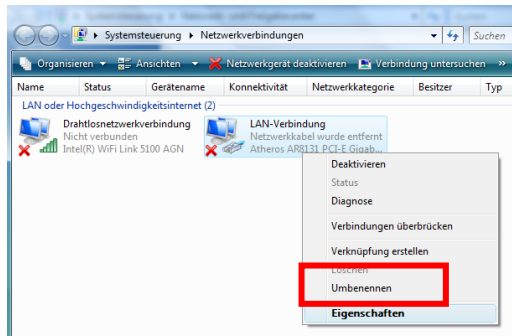
The laser interface will now be installed and can be used afterward.

2.3.2. Hardware (network interfaces)

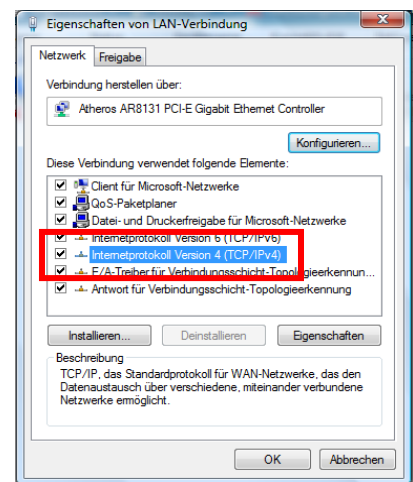
The PHOENIX-Net interfaces do not need to be installed separately. As soon as they are in the network, they are automatically located. Occasionally you have to allocate them an appropriate IP address, depending on the default setting of the network interface.

In order to allocate an IP address, proceed as follows:

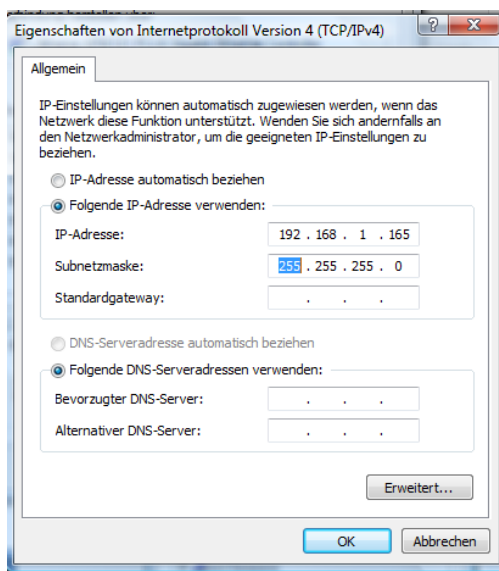
- 1) First set up your PC so that it gets e.g. the IP address 192.168.1.165 (e.g.) and the net mask 255.255.255.0. (The remaining fields remain blank!):



Open “Netzwerkverbindungen” (Network connections). Click on “LAN-Verbindung” (LAN connection) using the right mouse button and select “Eigenschaften” (properties).



Double click on “Internet protocol Version 4” to enter the IP address for the computer.



Enter the IP address e.g. “192.168.1.165” and the subnet mask 255.255.255.0. The other fields remain blank!

Click “OK” to close the window.

Your PC is now ready for connecting to the network using the LAN interface(s).

2.3.2.1. Setting up the PHOENIX-LAN interface

After preparing the PC the network interfaces also require corresponding IP addresses. Connect the interface directly to your PC using a network cable. (Possibly using a router/switch as well) For the initial setup you should always limit it to ONE LAN interface since the factory setup assigns the same IP address (192.168.1.100) to all LAN interfaces.

Open your default browser and type in the IP address "192.168.1.100" (WITHOUT http or www). A web window with the navigation menu will open, in which you can set up all interface settings. Switch to "IP-Setup" to enter the desired IP address. The IP addresses should be in the range of e.g. 192.168.1.101 to 192.168.1.115. The subnet mask always remains at the set value of 255.255.255.0! – After successfully making the changes you should restart the card by turning the power off, waiting 10 seconds and turning the power back on. The card is now configured to the newly set IP address.

Alternatively you can set „Automatic DHCP“, whereby the interface gets assigned its own, new, available IP address from the PC automatically at every startup. In that case the PC has to be set within the IP address settings to "Assign IP address automatically" and a DHCP service has to be active (usually from a router).

Currently you can run up to 32 LAN interfaces with one PC. This can also be used as a laser show backup function by connecting two PCs to the network and registering the same network cards on both! If the same show is started on both PCs at the same time and – for whatever reasons – one of the PCs stops running, then the other PC can immediately take over and continue the show! The interfaces are available again immediately after completion of communication with the first PC and can be accessed via the second PC. Therefore, you can start the same show in parallel on both PCs and can be assured that you have a show backup solution available in case of a failure.

3) As long as the network cards and your PC are on the same network, PHOENIX4 will locate the cards on its own and display them! If this is not the case, please check the network settings of your PC and the network interfaces once again.

Note: *There is no problem with operating network cards and USB cards simultaneously with one another.*

3 Support

On our website www.Phoenix-Showcontroller.de you can always find the latest information regarding the programming status and any news about the laser software Phoenix4 Showcontroller.

3.1. Software Updates

On the website <http://www.phoenix-showcontroller.de/support/downloads/> you can obtain our free PHOENIX4 and additional small programs for the PHOENIX4 laser software.

CAUTION: Please note that you must secure your settings and your adjusted laser shows as well BEFORE installing an update. Read about it in the chapter entitled „Updates“.

If you register your email address in our Update-Alarm Newsletter, you will immediately be informed of important updates (security / expanded features etc.). (<http://www.phoenix-showcontroller.de/support/update-lasersoftware/>)

3.2. Instructions

In the menu Manual you have access to the current version of the manual for our laser software PHOENIX4. Please note that you are currently holding the manual for PHOENIX4 in your hands, i.e., we will add and expand it from time to time. So please feel free to check our home page at irregular intervals: <http://www.phoenix-showcontroller.de/support/anleitungen/>

3.3. Online Updates

We take our job of providing you with perfect laser software seriously. We work on the software every day to expand its functionality and to optimize it. Therefore, it is possible that we will provide you with updates frequently which can be easily implemented using the automatic online update.

3.4. Video Tutorials

In order to introduce you to the varied possibilities of our laser software, we will also offer you our own video tutorials on individual topics on the internet.

3.5. Support Ticket System

We make every effort to always provide you with the best service. Since our laser software PHOENIX4 is being used worldwide in a huge range of application areas, we will implement a strict support concept starting at the beginning of 2010. For software questions, comments and requests we request that you initially contact us **by email**. Only in extremely urgent cases, do we request that you call us directly. Emails will be processed based on their receipt with consideration given to their different time zones.

Please note that we are currently offering entirely complimentary support. The support is independent of your term of use, which means that even if you obtained our software in 1990, this support is still free of charge. In order to maintain this complimentary service, we request that you contact us by email first if possible, before calling us. Otherwise, we cannot guarantee the complimentary continuation of this service due to the large number of users.

Please tell us **your concern in detail**, as well as the **software you used, the version, the operating system and your Dongle number**.

To look up your personal Dongle number, start “CAD” or PHOENIX4, select “About this software” in the “Help” menu. A new window will open and display your “Individual Dongle No.”.

Register with us on the website <http://www.Phoenix-Showcontroller.de> for the Update Alarm Newsletter, so that you can always be informed about new items.

For further assistance, ideas or reviews as well, we are happy to be always available at support@phoenix-showcontroller.de.

3.6. Online Access by Remote Maintenance Tool

With the help of our “OnlineHelp” software we have provided a remote maintenance option. That means that if you have exhausted the above mentioned support opportunities and we cannot assist you by email, we offer you the opportunity to grant us access to your installation of the PHOENIX4 laser software. For this, click on the “OnlineHelp” button in the program startup of the Phoenix4 software and mail your online id number to support@Phoenix-Showcontroller.de. **Contact us in advance in every case** to schedule an appointment for this!

4 PHOENIX4 Program Startup

After installation you can start PHOENIX4 by clicking on the desktop icon. Now insert the small orange USB Dongle into your PC. It will be recognized as an “HID – Human Interface Device” and self-install. You need NO additional driver for this.

The PHOENIX program startup will open. Depending on whether you installed the entire PHOENIX package or just the PHOENIX-LIVE kit, a selection of the programs to be started will be displayed or the **non-licensed** programs will be started with limited functionality in **DEMO mode**.

Note: You can open all programs with any license – however, you may not have laser output! In that case the program is running in demo mode. This way you have a chance to get an initial impression. You can obtain an upgrade anytime by email to be able to use additional or all features of PHOENIX4.



Options:

PRO: Starts PHOENIX4 PRO/PROPLUS – Showcontroller

LIVE: Starts PHOENIX4 LIVE

CAD: Starts the 3D Picture Editor for drawing your own graphics / logos

ShowPlayer: Date planner for starting shows (for PHOENIX4 – PRO/PROPLUS users only)

HardwareCheck: For checking the connected hardware – without using PHOENIX4. Can also be used for objective scanner checks and performance tests!

MediaConverter: Optional available MediaConverter for transforming pictures, flash (SWF), videos, vector (SVG) and ILDA files into PHOENIX4 optimized animations.

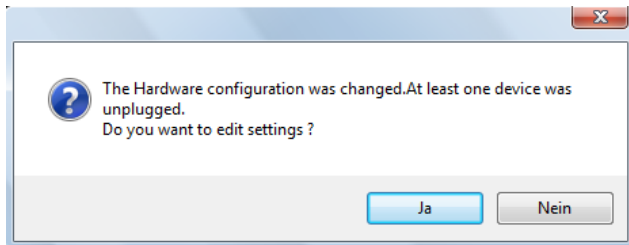
Online Help: Remote access to your PC by the PHOENIX Support Team

Videohelp: Opens the PHOENIX4 Showcontroller website for current tutorials.

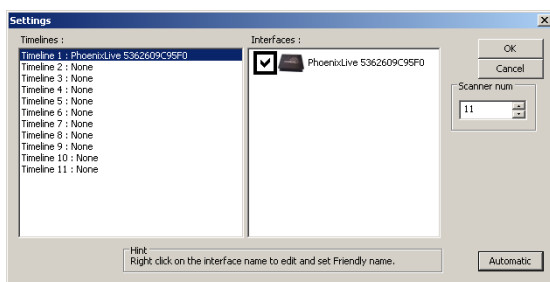
5 Possible Settings

5.1. Interface Options

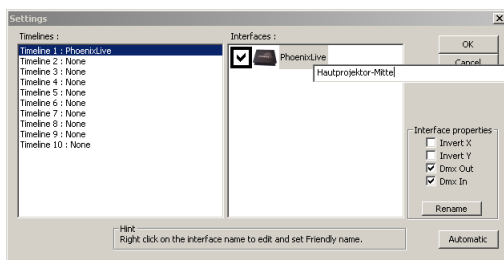
Upon program startup PHOENIX4 automatically recognizes which and how many interfaces are connected to the PC. A message window displaying a changed hardware configuration will open:



Select “JA” or “Yes” to adjust the settings of the interface. If you happen to select “Nein” or “No”, the previous settings will not be changed which could result in no output or output on the wrong interfaces...



If you clicked on “Ja” in the previous window, then you will see the following window. Select the appropriate interfaces here, or click on “Automatic” –PHOENIX4 will then assign the interfaces to the individual timelines in order. The assignment will remain in effect until an interface is added or deleted.



The names of the interfaces (e.g. “main projector-center”) can be changed anytime in the PHOENIX4 “Remap Interface” settings – from outside of the software as well! Right click on the name of the interface. A text window will open for you to enter the name. The name assignment is completed by pushing the “Enter” key.

You can also enter the remap-interface window at any time from within the software. Click on the menu item “Projector” and select the entry “Remap interfaces...”. Additional interfaces can be connected or removed – anytime – even without restarting the software.

Note: PHOENIX Showcontroller can currently manage up to 32 interfaces (ProPlus License). PHOENIX-LIVE, however, only a max. of 8!!! If the interfaces changed upon the next program start, then the remap-interface window will reappear. If no change occurred, the software starts without any messages.

5.2. Basic Settings for the Laser Projector

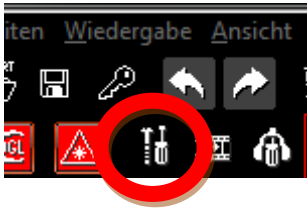
5.2.1. Test Pictures

Every laser projector has different scanner settings depending on the equipment quality. Scanner settings include in addition to the scan speed (speed of the scanner) also important information regarding the distance between and number of visible and invisible (blanked out) points as well as waiting times at the edges (to depict hard edges) etc.

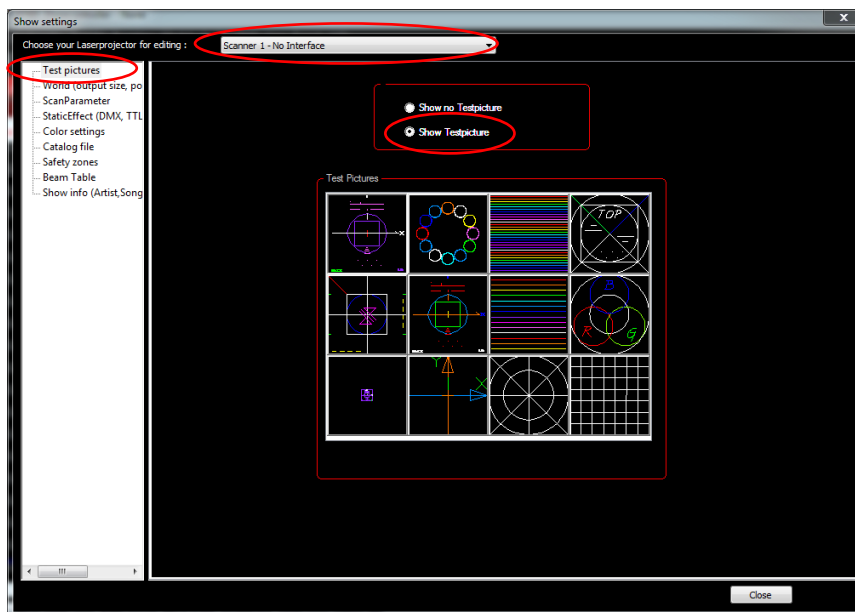
Due to the different components within the laser it is very difficult to set up standard values that are optimal for every laser projector! Therefore, you have to enter the values for each one of your laser projects once to obtain the best possible results! Every manufacturer or projector might have different values!!!

Proceed as follows:

Click on the “Settings button” to be able to adjust the general settings.



The settings window will open. The first page will display the “Test pictures”.



Select the laser to be processed first.

Then click on one of the test pictures

Then switch to the “scan parameters”

5.2.2. Scan Parameters



In this dialogue window all settings for optimizing the scanners can be adjusted. The most important and most effective settings are:

„PointRate“ – Enter the number of frames here that should be output. An optimal value generally is between 27-35k.

CAUTION: *If you set the value too high, the scanners can suffer irreparable damage. You generally recognize this when the image is completely distorted. This overloads the scanners and can damage them.*

Interpolate MaxDistDrawn: Insert additional points between two vector points (e.g. the first and last point of a line). A value between 800-1500 should be targeted. More or fewer points tend to decrease the picture quality excessively.

Extra PreBlanking Points on/off: Number of points added to the first or last point of a blanked out line. These ensure that the line stays in the correct position at its ends. Adjust the value such that NO extended line is visible behind the first and last points of the remaining figure in the test pictures. The point should not be brighter (hotspot) either than the points of the remaining figure.

Extra PostBlanking Points on/off: Number of points added to the first or last points of a drawn line. Adjust the value such that NO extended line is visible behind the first and last points of the remaining figure in the test pictures. The point should not be brighter (hotspot) than the remaining drawing.

ToStartPoint: Typically is only used with gas lasers with crystal insert. Inserts additional points at the beginning of a frame. This value can be set to 0 for DPSS lasers to avoid unnecessary loss of performance. Otherwise, leave it at 20.

Interpolate MaxDist SoftColor: Upon activation of the check box “Softcolor” in an animation event a color transition is created between two vector points of different colors. The difference (softness) of the color transition can be adjusted with this value. The higher the value, the “softer” the transition of the colors into each other.

Interpolate MaxDistSoftBlank: Similar to SoftColor here the distance of the threshold value between the first and second drawn point is indicated. If the checkbox “SoftBlank” is activated (!) in the animation, every line is in principle threaded at its ends.

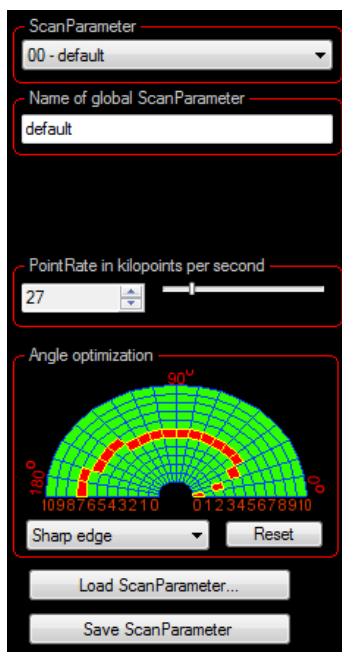
Note: The overall brightness of DPSS laser systems can drastically decline because the blanking is too “slow”. For gas lasers with crystals soft blanking is no problem.

MinMaxdistSoftBlank: To avoid having every small line fade in and out in the “Interpolate MaxDistSoftBlank” function, you can specify the minimum length of lines here. Otherwise it is possible that the line will disappear altogether when fading in and out...

Issue a test picture and adjust every value one after the other such that the drawing flickers as little as possible and still is not distorted. Pay particular attention to the end points to ensure that they do not have any extruding lines or points that are too bright. These are adjusted with the values “ExtraPre” and “ExtraPost Blanking”.

Alternatively to using test pictures you can also push “Pause” DURING show output and then perform the scanner optimization in real time!

At the end you have to (!) name and store the scanner settings.



Enter the name for the scanner settings here. The next time the show is loaded THESE scanner settings are then loaded explicitly! All of the scanner settings are – just like the worlds, colors, etc. - NOT stored in the show. Only the name of the setting is stored with the show. The setting is deposited in a separate file on the PC with the listed name. I.e. if you were to call these scan parameters „default“ and store them, then these parameters are also loaded at the next startup. Only the name of the parameters is stored with the show, not the settings themselves.

The background is that if you send the show to someone else and he wants to immediately reproduce the show on his computer and with his laser system with its proper scanner, world and color settings, he only has to store his specific settings under the same name (here: default).

Please also note that you can work with up to 32 **different** scanner settings in a single show. In particular, for combinations of graphics and beam shows it is sometimes necessary to use different settings for the scanners. Later on in the “**animation**” you can see on the timeline, you can select which scanner setting you want to return to...

Note:

Scanner speeds are measured according to the ILDA Standard at an 8 degree displacement angle. In practice, however, a laser show is frequently output at an angle of up to 45 degrees which, of course, places a much higher burden on the scanners.

THEN the scan speed must not be exhausted under any circumstance. The following table could provide guide values which should only give an idea though.

We are not liable for possible damages due to improper settings.

Acc. Manufacturer information:	Recommended set maximum limit
20K	15k
30K	22k
40K	28k
50K	35k

5.2.3. Color Settings

Basically, there are only a few different laser systems. There are monochrome (e.g. green), 2-color (red/green), RGY (red, green, mixed color-yellow) and RGB (red, green, blue) on the solid state or diode market. Furthermore, there are gas lasers and high end diode systems with up to 6 color lines.

If you use a monochrome laser system, only gray values can be calibrated in the best case scenario. I.e. in the laser show dark colors (e.g. dark blue) are depicted darker than light colors (e.g. white). With RGY (red, green + mixed color-yellow) a few more colors have to be adjusted. The greatest challenge is posed by the 6 color lasers for which even fine color shades should be set within PHOENIX4 to obtain the optimal output. The procedure is principally always the same! For an **even** more color correct reproduction you can also reach for the color palette for multicolored lasers. Their adjustment is further discussed below. Up to 6 palettes are available. Every color is individually adjusted. The color depiction of an animation is then based on the color values set there according to the principle of the most similar color.

You should definitely connect your laser for these adjustments and point it at a screen to perform these adjustments...

Starting the Color Wizard:

To begin with start the scanner settings menu with the following interface:



Change to “Color Settings”

Selection of the scanner

Color matrix:

Output on the red channel

Laser performance

Output on the green channel

Output on the blue channel

Output on Intensity channel

Activate / Deactivate the Intensity Automatics

Overall brightness

Selection of the already optimized settings

Start of the calibration

Menu selection

Minimum/Maximum for each individual color

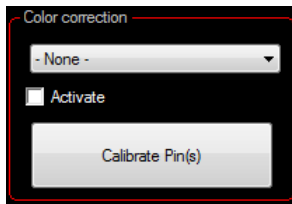
Colorshifting of the individual color channels. (Forward/Reverse)

To move all color shifts simultaneously...

The colored field of the “color matrix” on the left before the adjusters represents the color in the animation output. C0-C2 represent the color diodes in the projector. Generally, the assignment is C0=red, C1=green, C2=blue. The color matrix works with percentage entries, i.e., if the “red” channel says e.g. 1 / 0 / 0, then the “red” channel (physically at pin 5) has 100% output, for all colors in the animation that are only red in the show. In this case there is 0% output on the green and blue channels for the red color. You can use the color matrix e.g. to support the display of individual colors. If you increase the C1 value (green) for the depiction of the color „blue“ a little, e.g., to 0.8 then an 8% green output will be mixed in for every animation that has a blue component. This method allows you to slightly improve the visibility of a laser weak in blue with a green color component.

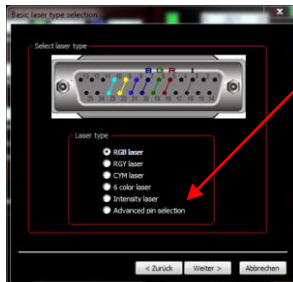
The “Min/Max” output indicator on the right-hand side displays when the laser diode starts producing a visible output and when it is outputting at full capacity. Since all laser diodes have different initial values it is very important for these indicators to be set correctly in order to make uniform fading in and out of the individual colors possible. When a white wave is e.g. faded out, then it should not display a red or green tint all of a sudden when getting darker... To achieve the most perfect color performance possible you have to run the automatic calibration of the “Color correction”.





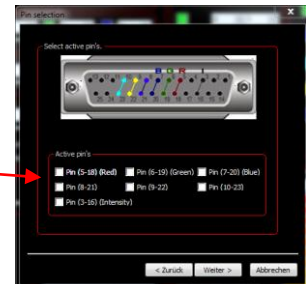
To do this, first activate the “Activate” checkbox above the **“Calibrate Pins”** button. Then click the button for the color correction.

A new window with setting options will open:



First select your laser type

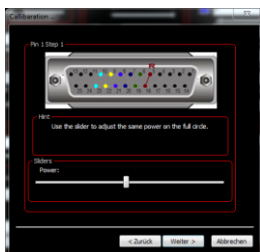
Or choose the “Advanced selection” directly



Click on „Next ->“ to proceed to the next step.

Now 2 red lines are projected onto the screen. Adjust the “Min” slider downward until you can barely not recognize the red line.

Adjust the “Max” slider to the right until you have reached the maximum brightness or the brightness no longer increases. This frequently occurs just before the end of the indicator scale since most lasers have already reached their maximum performance at approx. 95%.



Click on „Next“. In the next window a red circle consisting of two halves is now output from your laser. On your slider drive up the brightness of the second half until the brightness is identical to the other half.

Don't let yourself be fooled – These adjustments are extremely important and decide whether your laser will later display good or bad colors!!!



This procedure needs to be repeated several more times for EACH individual color.

In the second to last window you will have the opportunity to once again balance all colors against each other.



In the last menu you can save the settings.

Select the checkbox “Do you want to save”.

Enter a name into the “Name” input field and complete the color correction with the “Done” button.

Adjustments are possible in the color matrix later on as well. So it is e.g. possible to exchange all red colors with green colors on the fly or to generally add a bit of green to blue if you are using e.g. a 405nm diode...or if you e.g. have a monochrome green projector, you can simply map the red and blue color output onto the green diode by setting the C1 value to 1 and the C0 and C2 value to 0 for each of them.

Note: The changes are immediately visible and do not need to be rendered or similarly processed. You can even adjust and optimize the colors during the show!

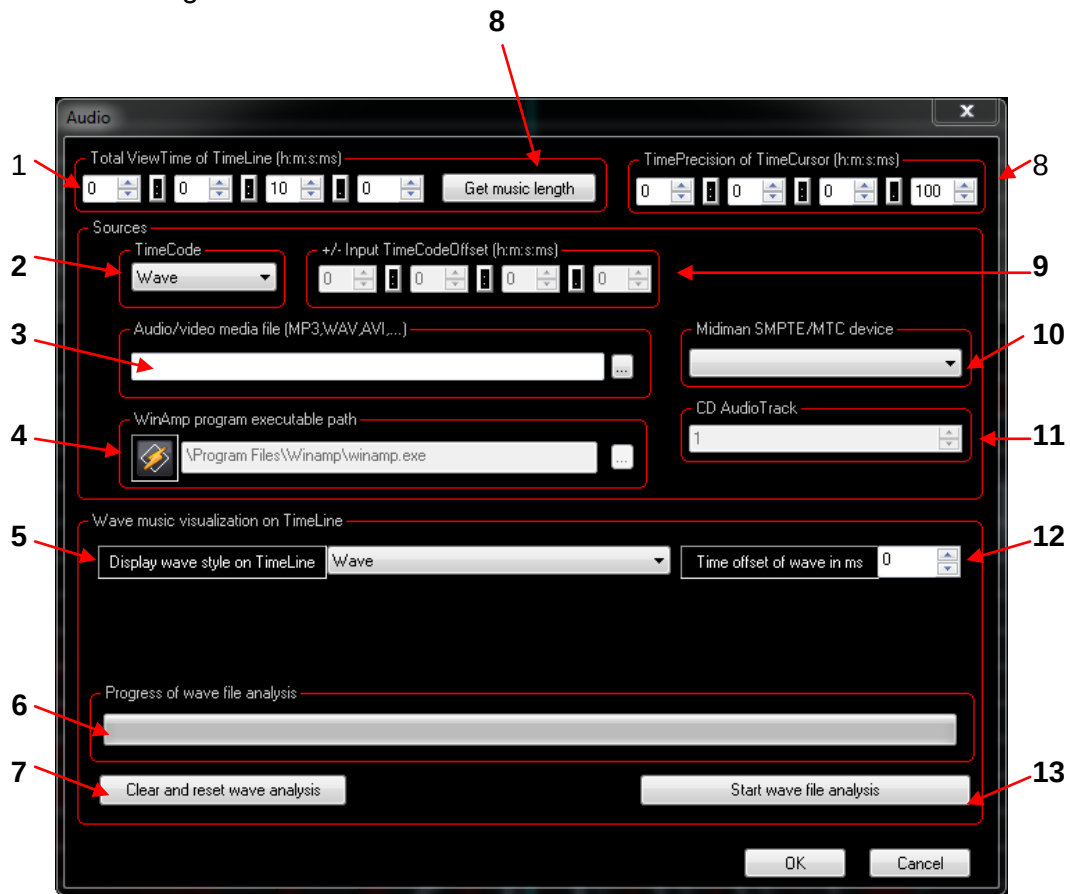
5.3. Synchronization Source (Audio) and Timeline Length

Synchronization

A laser show can generally also be run without music. However, “Synchronization” is indispensable to guarantee that the programmed show always displays identically at every location. To fix the synchronization source, open the audio settings window by either double clicking with the left mouse button on the white time display (58), the audio symbol or selecting the item “Settings...” in the “Audio” menu.



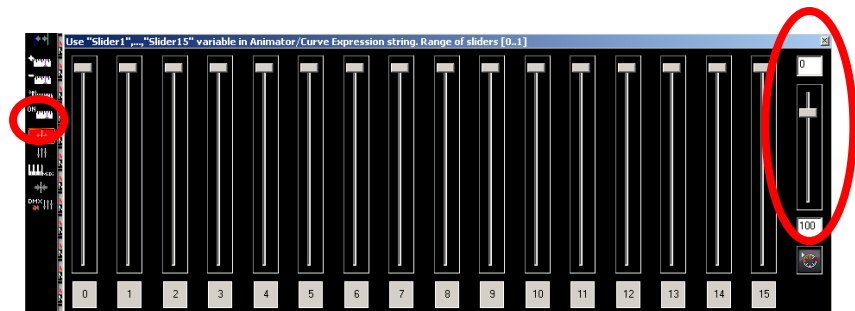
Menu “Audio settings”:



- 1) Displays the entire length of the timeline. Should always be of equal length to the music piece in the best case scenario.

2) Time Code Selection: This indicates which source the laser show is to be synchronized with. The choices are:

- a. **Time** Is the internal PC system time, i.e. 1 sec. on the timeline equals 1 „real“ second.
- b. **CD Audio** Plays the CD currently in the CD/DVD drive. The corresponding title is selected using option „11“.
- c. **WAVE** The timeline is synchronized to a WAVE file. The file is selected in the selection window „3“.
- d. **SMPTE** The show is synchronized using an optionally available SMPTE time code device. E.g., the M-Audio (or AKAI) Midiman 8x8/s SMPTE (32bit driver version 4.3.1) or „MOTU Micro Express 4x6 USB MIDI interface“ is supported. The corresponding device has to be selected after being connected in selection window „10“. Using the time setting „9“ the corresponding offset (time offset) from the start of the show can be set.
- e. **MP3** The timeline is synchronized to an MP3 file. The file is selected in selection window „3“. Please use MPEG-1 Layer 3 (MP3) files with constant bit rate (CBR).
- f. **LIVE** Timeline is synchronized to a variable speed. The speed can be variably adjusted using a speed controller from 0-100%. The speed controller can be accessed using the menu „View>Open new slider window for live control or the tool sidebar.



- g. **WinAmp** The timeline is synchronized to the WinAmp player. The „exe-Pfad“ (exe-path) of the WinAmp player must be entered in field „4“.

- 3) Is the path specification for WAVE and MP3 files.
- 4) Is the path specification for the WinAmp player (if required for synchronization)
- 5) For a WAVE file the WAVE waveform graph can be displayed.
- 6) Displays the current transformation status of the WAVE conversion.
- 7) Restores the previous WAVE waveform graph.

- 8) Interval size of the event movements on the timeline. Events are always inserted in fixed, invisible raster grids on the timeline. Standard = 100msec. Some music passages may, however, require synchronization in the one one-hundredth second range. This interval can be set here.
- 9) Offset setting for use of SMPTE for starting and synchronizing the laser show. When many different companies are producing a show together (e.g. music, laser, video, pyro, special effects, show travel etc.), then it is advisable to use **one** signal generator (mostly a device with an appropriate SMPTE signal) which keeps all other devices in sync with each other. This way all directions such as breaks or repetitions can be handled synchronously from just one “director’s chair” for all devices.
- 10) Selecting the SMPTE devices (e.g. Akai (formerly M-Audio) Midiman 8x8/s or MOTU Micro Express 4x6 USB MIDI interface)
- 11) Selecting the CD track (only activated for the TimeCode setting “CD-Audio”)
- 12) Offset setting of the WAVE form versus the timeline. Sometimes the WAVE form has to be adjusted forward or backward by a few milliseconds for it to be in sync with the music.
- 13) Starts the WAVE file conversion.

Safety Zones

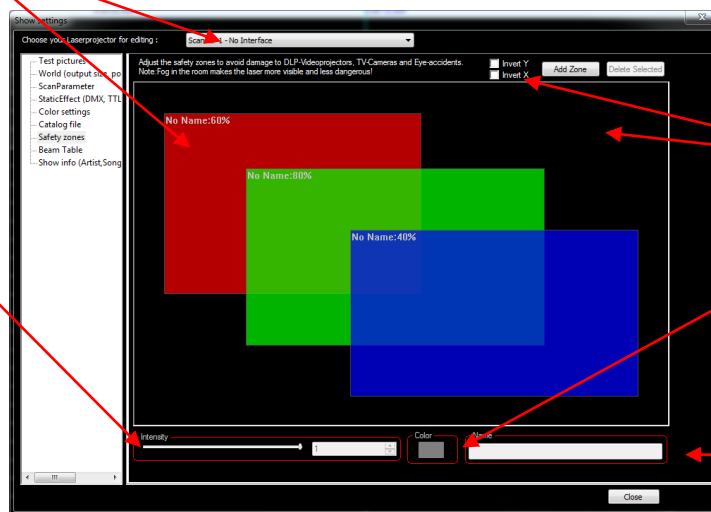
Safety Zones are used to restrict the maximum laser output in certain projection areas e.g. the auditorium. For example, video projectors, as well as video and photo-cameras are extremely susceptible to damage by laser light and should if possible not be exposed to any laser light. Even the least bit of laser light can be sufficient in extreme cases to damage the device!!!

To create two independently operating safety zones within PHOENIX4, please proceed as follows:

Open Settings with  and navigate to “Safety Zones”

Safety zone
Laser protection area

Max. laser output



Add safety zone
Invert the view

Select the color for
the safety zone

Enter the name for
the safety zone

The safety zones (the rectangles) can be changed to the required size by moving the corners.

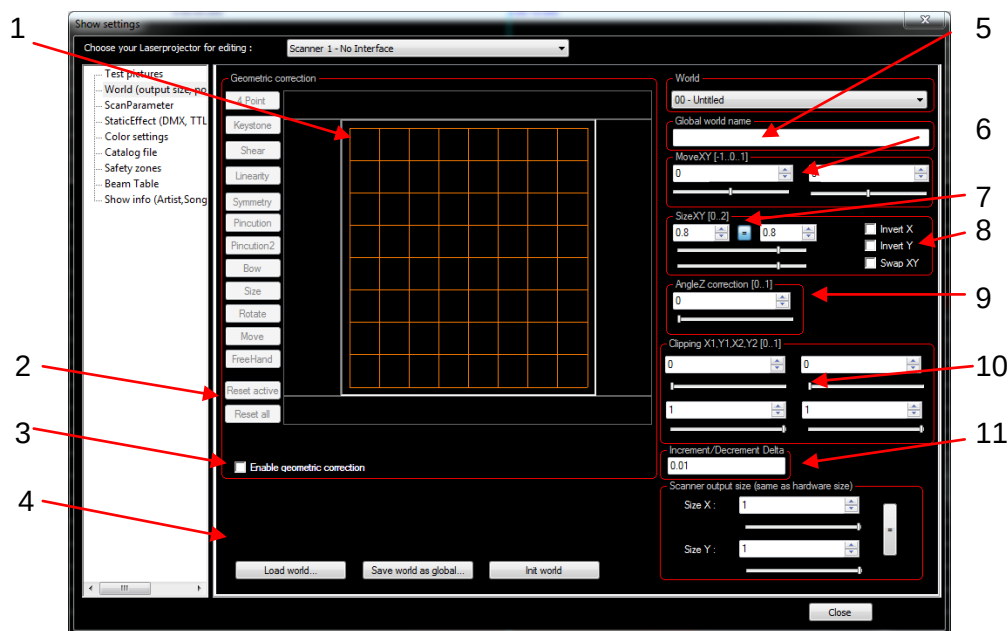
5.4. Show Settings (World/Projection Zone)

The “World-Settings” are the basic settings of every laser projector and of the laser show. Here among others the output size, the geometric correction, the clipping area etc. are set for every laser and its projection zones.

The term projection zone is used synonymously to “WORLD”. We define a projection zone as a type of area in which some animation or another or an effect is to be displayed.

So there are several standard projection zones such as e.g. the “Audience” world. Audience (in German: Publikum) is the term generally used for the worlds in which the audience can possibly experience the laser light at eye level. “Screen” (in German: Leinwand) are the worlds in which projections fall onto screens or similar surfaces in a room. “Mirrorball” or “Beams” is also a popularly named world in which e.g. spiral figures etc. are projected onto a mirror ball in the room. It is very important to adjust the projection zones correctly and these have to be set correctly for all laser shows to guarantee 100% correct safety and laser show output. In a laser show max. 32 of these projection zones can be saved per laser which then need to be assigned to each individual effect or animation while programming the show.

Open the “World-Settings” with  and switch to the menu entry “World”



- 1) Geometric corrections can be made in all versions using the side adjusters.
- 2) Reset the currently active geometric correction or all corrections
- 3) Turning the geometric correction on /off
- 4) Loading / Saving the entire world or projection zone (All settings visible on this page). Please always save your settings when making changes!!!
- 5) Name of the world (max. 32 worlds can be saved per laser projector for each show.)
- 6) Position of the projection in this world (right/left, up/down)
- 7) Size of the projection in this world
- 8) Inverting (mirroring) of the X or Y axis

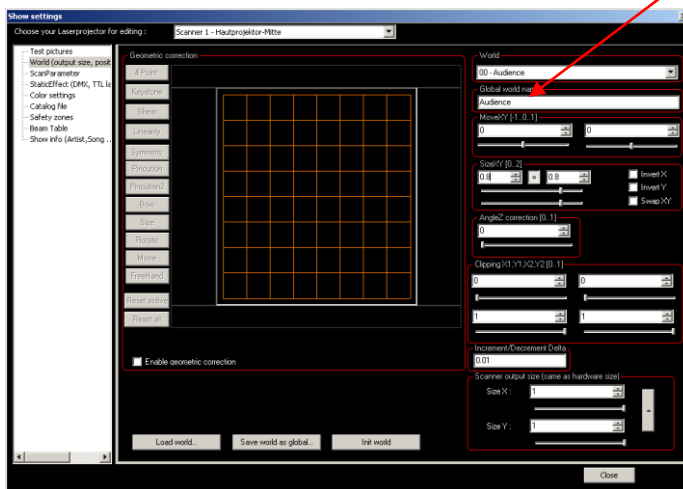
9) Z axis rotation

10) Clipping (e.g. to cut a projection to fit a screen so that the graphics projection does not exceed the selected screen – no matter how large the animation becomes due to effect changes).

11) Delta value: Step size of all variable settings on this page (e.g. 0.1 for large or 0.0001 for very small value adjustments). Particularly when setting the size or position you can perform a very exact value adjustment this way.

12) Scanner Output Size: Only when using the optional video cut option is necessary to set the size of the laser output to cover the video image for a perfect “cut”.

Afterward you have to (!) name and save the world settings.



Enter the name for the projection zone setting or for this projection zone here, so that when the show is loaded **these** settings are explicitly loaded! The entire world settings are – just like the scanner settings, colors etc. - **NOT** saved in the show itself. Merely the name is stored in the show. I.e. if you select and save the name “Audience” for the “Global world name”, then these settings are loaded for every show from here on that has “Audience” listed under “Global world name”.

Hereby it does not matter whether the file with the settings is stored on your

PC or on another. The “Audience” settings that were saved for this projection zone setting are loaded automatically. These can, of course, be different settings on another PC for another projection environment.

You can save (and load) up to 32 different worlds per show. When you program your effects and animations later on, you can select in which projection zone the animation is to be displayed.

Note: When you start programming your own multimedia shows, we request that you adhere to certain naming conventions. This way, when you pass along your show, it is guaranteed that the recipient does not have to readjust his settings over again. You should name the world as follows:

00 – audience1_1
 01 – screen1_1
 02 – text1_1
 03 – audience2_1
 04 – screen2_1
 05 – text2_1

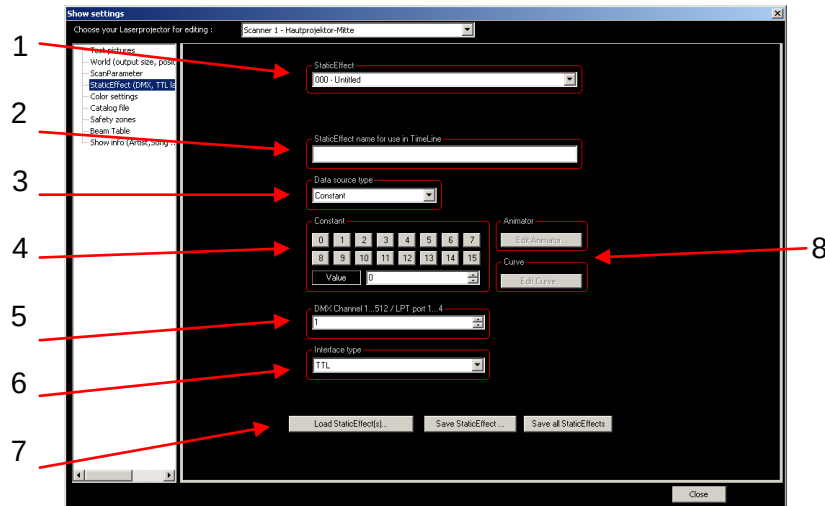
The number als postfix of the zone name is a running index numbering followed by the number of the timeline for which the settings was created. E.g. audience2_1 is second audience zone on timeline 1.

Correspondingly they should be assigned to these projection zones in the events.

5.5. Static Effect

Static effects are static effects, such as individual DMX signals or TTL signals (+5V) as well that can come from a Phoenix Net-Interface. Static effects can even be activated spontaneously and during a running show, e.g., for the spontaneous use of a fog machine or a motorized screen.

Open the settings with  and switch to “Static Effect”. Make sure that the correct laser projector or the correct interface is selected. Every interface has its own static effects (DMX-universes and TTL outputs)



- Name of the currently active static effect
- Name input
- Type of static effect:
 - a. Constant : Fixed value that is entered in the “Value” field (4)
 - b. Animator: Variable value that is dependent on the “Animator” (8).
 - c. Curve: Variable value that is dependent on the “Curve” (8).

Note: The smallest value is always “0” or “1”. The largest is dependent on the selected function (Interface type) (6)! I.e. for “DMX” the min. value would be “1” and the max. value “512”. For TTL the min. value is 1 and the max. value “65535”. The animator and the curve are always between these two extreme values. To maintain the overview “0” is simply used as the min. value and “1” as the max. value (0=0%, 1=100%).

- Selection of the “constant” value
- Selection of the DMX channel – assuming DMX was also selected as interface (6).
- Selection of the interface:
 - a. **TTL** (These are the 0V / 5V connections to the PRO-USB & the LAN-interface)
 - b. **DMX** (Accesses the DMX output of the interface – CAUTION every connected interface has its own DMX-out universe – therefore, please pay attention as to which laser projector you selected above!!!)
 - c. **Shutter** Accesses the shutter signal of the interface.
- Loading and storing the static effects.
- Settings of the “Animator” and “Curve” for the “Type” (3)

How and where static effect is used, you will find out in category “Events”.

6 Figures and Animations for a Show

For every laser show pictures are required to create effects and animations. These pictures are drawn in the PHOENIX4 program “CAD”. Then these are stored as “.pic”. PHOENIX4 Pro/ProPlus uses a library in which all pictures can be stored and sorted into categories. From there they can be added via drag ´n drop or by double clicking onto the track of a timeline. Internally all used animations are stored in the show. An additional catalogue such as still used in Phoenix 3 is no longer necessary.

Note: To convert an adjusted or your own laser show from PHOENIX 3 into PHOENIX4, the PHOENIX 3 laser show must be opened in PHOENIX4 and saved once. The external catalog will be integrated into the PHOENIX4 show file. The old catalog should then be pushed away since it could happen that the old catalog would overwrite changes to the new PHOENIX4 laser show when the show is loaded the next time. Also, a laser show saved in PHOENIX4 can no longer be opened with PHOENIX 3.

For organizational purposes we recommend paying attention to an orderly filing system from the beginning and to place all necessary files belonging to a show into a SINGLE folder. This ensures that there is no long search if you should want to transfer the show at some point onto another computer or perform a new installation of the system.

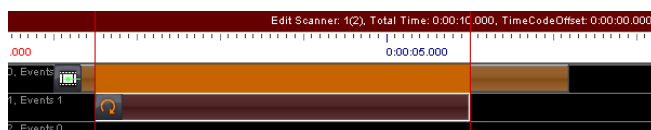
7 Events & Timelines

Before discussing the events in more detail, a bit of information to the timelines.

7.1. Priorities

The timeline follows the basic principle of PRIORITIES! (or hierarchies as well)

The further **down** in the timeline such an event is found, the **higher** its priority! For example, if a rotation around the x-axis is **above** an “Animation” (*An animation is the event, in which the shapes or key frames of an animation are specified – so the most used event in PHOENIX*) so **no** change of the display for the underlying animation is executed. However, if the event (e.g. the rotation about the x-axis) is placed **below** the animation, then the figure within the animation will rotate about the x-axis. If an event that is located below another one is selected, then the area it affects is highlighted in another color.



A similar process occurs, if a rotation **and** in addition e.g. a translation are located below an animation – PHOENIX4 processes the commands in order. First the rotation and only then the translation. If the events are switched, so first the translation and then the rotation take place – then the display changes correspondingly. Experiment thoroughly with this when you first try out PHOENIX4 to get a sense of how and what is possible.

How the individual events are placed with respect to each other is important to achieve the correct or desired effect.

7.2. Events

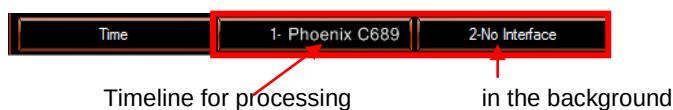
Events in PHOENIX4 are **all** movements, animations and effects that are placed on the timeline. The event list is visible by default on the right hand side of the timeline. If the event list is not visible, left click twice anywhere on the timeline – then the event list will reappear. The event list can also be placed at another location –e.g. on 2.monitor. That way you can always see all events at once. Click on the upper frame and while holding down the mouse button drag the event list to the desired position. Events can be freely moved within and between categories. Events can be inserted into the timeline via drag n’ drop or by double clicking. First click on the track within the timeline in which you wish to place the events. If you wish to insert several events directly below one another, simply click on several events in a row while holding down the “Ctrl” key... PHOENIX4 automatically copies the events to the time marker in the timeline.

When you insert an event into the timeline, the order makes a big difference. The “animation” is the most important event. Here the key frames (key images) for an animation are selected. The animation has to therefore be at the top of an effect composition. Every animation movement for this animation must now be located below. You have to also pay attention to the order of the individual movements. When, for example, a „Translate“-movement is located above a „Rotate“-movement, then the animation is moved to the position first and then rotated. So there is a hierarchical priority from the top to the bottom of the timeline. The further down on the timeline an event is located, the more important it is and the later it is executed in comparison to the events above it (see “Priorities” as well).

7.3. Selecting the Timelines / Programming for Several Lasers

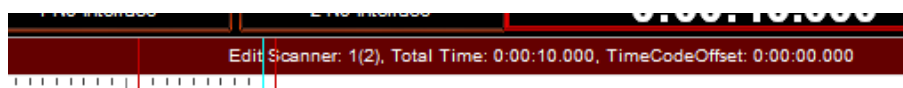
The timelines with their tracks are the recording areas for events. Every timeline is connected to at least one laser projector or interface via the “Remap Interface” (Projector>Remap Interface). Several interfaces can be assigned to a timeline while setting the “Remap Interface”. These interfaces then correspondingly all play the same events on the tracks of this timeline. However, the reverse of assigning more than one timeline to an interface is not possible.

Timelines can be displayed in two ways. On the one hand for processing, on the other hand in the background (helpful when programming multiple laser timelines).



There are two selection buttons in the above toolbar for this. The first one determines which timeline is currently open for processing, the second one which one is currently displayed in the background. The interface was given a name in the “Remap Interface” settings, then these are displayed here. If no interface is associated with the displayed timeline, then “No Interface” is displayed.

Since several timelines can be displayed for processing in Phoenix4 Pro/ProPlus (divided display horizontal, vertical or quartered – Above toolbar: View>Options>Layout, i.e. the selection which timeline is meant for *processing* and which timeline *for view* is displayed once again in the upper window bar.



The first number on the right near „Edit Scanner:“ indicates which timeline is currently open for processing in this window. The number in parentheses indicates which timeline is currently displayed in the background. All events displayed on the “background” timeline are displayed in a different color and can neither be selected nor moved nor processed.

In order to program a laser show individually for several lasers, the following licenses and hardware are required:

To be able to direct several lasers in Phoenix4, you need the Phoenix4 ProPlus license. In order to direct several lasers individually (each via its own timeline/interface) you need one interface (USB micro interface or/and network interface) per laser.

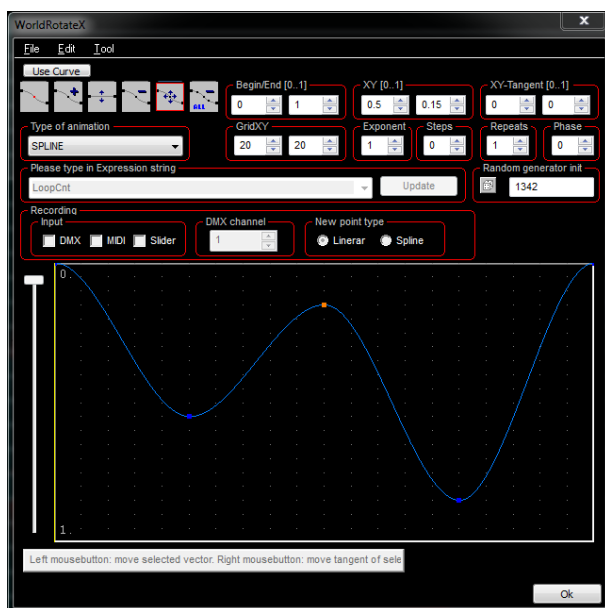
To program a multi-laser show you roughly proceed as follows:

1. Selection of a time code source (e.g. music)
2. Selection of the **first** timeline for **processing**
3. Adding the events on the tracks of **this** timeline
4. After that: selection of the **second** timeline for **processing**
5. Selection of the **first** timeline for display in the **background**
6. Addition of the events on the tracks of the **second** timeline
7. etc....

7.4. Value changes - Curve and Animator

Basically, the movement and effect events exist in two versions. As CURVE and as ANIMATOR events. Both have the same value range of 0-1 (0-100% execution within the effect time period). The big difference lies in the fact that in the animator no individual movement points can be set as they can in the CURVE. Further below, there is a small selection of events in detail.

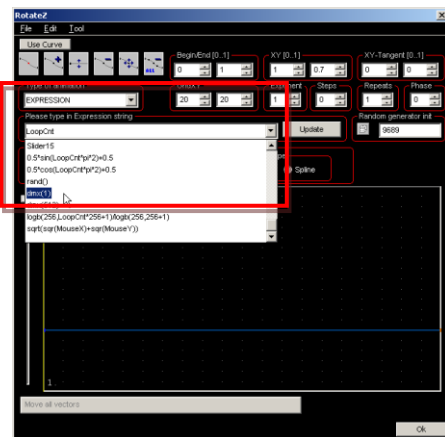
7.4.1. Curve Window



The CURVES are one of the most powerful tools of PHOENIX4. Curves are used for movements, rotations, morphing etc. A variation always takes place between two values. A continuous vertical yellow „CURVE line“ displays the time marker on the event and thus what is happening how and at what time due to a change in value (blue curve). It is important to know here that the CURVE window always refers to the entire duration of the effect! So if e.g. the effect “WorldRotateX” is 10 seconds long, then the effect duration and its movement processes are also exactly 10 seconds. Here the frame / animation would turn from left to right (approx. $\frac{3}{4}$ of a rotation), then another $\frac{1}{4}$ rotation back to the left, then a slow rotation to the right and finally another relatively fast turn to the left...

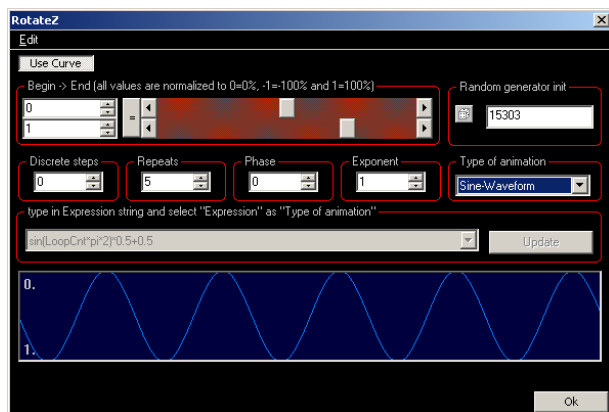
Curve intersections are set using the above plus sign button. Using the minus button, points can be deleted again. The points can be dragged using the arrow buttons pointing in all directions. Using the value input boxes to the right of those the inflection points can be moved numerically or the value range can be determined. The grid can be set to a high

resolution using the input box “**Grid XY**”. Exactly duplicating a movement is very easy using numeric input in “**Repeat**”. The “**Phase**” is a shift of the entire curve. The **exponent** is needed in connection with the “**Type of animation**” for the “**Exponential**” option. You can even use interactive user input devices such as e.g. a “**Joystick**” or “**Maus**” (mouse) with the “**Type of animation**” – “**Expression**” to teach an ACTIVE point movement using a joystick / mouse or similar. The expression is also important in the context of the use of the “interactive rule”. For example, you can impact the events **live** during a show. You can also enter your own mathematical formulas in this field to create abstract movements. Here is a short example for the use of expressions:



Now we have the “Curve” as a horizontal line from beginning to end. I.e., the object will be rotated by the set rotational angle and thus does not move. In “Type of animation” “DMX(1)” was selected in our example. The (1) specifies the DMX-in channel, which can now be used to guide the curve. If I enter another value within the brackets (e.g. 150) then this curve will be controlled with the corresponding channel on DMX-Controller. This way all devices listed in the expression list can be used to control this curve, whether it is with Midi channels, mouse movements or joystick movements or even a mathematical formula you invented yourself that can be entered here.

7.4.2. Animator-Window



The second of the mentioned options is the Animator. In principle, the Animator acts just like the Curve with the singular difference that the inflection points between the two maximum values cannot be specified individually. All other functions are similar and can thus be derived from the CURVE description. The advantage of this version is that regular movement processes can be created more quickly than e.g. are supposed to occur exactly 5 times during the effect duration.

In particular, movements to the beat of the music can be easily and quickly created this way.

All available laser events...



The events are sorted into categories and can be placed into an arbitrarily order within these. With drag n' drop they can be dragged with the left mouse button. The event positions are automatically saved. Upon clicking the right mouse button a context menu appears with a "Reset List" entry, which enables you to reset the list to the factory default.

7.5. Included Events

1) Animation

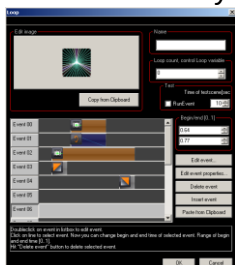


The most important event. We will go into more depth with regard to this event in the pages to come.

2) Loop Event



A loop contains its own 32 timelines into which multiple additional events can be inserted by double clicking. This can later be added to the main timeline as a new total event of the main timeline. Loops can be saved individually and later loaded upon need and added to a new show. Complicated effects can thus be copied and adjusted to the time quickly and easily. The events within the loop event can – like on the large timeline – be adjusted in duration with its start / end values. It is also possible to insert entire show parts from the show into a loop by using copy and paste.



By using figures from the internal catalogue or the library the correct animation will be displayed even if the location where the laser show is stored changes.

3) Curve Intensity

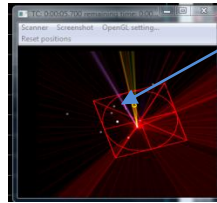
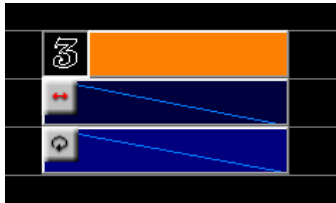


Determines the brightness of an effect.

4) Curve Pivot X / Y / Z

Determines the center of rotation of an effect along the appropriate axis. Is needed if you want to perform a rotation e.g. along around the corner of a figure.

For example, to let a square rotate around its corner (and not around its own center axis...) You should take care that the pivot is placed ABOVE the rotation command in the timeline to achieve this result (based on the event hierarchy).



Rotational center point for this example...

5) Curve Rotate X / Y / Z

Rotates an effect about the corresponding axis.

6) Curve World Rotate X / Y / Z

Rotates the effect incl. the position shifts about the corresponding axis.

7) Curve Scale X / Y / Z

Changes the size of the effect without changing the number of points of the projection.

8) Curve Size X / Y / Z

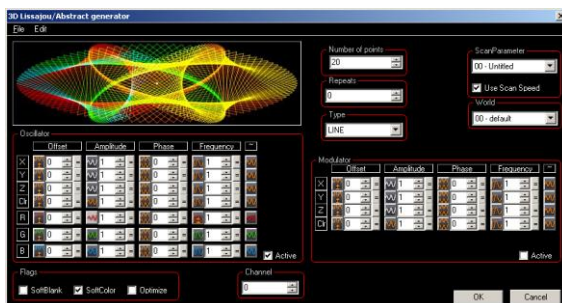
Changes the size of the effect. The smaller the projection, the fewer points are output.

9) Clip X / Y / Z 1 und 2

Clips the projection at the sides. Is, for example, required to show a graphic image on a projection screen – without exceeding the screen.

10) Lissajous

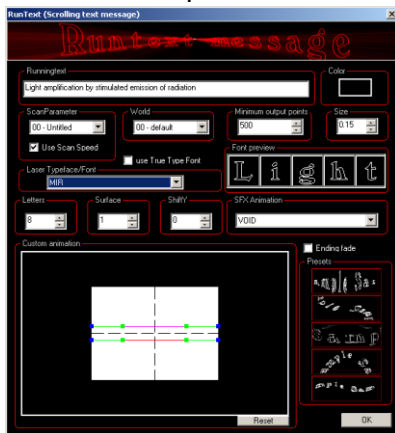
For creating individual laser figures, based on various frequencies, phases etc.



11) RunText



With this texts of arbitrary size can be displayed by the laser. For the depiction “laser optimized” fonts and “TrueTypeFont (TTF)” are available. Since the laser fonts were drawn optimized, usually they provide a better display on the laser than is possible with the “True Type Fonts”. The different fonts can be selected from the drop down menu. For TTF the fonts available within Windows are used. With “Custom Animation” text can be manipulated in its form and direction of movement using paths to create running fonts that appear three dimensional.



12) Curve Pipeline

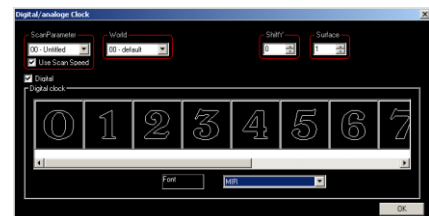
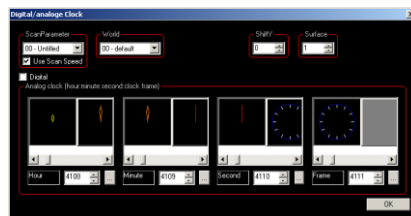


Shifts the viewing position IN a 3D picture. Very nice feature to move through 3D graphics.

13) Clock



Display the PC time on the laser in real time. Digital and/or analog clocks can be displayed. The analog clock can hereby be depicted by your laser figures. I.e. the hand and the frame can be selected from the internal catalogue (An example of a clock can be found in the show folder “DEMO” – these pictures can be copied at will). For the digital time the “font” of the digits to be used can be selected from the drop down menu at the bottom edge.



14) CurveShift X / Y



Moves the object without changing other parameters. Is identical to moving the laser projector physically.



15) CurveShear Y by X and the others.

The object receives the corresponding, geometric distortions

16) Curve View / View X / Y / Z



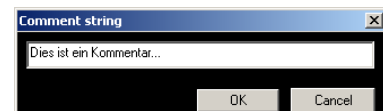
Changes the viewing angle of an object.

CAUTION: To be able to see this effect on the object, the “View” checkbox must be activated for the animation!!!

17) Comment



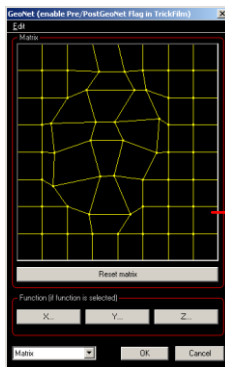
Adds a text message to the timeline



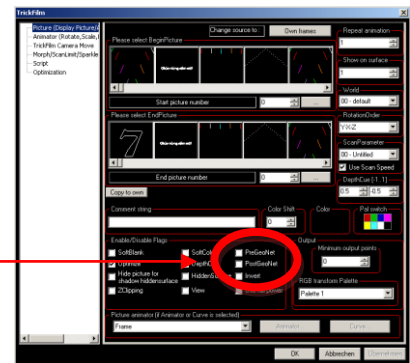
18) GeoNet



Allows for the complete geometric distortion of the object.



CAUTION: To be able to see the results of an effect, the checkbox “GeoNet” in “TRICKFILM” (animation) must be activated.



19) Colorrotation



Color rotation of the object. The speed of the color rotation is dependent on the value setting.

20) Fade in / out



Lets the object fade in or out

21) Scanspeed



Changes the scan rate. **CAUTION** is advised for this effect. If the scan rate set in the PHOENIX4 setting is e.g. 30Kpps, then for the “Scanspeed-Event” value “1” – exactly 30Kpps will be output. However, if you now change the value to 2 – then PHOENIX4 outputs a scan speed of 60Kpps (!). The other way around, for the value 0.5 half of that, so 15Kpps. With this effect the scan rate speeds can be changed during a laser show.

NOTE: The scan rate speed does **NOT** return to the values specified in the settings after the completion of an event! Therefore, you have to make sure that the scan rate speed is definitely completed with the value “1”. – Otherwise, it remains on the new scan rate for the remainder of the show.

22) LIVE



Is a pared-down version of the Lissajou generator.



23) Ping



A small effect that lets a few circles randomly swivel around. The number of circles can be specified in the event.

24) (Curve) Color Shift



Shifts all colors by another color.

25) BEAMSHOW

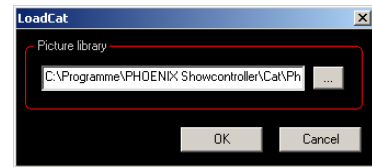


Turns beam visualization on/off in the preview (!). (Useful when at the beginning of a laser show a graphic is displayed that then transitions into a beam show. This way you don't have to specially change to “beam visualization” manually in the preview.

26) LoadCat



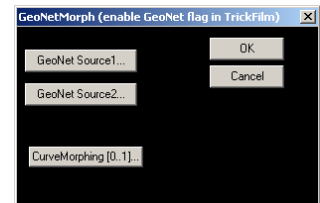
Enables the loading of an external CATalog file during (!) the show. This way several old CATalogs can be used and applied in a show. Make sure that all later events access the new catalog though as long as it is an active effect – and not the original internal CATalog.



27) GeoNetMorph



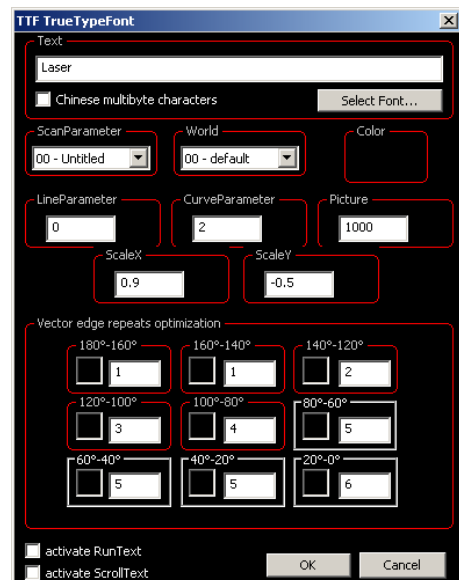
Makes morphing (shifting of points) between 2 set up GeoNet grids possible. Ensure that checkbox “Geonet” is activated in the animation!
With “CurveMorphing” an individual movement curve can be created between the two GeoNets.



28) TrueTypeFont



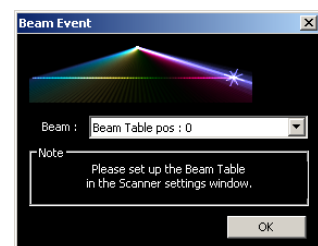
Makes the display of a single word possible. The difference between it and “RunText” is that you have other marquee animation options here as well. In addition vector edge optimization (Vectoredge) is included to optimize all angles of the letters. This event is specifically suited for the depiction of Eastern European and Asian TrueTypeFonts. The font is chosen using the „Select Font“ button.



29) Beam



For “Singlebeam” beams on external room mirror. The position settings are adjusted using the Beamtable of the projection zone settings in “Settings”! Up to 32 beam positions are available per laser.

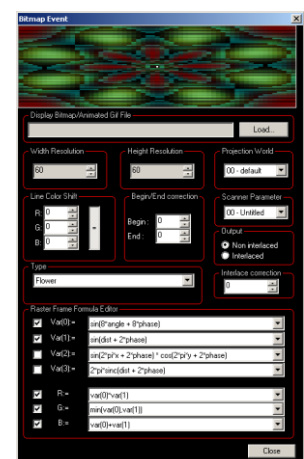


30) Bitmap



Allows the display of a bmp image or other raster images.

The bitmap resolution is limited to 64x64 pixels. For the “Type” selection you can choose between “Bitmap” and the “Formular Editor” (form editor). Here is an example for a standard “Flower”! Generally raster scans are output with approx. 100-110k! Therefore, the max. size of the image is relatively small as well! Please ensure that your scanner is approved for such extreme loads since we are not liable for possible defects. The use of the PHOENIX-NET interface is a prerequisite for reaching the needed scan speed.



31) Twist Z



Allows all objects incl. their animations and movements to rotate about the z axis

32) Modulate RGB

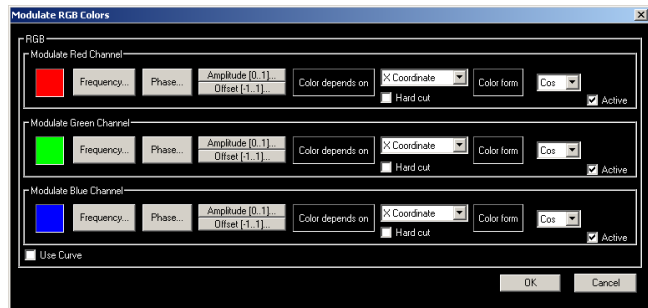


Beautiful color effect which offers various modes for creating color transitions. To understand this effect quickly, choose a (test) image with a lot of horizontal and vertical lines (chess board pattern).

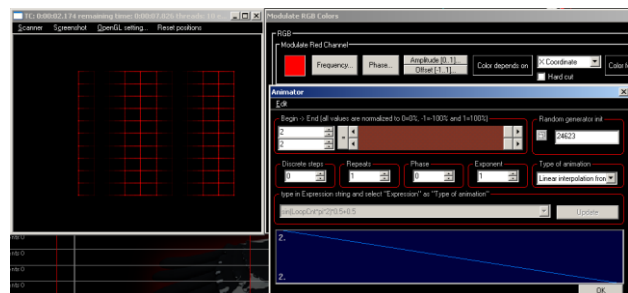
Place the “Modulate RGB” effect underneath it and **deactivate** the green and blue checkboxes

(remove the checkmark on “Active”). Now you should see only a red display with 2 black bars on your laser... THAT is the “**frequency**”. The higher the value is later on in the Animator, the more bars are created. The **Phase** is the run time of the two bars from right to left. The higher the final value, the faster the bars move from left to right. The “**amplitude**” is responsible for the thickness of the bars. The higher the value, the narrower the bar. With “**offset**” you can adjust the depth of the effect. With the selection options available in “**color depends on**” you can choose how the color progression is supposed to proceed.

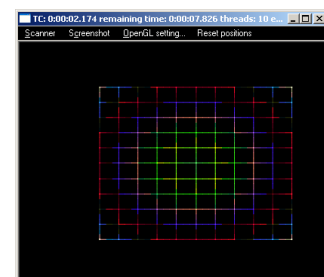
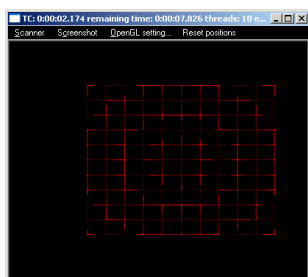
This picture was e.g. created using “Point Distance” and the default settings.



RGB-Event 7.5-2



When activating the checkboxes of the other two colors the color transitions now, of course, overlap and result in new colors. With a bit of experimenting many varying and individual color transitions can be created.



33) Move X / Y / Z (Curve and Animator)



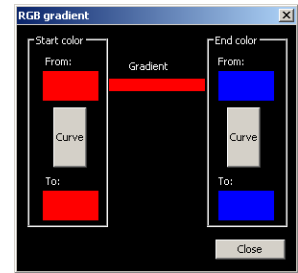
Shifts the object along the corresponding axis

34) Rotate around red / green / blue

All colors are exchanged – **except** the selected base color (red, green or blue)

35) RGB Gradient

Allows for color morphing (color shifting) from one color into another. The special feature of this event is that the starting point can have a different color than the end point t!

**36) Live-Speed**

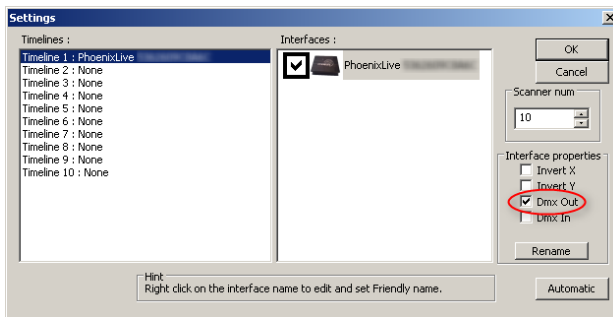
When the TimeCodeSource in the audio window is set to "**LIVE**", then the run time can be variably adjusted manually. This event variably affects the play time while the laser show is running. 0= show stops. 100= maximum run time. The speed can even be specified in 0.01 steps. The change is implemented using the setting curves.

8 DMX Settings and DMX Events

PHOENIX4 is capable of running all types of DMX devices. ALL PHOENIX interfaces therefore offer a DMX512 output and a DMX512 input. You can set up as many DMX circles as there are interfaces. Interface types can also be mixed (Network and USB). The PHOENIX-NET interface offers several advantages versus the Micro USB interface such as e.g. optically completely insulated DMX connections via the built-in Neutrik connections, as well as support of the ART-Net protocol! With the PHOENIX Net interface the DMX signal can even be transmitted via W-LAN. Some professional users even build the network interface directly into the laser projector and are thus capable of e.g. connecting a fog machine directly to the laser to then run them immediately when needed... here too use via W-LAN is possible.

The PHOENIX Micro USB interface can on the other hand “ONLY” disconnect the DMX signals via a separately available ILDA-DMX adapter (25-Pol SUB-D connection) – which does not offer any optically insulated DMX in/outputs. With the appropriate technical skill you can build such an ILDA-DMX adapter yourself (layout in USB Micro Interface manual) or you can purchase the optional cable in our webshop <http://shop.Phoenix-Showcontroller.de> or from your dealer.

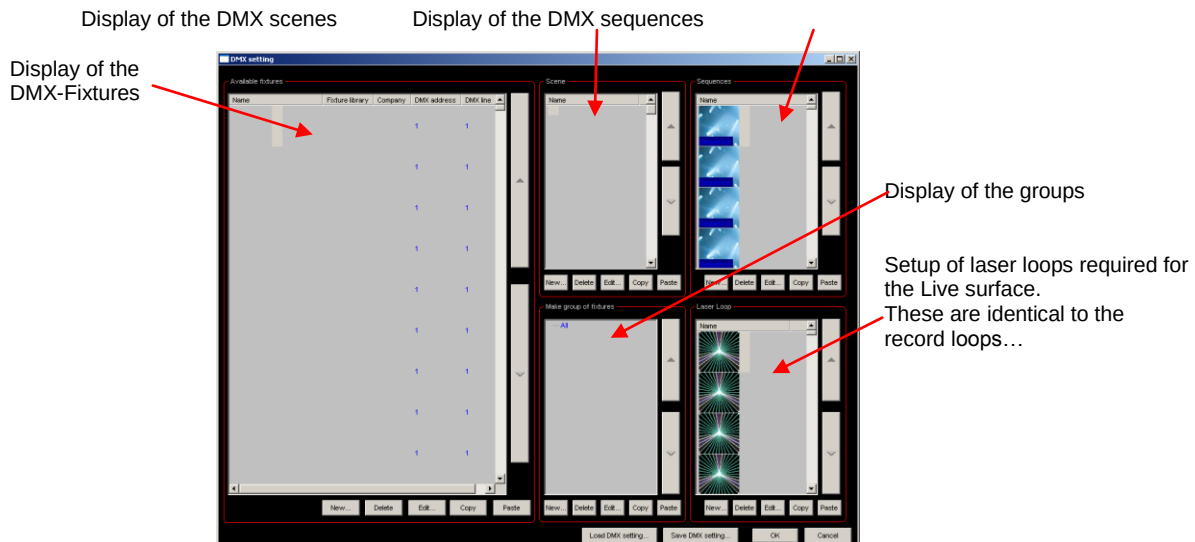
As far as the software is concerned very little needs to be adjusted to enable DMX output. **Important:** DMX outputs only works for (laser) output activated in the software – this is still required even if no laser is connected or intended for use.



Check whether the interface is set up for DMX output. To verify this, open the “Projector>Remap Interface” settings. When you select the interface that is supposed to output the DMX, the checkbox “DMX-Out” should be activated on the right hand side.

8.1. DMX Settings

In the DMX settings the DMX devices, DMX scenes and DMX sequences are managed as well as programmed. To be able to use DMX devices they must first be added. To do this, go to the menu “DMX > Einstellungen” (DMX > Settings). Here you have the option to select from an extensive library of already setup DMX devices. If your device is not yet included in the list, you can simply set it up yourself.



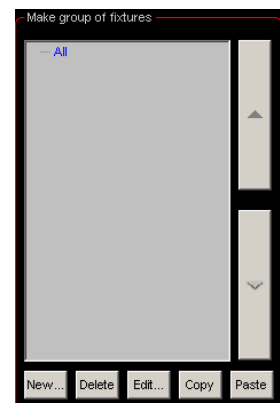
To use DMX devices e.g. a Movinghead in the show, it needs to be added to the device list. To do this, click on „New...“. In the window that opens up you can select an already setup DMX device (fixture) from indices, categorized by manufacturer, using the “Load from...” button or setup a new device using the “Create...” button.

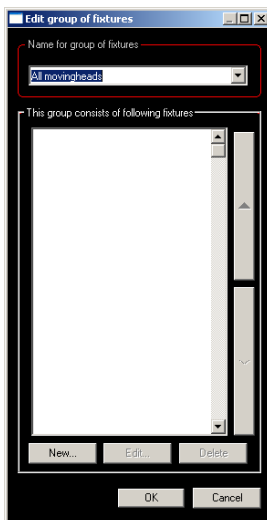
“Quantity” lets you specify the number of devices of the same type. This allows you to quickly setup multiple DMX devices. Based on the number of channels specified for the selected DMX device the following DMX devices are automatically assigned the next available channel numbers. You just need to select the DMX start address. If there already are existing DMX devices, the DMX start address is automatically set to the next available channel. Next the output interface needs to be specified using “DMX-Line” (Phoenix USB Micro interface (with ILDA-DMX adapter) or Phoenix Net interface). On every connected interface a DMX512 channel universe can be used. If you wish to do this for several devices that are not added immediately one after the other, then an offset can be added to leave few channels available in between. For better differentiation when setting up DMX devices they can be individually named. This is accomplished by clicking on “Fixture-Name” and changing the name.



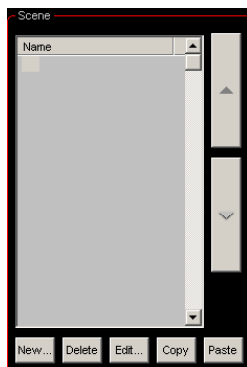
Once you have selected a few DMX devices for use, you can group them. This enables you to quickly program even complicated effects.

Click on “New...” below the “Make group of fixtures” list in the center of the DMX setup window.



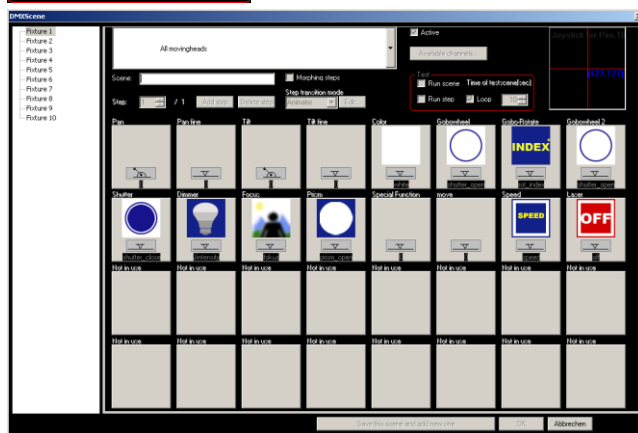


First a predefined name has to be selected from the drop down field or a new one entered. Next by clicking on “New...” a new group of DMX devices can be set up in the next window. The “Select all” tab selects all listed DMX devices. Using the CTRL key or the SHIFT key you can also select several devices in a row or a selection of devices to combine into a group. Confirming twice with the “OK” button closes the window and performs the group assignment. The individual elements can be verified again by opening the tree structure on the DMX settings button.



The previous steps were necessary to inform the software about the devices and to create an organization. The following steps will now setup scenes (lighting conditions) and group them into sequences (scenes following each other).

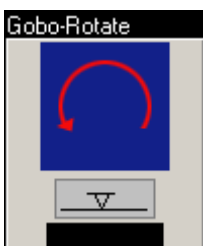
A new scene is created by clicking on the “New...” button.



The window is roughly divided into 3 areas.

On the left side using “Fixture 1-10” up to 10 simultaneously running (upon loading of this scene) fixture situations/processes can be setup. For each of these fixture storage places a unique selection of DMX devices, steps (light conditions) and settings can be set up. In the upper third there is the assignment and the control area for the DMX scene.

The largest area is taken up by the channels defined when the DMX devices are set up. In the first step the DMX devices are selected from the large drop-down box that are supposed to be managed in the following steps. If DMX devices were previously grouped, the group can be selected here as well to be able to direct all DMX devices belonging to it together. Next the scene must be named. Without a name the channel features remain deactivated. The name and features of the channels are listed above the tiles.



The channel settings can be read off the tile even without opening the window. If specifications with icons were submitted for fixed values when the DMX channels were setup (see below), then these appear in the upper area of tile. Depending on the selected setting (value) the corresponding icon will appear there.

Below it the type of value change will be depicted in a smaller grey box.



Value adjustment using a slider

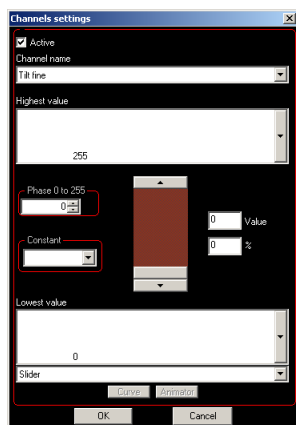
Value adjustment using a joystick (not available for all DMX features)

Value adjustment using the Kurve (Curve)

Value adjustment using the Animator

To change a function it is usually sufficient to slide the mouse indicator over the grey tile and move the center mouse wheel. In combination with the “shift” key slower value adjustments are possible. This operation presumes that defaults were set when the channel values were set up. Additional opportunities to change the channel values are available by left clicking the mouse on a tile.

8.1.1. Channel Settings



In these „Channel settings“ the values can be set with precision and the type of value adjustments can be defined as well.

In the upper area the channel can be switched on and off globally. Furthermore, below that in „Channel name“ the function of this icon within the framework of the device’s available channels can be changed.

The bottom most drop down menu specifies the value control type from among “Slider”, “Animator” and “Curve”.

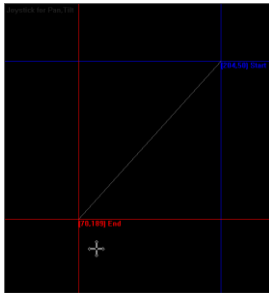
For the value control type „Slider“ the „Highest value“ and the „Lowest value“ limit the DMX value range at the top and bottom. The slider controls the value to be sent. If fixed values with names were established when the channels were setup, then these are displayed instead of the numeric values. The value can also be entered numerically as an absolute value in the field “Value” or as a percentage into the field “%”. Alternatively, the “Constant” field can be used to access a fixed value directly by name.

If the value control type “Animator”, “Curve” or “Joystick” (if available) are selected, inapplicable fields are deactivated.

To change values using “Curve” or “Animator”, you have to click on the available button. Operating instructions for these value manipulation tools can be found above.

The plain “Phase 0 to 255” operation helps you setup seemingly complicated DMX animations very quickly. However, settings only make sense here for the selection of a group of DMX devices for animation. By entering a value (0=0% - 255=100%) there the channel value or the channel value adjustments are transmitted from DMX device to DMX device (belonging to the group) with a delay. For example, for a tilt channel you can quickly create a beautiful wave motion due to the delay of several DMX Movingheads.

Value controller “Joystick”



The value controller “Joystick” is only available for PAN and TILT. Using two points it can quickly program a movement. By moving over the small rectangular surface in the upper right corner, they are enlarged to allow a more precise adjustment. The starting point is selected by pushing the left mouse button. It is displayed numerically and with blue crossing lines. The endpoint is fixed by pushing down the right mouse button. It appears as a red marking.

Principally, programming the light scenes is done in steps.

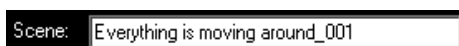


First, light conditions are specified. Next they are adjusted and saved. The sequential running of the different steps creates the animation. „Add step“ creates a new step. The „Delete step“ button deletes the changes. If more than 1 step exists, then you can select how fast the transition between the steps should occur. The speed can be fine-tuned with the „Animator“ or the „Curve“. The “Edit” button opens the already known setting windows. If the checkbox „Morphing steps“ has been selected, a „soft“ transition to the next (step) light scene is performed for the channels for which the morphing feature was selected when the DMX devices were setup.

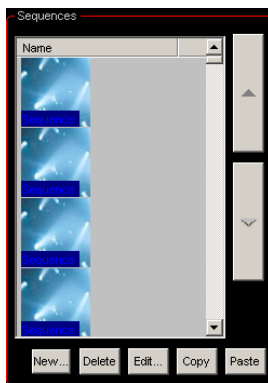
To receive verification of the changes from the devices directly when programming DMX devices output can be turned on using the “Run Scene” or “Run Step” checkbox. If the “Loop” checkbox is checked, then the steps or scene repeat. For the test mode of “Run scene” a runtime interval can be specified in seconds in the entry field “Time to testscene[sec]”.



Processing is completed using the “OK” button at the bottom edge and the scene is saved with the settings. The “Cancel” button cancels the last changes. The task of the “Save this scene and add new one” button is to simply program fundamentally similar scenes with variations. All scene settings are copied and the scene name is appended with a sequentially continuing numeric index.



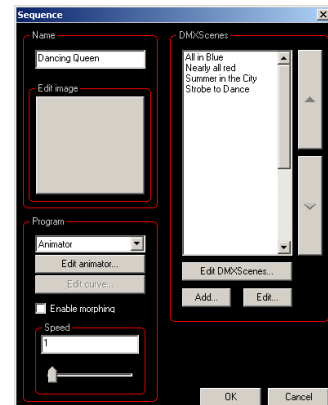
8.1.2. Sequences



Fully programmed DMX scenes can also be interlaced into sequences and recalled from there one after the other. To create a new sequence you have to click on the “New” button within the sequence section.

The sequence name is specified in the “Name” input box. You can also store an image in “bmp” format here by clicking on the grey “Edit Image” button. Via the “Add” button below the “DMX-Scenes” list previously programmed DMX scenes are

added to the sequence. Using the large arrow buttons on the right hand side, after selecting a scene, its position can be changed within the list. The selected scene can be altered afterward by clicking on the “Edit DMX-Scenes” button. The settings within the “Program” section influence this section’s interval and speed. With the known “Animator” and “Curve” value settings variable sequence steps are possible. In addition, the “Enable morphing” checkbox makes a soft transition possible for those channels for which morphing has been activated within scenes (when transitioning from one scene to the next).



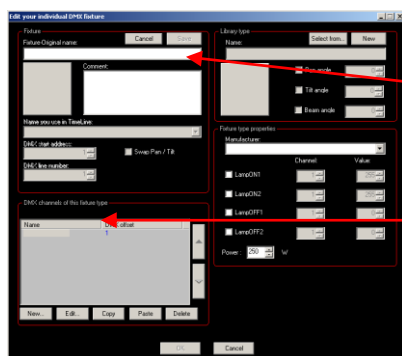
Laser Loop



The Laser Loop operation is specifically meant for application in DMX Live operation. A new laser loop is created by clicking the “New...” button. A detailed description of the “Laser Loop” event can be found in the event details.

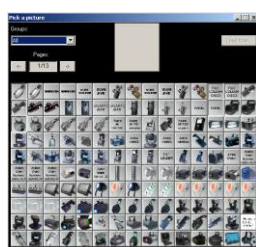
8.2. Initial Setup a DMX Fixture

If a DMX device does not yet exist in the extensive manufacturer library, click on the “Create” button within the “Add DMX Fixture” window to setup a new device or fixture.



The window for setting up DMX devices will now open. Proceed step by step through the individual items. **CAUTION** – Only AFTER all items have been selected can the “Save” button be selected to store the device (fixture).

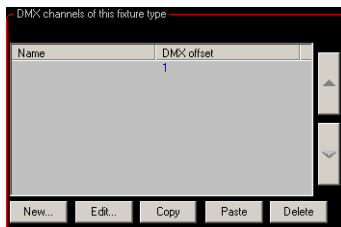
The most extensive settings are for the “DMX-Channels“. A Movinghead can have up to 32 channels which need to be defined here.



First a name needs to be specified for the device in “Fixture-Original Name”. It is also helpful to define an icon here. You merely need to click on the square grey surface to do this. Another window will open where you can select an existing one. If you select the entry „Individuals“ from the drop down list, you can upload your own picture using the “Load from...” button on the right hand side. Please use a square preview image for this since it will be distorted otherwise. After clicking on an image, it will be used for the new DMX device. In the “Comment” text area additional information can be saved optionally for the device.

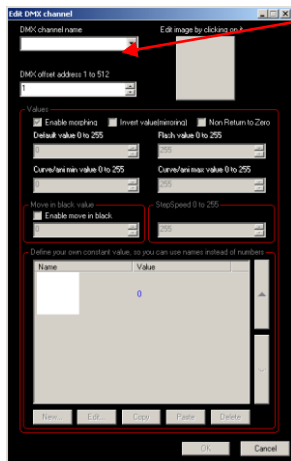
The following gray fields do not play any role in setting up new DMX devices.

One of the most important steps is completed by setting up the DMX channels in “DMX channels of this fixture type”. Here the functions of the DMX device are defined. These can generally be found in the reference section of the handbook for the channel setup of this device.



By clicking on the “New” button a new operation channel is set up for additional processing.

8.3. DMX Channel Editor

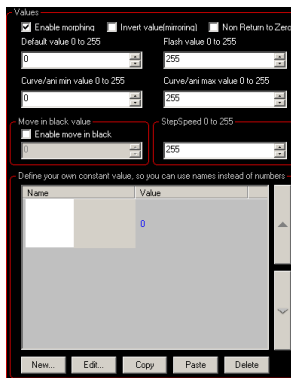


All relevant settings for each individual channel are entered here. First the channel name must be entered. It can be specified by you or selected from the list.

To its right an icon is displayed automatically – or for individual name assignment by clicking on the button.



Next the “DMX-Offset address 1 to 512” is determined, that is the channel on which the function is loaded.

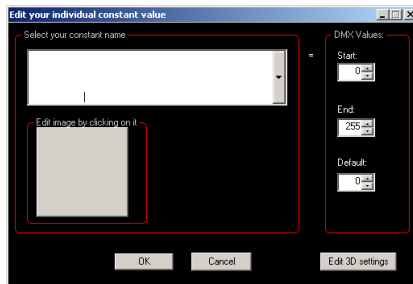


Next are the values to be used for this channel. In the upper area you can specify several default values for this channel. By checking „Enable Morphing“ you can later perform a soft transition during later DMX programming for this channel using continuous value adjustments. „Invert value (mirroring)“ inverts the values so that the value adjustment is performed in reverse. The „Non Return to Zero“ checkbox prevents this channel from continuously returning to the zero point when no scene is running. A similar behavior is experienced with the „Default value 0 to 255“. Hereby a constant value is sent to this channel. For PAN that could e.g. be the value 128, so the head remains vertical. „Flash value 0 to 255“ permits setting a default value for a channel that enables short impulses.

The input boxes „Curve/ani min value 0 to 255“ and „Curve/ani max value 0 to 255“ allow you to set defaults for the value range of the value manipulation with Curves (s. chapter on Curves) and the Animator (see chapter on Animator).

The field “**Move in Black**” (MIB) applies the value in the input box to this channel when the event “MIB” (s.b.) is active. Generally, this function is used for the „dimmer“ and the „shutter“ channel to execute movements (movement processes) without visible output. The „Step Speed“ setting determines the speed within the range 0 to 255 for the value adjustment between the two effect steps (e.g. two different PAN-TILT positions). A value of 255 corresponds to 100% of the device’s possible speed for the particular operation.

It is very convenient to set defaults for fixed DMX values by name for use during programming. They are setup in the list box below. To create new defaults, click on “New”.



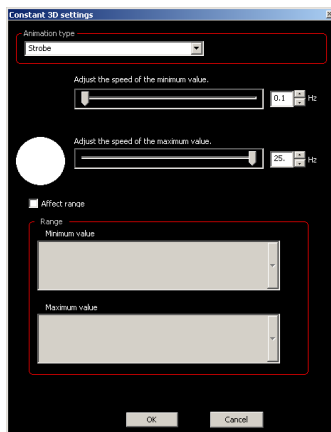
The “Edit your individual constant value” window will open to add further settings.

Enter the starting value in the “**Start**” input box and the ending value for the effect e.g. a color in the “**End**” input box.

“**Default**” is the value output when the fixed effect value e.g. for a color “Red” is selected from the drop down menu during DMX programming. By clicking on the grey button a visual representation for the value can be selected which is

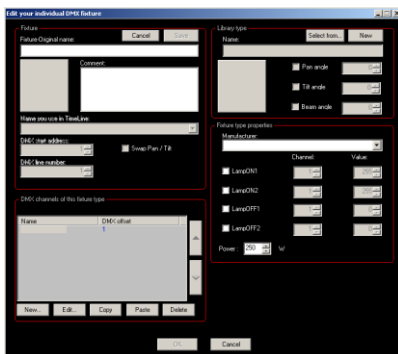
meant to aid in the selection of the fixed named value assignments. Selection of the graphic image proceeds as before with the pictures for DMX devices.

The bottom section also displays the “**Edit 3D Settings**” button that enables adjustments for realistic 3D visualization with the Phoenix 3D Visualizer.



After selecting an animation type e.g. Object Rotation you can adjust the minimum and maximum speed of value changes with the sliders. In addition, you can also limit the value range within a “Minimum value” and “Maximum value”. These settings, however, will only affect the display reality within the Phoenix 3D Visualizer.

Set up all DMX channels this way and enter values for the defaults. Try to work as precisely as possible so you can create the DMX scenes quickly later on...



Finally, save the Fixture, so that you can use it again later on. To do this, you still need to enter a bit of information so that later on in 3D visualization the correct device is displayed. Even if you do not want to use 3D visualization, there are still some entries to be made. First these include the proper library type. It makes sure that the correct device is used in the 3D preview. The “Select from...” button opens a selection of existing basic visualizations. Different „Library Types“ are available. Select the device type that is most similar to yours e.g. a Moving-Head. After the assignment an alternative preview picture from the selection window

mentioned above can be used again. For 3D visualization you can also specify the degree of movement and the output size in degrees.

To properly file the new device in the directory or easily select it later on, a manufacturer has to be chosen from the drop down list in “Fixture Type Properties”. If you wish to add a new manufacturer here, you merely need to setup a new directory in the Windows program folder “PHOENIX Showcontroller\Fixtures”. It appears the next time a DMX device is setup. With Lamp ON/OFF the lights can be turned on or off from within the software (assuming the operation is supported). In order to not accidentally trigger this via a channel, this setting should be set up here separately. You can optionally set the performance of the DMX device in Watt to be able to better display different light intensities and differences in distance in the 3D visualization.

9 DMX – EVENTS

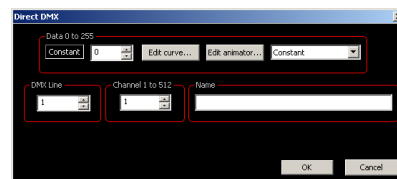


To be able to apply the setup and preprogrammed DMX devices, scenes and sequences quickly and easily there are special DMX events. These can be found in the event list on the right side of the tab “Events>Other”. They are simply dragged onto the tracks just like the laser events.

DMX



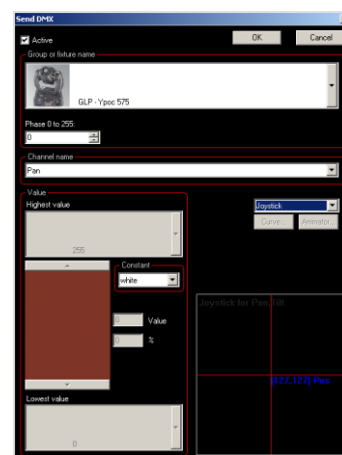
The DMX event is the simplest of all DMX output possibilities! In the upper area the type of DMX value adjustment is chosen from among “Constant”, “Curve” and “Animator”. A description of the processing windows is found in the corresponding chapters. “DMX-Line” allows the selection of the interface that is to transmit the DMX signal. Enter the DMX channel number in “Channel 1 to 512”. To better distinguish DMX events on the timeline tracks an individual name can be assigned.



Send DMX

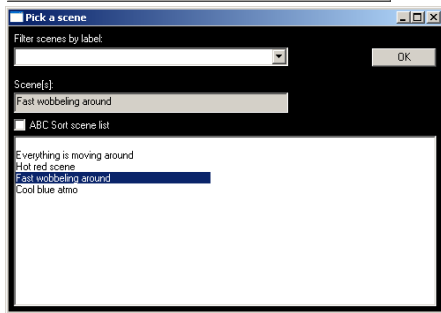
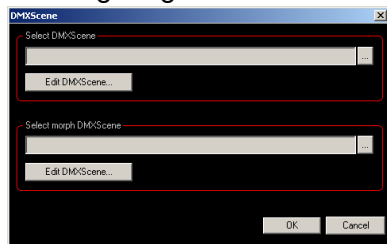


Enables the change of **ONE** DMX channel of a preprogrammed DMX device. When placing a SendDMX event below a DMX scene event, the DMX channel changed within SendDMX is overwritten in the DMX scene. This way it is e.g. possible to only change the color of Gobos while a DMX scene is running – without having to change the DMX scene itself for it. As soon as the “Send DMX” event is completed, the value defined in the scene is automatically output again. First select the device to be changed from the above drop down box. In the next step select the channel to be changed in “Channel Name”. Below that to the right select the value adjustment type again from among “Slider”, “Curve”, “Animator” and “Joystick”. These adjustment methods are available based on the type of channel. For the adjustment method “Slider” the values can be then adjusted in the “Value” section. The operation is analogous to that for setting up scenes (s. Channel Settings). The value adjustment type “Joystick” is only available for PAN and TILT (s. also value adjustment type “Joystick”). Using the “Phase 0 to 255” function you can shift in time the value adjustments of the devices when a DMX device group is selected (s. also Channel Settings).



Send DMX Event 9-1

DMX Scene



For the DMX scene the properties of the DMX devices are applied so that lighting conditions are created. By using a sequence of “light situations” (Steps) changing light conditions can be created. Creating simple and complex lighting conditions occurs within the DMX Settings (s. DMX Settings). A scene saved there can be selected by clicking on the “Select DMXScene” button in the window that opens. Clicking on a scene name from the large overview list makes it appear in the “Scene(s)” input area. The “OK” button causes the window to close and the selection to be locked in.

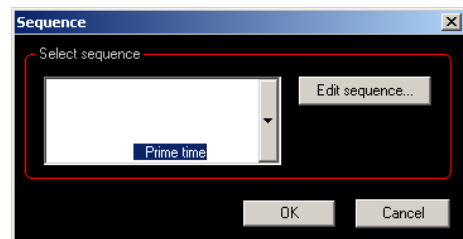
In “Select morph DMXScene” in the “DMXScene” window you can additionally select a scene to “fade” to after the scene finishes.

DMX Sequence



A sequence consists of several DMX scenes that are played one after the other. Double clicking on the event opens the sequence selection. You can select a previously set up DMX sequence from the drop down menu in “Select sequence”. It is also possible to edit the DMX sequence afterward using “Edit sequence...”.

Additional information on the settings possible there can be found in the section “Sequence” of the DMX settings. Each scene receives an identical amount of time within the entire sequence – independent of how many DMX fixtures, DMX steps or DMX channels were used in a DMX scene. Scenes can also be set up or added afterward. Additional information are available in the section on „Sequences“.



Move in Black

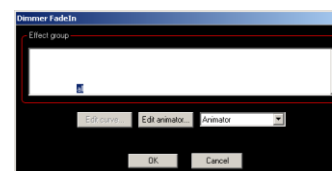
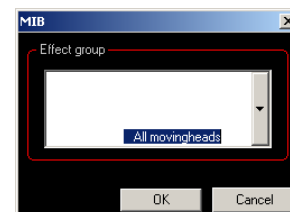


Lets the DMXScene – e.g. a movement of DMX devices – continue to run, but turns off the visible output during the “Move in Black” time period by closing the dimmer or shutter. By editing the effect its impact can be limited to individual DMX devices or groups.

Dimmer Fade



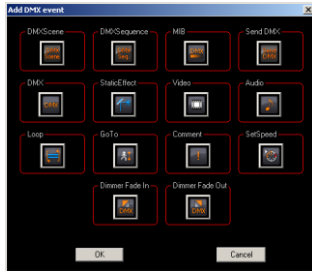
Lets the selected light effect or group fade in or out using the dimmer. A prerequisite is that the DMX device uses a dimmer. PHOENIX4 uses the dimmer channels selected in the DMX device for fading. By editing the effect its impact can be limited to individual DMX devices or groups.



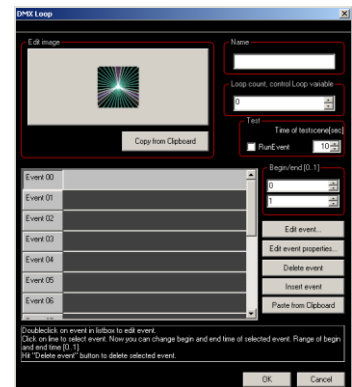
DMX Loop



A loop is a “Container” in which complex light conditions can be programmed. Here an additional timeline with 32 tracks is available. Once programmed, it can be reused as a whole over and over later on. The individual tracks can be adjusted in their length. To simplify the work, events can be inserted into this new timeline loop using copy n’ paste from the main timeline. The inserted events are added to the loop tracks in relative time to the main timeline.



With “Name” you can assign a name to the loop. By selecting an **empty** event track and clicking on “Edit-event..” a new window opens up for selecting an event. Clicking one leads to another selection window based on event selection. Finally the selection is transferred to the event track in the DMX loop main window by selecting the “OK” button. Renewed selection of “Edit event...” for an active track or double clicking on the event



opens up the settings for editing the corresponding event. With “Edit event properties” general settings for the event are edited. “Delete event” removes the event from the event track.. “Insert Event” shifts the event down by one event track.

Using the “Paste from Clipboard” function it is very easy to copy existing DMX events into a DMX loop. The corresponding DMX events need to be highlighted on the main timeline and copied onto the clipboard using “CTRL+C” or the context menu upon clicking the right mouse button. If you now open the DMX loop event for editing and click on “Paste from Clipboard”, the events are inserted into the loop tracks relative to the original position.

The length of the individual events is adjusted numerically using the number boxes in “Begin/end [0..1]”. First you have to select the event. The numeric adjustment then shows up visibly in the length of the event. The upper field adjusts the starting time, the bottom one the end time.

Selecting the “RunEvent” checkbox in the “Test” section results in the output of the DMX loop event for the amount of time specified in seconds in the “Time of Testscene (sec)” field.

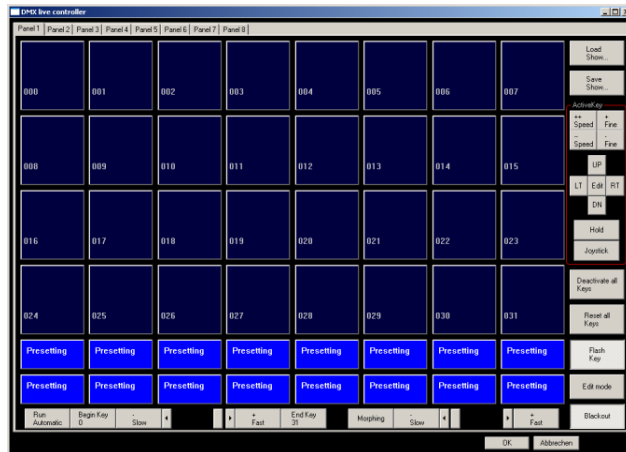
The “Loop Count control variable” is only needed in case the event “VAR” is used. In this case a value can be stored here that directs the opening of the DMX loop event.

9.1. DMX-LIVE Controller

DMX events, however, are not limited to being added on the tracks of the timeline. Especially for fast implementation in a live situation the “DMX Live Controller” was developed. It

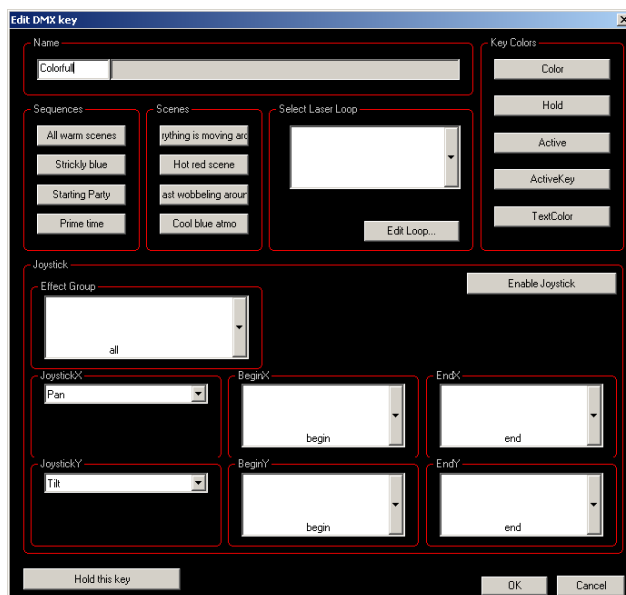


superimposes seamlessly onto the existing DMX settings and programming and enables recalling a scene, sequences (and even laser loops). Starting the live operation is handled in the menu item “DMX>Live” on the top menu bar.



Operation is very easy. Selecting one of the blue tiles runs the saved action. It can be scenes, sequences and laser loops. Above the tiles you can switch to 8 banks using the tabs, so that overall up to 256 tiles with DMX situations can be stored. The presetting storage locations permit saving the conditions of several DMX effect tiles on one tile. For this the lighting conditions are set first (even with several active tiles). If the Preset button is clicked with the right mouse button, then the current lighting conditions are saved. In addition its colors can be altered and it can be assigned its own name.

To program one of the DMX tiles click the “Edit mode” button on the bottom right edge. The chosen tile is then edited.



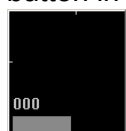
Now you can decide which sequences, scenes and laser loops are to be run when this button is pushed.

On the top right with „Name“ a name can be assigned that is then displayed on the tile. By clicking on „Sequences“ and „Scenes“ a selection window opens to choose the appropriate DMX lighting conditions. Next its name is displayed on the buttons. All saved sequences and scenes are played simultaneously. Overlapping devices or signals should be avoided. If previously set up, a laser loop

event can be selected from the drop down box to the right in the “Select Laser Loop” section that is output in addition to the DMX devices. The assignment of colors in “Key Colors” permits the fast distinction between the states of the DMX buttons. One click on each status opens the color selector.

In the large bottom “Joystick” area the “Effect Group” i.e. the DMX devices, the channel to be directed e.g. PAN & TILT with “Joystick X” and “Joystick Y”, and the value range with “BeginX” & “EndX” or “BeginY” & “EndY” can be set up for the intersection function.

ON the DMX tiles of the main interface the “**Joystick**” values appear as small white lines on the edge. The joystick function has to be selected in the tile settings or using the “Joystick” button in the center of the right edge.



The invisible crosshairs can be moved by holding down the left mouse button. For example, you can define pan and tilt as joystick for a moving head and thus interactively move the moving heads during the show...

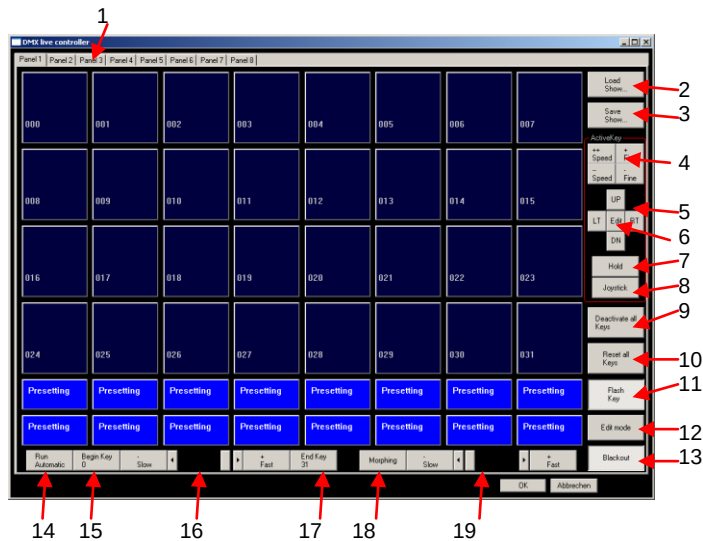
If the “Hold this key” button is active, then the hold function is active for this DMX

tile which when selected ensures that the saved DMX effects are passed along even if there has been a switch to another DMX tile. To stop the hold function the corresponding button must be selected again. This function is also included on the main interface in the section on "ActiveKey".

Note:

The LIVE controller function works with hierarchical processing, i.e., the values of the later effect tiles record over the ones earlier on. For example, if you want to spontaneously change the color of a moving head during movement, then you can simply place the color channel onto one of the later effect tiles. When activating 2 effect tiles that use the same DMX devices the last effect has priority and will overwrite the color of the scene from the first effect button.

9.1.1. Surface of the DMX-LIVE-Controller



- 1) Effect banks
- 2) Loading the DMX LIVE banks
- 3) Saving the LIVE banks
- 4) Effect runtime
- 5) Select the next DMX effect
- 6) Edit / change the effect
- 7) Activate / deactivate the hold mode for effects
- 8) Activate / deactivate the joystick function
- 9) Deactivate all effects
- 10) Reset all effects to the defaults
- 11) Activate / deactivate flash mode for the effects
- 12) Activate / deactivate edit mode
- 13) Blackout – stops DMX output
- 14) Activate / deactivate AutoRun mode
- 15) Select the start effect
- 16) Speed for Autorun
- 17) Select the last effect for Autorun
- 18) Lets the DMX channels transition from one effect into another upon transfer
- 19) Transition speed

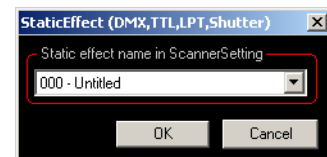
9.2. Other – Events

Aside from the laser and DMX effects there are several more that expand the functionality.

Static Events



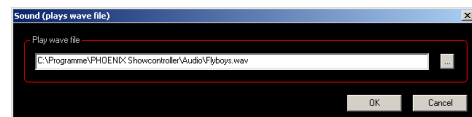
Recalls the effect saved in “StaticEvents” within the “Show Settings”. These can be DMX functions as well as TTL signals. A more detailed description is available in “Show Settings”.



Sound



Provides the option of inserting an audio file in the WAV file format quickly into the timeline – without having to change the audio synchronizations file. With this function a noise effect, e.g. the squeaking of a door, can be built into a graphics show.



DMX Comment



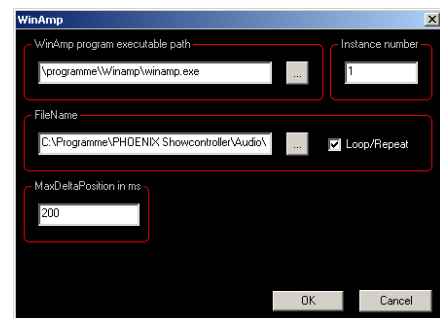
For writing a brief comment on the DMX timeline. Has no further effect on the show.



WinAmp



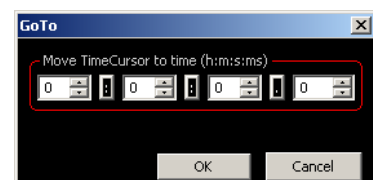
Starts the audio file in sync with the show in the WinAmp player. The path for the WinAmp.exe file is entered in the first selection window. Underneath that, in “FileName” the audio file that is supposed to be played. Immediately to the right you can specify whether the audio file should be repeated if the “WinAmp” event is longer than the runtime of the file. In „MaxDeltaPosition in ms“ a play delay can be entered.



GoTo



Let the time display (TimeCursor) jump to the time specified within the event.



If / Goto Event

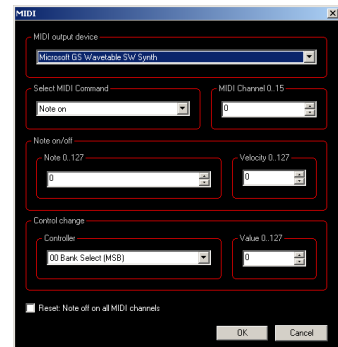
In this event you can direct run process via the system time. This effect is needed when you have an implementation whereby something is supposed to happen from 10-12 o'clock and something at another place at 12:01. With "Begin System Time" you set when something is supposed to start happening. "End System Time" specifies up to which time the time leap redirect is supposed to be active.

Midi



Sends out corresponding Midi direction signals via a MIDI device.

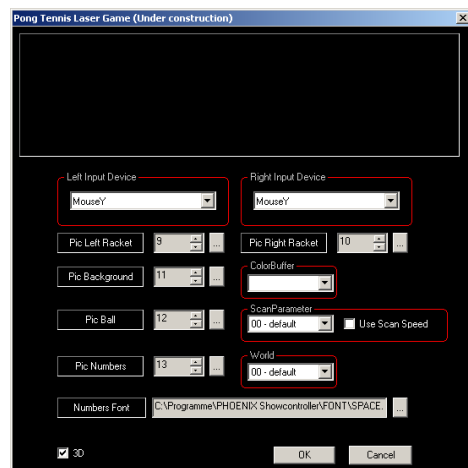
All Midi devices registered in the system can be used. The corresponding ones appear in the selection box "MIDI output device". Below that, in the "Select MIDI command" you can select the MIDI command to be sent from the option box. Immediately to the right of that you can set the MIDI channel for transmitting commands with "MIDI channel 0-15". In the "Note ON/OFF" section the grade and acceleration are displayed with "Note 0..127" and "Velocity 0..127". In case a "Control Change" is supposed to be sent, the settings are adjusted in the "Control Change" section. For "Controller" predefined entries are available which are completed with the announcement of the value "Value 0..127".



Pong / Tennis



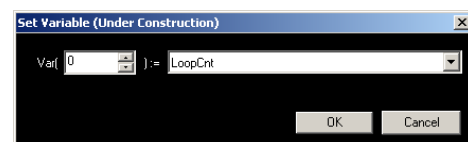
Is a laser game that can be played with 2 people. The playing field as well as the paddles and balls can be designed individually. There are already "tennis-type" graphics in the demo folder. Operation is unbelievably easy! First select your steering mechanism for the "Left input Device" and "Right input Device". These can be joysticks connected to your PC, as well as the mouse, a DMX controller o.s. Next select a frame from the catalogue for the individual paddles etc. Further down in the window you have to select the font for the display of the points. (Select ...\\PHOENIX Showcontroller\\Font\\). In addition, the projection zone and the scan parameters to be used can be selected.



Set Var



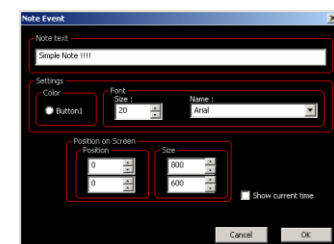
For experienced show programmers and mathematicians it is possible to define the variables here for all offered expressions.



Note Event



Creates a pop up window. With this you can e.g. place messages on a 2. Monitor in the backstage area. Aside from the text you can also specify the font, background color and position of the message window.



No Operation



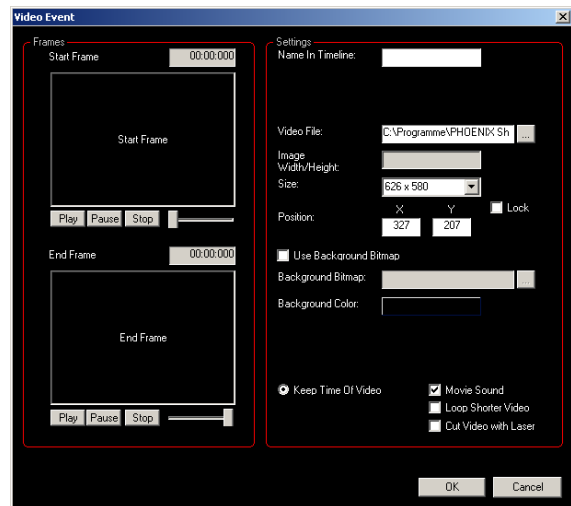
The „No Operation“ event ensures that no events are executed.

Video



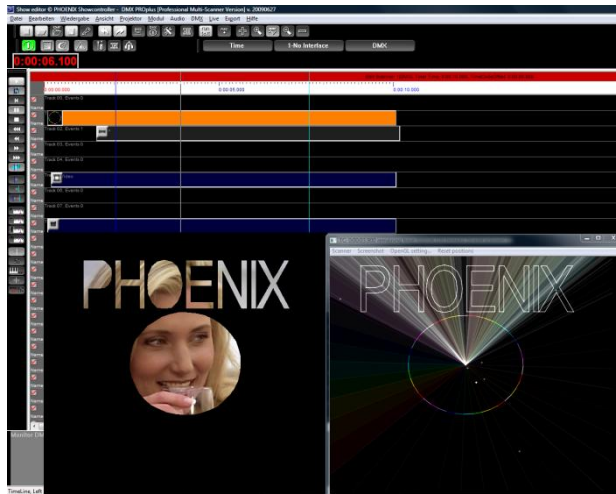
For the display of a video on another graphics card output. In principle, all videos can be loaded that can be played back by the Windows (!) Media Player. The higher the compression of the video, the more problems / shaking can occur during playback. The event is deposited on the timeline **“DMX”** when added – just like the other **“Other”** and **“DMX”** events.

The video is played frame by frame in sync with the laser show or the lasers and DMX fixtures (depending on the number of frames in the video). The start and end frame can be selected in the effect's properties text window. For the time period during which no video output occurs, a background image e.g. a company logo or alternatively an individual color with **“Background”** setting can be selected. The size of the image (the optimal resolution of the video projector is best) as well as the position of the video image must be set this way. In addition you can choose whether the audio file of the video should be used and whether the video should be repeated if the event is longer than the play time.



The **“Cut Video with Laser”** checkbox is only available if the optionally available video cutting function was purchased.

10 Video Cutting

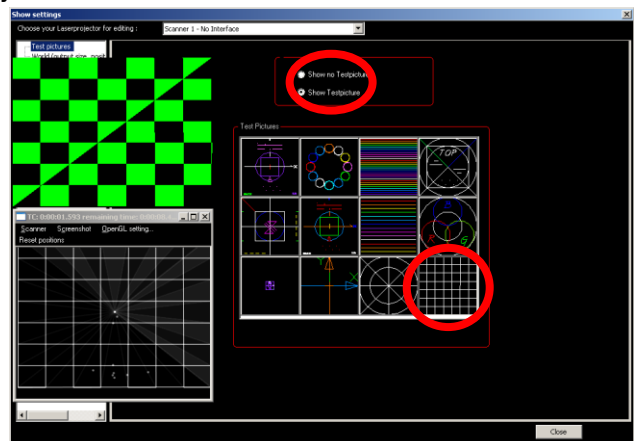


Video Laser Cutting is the creative art of video laser presentation. Assuming the appropriate optionally purchased license exists, the checkbox “Cut Video with Laser” can be activated for a video event. The video image is now masked by the simultaneous release of the laser animation. (cut out). The “Masking” is principally only done using the first scanner or timeline 1. If you e.g. let a circle move from right to left, then the video projector will only display the video image **in** the circle. To achieve a perfect result, you have to adjust the

laser projector and the beamer perfectly to each other with overlaying. The synchronization of the video projector with the laser projector must be executed extremely carefully.

Proceed as follows to do this:

- 1) Create a video event using video or BMP graphics.
- 2) Set up your laser and video projectors such that both are standing as close together as possible and can project perfectly (also without geometric distortions if possible) onto the screen. (That would only complicate the adjustments)
- 3) Specify a color (e.g. green) for the “Background Color” in the video event that is displayed when **no** video is playing (a break).
- 4) Close the video event window with “OK”
- 5) Click on „Settings“ to enter the projection
- 6) Select the test image with the grid lines.
- 7) Now you see corresponding grid chess board lines on your video projector and on your laser projector. Now you have to adjust the laser lines **EXACTLY** to the video chess board rectangles using the „World“-settings. First set the values “MoveXY” and “AngleZ correction” to 0 and the “Size” for each to 1. If you want to adjust the size of the output, do



this **only** with the settings in “**Geometric correction**”. If you only want to change the size of the **laser output**, you can achieve this using “SizeX” or “SizeY” of the “Scanner output size” at the bottom right.

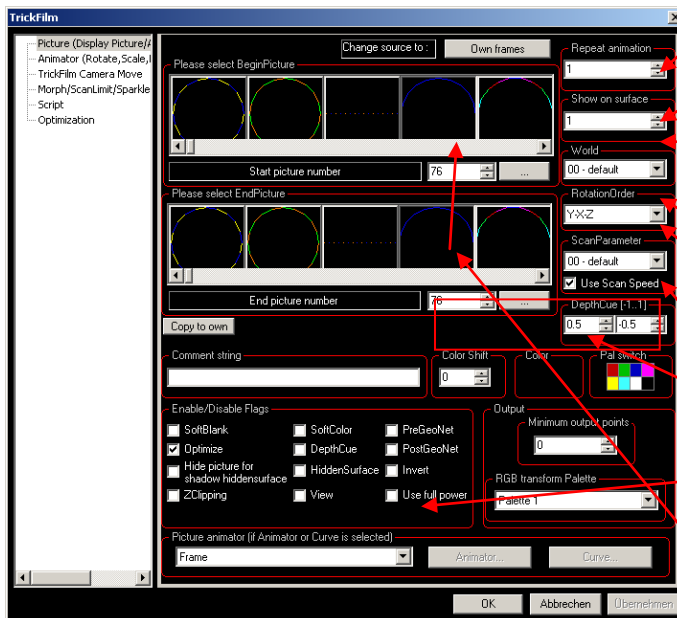
Finally the most important (!) one: **Save**: Assign a separate name to the “World” settings! Phoenix4 Pro only saves the world name in the show. The settings themselves are saved in a separate file in the Phoenix subdirectory “World”. The settings saved in this file are used the next time the show is opened. The show uses the settings stored in the file with the referenced name. If you do not save a world with a unique name – it can therefore happen that you get altered settings from an identically named settings file the next time you open it. The same applies to the scanner parameters, by the way...

Note: If you create several worlds (up to 32) EVERY world must receive its own name and be saved separately.

11 Animation

The animation event is the most important event in PHOENIX4 and the basis for every laser show. An animation is automatically created when an animation is dragged from the library onto the tracks of the timeline or added. Once an animation with its pictures is on the timeline, they are automatically added to the **internal** laser show catalogue and can then also be selected from there. An animation can consist of a single (frame) image (with the same start and end picture) or of several pictures (with the specification of a start and end picture). The pictures are output as an animation in a sequence from the start to the end picture one after the other. The settings in an animation go far beyond the specification of a start and end picture. Point shifts (Morphings) and many other effects are available. Only with the animation event can a complete laser show be programmed!

To discover the many possibilities of the individual features you need quite a bit of desire to experiment! Take some time to discover the features.



Number of repetitions of an animation (Run through the frames) within the event duration

Layer position (Whether the animation is to be in the foreground)

Selection of the "World" in which this effect takes place.

Selection of the rotation order to be maintained.

Selection of the "Scanner settings" with which the animation is to be run.

Cutting of the perspective axis (Z) (front and back)

Color shifting of the picture. A single color or color morphing are possible

Processing type of an animation: Normal, Animator & Curve. This way animations can be played back and forth or following a path...

In the start frame and end frame the frame the animation is to start on and end on are indicated. For identical frames only the specified picture is displayed.

Flags:

- Softblank: Lets the blanking points fade out slowly (fading figure until the end).
- Optimize: Optimizes the corner points of a drawing automatically. Depending on the angle more points are automatically inserted.
- Hide picture... Hides the picture. All lines are drawn with blanking lines.
- Z-Clipping: Permits / denies the general clipping along the z-axis (depth axis). May have to be activated in the animation!
- SoftColor: Lets the colors transition into each other. (No hard cuts)
- DepthCue Fades out the lines along the z-axis.
- HiddenSurface Permits / denies the HiddenSurface function (ONLY works for 3D pictures)
- View Permits / denies the View function
- PreGeoNet Permits / denies the GeoNet functions
- PostGeoNet Permits / denies the GeoNet functions
- Invert Only Works in connection with the "Surface Layer". A second picture / A second image / Animation is then played within the first one (masked by it) instead of being hidden by it. The higher the "Show on surface" value, the closer to the foreground this animation is. Example with 2 animations:

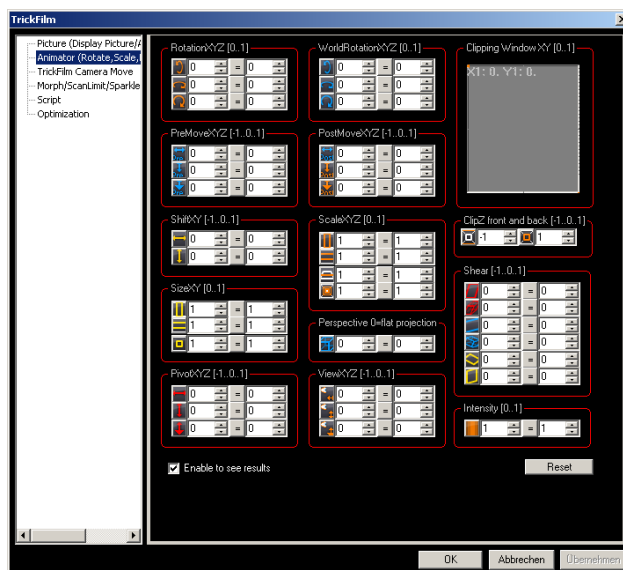


With Invert

Without Invert

- Use full power Deactivates the color correction (all colors 100% output)

11.1. Trickfilm (Animation) – Animator

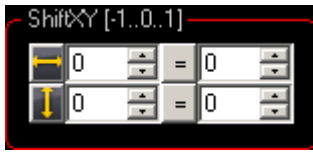


As mentioned above you can also program a complete laser show using the animation event! The animation's required properties such as changes in size, translations and rotations etc. can already be specified in the animation itself. Thus it is not necessary to place an additional event on the timeline for a movement from right to left – this can be accomplished faster in the animation itself.

The simple value range goes from 0 – 1 (0% -100%) in PHOENIX4. That means a complete rotation of 360 degrees is achieved by entering a starting value of 0 and an end value of 1 (100%). However,

values outside of that range can be chosen, e.g., to double the number of rotations during the event period. This would be the case for an end value of "2". If the start and end value are numerically different, then over the course of the animation a value increase/decrease

takes place until the values are identical at the end. If the button displaying the equal sign in the center is active, then both values are altered simultaneously and a constant functional change takes place.



“Animator Window” above.

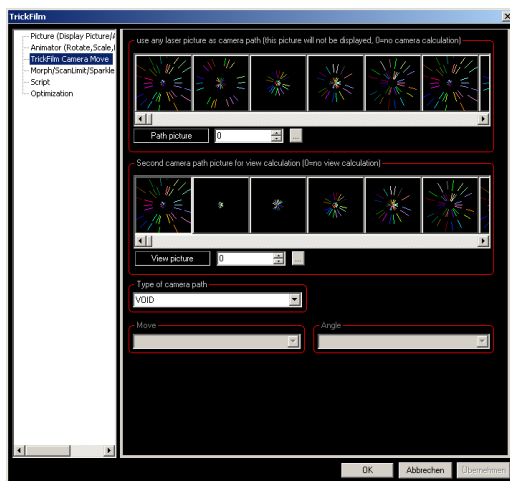
By clicking on the small symbols on the left edge of the input fields the corresponding animation event windows open! Here you can define the movements even more precisely. More detailed information about the Animator is available in the chapter

Many of the fundamental animation options are found here in the animation. You can find an extensive description of the functions in the section on “Events”.



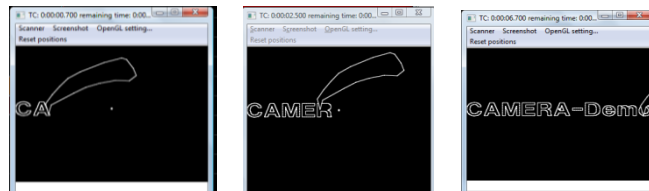
A function that cannot be defined using numeric values or the Animator here in the animation is “Clipping”. If you click on the grey surface with the left mouse button, then the upper left corner of the clipping area is set. The position of the bottom right corner is fixed with the right mouse button. The rectangle defined by these two points is the visible area of the animation.

11.2. Animation – Camera Move



This function is needed when you want to let a picture (frame) follow a path. You can e.g. implement writing a word with a feather.

First of all we need 2 pictures (frames). The picture „to be drawn“ and the „drawing“ picture. In our example that would be a word and a writing utensil (feather).



Both are created in the following. Switch to the drawing program CAD to create these two pictures (frames)...

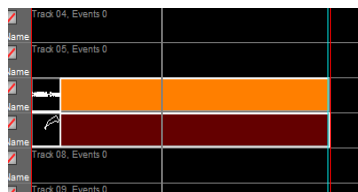
Now you can stop “CAD” again and return to PHOENIX4 PRO/PROPLUS ...

Open the library there (if it isn't already open) with „View>Show Library“. Select a directory or create a new one. Click on the right hand side with the right mouse button between the symbols and select „Import file ...“ from the menu! Now open the newly created file. It now appears as a symbol in the library. Repeat this with the other file.

Now click twice each time on the new symbols or drag the icons from the library onto the tracks of the timeline.

Now align the animations precisely underneath each other. Pay attention to ensure that both are equally long.

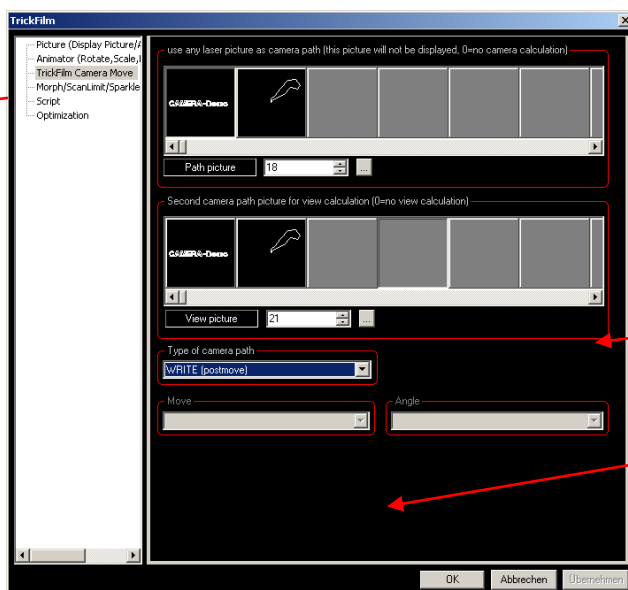
Animation 1:



Edit the animation by double clicking on it. Switch to the settings “**Morph/Scanlimit/Sparkle**” and activate the function by selecting the checkbox “Enable Scanlimit” in “Scanlimit”. Now close the animation again..

When you start the show, you will now already see that the word is being drawn point by point.

Animation 2:



Open the second animation. Change the value in „Show on Surface“ in the right column from 1 to 2 – to give the feather a higher level (priority) and to always let it appear to be the foreground of the word. Then switch to the menu “**Trickfilm Camera Move**” and select as path-picture the word “**Camera-Demo**”.

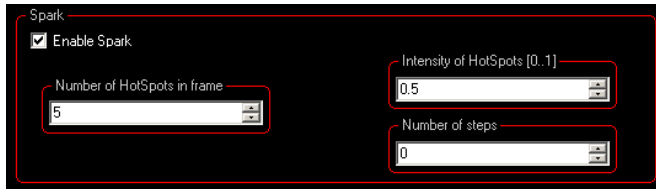
Below that, in “View Picture” select an empty frame (for calculating) except for Frame 0 – this would deactivate the function again!

Finally, select the function “**WRITE (Postmove)**” from the Combo-box.

Close the animation with “OK” and start the show. The feather should now “write”.

Note: In some cases the feather will not stay on the path precisely. In this case increase the “interpolation rate” in CAD a bit (More points = higher resolution). You can achieve this by marking all points/lines (“a” key) and selecting the option “Transform>Interpolate” from the top menu in CAD. Some “writing mistakes” can also be corrected with the CURVE value adjustment of the ScanLimit function for the word (in the animation in PHOENIX4 Pro itself)! Try it yourself...

Animation - Sparkle

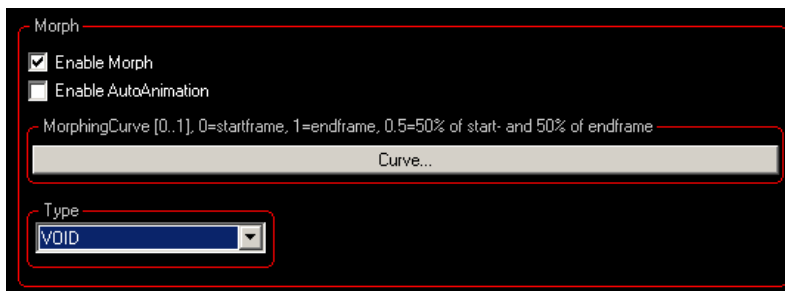


The “Sparkle” function is located in the menu item “Morph/Scanlimit/Sparkle”. It creates small bright points (Hotspots) that randomly flash up on the paths of a figure. A very beautiful effect e.g. in a wave in which randomly bright points

flash along its outline in the fog.

Select the checkbox “Enable Sparkle” to activate the effect. “Number of HotSpots in frame” sets the number of flashing points. Their intensity is regulated via “Intensity of HotSpots”. With “Number of steps” you determine how often the position of the hotspots changes over the course of the animation.

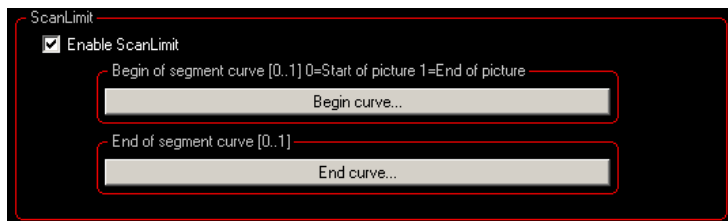
11.3. Animation – Morph from one picture to another



„Enable Morph“ activates the translation of the figure from start-figure to end-figure, without considering the frames located between them. If you add the “Enable Autoanimation” function, then the translation of ALL frames,

from the starting figure to the end figure is executed within the animation length. Using the “MorphingCurve” more complex translations can be programmed e.g. you can translate within the length of the animation from the starting frame to the end frame and back again... The position “0” of the curve then corresponds to the starting picture, the position “1” to the end picture.

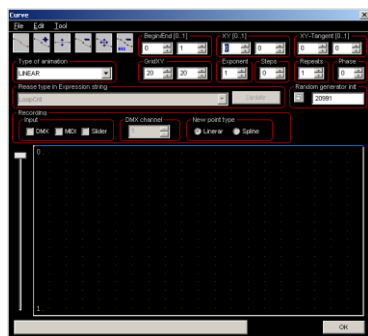
11.4. Animation - SCANLIMIT



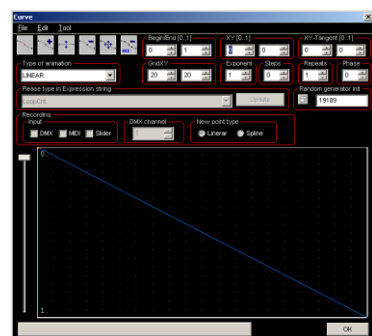
Making graphics appear or vanish from point to point is easily possible with this function.

When the function is activated, then the figure is redrawn from point to point. Without further adjustments to the curve the drawing proceeds within the animation period from the first to the last point.

The instant the drawing is complete, the figure creation ends as well. Thus it is easy, for example, to let a logo evolve/ be drawn slowly etc.



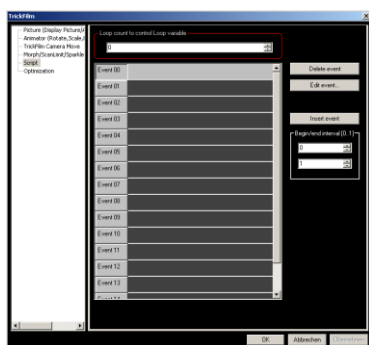
Using the start and end curves you can decide how the starting and end point of a picture / an animation should behave over the time period. By default the setting for „Edit Curve start“ curve is set to the constant value “0”. That is, the first point of the drawing is displayed from the first to the last second. Changing the curve towards the value “1” at the end leads to the first point of the drawing vanishing again towards the end or being erased.



The same applies to the “Edit curve end” setting. Here you can see that a linear path from the value “0” to the value “1” is executed. That is, as time passes more and more „End points” are drawn...until the last second – when the value reaches “1”, and ALL points are displayed visibly.

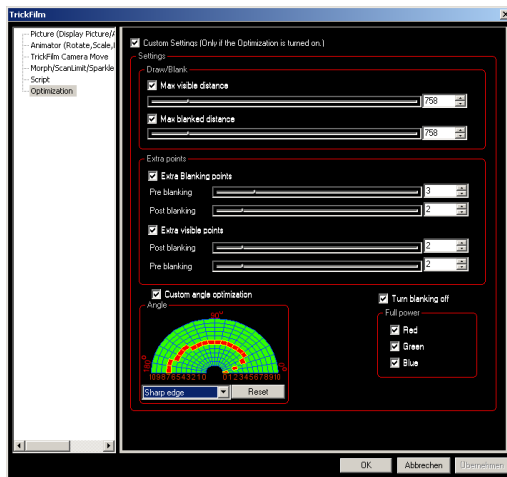
You can also picture this behavior as a piece of thread being pulled along the contour of the figure. The beginning of the thread remains at the starting point the entire time while the end on the other hand moves along the figure and pulls a piece of thread behind itself until it reaches the end of the figure and the entire figure is visible.

11.5. Animation - Script

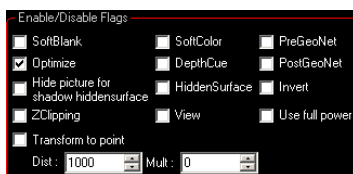


In the script you can once again insert additional events on your own timeline. This works similarly to the loop event (additional information for application there). This way nesting of an effect within an effect is possible. The advantage of nesting is that all effects and additional animations always move and adjust adequately to the size of the main animation.

11.6. Trickfilm – Optimization



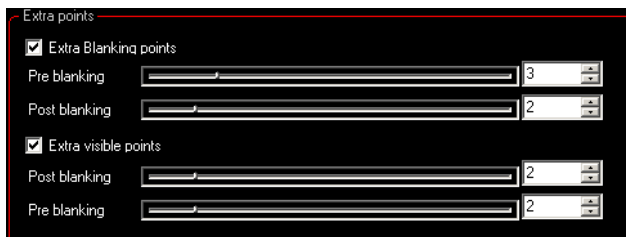
One of the strengths of PHOENIX Pro/ProPlus is that it can optimize any animation or animated movie afterward. The global settings of the projection zone and scan parameters are then overwritten. Thus you can concentrate on the basic shapes when creating graphics and later on, assisted by software, enter the correct settings to achieve a concisely contoured and low distortion animation. You can find all this in the navigation entry “Optimization”.



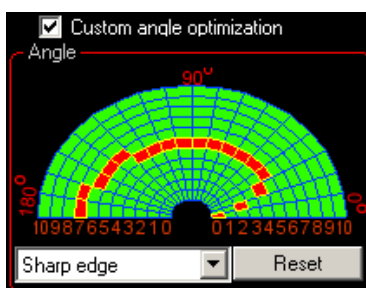
Optimization is turned on with the above checkbox. As a prerequisite the “Flag” for “Optimize” must be checked on the “Picture” settings.



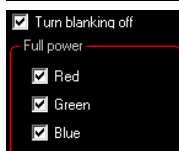
Using the “Draw/Blank” settings the interval between the visible and invisibly drawn points can be specified for the animation.



The „Extra Points“ guide the number of points at the line beginnings and ends for points drawn visibly and invisibly. With this distorted lines can be corrected and paths that aren't closed as well as points that are too bright can be adjusted.

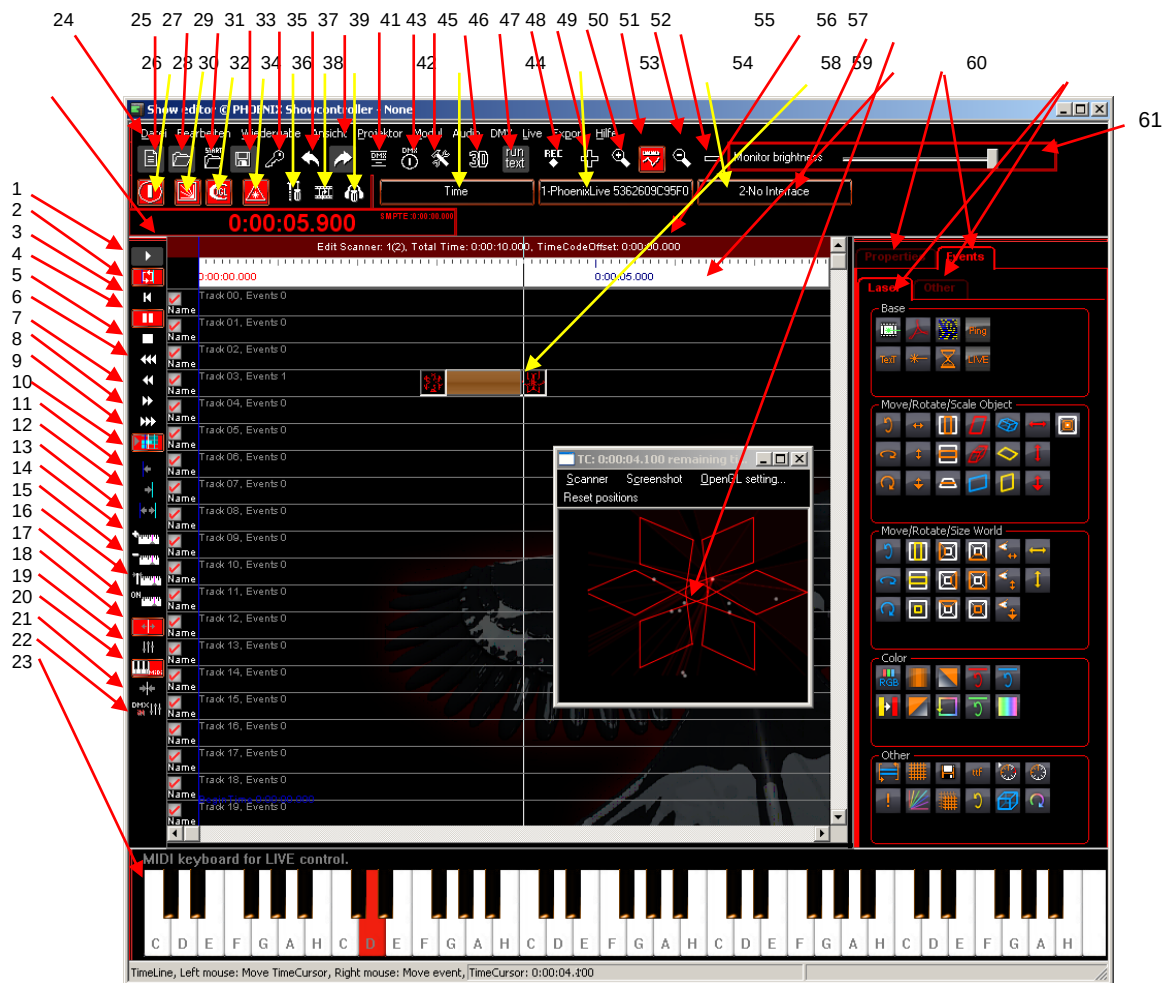


One of the best figure postprocessing options is offered by corner optimization. Every relative angle can be enhanced with additional points later on to further emphasize graphical details. The red markings are used to specify how many points are added at which angle. On the horizontal axis the points are marked from 0 to 10. Along the arch the angles range from 0° to 180°. Underneath, the option field offers preset profiles to quickly enter settings.



By checking the „Full Power“ checkboxes for individual colors color mixing is turned off so that the colors are output at full intensity via the software. If all checkboxes are checked only white is output for this animation with an RGB laser.

11.7. PHOENIX4 Pro/ProPlus Interface Description



11.7.1. Interface – Buttons

- 1) **Start**  To start / run the show
- 2) **Loop**  To repeat a passage between start and end markers that are placed with (11) and (12).
- 3) **Restart**  Start the show again from the beginning
- 4) **Pause**  Stops the running show and can be continued from this point on at any time.
- 5) **Stop**  Stops the show completely. DMX and laser signals are no longer output. The starting time is reset to the start marker
- 6) **Rewind**  Big jump backward by the time marker on the timeline.

- 7) **Rewind** Short backward jump of the time marker on the timeline



- 8) **Forward** Short forward jump of the time marker on the timeline



- 9) **Forward** Large forward jump of the time marker on the timeline



- 10) **Only active** Only events marked as active on the timeline are output



- 11) **Start Marker** Starting point of a loop (of a repetition loop)



- 12) **End Marker** End point of a loop (of a repetition loop)



- 13) **Open Marker**

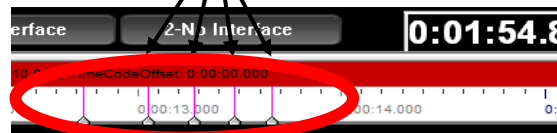


Sets the start and end markers to the maximum length of the synchronization source (e.g. length of the audio file)

- 14) **Beat-Marker**



Depending on whether (17) is activated or deactivated you can use this button to place beat markers in the top white timeline or pause the show. The same function is available with the space bar...



- 15) **Marker-Delete** To delete **all** beat markers on the timeline.



- 16) **Marker-Magnet** Jumps to the beat markers to find these more quickly.



- 17) **Marker On/Off**



Turns the function to set the beat markers on or off. Beat markers can be placed using the “Beat-Marker” button or the “space bar”.

- 18) **Auto-Scroll**



Keeps moving up the view of the timeline during the running of the show so that the timeline marker does not disappear from the window.

- 19) **Var.Sliders**



Opens the window with the variable controllers. Each one of the controllers can be assigned to a function (in an “Animator” or in a “Curve”). To do this, select the option “Expression” in “Type of Animation” in the Animator or in the Curve and in the expression field “Slider1.” Now the value will be adjusted between 0 (0%) and 1 (100%) with the slider 1.

This method makes it possible e.g. to control values such as e.g. colors, intensity, motion etc. live during the show later on. The last slider on the right hand side is responsible for the “LIVE” speed. If “LIVE” is selected in the TimeCodeSource (synchronization source), the show runtime can be influenced with it. The min. and max. values (above and below the slider) can still be changed individually from 0.01 to 1000.



20) Midi



Opens/ Closes the view of the Midi keyboard (23)

21) TimeCursor



If the time marker has left the window, the view of the timeline can be centered on it again with this button.

22) DMX in



Activates / Deactivates the DMX-in DMX-ready. You can Connect an external DMX dashboard to **one** of the interfaces and remotely control all functions via DMX. If DMX-in is deactivated, no DMX signal is received for controlling the software!!!

23) Midikeyboard Displays the Midi keyboard. By clicking on the keys the Midi keyboard window opens. The Midi functions are explained in greater detail in the chapter “Midi Control”.



11.7.2. Top-Menu – Menu Items

a. File

New Show (CTRL+N)

Creates a new show file. All timelines are reset.

Open existing show ... (CTRL+O)

To open an already programmed show

Save this show (CTRL+S)

The open show is saved with the same name

Save as...

The show is saved as a file with another name that can be created here

Import Show...

A preprogrammed show can be added to the already open show. The show is inserted at the current position of the time marker. In addition, the track number can be selected on which to place the first track of the imported show

Recent File

A selection of recently opened shows appears here to reload these quickly.

Send this show by email ...

With this the open show is added to a new email as an attachment.

Copy protection...

With the copy protection a laser show can be protected with Phoenix4 **ProPlus** and given various rights. More on this topic below.

Enter Password...

By entering the correct password you are able to edit the show's copy protection options.

Stop realtime and running show

Closes Phoenix4 Pro / ProPlus

b. Edit

Undo (Ctrl+Z)

Undo the last editing steps

Repeat (Ctrl + Y)

Redo the last steps you undid

Delete all active events (Del)

Delete all selected events

Cut all active events from the timeline (Ctrl+X)

Cut all selected events from the timeline and store them temporarily on the clipboard

Copy all selected events relative to the current time marker on the timeline (Ctrl+C)

Copy all selected events from the timeline onto the clipboard

Insert all events from the clipboard (Ctrl+V)

Paste the events on the clipboard into the time position at which you are located at the time of copying or cutting.

Shift all active events forward (Right cursor)

Shift all selected events to the right

Move all active events to the back (Left cursor)

Shift all selected events to the left

Move all active events up (Up cursor)

Shift all selected events up one track

Move all active events down (Down cursor)

Shift all selected event down one track

Select all events (Ctrl+A)

Select all events on all tracks of the current timeline

Deactivate all events (Ctrl+I)

Deselect all selected events on all tracks of the current timeline

Invert all event selections

Invert all event selections
(Selected<-> not selected)

Find events on the timeline

Jump to events of a specific type on the timeline

Repeat search for events

Jump to the next event of a specific type on the timeline

c. Play

Play the show (F5)

Plays the show

Edit the show (F6)

Opens the show for editing

Stop (F7)

Stops the show. Resets the time marker to the beginning (or to the start marker)

Pause (F8)

Pauses the running of the show. Does not turn off the display!!

Rewind (F9)

Lets the time marker jump back in time by a few seconds

Fast rewind

Lets the time marker jump back a few more seconds in time

Forward (F10)

Lets the time marker jump forward in time by a few seconds.

Fast forward

Lets the time marker jump forward a few more seconds in time.

Play in loop (F11)

When this function is selected, play back is repeated over and over again in a loop between the start and end markers.

Begin at the start (F12)

Restarts the show from the start marker.

Starting point (F2)

Sets the start marker to the current position of the time marker on the timeline

End point (F3)

Sets the end marker to the current position of the time marker on the timeline

Set the total interval (F4)

Sets the start and end marker to the total length of the synchronization source (e.g. the length of the audio file).

Laser output

Turns the laser output of the current timeline on/off

Enable 3D Simulation

Passes the operating commands from Phoenix4 Pro/ProPlus to the Phoenix 3D Visualizer

Start Phoenix 3D

Starts the Phoenix 3D Visualizer. The realtime display of the show in a 3 dimensional environment

Set time marker (Space)

Sets a beat marker on the time scale

Clear all TimeMarks

Deletes all beat markers from the time scale

Automatic window positioning

Follows the time marker in the display of the timeline window.

Go to the next event (Tab)

Sets the time marker in pause mode to the start of the next event

Go to the previous event (Tab+Shift)

Sets the time marker in pause mode to the start of the previous event

Execute all events

When deactivated only events are executed that are marked as "Active"

Go to the current time marker

Positions the view on the time marker.

d. View

Display the toolbar

Display for the selection of the synchronization source, the editable timeline and the background timeline

Display statusbar

Display of the statusbar at the bottom window edge

Display controlbar

Display of the controlbar at the right screen edge

Display rebar

See "Display Toolbar"

Display viewbar

Display the laser controls as well as the projection settings and synchronization source

Display MIDI keyboard for live operation

Superimposes the MIDI keyboard on the bottom of the screen

Display DMX

Displays a DMX monitor on the bottom of the screen which lets you check the potential signal output of DMX signals.

Display events

Display of the timeline's events and properties on the right hand side of the screen

Display timer

Display the show time/remaining time/SMPTE timecode

Show Library

Blends in the extensive figure/animation library for programming

Show Monitor Brightness

Displays the slider for adjusting the screen intensity

Reset Position

Resets the display elements and toolbars to the default positions.

Track height

Varies the track height of the timeline tracks at 3 levels.

Timeline height

The timeline height can be switched to full screen display for the display of waveform representations (only for WAV audio files).

Enlarge (Shift+ +) Enlarge

Zooms in on the view of the current time segment

Reduce (Shift+ -)

Zooms out on the view of the current time segment

Minimum size

Sets the view to the minimum time display size

Maximum size

Sets the view to the maximum time display size

Display preview window...

Displays the OpenGL/DirectX preview window

Display pictures of the animation events

Displays small preview images on the animation events on the timeline tracks

Display event icons

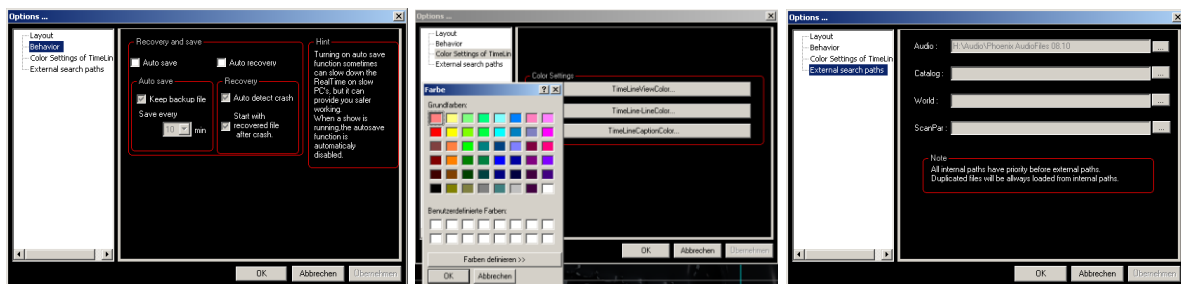
Displays small icons on the events.

Open new slider window for live operation

Opens the slider to manipulate effect properties in real-time for live synchronization or with the “Expressions” in the “Animator” or the “Curve”.

Options

Here the number of visible timelines can be specified, as well as the automatic save/backup functions, the screen colors for the user interface and the search paths for the system files.



Note: The settings do not take effect until PHOENIX4 is restarted!

e. Projector**Projector settings****1. Size, position, speed, colors, music source...**

Opens the window for entering the show settings

2. New**3. Open**

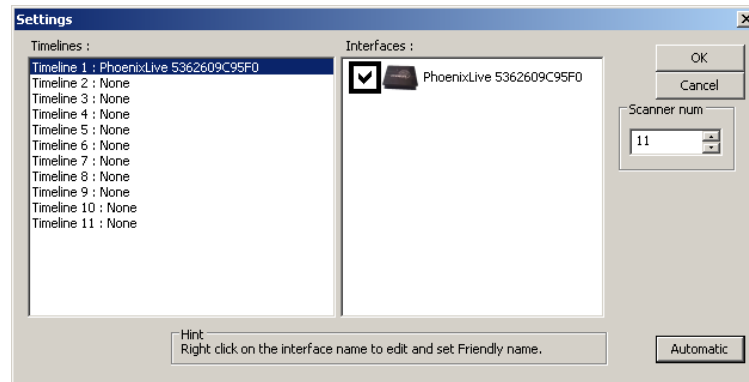
Opens the window for loading scan parameters

4. Save as...

Saves all current settings of the scan parameters with a new name.

Remap Interfaces...

To assign a timeline to a specific laser projector use the Interface Mapping menu. Here you can assign a name to the individual interfaces and assign the interface manually or automatically to a timeline. Upon clicking the “Automatic” button all interfaces are automatically distributed on the timeline one after the other according to their series number. The names are retained even after restarting the computer if they are used on the same PC.



Note: The interface name can be changed here as well. Click on the name with the right mouse button. A box opens and you can enter the name. Pushing the „Enter“ key completes the name assignment. The number of timelines (up to 32 in ProPlus) can be adjusted in the input box “Scanner num”.

The interface assignment is checked upon starting up the software. While the software is running, you can add new interfaces any time or deactivate them without having to restart the program. All connected interfaces (USB and network) are automatically detected and displayed.

Copy all events From ... To

To distribute a show quickly to several lasers (or interfaces), you can use the „Copy all events From ... To” function. It copies all events from the source timeline to the target timeline that is open for editing. All effects and time connections of the source timeline are transferred identically to the target timeline. You can also do the reverse if you only own one output card (interface), and copy ALL effects from ALL timelines to one timeline. This way you will not be missing any important effect sections.

CAUTION: Verify, however, that your scanners can still output the multiple points created by double effects cleanly...

f. Module:

i. Open Module

With the module function several events can be saved separately as a set. Hereby the individual events – as they are – are saved externally. Select the events to be saved by drawing a square with “Shift” and “left mouse button” around one or several of the events on the timeline. Then select “Module>Save as...” from the top menu bar and save the conditions or all selected events as a “Module”. Modules can then be reloaded any time using

the menu item “Open Module” and inserted into your show. The events are inserted at the position where your time marker is located at that time.

Note: If you want to insert a sequence of several events into your show several times it is recommended that you use the “Loop” event instead of a module. First select the events to be used and copy these using “Ctrl+C” onto the clipboard. Next insert a “Loop” event into the timeline and double click on it to edit it. Within the event click on “Paste from Clipboard” in the right column. The events will then be added to this loop event and output during play.

Speicher als... (Save as...)

For a description see „Open Module“

g. Audio

i. Settings...

From here you reach the „Audio-Settings menu“. A detailed description of this function can be found above. You can adjust all the important settings regarding the synchronization source (e.g. music etc.) here. You can also reach this menu by “double clicking” on the white timeline (58) or the  button.

h. DMX

Settings

Here, all settings relevant to DMX for all DMX devices (moving heads, scanners, fog etc.) are performed. You can obtain more information on the topic of DMX in the section “DMX Settings”

Colors)

Define the colors of the DMX events

LIVE

The LIVE interface primarily lets you program DMX effects, but also laser sequences easily and quickly and recall them via a touchscreen optimized interface. More on this topic is available in „DMX-LIVE“

lamps

For turning the scanners and movinghead light fixtures on and off. The corresponding channels are specified in the DMX settings for the devices used.

DMX only

If you do not use any lasers, it is advisable to turn off the laser effects.

Block DMX

All DMX signals are deactivated.

i. LIVE

Run Text

For spontaneous marquee messages e.g. on a screen – without having to especially program a show for this...

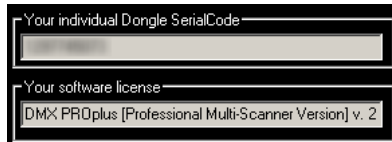
j. Export

Save Show to Memory Card

Save up to approx. 18 second shows and laser effects as a showfile (.pho). Afterward you can save these files on a PHOENIX-Net interface and recall them there via DMX.

k. Help

About this program..



..here you can check what your personal Dongle serial code is. For possible updates we need this information from you! It also displays the version you own.

German

Refers to the German instructions on the Phoenix4 Showcontroller Website

English

Refers to the English instructions on the Phoenix4 Showcontroller Website

Updater

Opens the Phoenix4 Online Updater to update the Phoenix4 software

11.7.3. Top-Menu - Menubar

24) **New**



Deletes the current show and starts a new project

25) **Open**



Loads an existing show

26) **Start**



For easy and quick start up of a show. All shows are displayed in the subfolder "Shows".

27) **Save**

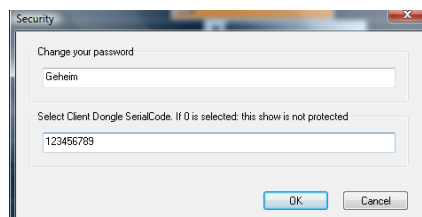


Saving the show with the current name. If no name has been assigned, a window pops up to enter a show name.

28) **Protect**



Protecting a show with a password.
(Only available with a PROplus license!)



Enter your personal password here.
(Remember it but do not share it with anyone else)

Enter the Dongle ID number here and assign appropriate rights.

To change the show privileges you have to enter the password.

CAUTION: There is no option to restore the password!!! If you forget it, none of the show privileges can be changed!

- 29) **Undo**  Undoes the last step.
- 30) **Redo**  Redoes the last UNDO command.
- 31) **DMX only**  If you do not wish to program any laser effects, it is advisable to only program in “DMX-Mode” to keep the overview.
- 41) **Block DMX**  Deactivates the DMX display
- 42) **DMX-Settings**  Opens the DMX settings
- 43) **3D-Visu**  Starts the PHOENIX4 3D visualization program
- 44) **LIVE-Runtext**  Starts the LIVE runtext window. (More about this in the section “Live-Runtext”)
- 45) **Rec-Loop**  Starts the Record loop window (More about this in the section REC-Loop))
- 46) **Zoom++**  Zoom with large steps
- 47) **Zoom+**  Zoom with small steps
- 48) **Wave-Form**  Displays the WAVE waveform representation if it was previously created in the audio settings.
- 49) **Zoom-**  Zoom out small step

- 50) **Zoom--** Zoom out large step



32) Monitor Brightness

For setting the screen brightness. Dragging the slider to the left darkens the monitor.



- 51) **All on / off** Activates or deactivates all laser projectors



52) Preview



Starts up the preview window. You can adjust the beam visibility settings in the preview window menu.

33) OpenGL



Switches between DirectX and OpenGL laser preview. In the preview method you can also set the beam settings in the preview window using the right mouse button.

34) An / Aus (On / Off)



Turns the currently active laser projector on or off. (The active timeline is always the one that has a red bar above the white timeline!).

35) Settings



Starts up the laser projector settings (See the explanations in the previous chapter about laser settings...

36) CATfile



Opens the projection settings directly with the "Load CAT-File" window

Audio Settings



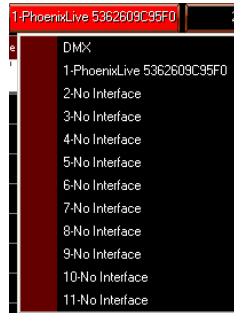
Opens the settings window for the synchronization source.

- 53) **TimeCodeSource** Displays the selected synchronization source for the show (E.g. MP3)

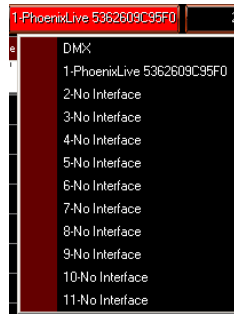


54) Edit Timeline

Displays which scanner can currently be edited. You can now select scanner 1 – 32 by clicking on it.

**55) Shadow-Timeline**

Displays a second timeline as 2. layer in the background. Allows better alignment of several timeline tracks. Background events are displayed in a different color and are NOT moveable / editable...

**56) Time**

Displays the remaining show time / **Upon mouse click:** Displays the already played show time or when using a SMPTE timecode signal the current timecode or the remaining time until the start of the show based on the SMPTE timecode.

**57) Timeline**

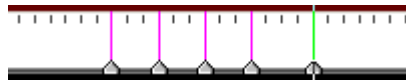
Displays the synchronization time. By double clicking on the timeline you arrive at the “audio window” – for setting the music etc.

58)**59) Event**

Events is the term used in general for all events such as effects etc, on the timeline.

**60) Beat marker**

Markings on the timeline that can be placed using the space bar or the + key (14). The beat marker function  must be turned on.



61) Preview Window

Preview window. Up to 32 laser projectors can be placed in the window using the mouse to be able to view the laser show without lasers.

The window provides different options within the menu to adjust the display:

Scanner

Preview Scanner Number

Specifies how many lasers are to be visible in the preview

Beamshow simulation of scanner number

Which lasers are to be used for the display of a beam show

Grafic simulation of scanner number

Which lasers are to be used for the display of a graphics show

Transformation

Sets the orientation of the X & Y axes of the individual interfaces for the preview(!).

Screenshot

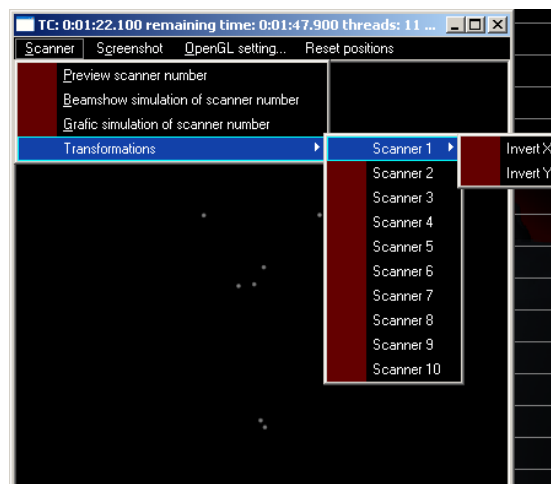
Takes a screenshot of the current preview and copies it onto the clipboard

OpenGL Settings...

Settings of the preview visualization e.g. beam simulation, fog density etc.

Reset Positions

Resets the positions of the preview laser projectors to the default positions. You can select from the center and an alignment on the circle



In the menu you can mirror all projectors along the x and y axes (for the preview **ONLY**). Beam simulation and/or graphics projection settings etc. In the "OpenGL Setting" you can also fine-tune the settings for the visibility of the beams.

11.7.4. Tab Menu

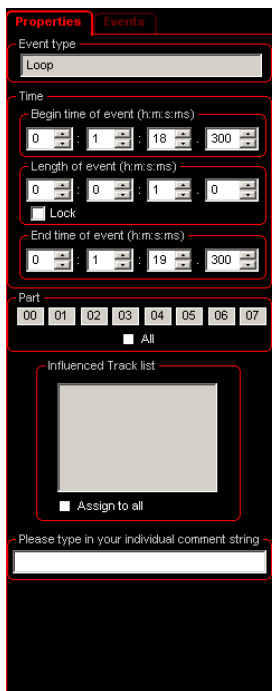
Displays either the events or the properties.



Events: All possible events that can be inserted into the timeline.

Properties: Displays the start point, duration and end point etc. as well as the current timelines of the current event.

Events: There are laser, DMX and other events. You have to put the events in order yourself. Simply use the left mouse button to drag n' drop the events. The order is automatically saved when the program is closed. Events can either be dragged onto the timeline using drag n' drop or inserted by double clicking. Depending on where the time marker is currently located on the timeline, the event is inserted at that location. When inserting one or more events they are placed precisely below each other on the timeline.



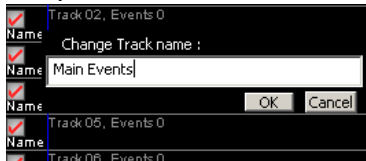
Properties:

As soon as an event is selected, several properties are displayed in this window. Start time, event duration and end time. You can optimize the length of the event and adjust it here.

If you have created an effect event with "Parts" and selected it here, you can use "**Parts**" to define WHICH part if the picture you want to move. Part definition takes place in "CAD" – back when the picture was drawn! The show "Robots" in the demo folder shows beautifully how to use parts. The show consists of a single frame(!). However, by using parts each arm, each leg etc. can be defined as a part and thus be moved individually.

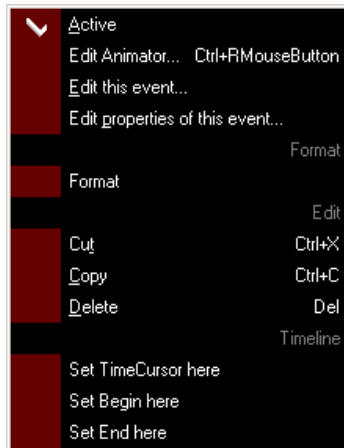
With **Influence Track Number** you can define precisely **WHICH** track on the timeline you wish to influence with this event. This way you can disable the default hierarchy of the events and select the events to be affected explicitly. If nothing is selected here, the next higher animation is always affected automatically according to the hierarchy principle.

62) Left Bar



On the left hand side of the timeline there are small check boxes... If you deactivate these, all events on this track are ignored during the playing of the show. Additionally, every track can be assigned a name.

63) Context Menus (right mouse button)



Depending on whether you use the right mouse button only on the timeline or on several (!) active events, more or fewer selection options are offered. The picture is now displaying all possibilities (In the example 3 events are selected)

With format all selected events can be right / left/ center adjusted simultaneously or adjusted to the same size.

12 Additional Features and Program Parts

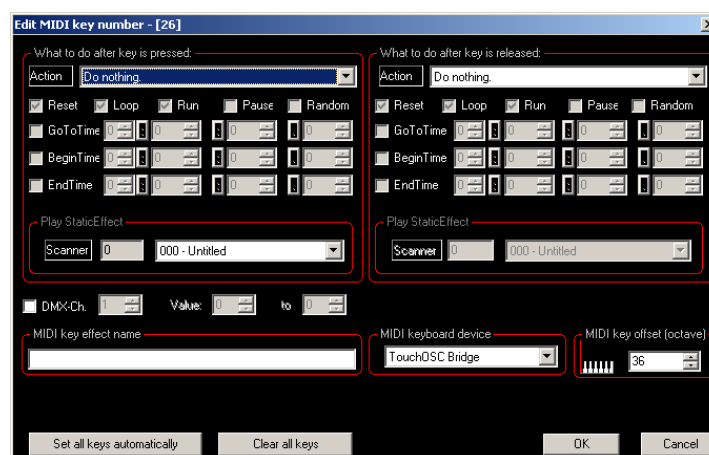
12.1. Midi Control

In PHOENIX4 all functions, events and movements can be operated / controlled by Midi and DMX-in. Basically there are 2 different Midi applications in PHOENIX. The first is jumping to a specific point in time on the timeline or a static effect. The second application is the interactive handling and adjustment of movements, animations, colors, effects and speeds.

Jumping to points in time:

To be able to use the MIDI function, a MIDI keyboard needs to first be connected via a USB connector to the PC and its driver has to be installed. Next you need to find it in PHOENIX4 under "Midikeyboard device" and select it. In addition, the keyboard has to be selected in the audio synchronization settings. In a few cases it is possible that PHOENIX4 has to be restarted to reliably recognize the Midi keyboard.

To play back a specific time window as a loop by pushing a key on the Midi keyboard proceed as follows:



- 1) The show must be stopped!
- 2) Click on one of the keys of the Midi keyboard (23) or on the USB Midi keyboard (Alternatively you can also use your PC keyboard instead of a MIDI keyboard)
- 3) The window "Enter Midi key number" opens. You can see based on the Midi number displayed in the window header which Midi key was pushed.
- 4) In the "**Action-Menu**" you can select between "**Go to**" or "**Static Effect**".
(Default: Upon "Do nothing" nothing happens).
The adjustments for pushing a key are performed in the left half of the window.
"**Go to**" means that when this key is pushed the time marker jumps to the time on the timeline that is specified in the "**GoToTime**" input box.

Now the time marker starts running until the time "EndTime". If there is a checkmark in "Loop", the time marker will then jump to the time set in "BeginTime". This way you can quickly and easily create an effect run through in a loop.

Example: A "crashing wave" is faded in over 2 seconds and then starts rotating. During the following period the wave is supposed to keep rotating. Of course, the fade in is not supposed to happen again during a repetition. So a 2. start point is set with "**BeginTime**" that is placed after the fading in of the wave. This way the fading in is not applied during the repetition. It is important that the check boxes to the left of "GoToTime", "BeginTime" and "EndTime" are selected accordingly.

- 5) On the right hand side you can specify what should happen if you release the key on the MIDI keyboard. Thus it is e.g. possible that the time marker jumps back to second 1 when the key is released. Or lands on an entirely different effect.
- 6) If you select "**Static Effect**" instead of "Go to", then the static effect that was selected in the drop down menu is executed the instant the key is pressed on the MIDI keyboard. The static effects are programmed in Settings. These can be e.g. DMX signals for fog machines, screens etc. or a TTL signal (0 / 5V). What is special about the static effects is that they can also be activated during a running show without having to interrupt / stop the show. Therefore, static effects are often used for effects that are manually applied such as fog, pyro, motorized screens etc. that can then be activated at any time.
- 7) For the "**DMX-in**" setting the channel and value of the incoming DMX-in value from the 1. interface(!) is used to activate the "MIDI functions". Just like for the Midi signal for the keys, the appropriate loop is started the instant the correct DMX signal is sent. You need to make sure that the "**DMX-in**" **button (22)** is selected – since otherwise no DMX signal will be accepted by PHOENIX4!!!

12.2. Record Loop Function

To program a show very quickly and effectively an innovative programming feature was created in PHOENIX4. The „Record Loop“. The principle is very easy and quick to learn. By pushing a key a previously created animation is written onto the timeline later on while programming the show. In preparation consider first which animation you wish to record e.g. crashing waves, rotating circles etc. Next these are assigned to a (Midi) key on the PC keyboard or a Midi key on a USB Midi keyboard. For final programming the music is started and the effects are inserted live to the beat of the music. There are two options here.

The first inserts an effect as long as the key is pushed. I.e. the start point is the push of the key and the end point is set by releasing the key.

The second option is the use of a fixed time placement. Here the effect is assigned a fixed time – e.g. 250 milliseconds for a single beam shot. Now this effect is started by pushing the Midi key. No matter how long you push the key – the effect is placed on the timeline for exactly 250msec.

You can also push several Midi keys (on a Midi keyboard) at the same time to insert several effects simultaneously. However, it is advisable to create a loop first for a music piece or a passage and to insert more and more effects accordingly during each run-through. The events are then automatically placed underneath each other by PHOENIX4!

CAUTION: Remember the priorities!!! Here too, they play an important role! For example, if you insert a fade-in effect below another event, then it automatically affects the event above it!

You will see how fast and effectively you will program simple (!) laser shows in the future or how you can insert fast beat changes perfectly and in sync with the timeline with the help of the Record Loop function.

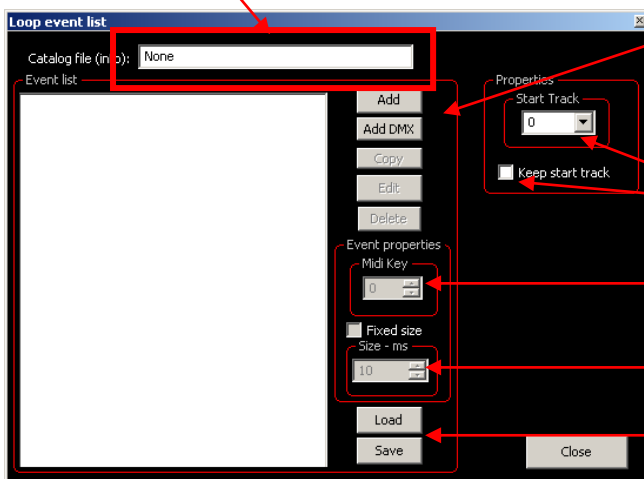
The Record Loop Function in Detail:

Start the Record Loop function by clicking on the REC button below the menu bar.



The window „Loop Event List“ opens.

Information as to which catalogue is used.



Adding a Loop event

Adding a DMX event

Copying a Loop

Editing a Loop

Deleting a Loop

Starting track for inserting a Record Loop

Fixing the track into which the Record Loops are inserted

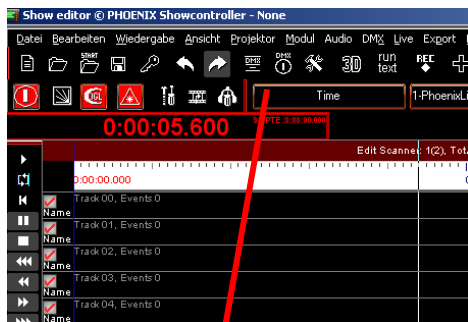
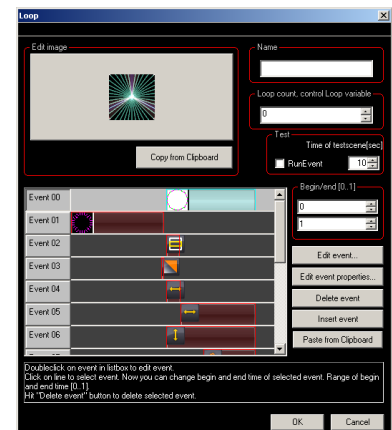
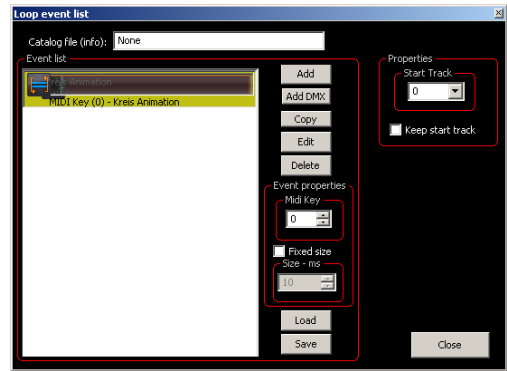
Selection of the Midi key (PC keyboard or Midi keyboard) that inserts the Record Loop

When a loop is supposed to have a defined duration, then the checkbox must be selected and the time selected.

Loading and saving all loops for other shows.

Procedure for using Record Loops:

- 1) Push the “Add” button in the loop event list window.
- 2) The „Loop“ window opens
- 3) Create a loop event (see “Loop Events”).
- 4) Double click somewhere on the timeline to be offered all available events. Begin as usual with the “Trickfilm” (animation) (e.g. a circle) – and add movements etc next. You can view the effect with “RunEvent”. However, executed changes won't show up until the next run! The adjustable time next to the “RunEvent” checkbox is only applicable for the “RunEvent” preview since the effect is played back faster or slower depending on the inserted length later on.
Alternatively, you can also select several events or whole show passages (!) from an existing show and copy them onto the clipboard using CTRL+C and then reinsert them in the loop timeline by clicking on “Paste from Clipboard”.
- 5) When you are done programming the effect, click on „OK“
- 6) The loop to be drawn is now complete and just needs to be assigned to a Midi key. (0-127)
- 7) Select whether the effect is supposed to only run for a defined period of time or not.
- 8) Click once on the timeline with the left mouse button to ensure that you are working on the correct timeline. (You can insert the loops on all 32 timelines ...)

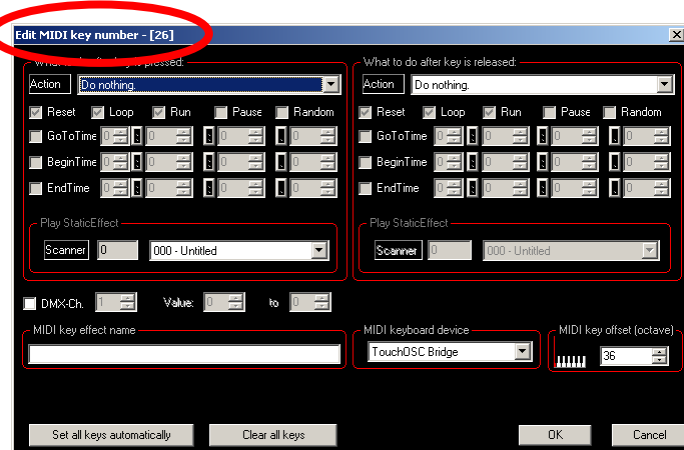


- 9) To start Live „Record Loop“ programming, start the show or the music with the Show Play key.
- 10) Now press the previously entered Midi keys to insert the „Record Loop“.
- 11) Later on you can correct the inserted loops if necessary by shifting them, editing them and even changing the effects.

By the way...

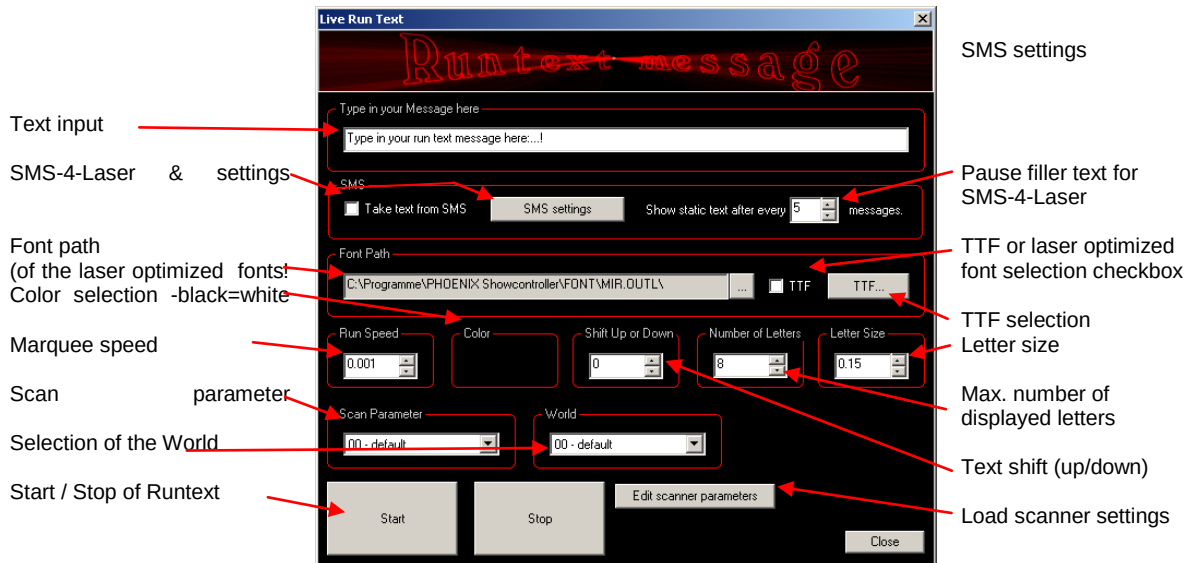
To find out the Midi key value of a keyboard key, simply push on the key e.g. "O" on your keyboard. The Midi window will pop up. At the top left corner of the window there is a number – the tone value of the Midi key...

If the window does not open, click on the timeline once to activate it!



12.3. LIVE Run Text

The LIVE Runtext function is suitable for short, instant messages that are supposed to be temporarily projected onto the screen in between. This function is independent, i.e., not associated with the timeline.



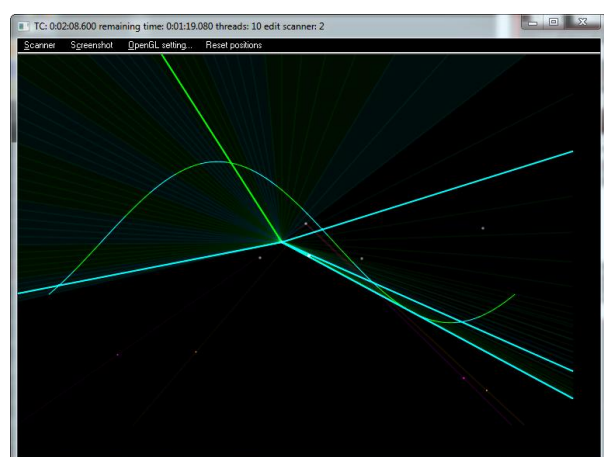
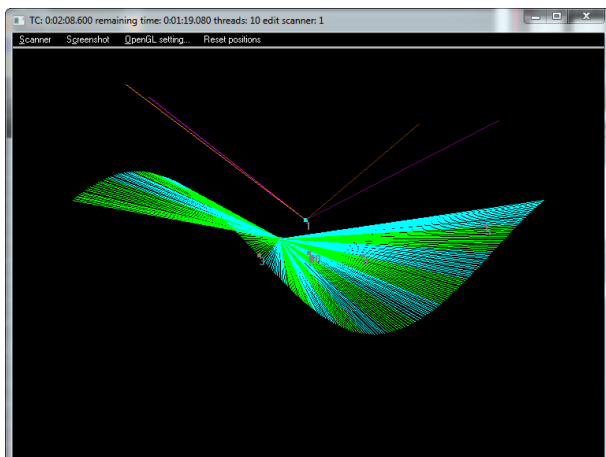
12.4. Direct X / Open GL Preview

With "Preview" you can already view the laser show in realistic preview quality without connecting a laser. The DirectX display is meant for older PCs with a simplified preview since it requires less performance from the graphics card... For up-to-date PCs we recommend always selecting the OpenGL view. It is the default view. By selecting the OpenGL button you can switch the preview between DirectX & OpenGL.

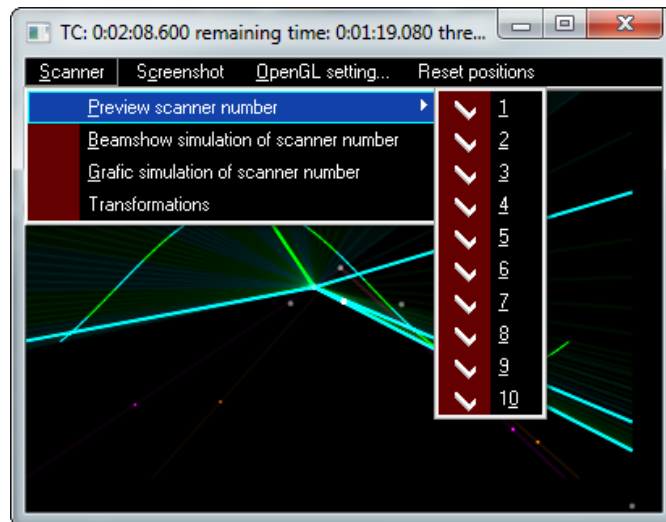


With DirectX view

With OpenGL view



You can set fundamental properties of laser projectors in the menu:

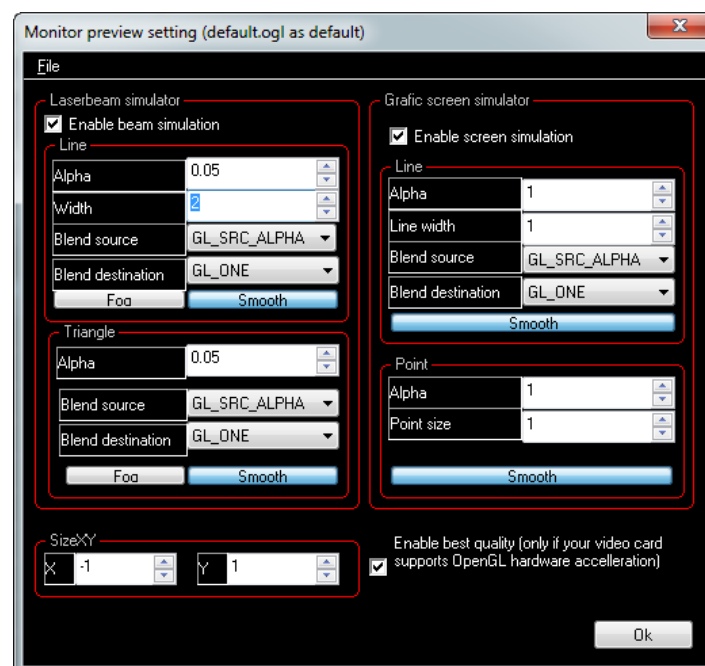


Preview scanner number:	Which laser is to be displayed
Beamshow simulation...:	Lets the beams appear visible
Grafic simulation of scanner...:	Simulates a screen so graphics can be recognized
Transformations:	Enables you to invert X and Y.

The projectors can be shifted within the preview by clicking on the white dot (center of the laser output) on the black surface using "Drag n' Drop". Thus a more realistic placement of the lasers can be created within the room.

With „**Screenshot**“ you can take an instantaneous shot of the preview. This can be used, e.g., to insert a preview image in a loop or somewhere else.

In the „**OpenGL setting...**“ you can also perform several additional brightness and size adjustment for ALL projectors to achieve a realistic visualization or better preview display.



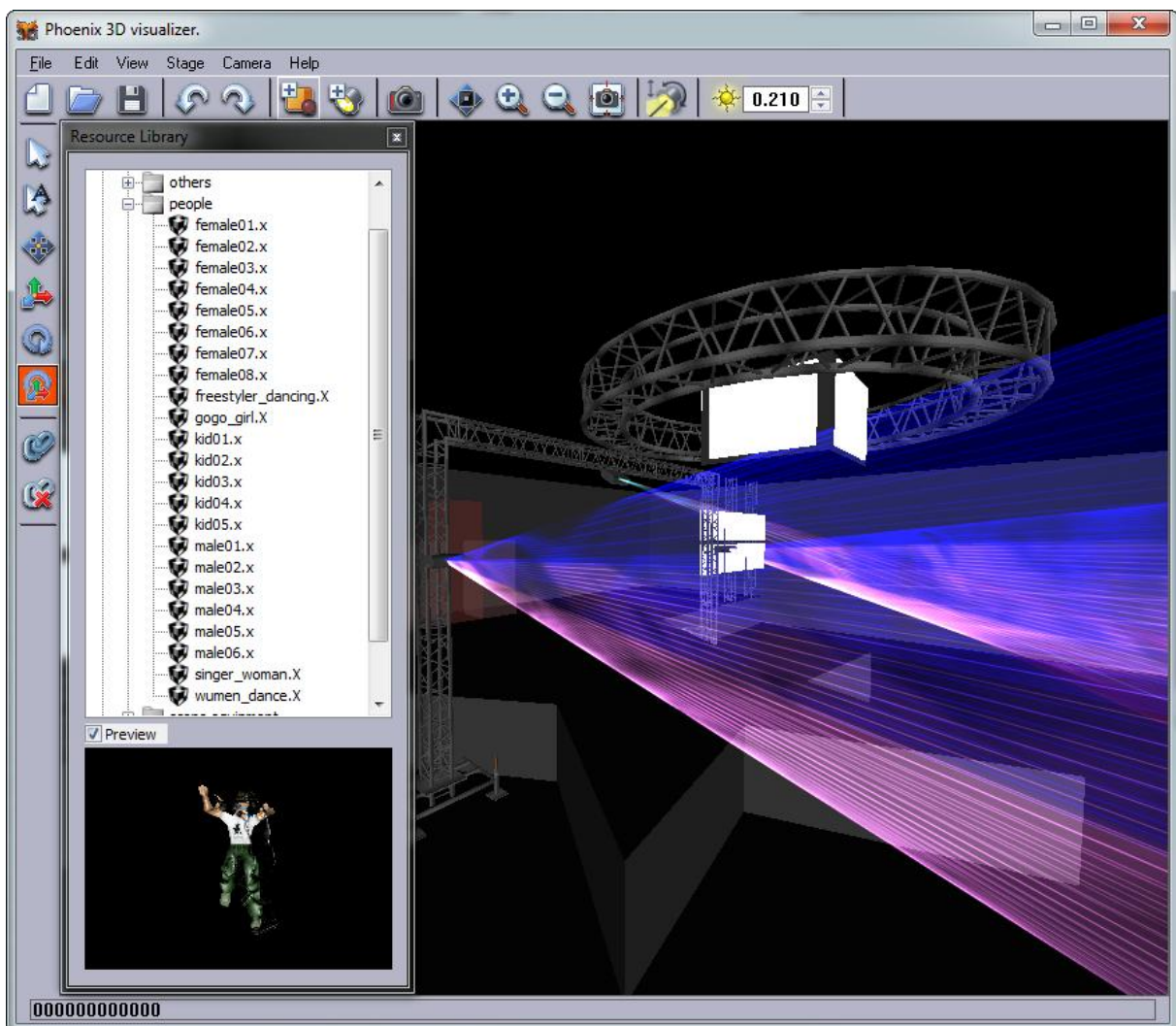
12.5. 3D Visualization

A highlight and further visualization type is the PHOENIX4 3D visualization that can display, aside from lasers, also light and video in a freely accessible stage environment.

You start the **3D Visualization** using the “3D” button in PHOENIX4 Pro/ProPlus



An independent program that communicates with PHOENIX4 PRO opens up.



The most important buttons:



File

New	Deletes the current project and starts a new one.
Open	Opens an existing 3D environment. By default all projects are saved in the folder "3D > Stages".
Save	Saves the current project.
Save As	Saves the current project with a new name.

Edit

Undo	Undoes the last step
Redo	Restores the last step
Delete	Deletes the currently selected object
Clone	Copies the currently selected object

View

Show Coordinates	Displays the coordinates of the 3D objects
Show Editor Tabs	Displays the editor box on the right hand side to adjust sizes and positions.
Show Ressource Library	Displays the 3D Object List of all premade objects. These can be dragged into the 3D environment using Drag n' Drop.

Stage

Add Objects	Here you can create your own 3D objects or import externally created ones. To import e.g. 3D Max files, you have to export the files as "DirectX files". The file suffix is „.x“.
Add fixture	To add moving heads, video files and laser projectors to the environment.
Options	Properties of the visualization quality can be adjusted here. The higher the quality the more computing intensive the visualization is!

Camera

Fit	Lets the 3D visualization appear without zoom.
Screen Shot	Creates a bitmap of the current view. Note: When using multiple monitors ONLY the first monitor is displayed!
Zoom	Enlarging and reducing the view in 3D space
View	Shows the display.
View > Rotation	Lets the 3D room rotate automatically.

Help

Help	Shows these instructions
About	Shows information about the PHOENIX4 3D Visualizer



- **Selection tool.** For selecting and activating an object

- **List selection tool.** By clicking on the object arrow an object list is opened. An object can be selected by name.

- **Freehand translation tool.** As long as the button is active, the selected objects can be moved with the mouse.

- **Axis translation tool.** When the 3D arrows are active, the position can also be changed along the XYZ coordinate lines with the mouse.

- **Freehand object rotation tool.** Rotates the object around all axes

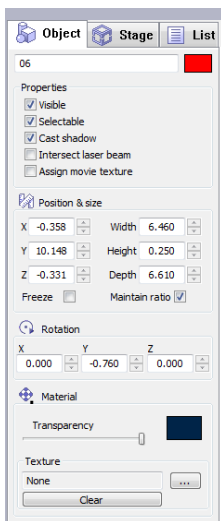
- **Axis rotation tool.** Rotates the object around the selected axis. The axis is highlighted the moment you move your mouse over it.

- **Group tool.** Groups several objects together.

- **Ungrouping tool.** Removes the grouping of several objects again.

12.6. Editor Box

12.6.1. Object Tab



Here the active 3D object can be adjusted in size and position. In Properties you can additionally set the following:

Visible: Displays the object or hides it.

Selectable: Determines whether the object can be selected with the mouse or not. A “non-selectable” object can always be selected using the list selection tool from the toolbar on the right hand side.

Cast shadow Whether the object casts a shadow or not

Intersect Laserbeams Displays whether the object lets laser beams pass or not.

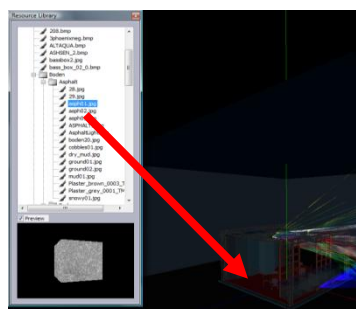
Assign movie texture When the checkbox is checked, then the video file from PHOENIX4 Pro will be displayed on the object's surface. To be used e.g. for video screens or plasma screens...

Rotation Rotates the object

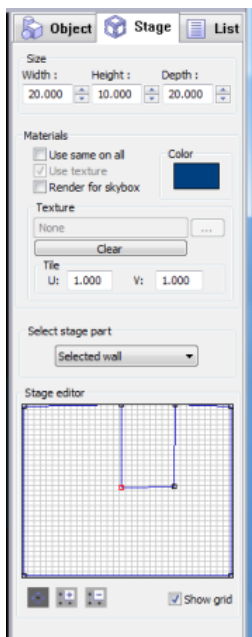
Transparency Displays how transparent the object is supposed to be, e.g., for simulating water screens or gaze screens.

Texture Select a surface from a large texture library or take your own pictures for 3D object surfaces.

Alternatively, you can grab a texture using Drag n´Drop and simply drag it onto your object to apply it.



12.6.2. Stage Tab



In the “Stage Settings” you can specify all properties for the 3D environment. These include the room size, width, length, depth and the placement of the walls. This way it is e.g. possible to plan a fair booth with many walls in complex arrangements.

Many textures can be used for the walls, ceiling and floor.

Materials (Material properties)

Use same on all: Same material on all surfaces or individually

Use texture: Use of texture

Render for skybox: Corners visible or invisible

Texture: Upload a BMP image as texture

Tile: Number of texture repetitions on the object

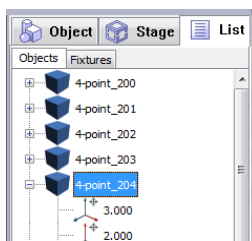
Selection: Indicates which wall or ceiling is currently selected.

Stage editor: For editing the walls.

Buttons: For adding, deleting and translating the corner points

Show grid: Displays the gridlines in the “Stage editor”.

12.6.3. List Tab

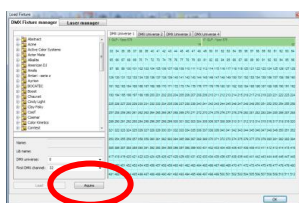


In the “List” all 3D objects and fixtures (e.g. moving heads, lasers...) incl. their coordinates are displayed. Editing them is not possible here.

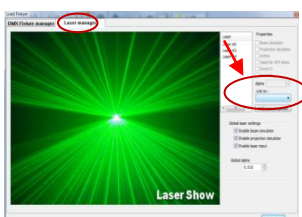
12.7. Light, Videos and Lasers in the 3D Environment



After clicking the insert button a new window opens...



The tab “**DMX Fixture Manager**” is selected. By clicking on “Acquire” all DMX fixtures (lasers, moving heads etc.) are automatically inserted from Phoenix4 Pro with the proper settings into the 3D visualization. If there are objects in the 3D visualization that have the property “Assign Movie Texture”, then the videos are also synchronized with the PHOENIX4 timeline and displayed on the corresponding 3D objects.

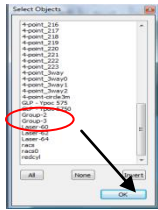


Next click on the tab “**Laser manager**”. Here you can insert however many lasers you want into the 3D environment using “**Add Laser**” on the right hand side. By selecting a laser additional options can be set. Brightness, whether graphics should be displayed or just beam simulations, inverts of the x and y axes, but also (**as the most important one**) which timeline the laser should be assigned to in the 3D environment. The corresponding laser has to be selected from the list and then the timeline (here: scanner) has to be selected from the

drop down box in “Link to” that is supposed to be connected with the laser in the 3D environment. “Scanner”, in this case, means the timeline from PHOENIX4 PRO. PHOENIX4 Pro/ProPlus has up to 32 timelines or scanners available (Pro: 1 laser, ProPlus License: up to 32 lasers), whereby each laser can be individually programmed.

The value that can be assigned in Alpha determines the overall laser brightness of the lasers in the preview.

Step Summary for the PHOENIX4 Pro 3D Visualization:

- 1) Start PHOENIX4 PRO
- 2) Load the show (By clicking on Start) 
- 3) Start the Phoenix 3D-Visualizer 
- 4) The Phoenix 3D-Visualizer starts... 
- 5) Load an existing stage
 - a. File > Open
 - b. E.g. default-Stage 1
(From the folder ...PHOENIX Showcontroller\3D\Stages\...)
- 6) Stage is loaded
- 7) Click on the “Lamp” to add lights and laser devices
- 8) The window “Load Fixture” opens... 
- 9) Click on the first tab “DMX Fixture Manager” below on “Acquire”.
- 10) Switch to the “Laser Manager” 
- 11) Click on “Add Laser Projector”
- 12) Close the window by clicking “OK”
- 13) Click on the object arrow 
- 14) The list of all 3D objects and fixtures opens... 
- 15) Select “**Laser**” from the list and push **OK**
- 16) The selected laser projector is now activated and can be moved with the help of the mouse or positioned exactly in the editor box (size, position and rotation)
- 17) In order to avoid accidentally activating another object, click on the directional arrows displayed in a square in the top toolbar, to the left of the magnifier. With these you can rotate and translate the view any time – without deactivating the activated object.
- 18) When all objects and lasers etc. are positioned according to your wishes, start the show in PHOENIX-PRO.
- 19) The lasers and devices in the 3D visualization will now display exactly what is specified in the events on the timelines.

13 Showplayer

The Showplayer is a somewhat different interface in PHOENIX4 Pro/ProPlus. Therefore, it is **ONLY** available with a PHOENIX4 **Pro/ProPlus** license. This interface is optimized for playing shows. Editing a show from within Showplayer is not possible.



With the help of the Showplayer you can preprogram complete show procedures days, weeks and months in advance or plan a convention day.

Start up the software with the USB license Dongle and the interfaces connected. **IMPORTANT: NO** other PHOENIX4 program (CAD, PHOENIX LIVE or the hardware check) is allowed to run at the same time! Otherwise it will prevent output.

13.1. Showplayer Modi (Live & Timer)

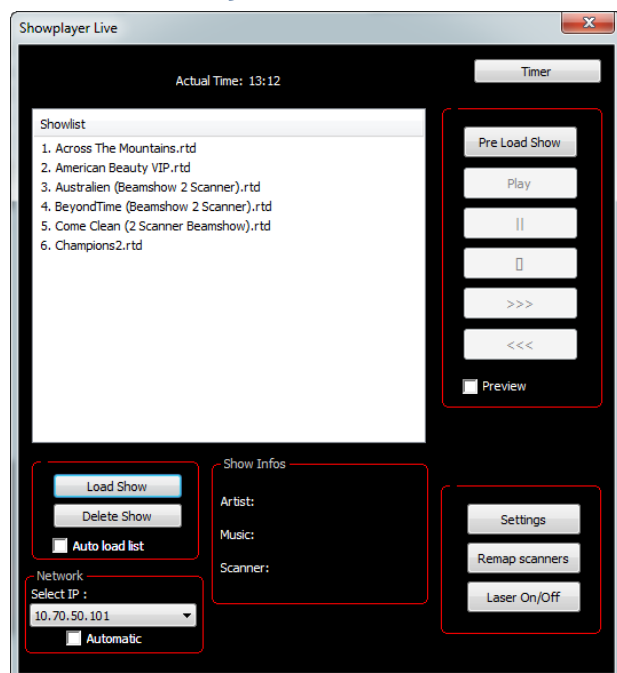
The Showplayer has two modes. The “Live” display and the “Timer” display. The “Live” display is a list for the fast assembly of shows to play these back one after the other manually. The “Timer” display is used for the automated playback of shows at a given point in time.

After starting the Showplayer you are in the “Live” view.

First the shows to be played back are loaded into the “Showlist”.

This is done by clicking on the “Load Show” button located below the showlist.

Shows can be found by default in the directory “C:\Program Files \PHOENIX Showcontroller\Shows”, further categorized into subdirectories.



Next, after selecting a show from the showlist by highlighting it, the show can be started with the play controls on the right hand side.

„Pre Load Show“ immediately loads the show and music and allows it to be played immediately upon clicking “Play”. If the show wasn’t preloaded, then this is taken care of at the latest with a brief delay when pushing the “Play” button.

Below the “Play” button are the standard control elements for pausing, stopping, advancing and rewinding the show.

Selecting the “Preview” checkbox enables you to call up the “OpenGL” Preview known from Pro.

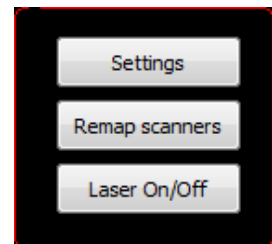
By marking a show and hitting the “Delete Show” button the show concerned is removed from the “Showlist” (of course, it is not physically deleted). The button below that, „Auto load list“ remembers the shows currently added to the “Showlist” and reloads these the next time the Showplayer is started. Otherwise the “Showlist” would be empty at the next restart of the Showplayer.

The Showplayer can also be remote-controlled via a special input request. For example, the show computer can be located on the stage near the lasers while the control computer for starting the show is located somewhere else e.g. in the FOH on the other side of the stage.

In the “Network” area in the drop down field “Select IP” you can specify which network card it is supposed to monitor for the control computer’s control signals in case the show computer has several network cards built in. The “Automatic” checkbox accomplishes the selection of the correct network card for you by attempting to find the correct one automatically.

You can learn more about the Showplayer’s remote control options in another chapter.

At the bottom right you can check the settings via the “Settings” button that are identical to those of the other world and projection settings of the default view. More information about these settings are available in the chapter on “World Settings (Projection Zone)”.



With the “Remap Scanners” button you can reach the menu for assigning the hardware interfaces (black PHOENIX Micro USB or/and PHOENIX Net USB box) for the timelines. You can find out more about this in the section about “Setting Options > Interface Selection” at the beginning of this manual.

The “Laser On/Off” button turns all lasers in the show on or off globally.

You reach the timer mode that makes automated play programming possible by using the “Timer” button.

Caution: If the checkbox for “Auto Load List” is not checked, then by switching into timer mode the “Show List” in the Showplayer’s “Live” mode is deleted.

The „Timer“ mode enables additional controls for playing shows. Primarily, shows can be set here for years in advance for play. However, manual show control is also possible. Shows are combined into show containers that can be assigned a play time

File: New show list, loading and saving of existing show lists.

Switch to „Live“ mode

Display of all selected show containers (there can be 1-1000 contained shows that are played one after the other)

Adding a show list
Changing a show list
Deleting a show list
Renaming a show list

Playing a show list
Pausing a show list
Stopping a show list
Next show/show container
Play back all/only selected
Play back in loop

Activating the Showplayer with time control Show settings

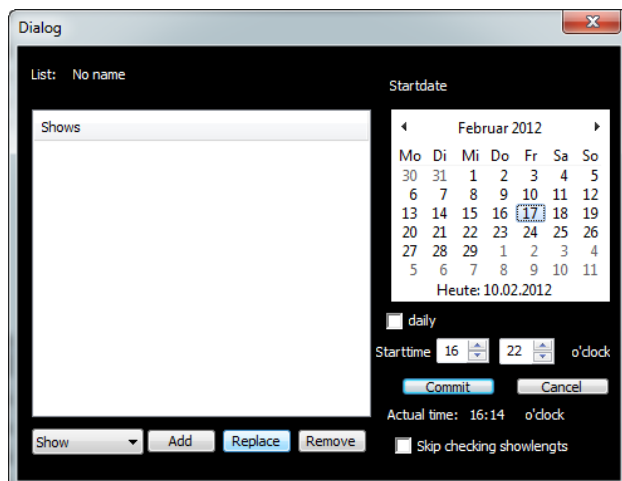
Status of the running show/ show container

Deactivating the Showplayer

Show name	Start Date	StartTime	PlayTime	EndTime	Number of shows
Champions Show	02/10/2012	16:03:00	00:03:21	16:06:21	1
Shows played daily	daily	16:22:00	00:15:20	16:37:20	4
Most famous shows	02/17/2012	16:07:00	00:14:28	16:21:28	3

13.2. Adding a Show Container

To add a show to a show container click on the timer mode interface on “Add Entry” in the “List Control”.



Click on “Add” below the large “Shows” list area to add a new show to the show container. As an alternative to a show you can also enter music or a pause in the “Shows” list. You have to choose the appropriate entry in the drop down list at the bottom left.

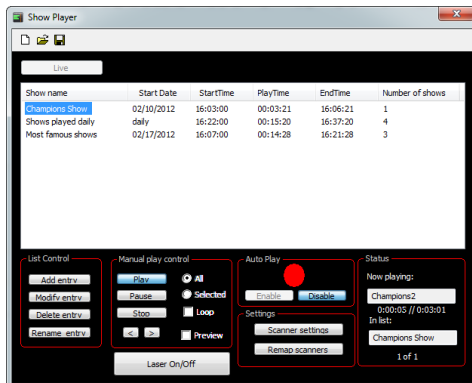
Select additional shows if several shows are supposed to be played in a row at the time of the container start.

When you have completed the show selection, choose the date from the calendar and the time under “Starttime”.

Next click on “Commit”. Assign a name to this show container – e.g. “OpeningShow”.

IMPORTANT: Check EACH individual show BEFORE you insert it into the Showplayer as to whether the proper scan parameters, the correct world settings and suitable music was SAVED and everything is available as well. During later operation the show is loaded and played as is. That means if e.g. the music is not located in the proper file directory or the world settings aren't correct – then the show may not start and the Showplayer is paused. Therefore, verify carefully in advance whether the show will really start immediately. In case of doubt, check the assignment again by starting the default interface of PHOENIX4 and

directly loading the show. If it plays without problems there, then this will also be the case for the Showplayer interface.



Now you can create show containers at will and coordinate them with each other.

To activate the automatic time play control you merely need to click on the “Enable” button in the “Autoplay” area. The red circle changes from red to green and indicates readiness to play.

In the status area at the bottom right you can track which container and which show are currently playing or how long play will still continue.

If you use this show combination more often, you should save it, so it does not have to be recreated after each program start. Save your personal show files so that you have the suitable shows ready for the next event. This is made possible by clicking on the disk symbol at the upper right edge.

14 Hardware Check



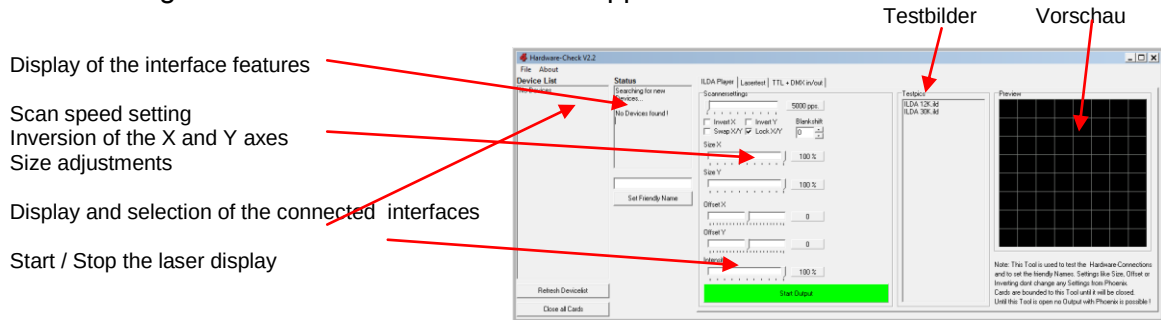
Hardware Check is a small tool independent of the PHOENIX4 software for checking your hardware (interfaces, lasers, TTL and DMX devices).

With this tool you can measure or check the actual scanner speed and the output of your laser and test the communication between the PC and the laser as well as the DMX devices.

If you have problems getting information from the software – first verify that the display works in “HardwareCheck” – thus you can quickly discover whether the error is more likely to be on the hardware or software side.

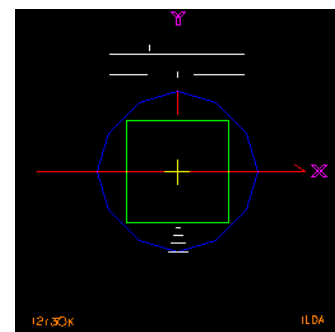
14.1. Overview Hardware Check

After starting “Hardwarecheck” this interface appears...



To test your laser, click on the list entry “ILDA 30K”. If you know that your laser projector only has 12k scanners, then please click on the test image “ILDA 12K”. The output on your laser should now look like this:

Now slide the “Scannersettings-Slider” **slowly** from 5000pps (5K) towards 20000 pps (20K). The blue circle should now slowly move into the green square. Move the slider toward the right until the blue circle barely touches the **inner edges** of the green square. The value now displayed (e.g. 25000pps = 25K) corresponds to the actual output speed of your scanners according to the ILDA Standard for an 8 degree angle of deflection.



Caution: Please note that this information is only valid for comparing the output of your scanners. In reality the angles of deflection will likely exceed these 8 degrees in most cases. In order to avoid shortening the lifespan of your scanners unnecessarily, you should use scan rates starting at 10k if possible for the animations that let your animation look good, but don't overload your scanners unnecessarily with excessive scan rates.

14.2. Laser Test



Here you can enter settings to measure the output performance of each individual color. The sliders need to be moved to the right for this. 100% performance is reached at a value of 255. This means that at this point 5V are present on the PINs at the color output.

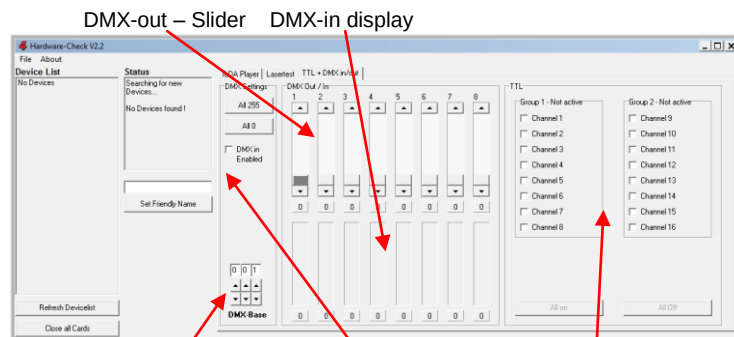
With your mouse you can change the scanner outputs or the positions of the single beam output in the black window. Right clicking on the button on the right hand side stores the current position of the single beams as the default for this button. Clicking on the button with the left mouse button displays the position of the single beams.

If you use a DMX or TTL shutter, then you can open it on the DMX/TTL page with the corresponding value. For this you also need to check the checkbox “Control DXM-Shutter”. **Start Output** = Laser output ...

NOTE: The performance that exits your laser now is the maximum performance **WITHOUT** modulation. That means, you will unfortunately never achieve this performance during a laser show, since the beam is always operated in modulated

mode (i.e. on/off). Typically and dependent on the quality of the laser module you will achieve approx. 50-70% of the max. possible 100%- performance during a show. That means for a 1W laser you get between 500-700mW output performance during the show.

14.3. TTL+DMX in/out

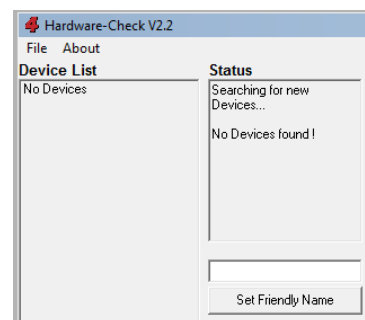


DMX-in / out Starting address Aktivating the DMX-in TTL display

Test your DMX and TTL interface inputs and outputs here. The starting address specifies the first channel for DMX-out as well as the DMX-in slider. On the right hand side you can test the TTL outputs of the PHOENIX Net Interface.

14.4. Get / Set friendly Name

Here you can assign individual names such as e.g. „Main projector“ etc. to your interfaces instead of retaining the cryptic names. For PHOENIX-Micro USB the names are saved on your PC, i.e., as soon as you connect the interfaces to your PC – the new name will be displayed. If you connect the cards to a different computer – the original name will be displayed. For PHOENIX Net Interface on the other hand the name is saved in the network card and is therefore always available and PC independent.



15 Video Help



Upon clicking „Videohelp“ the Phoenix4 Showcontroller website opens up where we make our latest video tutorials and other useful videos available to you.

16 CAD



CAD is a 2D / 3D drawing editor for creating graphics and logos of all types.