



USB Box^{V4}
USB-to-Laser/DMX interface

Technical manual



Here, at MediaLas, we truly believe that Laser is the world's most beautiful lighting entertainment technology today. We do not mean to disrespect or degrade any other lighting effect, but the homogenous coherent light beam of a laser is the most unique lighting entertainment effect ever created.

"Everything we do is dedicated to the laser light", founder and president of MediaLas, Dirk Baur, says. "We envision a world where those who work with lasers in live shows and presentations can bring out the very best from any performance, and where the possibilities of laser light performances are endless."

Our mission is lead by a simple rule:

Bring the best performance at highest possible level for a humanized and affordable cost.

So this is how we create our show laser tools. This is how we created legends like CATWEAZLE scanner, Mystique showlasers, or the new thrilling and freshly awarded Infinity showlaser system. It also means, that there is a group of engineers and technicians, research specialists and laserists sitting in Balingen/Germany, who spend most of their living time on the dedicated love to laser lights. This passion creates legends!

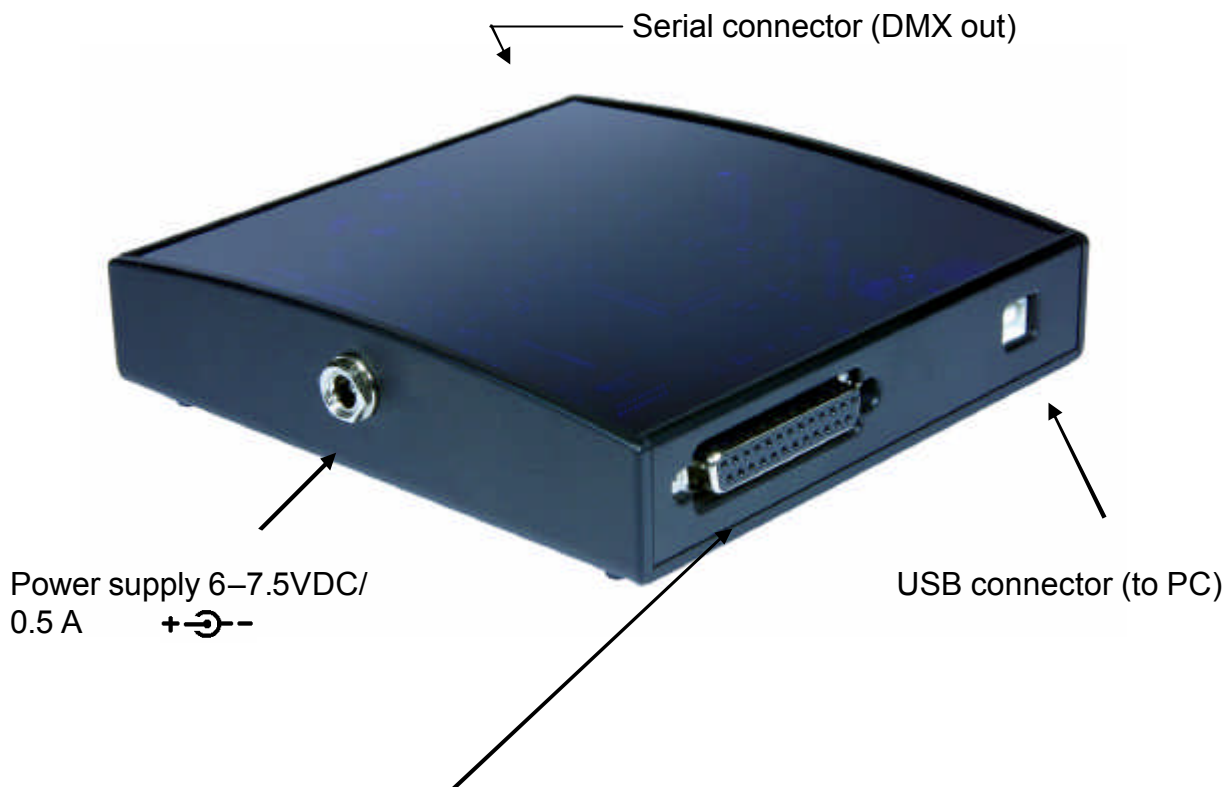
Our products focus on removing barriers and bringing the best possible laser technology with inspiring creativity in performance. Check out our range and features on our website, or visit us during a demo day or trade show worldwide!

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MediaLas USB-Box^{V4}

- High speed USB-to-Laser interface for Mamba software systems.
- Transfer up to 1MB per second ensures a very smooth and fast output of up to 100,000 pps.
- ILDA output connector with full XY, blank and RGB.
- Easy driver installation
- DMX output: 512 channels (for future use)



Pin 1 X+	Pin 14 X-
Pin 2 Y+	Pin 15 Y-
Pin 3 blank/intensity +	Pin 16 blank/intensity –
Pin 4 interlock	Pin 17 interlock
Pin 5 red +	Pin 18 red -
Pin 6 green +	Pin 19 green -
Pin 7 blue +	Pin 20 blue -
Pin 11 DMX +	Pin 24 DMX -
Pin 13 shutter	Pin 25 ground

Signal levels:

Pin 1, 2	–5V..5V
Pin 13, 14	5V..-5V
Pin 3, 5, 6, 7	0V..2.5V
Pin 16, 18, 19, 20	0V..-2.5V

Pins 16, 18, 19, 20 can be connected to ground, Pins 3, 5, 6, 7, respectively, will then range from 0V..5V single ended.
Shutter 0V/5V

Use only original MediaLas power supply, to run the USB Box. Any non original power supply could destroy internal electronics, and will void warranty!

Overview

The MediaLas USB Box is a very versatile and powerful USB-to-Laser interface, offering a full standard ILDA connector, and a 512 channel DMX buffered line. By connecting the interface to any USB connector on any computer system, there is no need to use desktop PC or separate connector boxes. USB Box runs even from smallest Netbook or any Notebook computer, running Windows operating system, available.

Each interface supports one projector channel. However, it is possible, to connect more than one laser projector to the ILDA connector, by using either a parallel splitter cable (available at MediaLas), or linking several projectors with ILDA in and out connectors. There is a maximum of 3-4 projectors, which can be connected to the USB Box's ILDA connector.

Connecting to the computer's USB port

The USB Box can be connected to any USB port from version 1.1 up to 2.0. Use a standard USB A-B cable, while the B-connector must be connected to the USB Box. First install the USB cable, before powering up the USB Box, to avoid any static electricity between the USB Box and the computer's ground. It is also possible, to connect the USB Box through a USB hub. MediaLas recommends, to use maximum two USB Boxes per USB port or hub, to avoid data transfer problems at large and high density frames between software and USB Box. If more than two interfaces are connected on the same port, a stucking output could appear.

After the USB cable is connected, power up your USB Box by inserting the plug type power supply to the main source, then insert the DC cable to the USB Box. Now, the blue LED inside the box should start to flash. This shows the proper internal operation of the USB Box.

Tests at the MediaLas labs had shown no problems, connecting 12 or more USB boxes to one computer. An additional USB port card was used, and there where maximum two USB Boxes per port installed. Note, that one USB power usually shows two USB connectors. Each connector pair is one USB port. Further tests where done on notebook computers, where just 3 USB connectors where available. We connected 4 USB Boxes through two hubs. Basically, the function is perfect, but could result is a lower framerate at a high point density of the laser frames. This is not an error, but very normal, if more than two USB Boxes are installed on one USB port.

Connecting your laser projector to the USB Box laser interface

Any laser projector with compatible DB25 ILDA connector can be connected to the USB Box laser interface. Please note, that NOT every DB25 connector is automatically a compatible ILDA connector! Especially low cost suppliers offer many times incompatible projectors, where negative signal lines are not connected or just missing entirely. MediaLas does not offer any support for non ILDA compatible stuff!

The USB Box interface offers gyrator circuitry on color output. Signal level between color + and color – signals is 5V. If your device does not support differential color input levels, connect all negative color lines to Ground. Now, you full signal level is 5V to Ground.

Driver Installation

The following installation procedures are meant to be under Windows XP or Vista operating systems. On older, Windows 2000 or 98/MW systems, it might be necessary, to install the driver manually.

When a complete package is purchased, first install the entire software, before you connect the USB Box to your computer. Drivers will be installed automatically on your system. After Mamba installation is complete, simply plug in the USB Box to a USB port, then apply power to the USB Box. The computer should find the hardware, and install the appropriate driver.

Operation

A blue LED will flash with a period of one second, indicating that the USB-Box is ready. When data is received the LED will flash (irregularly) with any frame received.

Warnings

- **Do not use other power supply than original one, supplied by MediaLas. Wrong voltage can destroy the USB Box interface!**
- **Do not connect XY signal lines to ground! All outputs are routed against ground. If your projector has an incompatible ILDA connector, with just positive signal lines connected, do NOT use the negative outputs.**
- **Make sure, not to cover the top of the USB Box interface, to allow heat to be removed adequately.**
- **Do not connect more than 4 projectors at the same time to the USB Box connector.**
- **Maximum cable length from ILDA connector to your projector is limited to 100m.**
- **If the USB Box gets connected to the computer, ALWAYS connect the USB cable first, then power up the USB Box interface**

Troubleshooting / If you experience problems with USB Box:

General:

- Make sure you run the latest Windows updates.
- In case of any continuous problems, try on a different computer, if possible.

The LED won't flash:

- Make sure the power is connected properly.
- Reset the Box by removing the DC connector, and inserting again.

Mamba does not recognize the USB-Box:

Check the USB section of the Windows Device Manager (My Computer/Properties/Hardware). The USB-Box should be listed, if not, check the USB connection. If it's still not listed, reinstall the driver (see section "Reinstalling the driver" below).

Make sure the (Mamba-) dongle is connected and the dongle driver installed. In the USB section of the Device Manager there should be 2 (!) entries:

Feitian ROCKEY4
Feitian ROCKEY 4 USB

If the second is missing, the dongle is not recognized. Check the connection.
If one or both entries are missing, the driver may be installed incorrectly, or not at all. You can use the driver installation/repair tool on the Mamba CD (folder "dongle_install").

The USB-Box "hangs" after some time:

Reinstall the driver (see section "Reinstalling the driver" below).

Reinstalling the driver:

To uninstall the previous driver, disconnect the USB cable from the USB-Box (and of possible other USB devices using FTDI 2xx chip), go to Windows Control Panel/Software, locate the item "MediaLas USB Drivers" and click "Remove".

Then reconnect the USB-Box and follow the installation procedure (you will need the original Mamba CD or the latest driver package from the MediaLas website).

Laser projection is just half the size:

Incompatible ILDA input connector of your laser projector. Usually, this happens if the negative signal lines are missing.

Laser projection is floating or jumping

- Ground loop, missing ground, or dual grounded cable. Check, if your laser projector uses a fully compatible ILDA connector.
- Try to disconnect Ground wire on projector side.
- Purchase ILDA compatible laser projector

If you still have problems, contact our technical support.