

PHOENIX USB MICRO V2 Interface with ILDA and DMX connection

Manual



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Publisher: PHOENIX Showcontroller GmbH & Co.KG * www.Phoenix-Showcontroller.de

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General

The PHOENIX USB MICRO V2 interface was developed as a special output device for laser shows and is a part of the „PHOENIX Showcontroller“ software package. The PHOENIX USB MICRO V2 interface can be purchased separately as well as in a set, but can be only used in combination with the “PHOENIX Showcontroller” software.

The device has an ILDA standard connector and optical isolated DMX connector (DMX-In, DMX-Out, DMX-Through).

Features

- USB 2.0 High Speed interface (480Mbits/Sekunde)
- 1,5 Mbytes maximum data transfer speed
- High performance 32Bit RISC-Microcontroller
- X/Y-Output 16Bit, in total about 4,2 billion picture coordinates
- Color output R,G,B,C4,C5,C6 / Intensity every 16Bit
- Highly stable, jitter free output
- Independent laser-player with hardware buttons or DMX control, 2GB Micro SD-card
- DMX-In and DMX-Out at the independent player (in player use)
- Actively controlled shutter output (5V)
- Output speed up to 50.000 picture points per second (pps)
- Power supply by USB or external power adapter (DC 9 V-15V ~ 400mA (Plus inside, minus outside))
- ILDA-standard output
- X/Y-output symmetrical, color output unsymmetrical
- Fault-tolerant data protocol
- „Plug and Play“-driver for all Windows operating systems as of XP, including 64Bit.
- Multidevice capable
- DMX-Out support for 512 channel input and output at ILDA-connector and optical isolated DMX In-Out-Through at the backside.
- Firmwareupdate capable by USB

Initial operation

For a better operation safety use a high quality High-Speed USB 2.0 cable (double shielded, preferred with integrated filter elements). Inappropriate cable can influence the operation safety of the hard- and software in a negative way.

External power adapter

If you use more than two Phoenix USB Micro V2 interfaces on one PC at the same time, please provide an own power adapter for every interface. This leads to an operation safety and can avoid a faulty output that is caused by an insufficient power supply at the integrated USB ports of many laptops. You can also use a USB hub with an own power supply that guarantees a power of 500mA at its outputs.

Use a suitable CE proofed power supply that observes the following specification:

Direct current DC, 9V – 15 V, min. 400 mA, plus pole in the middle (inside), minus pole outside

Driver installation

Please only install the interface **after** a successful software kit installation.

The drivers are available in the ZIP archive at the directory **“Interface Drivers”** if you downloaded the installation kit from the website: <http://www.phoenix-showcontroller.de/support/downloads/>

If you used the CD for the installation, that is included in the delivery, the drivers are available in the root of the CD in the directory **„Interface Drivers“**.

After a successful software installation the drivers are always available in the Phoenix Showcontroller subdirectory **„Interface Drivers“**:

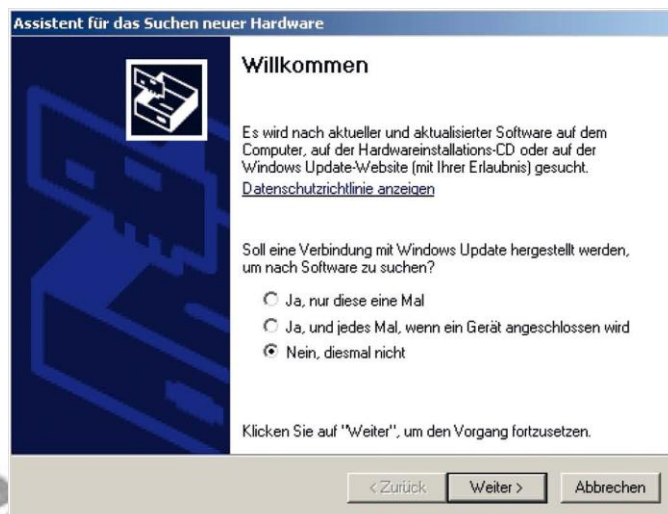
Windows 32 Bit:

„C:\program files\PHOENIX Showcontroller\Interface Drivers“

Windows 64 Bit:

„C:\program files (x86)\PHOENIX Showcontroller\Interface Drivers“

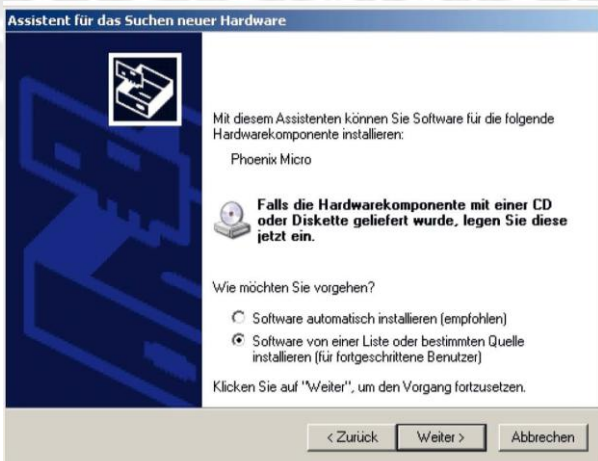
Installation of the Phoenix USB Micro V2 Interface at Windows XP



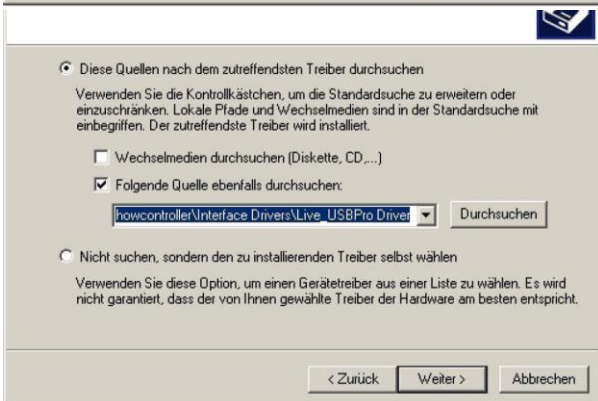
1. Plug in the USB-cable in the interface and connect the other end of it with the PC.

2. The windows installation dialog opens.

3. Answer the question „Shall windows connect to Windows update, to find software“ with the option „NO, not this time“ and click on “next >”.



4. At the next question for „What you want to do?“ answer with the option selection „Install software from a list or specific location (Advanced) „ and click on “Next>”



5. Then tick the checkbox “Browse at following resources:” and click on the „Browse“ button. At the opened window browse to the directory e.g. „... \program files\PHOENIX Showcontroller\Interface Drivers\ Micro“ and click on “Open”. Then click on the “next>” button.



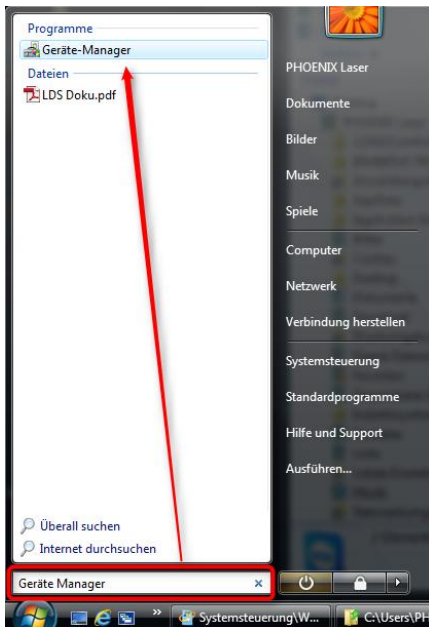
6. The interface is the being installed and can be used afterwards.



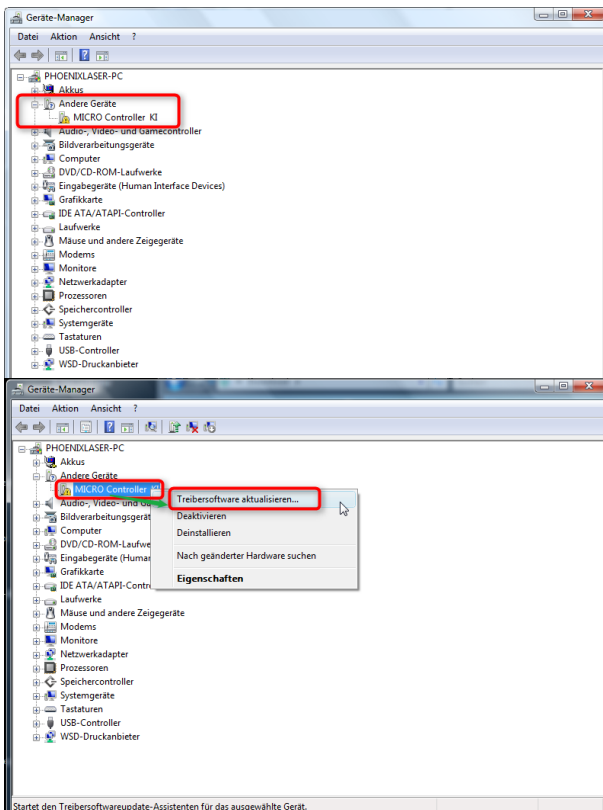
7. After a successful installation you get the confirmation note and then you can close the window with the „Finish“ button.

Installation of the Phoenix USB Micro V2 interface at VISTA & Windows 7

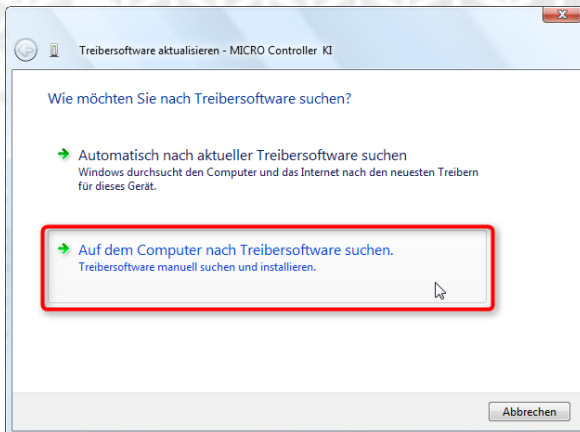
First connect the USB cable with the interface and connect the other end of the cable to the PC. Unfortunately the diver installation workflow has been changed by Microsoft, so that the installation dialog window is not shown automatically any more at many PC. Because of that some additional steps are necessary to install the interface driver.



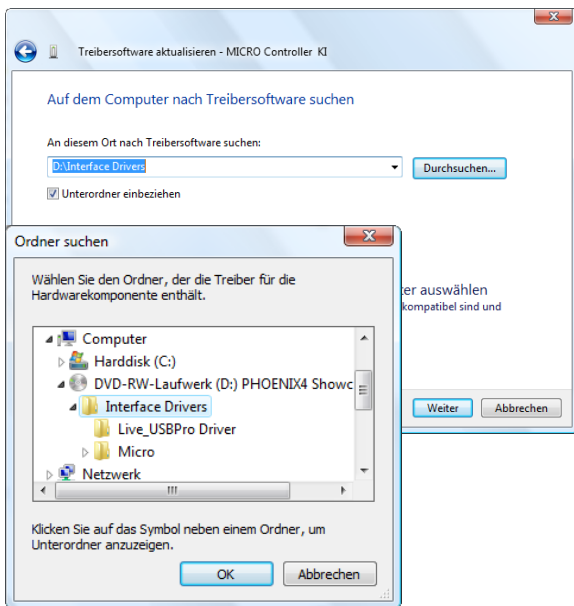
Open the device manager of windows. Click with the left mouse button on the “Start” button and insert the text “device manager” into the input field. After a short time the entry to the device manager is provided at the upper window that you need to click on with the left mouse button. If you get the question to allow this program to be opened, click on „allow“.



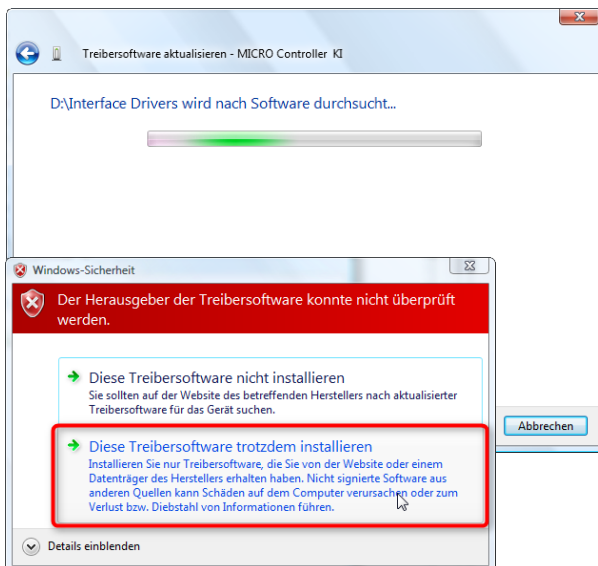
At the opened device manager you see a device tree. At the entry “Other devices” you see a device named „MICRO Controller KI“ or „Phoenix Micro“. Click on it with the right mouse button and choose the entry “Update driver” from the context menu.



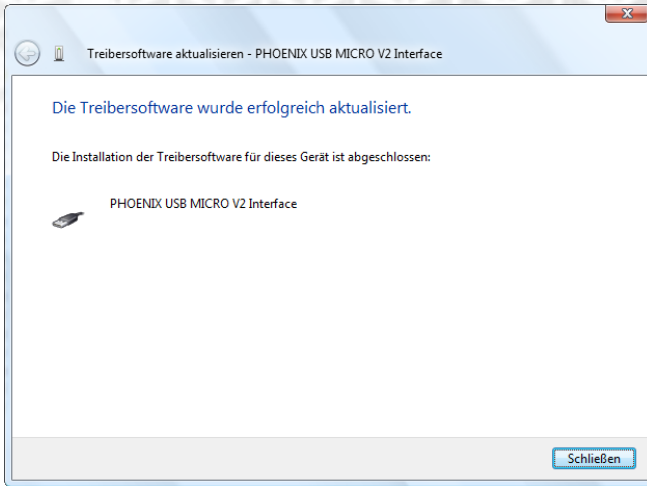
The installation dialog opens and asks for „How do you want to browse for driver software?“. Choose the last option “Browse for driver software at the PC”.



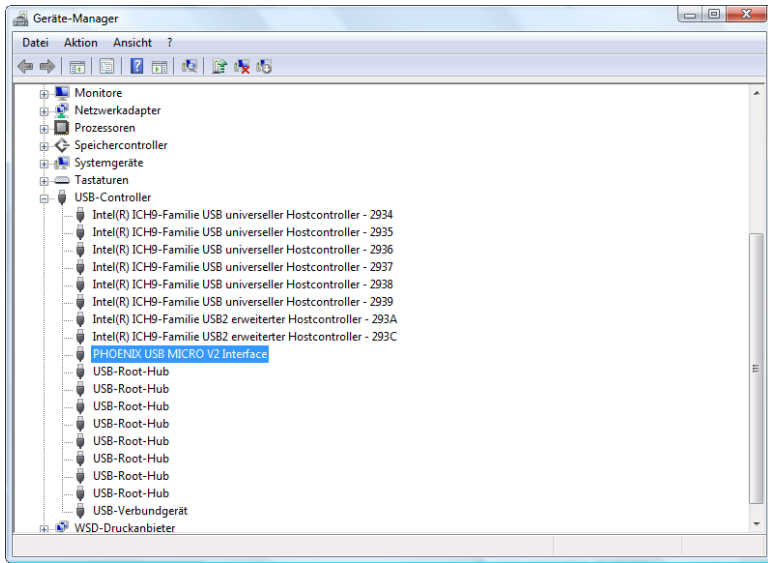
Click on „Browse“ at the next window and choose the directory „Interface Drivers“ from the installation CD or from the downloaded and extracted ZIP archive or from the windows program files directory at „C:\program files \PHOENIX Showcontroller\Interface Drivers“ or „C:\program files (x86)\PHOENIX Showcontroller\Interface Drivers“. Take care that the „Include subfolders“ checkbox is ticked. Then click on the „Next >“ button.



The installation starts. Maybe a window opens during installation, showing a red colored window “The publisher of the driver software could not be verified.“. Then choose the option „Install the driver anyway“ to continue with the installation.



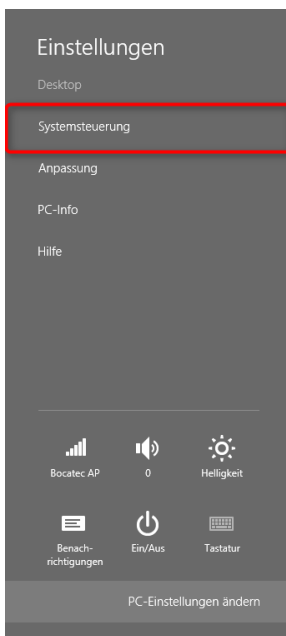
At last you see the confirmation dialog window for a successful installation and you can close the driver installation window with click on „close“. Close the driver manager window with click on the “X” in the upper right corner.



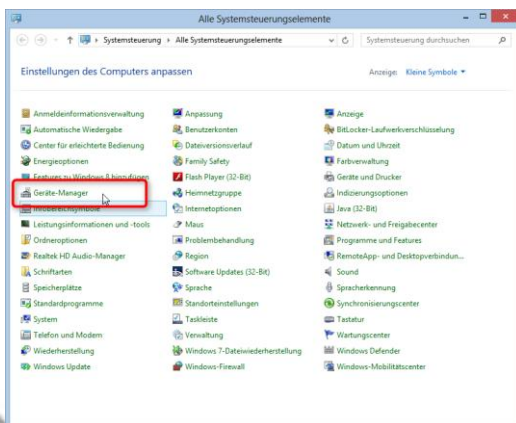
Installation Phoenix USB Micro V2 Interface at Windows 8

First connect the USB cable with the interface and the other end of it to the PC. Because of the changed driver installation routine at Windows 8, the driver install dialog window is not shown automatically on various PC. Because of that some more driver installation steps are necessary.

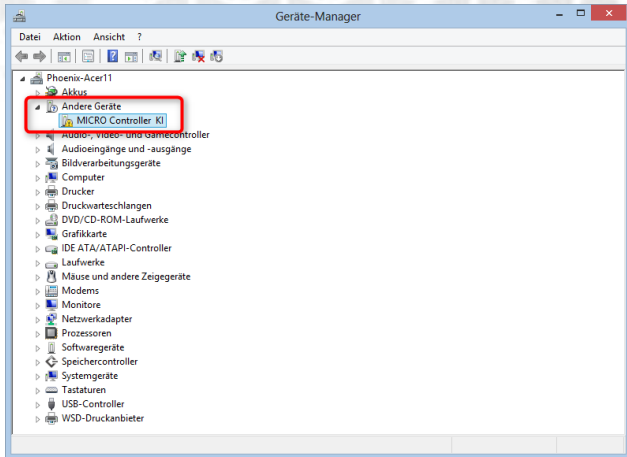
Move your mouse on the tile surface or at the desktop to the right lower corner until the transparent “Charms” menu comes out from the right side. Move the mouse to the „Settings“ symbol above that looks like a gear and click on it.



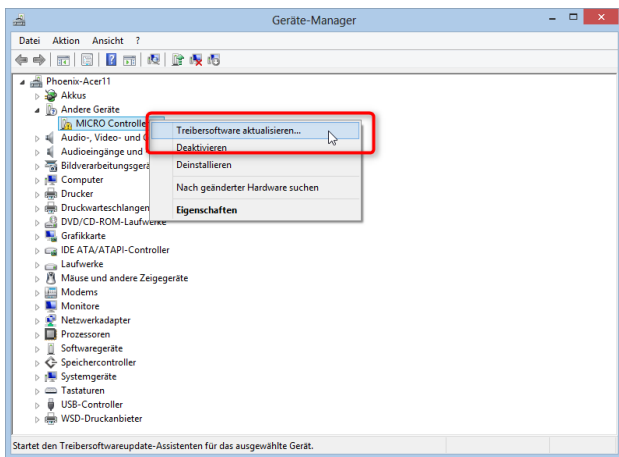
Choose the menu entry „System control“.



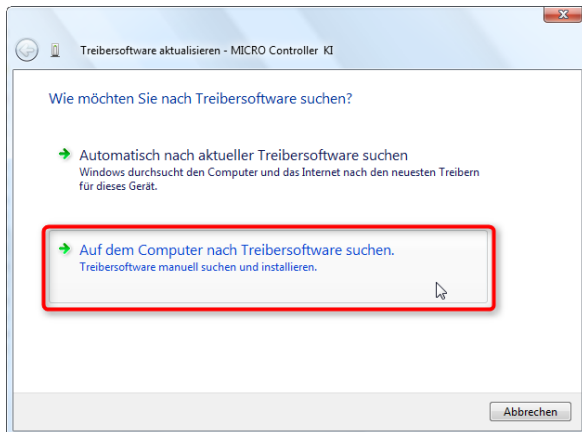
At the opening window you see the „Device Manager“ in the first column.

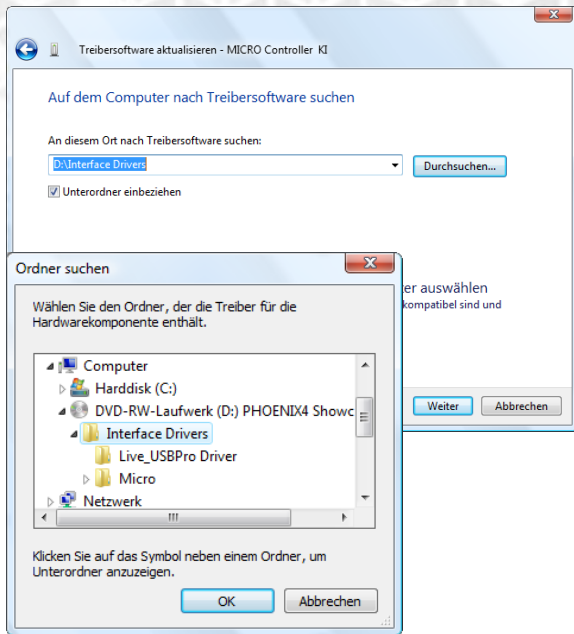


At the opened Device Manager you see a device tree. At the entry „Other devices“ a device named „MICRO Controller KI“ or „Phoenix Micro“ is shown. Click on it with the right mouse button and choose „Update driver“ from the context menu.

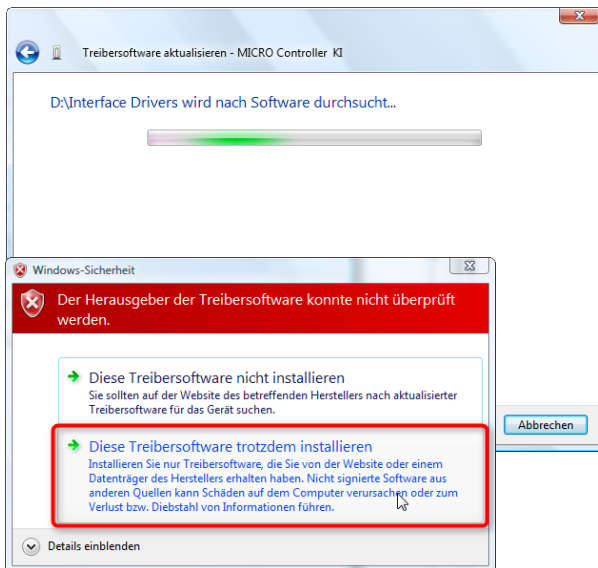


An installation dialog window opens and you get ask „How do you want to search for driver software?“. Choose the last option "Browse my computer for driver software."

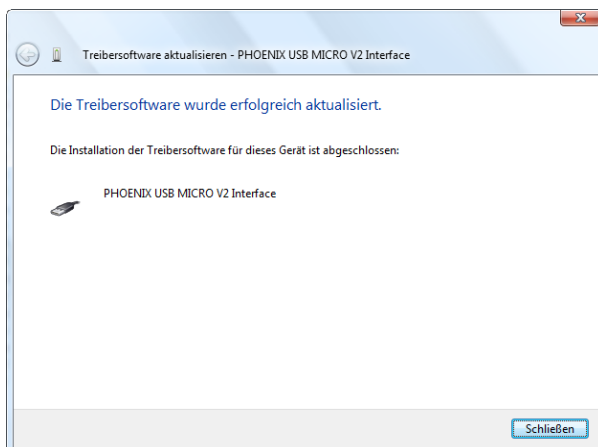




Click on the „Browse...“ button at the next window and choose the directory „Interface Drivers“ from the installation-CD or from the downloaded and extracted ZIP archive or from the windows program files directory „C:\program files\PHOENIX Showcontroller\Interface Drivers“ or „C:\program files (x86)\PHOENIX Showcontroller\Interface Drivers“. Check if the checkbox „Include subfolders“ is ticked. Then click on the „Next“ button.



The installation starts. Maybe you get an installation window that is red colored and it says „The publisher of the driver software could not be verified.“. Choose the option „Install this driver software anyway“ to continue with the installation.



At last you get the notice that the installation has been successful. You can close the driver installation window with click on the „Close“ button then. Close the „Device Manager“ window with click on the X in the upper right corner.

Use with another software

If in doubt, whether the Phoenix hardware is supported to be controlled by another third party software, please contact us and the other software manufacturer.

Signal connection (Phoenix Micro USB V2 interface)

DSUB-25(ISP)		Function
1	X+	Scanner output X+ (+5V)
2	Y+	Scanner output Y+ (+5V)
3	Intensity+	Intensity + (+5V)
4	Interlock A	Internally connected with interlock B
5	R +	Color output red+ (+5V)
6	G +	Color output green+ (+5V)
7	B +	Color output blue+ (+5V)
8	C4 +	Color output color 4+ (+5V)
9	C5 +	Color output color 5+ (+5V)
10	C6 +	Color output color 6+ (+5V)
11	DMX Out +	DMX-output plus
12	n.c.	Not connected
13	Shutter	Shutter output 0 -5V **
14	X-	Scanner output X – (-5V)
15	Y-	Scanner output Y – (-5V)
16	GND	GND for intensity (0V)
17	Interlock B	Internally connected with interlock A
18	GND	GND for color output red (0V)
19	GND	GND for color output green (0V)
20	GND	GND for color output blue (0V)
21, 22	GND	GND for color output color 4 (0V)
21, 22	GND	GND for color output color 5 (0V)
23	GND	GND for color output color 6 (0V)
24	DMX Out	DMX-output minus
25	Ground	Ground 0V
Schirm	Shield	high-impedance (1M) against ground

Connection of scanner- and color signals

All circuit points are connected to the 25 pole ILDA standard connector. It is a 25 pole D-Sub connector. There is output for X and Y, as well as intensity and 6 colors available. All color output is unsymmetrical, mass specific against ground. The maximum level of the color output is 5V against ground. The X/Y output is symmetric with an output voltage of +/-5V for each signal, which is a differential voltage of +/- 10V maximum between the output (+) and (-).

Attention: Never let one half of the output signal pairs blank.

If only one half of the signals is connected, the maximum angle of the scanner is only half as wide as it should be. You will get the same result when one of the signal half is connected to ground.

Important: Never connect PIN 11 and PIN 24 to ground. In that case no DMX is usable any more. If that happens inside the laser projector where you cannot influence it easily, open the connection by an external adapter, connected between the ILDA connector. This can be

done easily by an ILDA DMX adapter that leads through PIN 11 and 24 to an external DMX connector which can be left blank.

Please always connect the ground connection of the D-Sub connector (PIN 25).

**Attention: Maximum load for 5V shutter output is 20mA!

Status-LEDs

Function of the LEDs at the front side:

Power-LED (red)

The red Power LED indicates that the device is supplied with voltage.

Power-LED (green)

Active indicates that data is sending for output.

Usage

The Phoenix USB Micro V2 interface is intended to be used with the Phoenix Showcontroller software as a real-time laser and DMX output device. Additionally it can be used as independent laser and DMX show player, after animations have been uploaded with the Phoenix4 Live software (starting with Phoenix4 Live 4.16 version). Please read the corresponding section of the current Phoenix4 Live manual for the workflow of uploading animation to the SD-card of the interface. It can be downloaded from our website at:

<http://www.phoenix-showcontroller.de/en/support-en/manuals/>

Live usage and usage as independent Laser- & DMX- show player

When connecting the interface with the PC or better, when connecting the voltage supply at the PC or by an external power adapter the interface switches to the **live usage** or the **independent laser and DMX show player usage**. Additionally the chosen operating mode for the use as show player is important for the behavior (see mode selection below). If the interface is recognized by Windows as Phoenix USB Micro V2 (preconditioned a correct driver installation) it can be used in Live operation with the software Phoenix4 Live and Phoenix4 Pro/ProPlus. To use the interface as “independent laser- & dmx player” when in live operation mode, disconnect the Interface and make sure that it is only powered by voltage by the USB port or with an external power supply (i.e. not data connection is created to Windows).

External power supply in independent player use

Use a convenient CS proofed power supply that matched the following specifications:

Direct Current DC, 9V – 15 V, min. 400 mA, plus pole middle, minus pole outside

As an alternative you can also use the USB port at the interface to guarantee the power supply. In any case take care that a constant power of 400mA at minimum is provided to the interface. Otherwise a correct operating hardware cannot be ensured.

Mode selection

The interface can be used in two different modes for independent player operation (i.e. power supply only). These modes set if the interface operates automatically as independent laser- & DMX player when a power supply is established **and** it output the first animation with laser- and DMX signal, that is saved on the micro SD-card (“Autostart animation”) or if it continues waiting for a connection to the PC to operate in live operation mode. This mode can be only changed with the Phoenix4 Live software. The corresponding setting is described in the Phoenix4 Live manual, which can be downloaded from the Phoenix Showcontroller website. At the delivery status the interface waits for establishing of a data connection i.e. the automatic laser- and DMX output in independent operation mode with external power supply is deactivated. The automatic start as independent laser- and DMX-player with laser output can be useful when you have a fixed proofed installation

The automatic start as independent laser and DMX show player with laser and DMX output is perfect for fixed proofed installation on a booth. The customer only needs to connect the power supply to start the operation of the laser system.

Note: In any case take care of the official security advises and obligation for executive care, that are prescribed by your local person in charge, administration or law!

Attention:

If the interface is in the mode with automatic start as independent show player with laser and DMX output, the laser output starts directly after a few seconds after the power supply has been connected. Once the interface is in show player mode, you cannot use it for live operation or changing the configuration, until the power supply is disconnected and the interface gets connected while the Windows operating system is running (correct installed driver preconditioned) so that a data connection comes about. If a data connection by USB port is established when the connection of the power supply is done, the interface operates in Live mode directly (for the use with the Phoenix Showcontroller Software)

Key control

The Phoenix USB Micro interface has 3 hardware key on its front side, so it can be controlled when it is show player mode. If several animations have been uploaded on the Micro SD card of the interface, these can be chosen by the keys when in show player mode. The left key labeled with „Previous“ selects the previous animation for output. The middle key switches the laser output on and off at the interface. At delivery state the middle key needs to be pressed to get output about 5 seconds after the power supply has been established (preconditioned that animation has been uploaded to the SD-card and the laser projector is connected correctly). The right key labeled with „Next“ switches the animation continuously sequentially.

If the interface is in show player mode with automatic laser and DMX output, it can be controlled by the 3 keys on the front side. Only that the laser and DMX output of the first animation is already enabled when a power supply is established.

DMX control

The Phoenix USB Micro V2 interface has 3 optical isolated DMX connectors on its backside. At the DMX-in connector DMX controller can be connected to control functions of the interface (see table below). The DMX-in interface operates up to 512 channels. All signals coming in at the DMX-in connector are passed through 1:1 at the DMX through connector. This way the interface can be easily ground-in an existing DMX universe. At the DMX-out connector another DMX 512 channel universe is created. This way other DMX capable devices can be controlled by the interface and by the Phoenix4 Live and Phoenix4 Pro/ProPlus software.

The output parameters of the Phoenix USB Micro V2 interface are determined by internal default settings or by presets of an external DMX controller (e.g. DMX desk) when in show player mode.

Note: Whether the internal default settings are used or the presets of an external DMX controller, is decided when the power supply is connected. If in show player mode an external DMX controller is connected at the DMX-in connector, the DMX controller (e.g. DMX desk) is used to set the presets for the output. If no DMX controller is plugged in when the power supply is connected, the internal default settings are used.

If the player keys on front of the interface are used while an external DMX controller is connected, the animation and bank selection can be only done with the player keys at the interface afterwards. All the other settings can be operated with the external DMX controller as usual.

In following you see the default settings for the use with an external DMX controller (at the DMX-In connector)

DMX-Base = 0 (DMX Offset value)

DMX channel	Function
1	Bank (0 = bank1, 255 = bank 16)
2	Animation (0 = anim1, 255 = anim 16)
3	Intensity (0 = 0%, 255 = 100%)
4	X Position (0 = 0%, 255 = 100%)
5	Y Position (0 = 0%, 255 = 100%)
6	Size (Attention: 0 = 100%(max), 255 = 0%(min))
7	X Rotation (0 = 0°, 127 = 360°, 128- 255 = continuous)
8	X Rotation (0 = 0°, 127 = 360°, 128- 255 = continuous)
9	X Rotation (0 = 0°, 127 = 360°, 128- 255 = continuous)
10	Scan speed (0 = 10Kpps, 255 = 35 Kpps)
11	Color 1 (0 = 0%, 255 = 100%)
12	Color 2 (0 = 0%, 255 = 100%)
13	Color 3 (0 = 0%, 255 = 100%)
14	Color 4 (0 = 0%, 255 = 100%)
15	Color 5 (0 = 0%, 255 = 100%)
16	Color 6 (0 = 0%, 255 = 100%)
17	Animation speed (0 = 100%, 255 = 16 x frame repeat)

The assignment of the „DMX channel” can be changed by changing the “DMX Base” value or by changing the single “DMX channel” at will. Information about that in detail is written at the

current Phoenix4 Live manual. The settings are saved in the interface even if you disconnect it from the PC.

Flash firmware

Important notice:

Please follow the instructions **exactly** in this document. If an error occurs during the flash process or the connection to the interfaces is disconnected too early, your interface may not work anymore and you will have to send it to us.

Please contact your **local dealer** or us directly before that (support@phoenix-showcontroller.de) !!!

Precondition:

Current (!) Phoenix4 installation (at least **Phoenix4 Live 4.17**):

<http://www.phoenix-showcontroller.de/download/88/>

More information about the backup of your data before a reinstallation (if necessary) is available here:

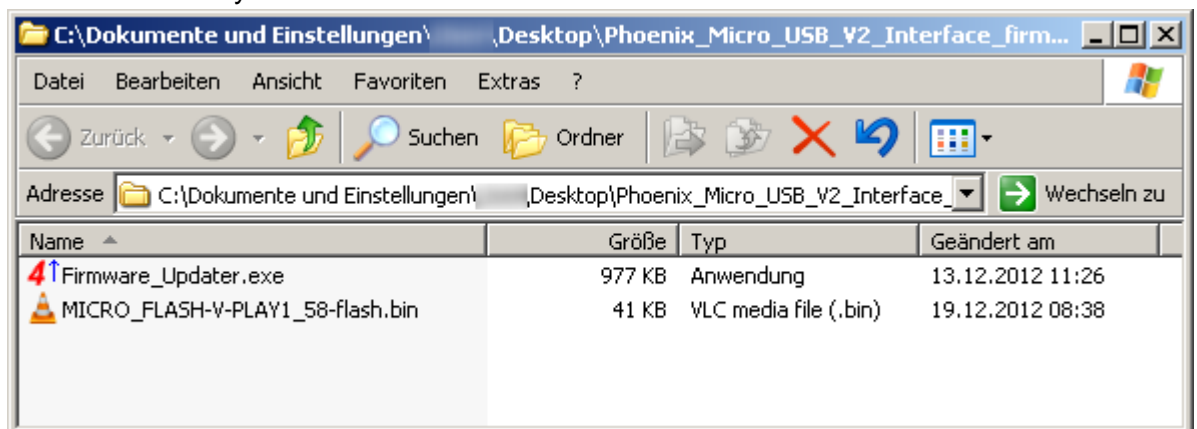
<http://www.phoenix-showcontroller.de/en/2011/10/phoenix-3-premium-to-phoenix4-update/>

Information for a correct reinstallation of Phoenix is explained in this short video tutorial:

http://phoenix-showcontroller.de/tutorials/eng/installing_software.html

Workflow for flashing:

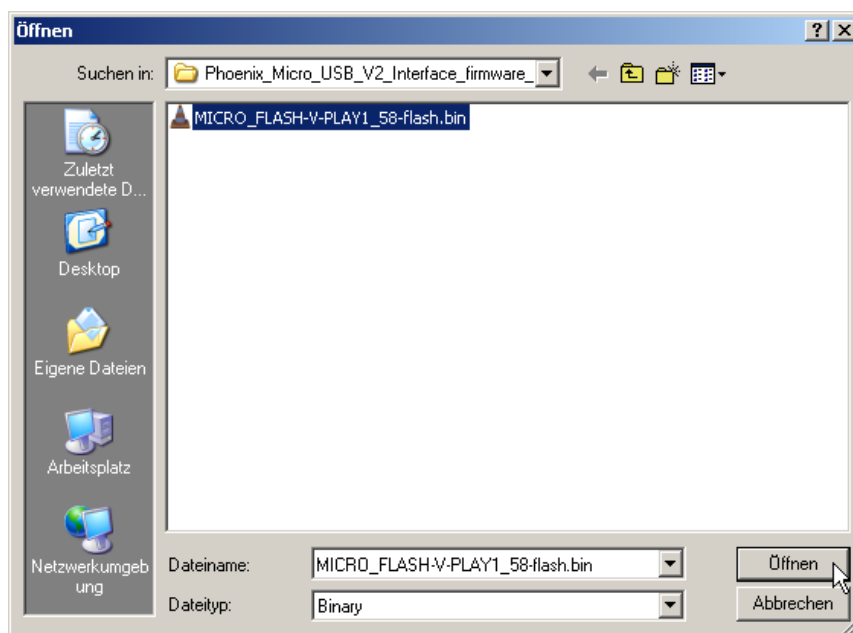
1. Connect the USB cable with the PC and with **one (!)** Phoenix Micro V2 Interface. (No other Phoenix software should be running !!)
2. Execute the file „Firmware_Updater.exe“ that is included in the downloaded and extracted directory.



3. Click on the „Load Flashfile“ button.



4. Select the file „MICRO_FLASH-V-PLAY1_XX-flash.bin“ from the extracted directory.



5. Now you see the numeric bytes counting up and stopping after a while. Now wait until the firmware updater window **closes by itself automatically**. Close the window by hand **in no case**.



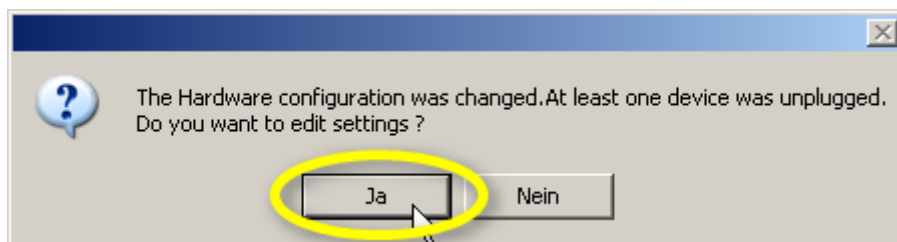
6. Disconnect the USB connection of the interface and the PC after the firmware updater windows has closed.
7. Reconnect the Phoenix Micro USB V2 Interface by USB with the PC after a second.
8. Double-Click on the „Phoenix Showcontroller“ desktop icon,



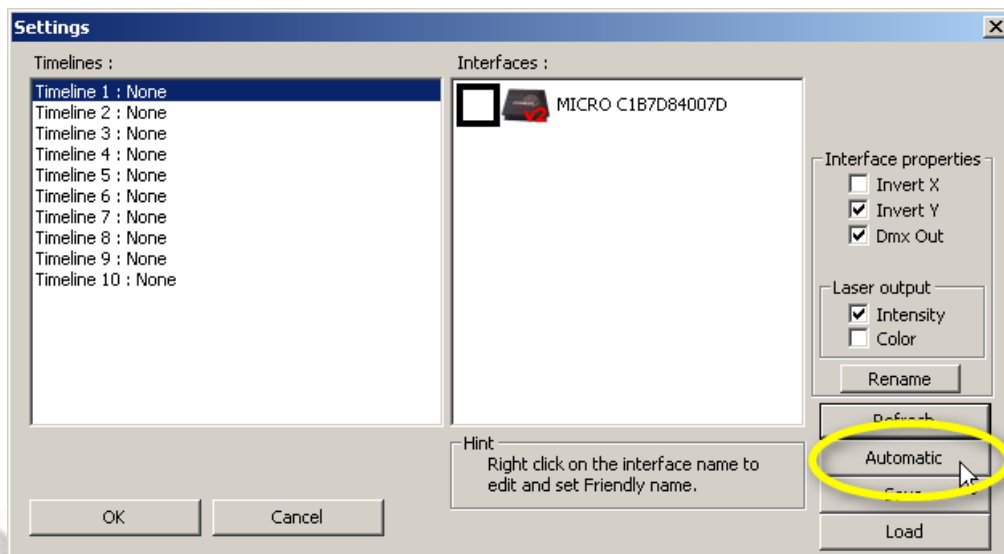
- At the Phoenix program launcher click on Phoenix4 „Live“.



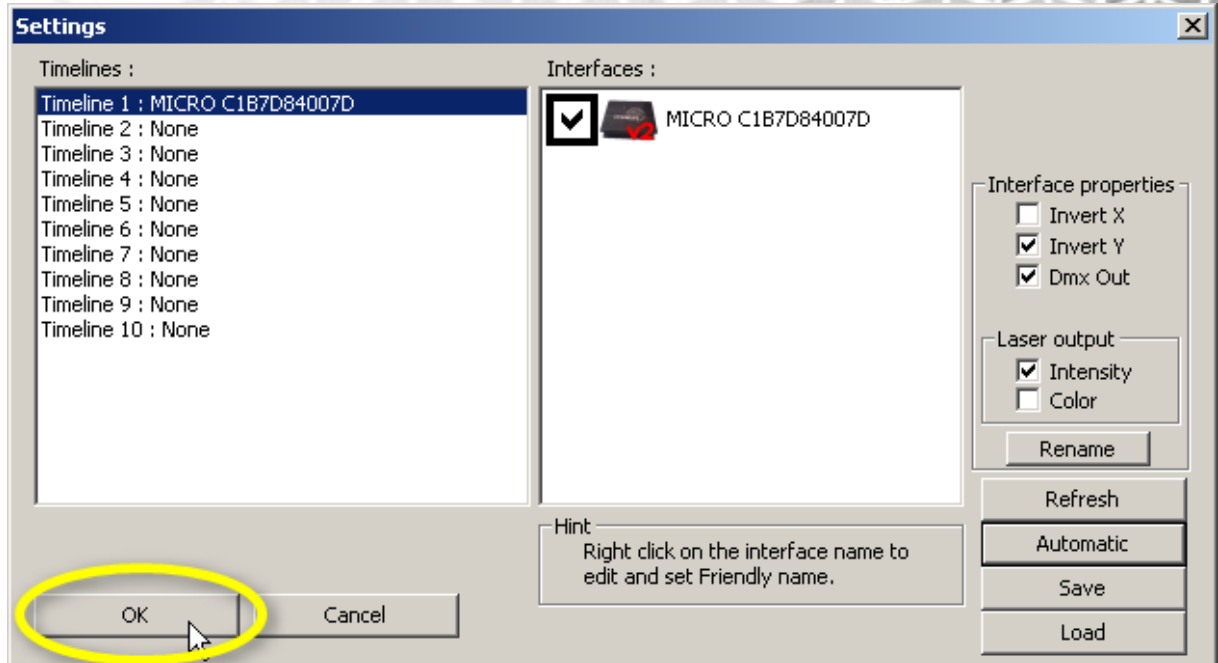
- If a windows is opened for the hardware configuration, agree to that demand by clicking on the „Yes/Ja“ button.



- At the „Settings“ window click on the „Automatic“ button. The checkbox in front of the interface is ticked.



12. After that close the window by click on the „OK“ button.



13. Phoenix4 Live 4.16 opens.

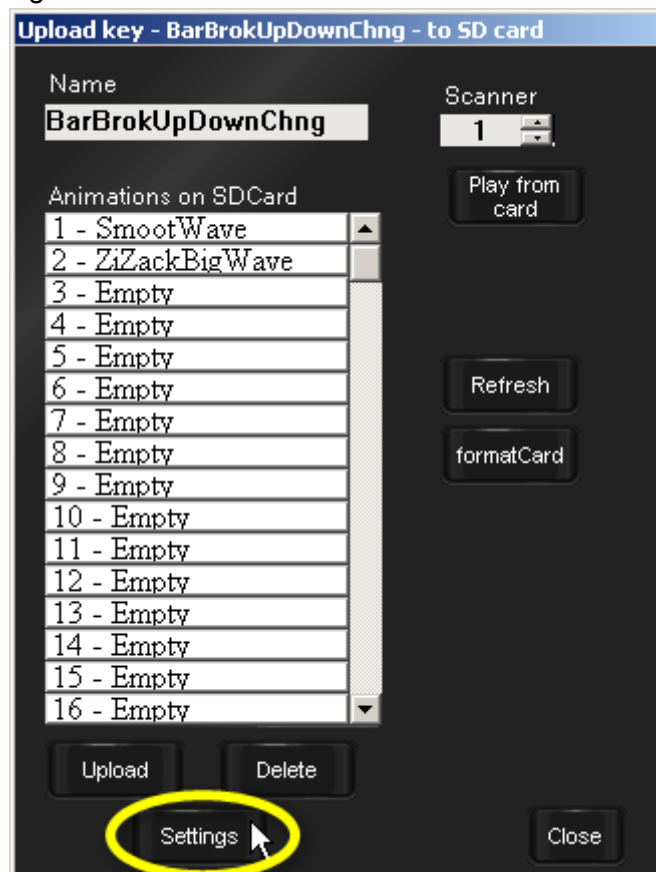
Important: Switch on the laser output. If the Laser is not switched on, the uploader function will not work.



- To open the uploader click on one of the animation tile with the right mouse button.
- Chose „Upload“ from the context menu.

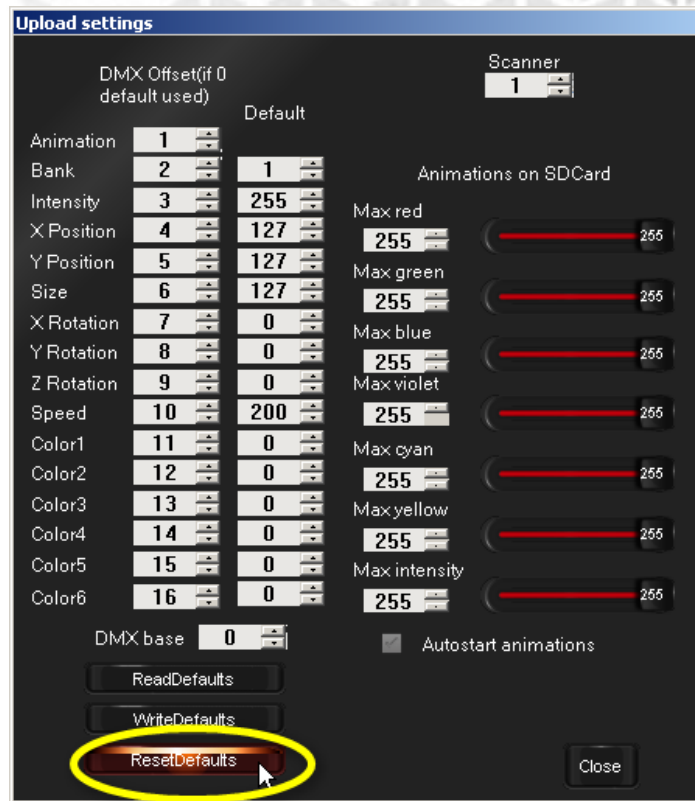


- Click on the „Settings“ button.

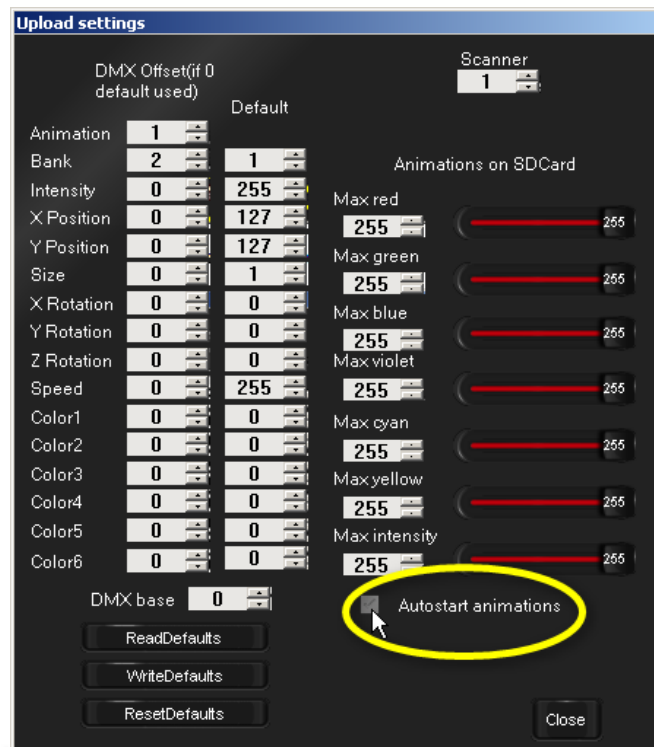


- The window of the „Upload Settings“ is opened.

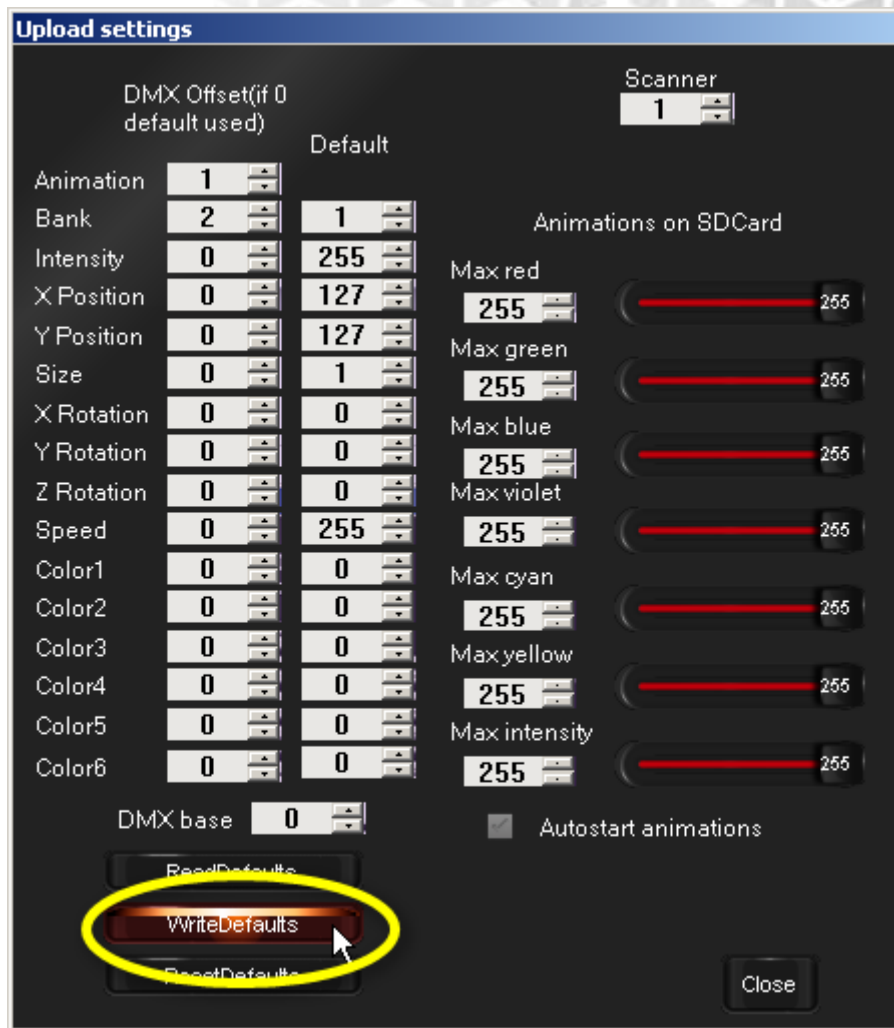
18. Click on the „ResetDefaults“ button.



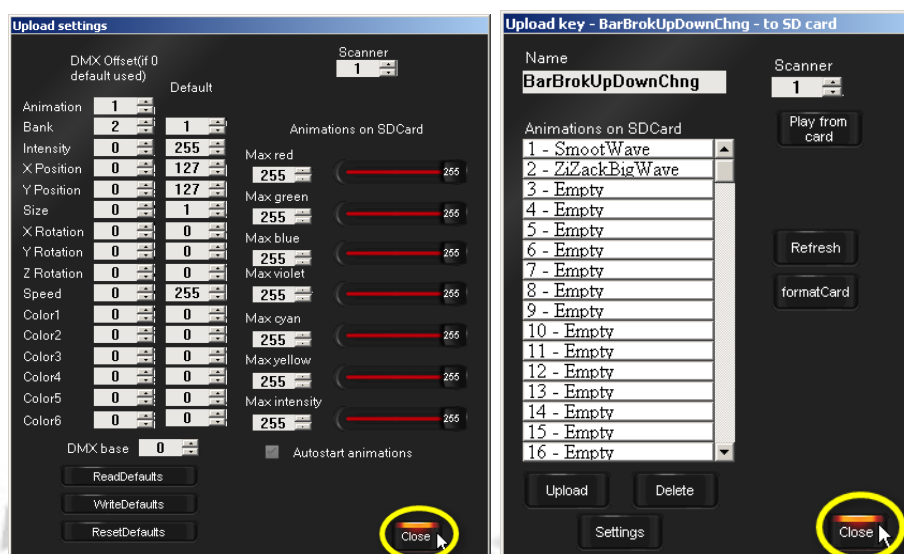
19. Remove the tick at „Autostart animations“ (when it is ticked).



20. Please click on the „WriteDefaults“ button to set the default settings correctly for the use as Stand-alone-player.



21. Close the „Upload Settings“ at the „Close“ button. Do the same for the „Upload Key [...]“ window.



22. Now you can upload the animation to the interface. Please get the information about uploading files to the memory card of the interface, as well as the usage, at the current Phoenix4 Live manual. This can be downloaded at the website: <http://www.phoenix-showcontroller.de/en/support-en/manuals/>

Potential Problems

Incorrect driver installation

If the USB driver has not been installed correctly, the device may be detected by the operating system, but Phoenix4 cannot map it correctly. In rare cases it is not even possible to reinstall the driver. This may happen if a running driver installation is interrupted or aborted. For this case take care that the interface is connected properly and ready to use. Navigate to the device manager of the system control, select the Phoenix USB Micro V2 driver and delete it (right click).

After you deleted the driver fragments, disconnect the USB cable and reconnect it after a short while. Windows should now detect a new hardware device and the driver installation can be redone.

Laser output with half output size

Please check if all cables are connected tight. Especially the ILDA cable has to fit tight.

If the problem still appears, check if the minus cable of the X and X axis of the scanner at the ILDA cable or inside the laser projector is not connected or put to ground (GND). This should not happen. The same result will appear when scanner with unsymmetrical inputs (only input and GND) should be driven.

No operation with the laser software

Check if the device is connected and ready to use. Start the Phoenix Hardware Check from the program launcher. If the interface is recognized there and the testing functions are usable, check if Phoenix4 runs in demo mode. Check that the output is enabled in the software and that the interface is correctly mapped (Settings>Remapp Interface>Automatic or Projektor>Remapp Interface>Automatic)

Automatic laser output without software, no operation with the software

Disconnect the USB connection of the interface. Switch in your PC. Connect the interface with the PC **after** Windows has been started completely. Start Phoenix4 Live. Check at the “Uploader Settings” whether the “Animation autostart” is activated. If so, remove the tick there. More information are available at the Phoenix4 Live manual, that is available at our website www.phoenix-showcontroller.de at the “manuals” section for download.

The software hangs or crashes

Check the USB connection. Also check the USB connector. Some low quality cable can have a defective contact at the connectors. Only use high quality High-Speed USB 2.0 cable (most suitable are those with a ferrit core)

Do not place the Phoenix USB Micro V2 interface next to strong disturbing active systems, like transformer, dimmer packs or power cable. Please also do not place the USB and ILDA cable directly next to those disturbing sources.

Important: If you use more than two Phoenix USB Micro V2 interfaces, use an actively powered USB hub or connect a suitable power adapter at the interface to guarantee an adequate power supply! An insufficient power supply can lead to unpredictable effects at the output and can influence a secure operation.

The output starts to flicker and bright or dark points are shown at lines

Reduce the scan speed at the software. Potentially the maximum scan speed of 50Kpps cannot be reached, depending on the power of the PC and amount of connected devices.

Closing statement

The products as well as the packaging leave the manufacturing in a perfect state. The user of the device has to take care of the local safety regulations and warning notices of the operation manual. Damages that are caused by improper use are not subjected to the sphere of influence of the manufacturer or dealer. We cannot inform you if changes of this manual are made. Please contact your local dealer if you have further questions.

For the following named product:

PHOENIX USB MICRO V2 Interface

we declare that it conforms the essential protection ratings, that are defined in the Council Directive on the approximation of the laws of Member States relating to electromagnetic compatibility (98/336/EEC)

For assessing the products for electromagnetic compatibility, the following standards are applied:

DIN EN 55103-1: 1996 DIN EN 55103-2: 1996 DIN EN 61000-3-2:2000 + A2: 2005 DIN EN 61000-3-3:1995 + A1: 2001

To assess the products concerning the Low Voltage Directive 72/23/EEC and 93/68/EEC following standards were applied:

DIN EN 60065 : 2002

Furthermore, the device was examined according to the guidelines of the VDE 0837 laser class. After successful installation a further examination of the entire structure is essential and must be made to the guidelines of VDE 0837 and corresponding accident prevention regulation VBG 93.

This declaration has been made for the manufacturer.

PHOENIX Showcontroller GmbH & Co.KG - Uhlenhorst 81a - 21435 Stelle - Germany

Tel.: +49 (0)41 745 98 55 0 Fax: +49 (0)41 745 98 55 24

www.Phoenix-Showcontroller.de - info@Phoenix-Showcontroller.de