

RTI PIKO

Full Color Laser Projector



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1 Contents of Package

Please make sure that all components were delivered correctly. Please also compare the separately supplied packing list.
If you discover that anything is missing, please contact your dealer.

Name	No.	Picture
Laser projector	1	
Mains cable	1	
Interlock plug XLR 7pin	1	
Set of keys	1	
Allen key 1.5 mm (built into the top part of the backplate)	1	
Manual	1	
ABS Flightcase Default case	1	

The unit is carefully packed before shipping.
If you discover damages to the device or the packing material due to improper transportation, please inform the shipping company and return the device to the supplier preferably in its original packing.



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2 Safety Hints
2.1 General Hints



- 1. The laser projector is intended only for proper use for projecting pictures and animations onto a projection surface (walls, screens) or beams into space indoors or outdoors.
- 2. The device may not be used when there is **visible damage** to the housing, the connectors in the rear, especially the electric power supply, or the connecting cables.
- 3. The installation should be performed by **specially trained personnel**. The projector **should not be connected to the mains** during installation.
Please note the local safety regulations!
- 4. For operation of the laser unit at truss or on ceiling, the projector must be additionally secured by a **safety cable**. This cable must be appropriately designed according to the weight of the laser projector.
The relevant accident prevention regulations of the professional associations must be observed.
- 5. If the provided mains cable does not correspond with your existing mains supply please use an **appropriate adapter** for mains connection.
Do not use any electronically controlled sockets, e.g. no dimmer or radio sockets, for mains connection of the laser projector.
- 6. The laser unit has to be used according to this manual. LaserAnimation Sollinger GmbH does not assume liability for damages caused by non-observation of this manual.
- 7. Before starting any maintenance or cleaning **remove the unit from the power supply!**
- 8. In case of malfunctions please send the device to **your dealer for inspection and repair** in its original packing.
Do not open the device!

Attention!
Warranty is rendered void if the device is misused, damaged, modified in any way, or for unauthorized repairs or parts.



- 9. The laser unit is intended for use in a dry and sufficiently ventilated location.
When used outdoors the device **has to be protected against humidity, overheating and excessively low temperatures**. Note the respective maximum and minimum ambient temperatures for operation specified in the technical details.
- 10. When operating the device in humid or special outdoor conditions that can lead to condensation:
 - a. **Allow the device to acclimatize sufficiently at the place of use.**
 - b. **Use LA Toolbox to check the internal temperature of the unit and the dew point.**
 - c. **Do not operate the unit if the dew point is > 20°C, as condensation can occur on the cooler components.**
 - d. **Do not switch the unit off between operating times, only to standby mode. This prevents the unit from cooling down, as all temperature control loops remain active.**
- 11. The laser unit may not be operated in environments polluted with sand, dust or acrid fumes or gases.
Fog machines must not be operated in the immediate vicinity of the laser projector. Do not point the fog nozzle directly at the laser projector.
- 12. Do not expose the laser unit to direct sunlight or other intensive light sources e.g. spotlight.



2.2 Hints for Laser Safety



Caution – use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This laser product is designated as Class 4 during all procedures of operation, maintenance and service.
The local safety regulations for the application of Class 4 laser products must be observed!

1. Eye Protection

- **Never look directly into the laser beam!**
 A laser beam is coherent, monochromatic light with very high energy. A laser beam retains its intensity even over very long distances. If a laser beam hits the human eye it can lead to irreparable damages to the cornea, the conjunctiva, the eye lens and the retina. **Avoid any reflections back into the laser to prevent damages to the laser system. Do not place any objects into the laser beam** because even diffusely reflected radiation can cause eye damages.
 Therefore remove any rings, watches or the like before you carry out work on the device and use only non-reflective tools.
- We strictly recommend wearing **laser protective glasses** for laser devices according to laser class 4.

2. Fire Protection

- The high energy density of the laser beam causes painful burns when it hits human skin. The beam may also burn holes into textiles.
 Therefore **never reach into the laser beam** and do not let other parts of the body get in the way of the laser beam.
- If the laser beam hits easily flammable materials such as paper, these will ignite and a fire can develop very quickly.
 Therefore make sure that **no flammable material is in the way of the beam** before activating the laser.

3. Audience Protection

- The operation of laser systems with class 4 lasers requires an emergency stop (E-Stop).
 Regardless of the way the laser is operated, **an E-Stop must always be connected!**
 Place the E-Stop so that you can reach it immediately in emergency situations.
 Run a test each time the laser is activated to ensure that it is turned off immediately by activating the E-Stop.
- Mark an area of about 3 to 4 m around the laser system as off limits to the audience.
- Only test the laser system as long as no audience is present.
- Never let the laser run unattended.
- Make sure that no unauthorized persons have access to your laser system.

The operation of laser equipment in the event sector with an audience requires an approval by a technical inspection authority in many countries!

The following warning labels are placed on the laser device:

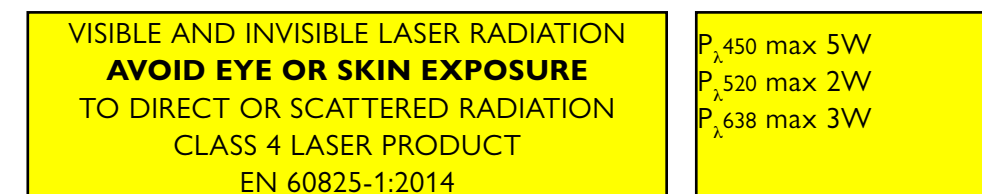
Next to emission laser window:

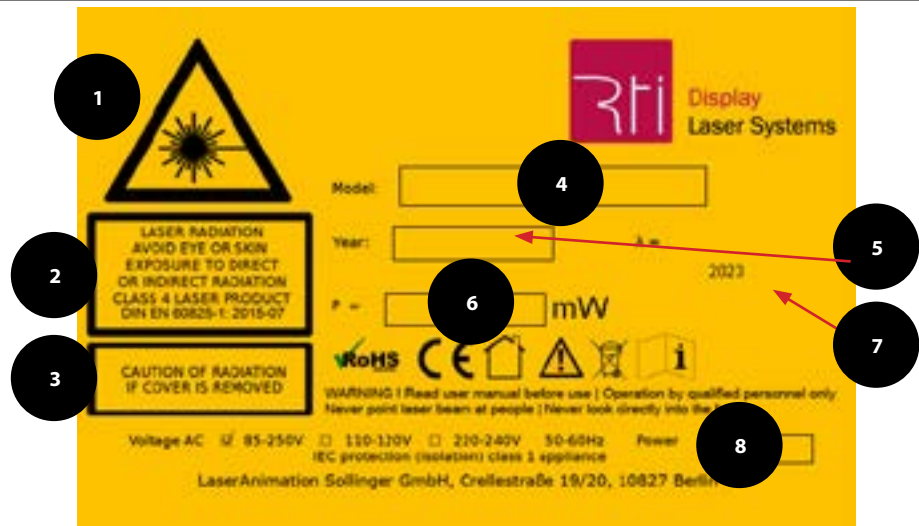


On the top cover:



On the bottom:





- 1. Laser radiation! Avoid exposure to beam
- 2. Laser class 4
- 3. Caution of radiation if cover is removed
- 4. Model type
- 5. Production year
- 6. Output power
- 7. Wavelength
- 8. Power supply & consumption

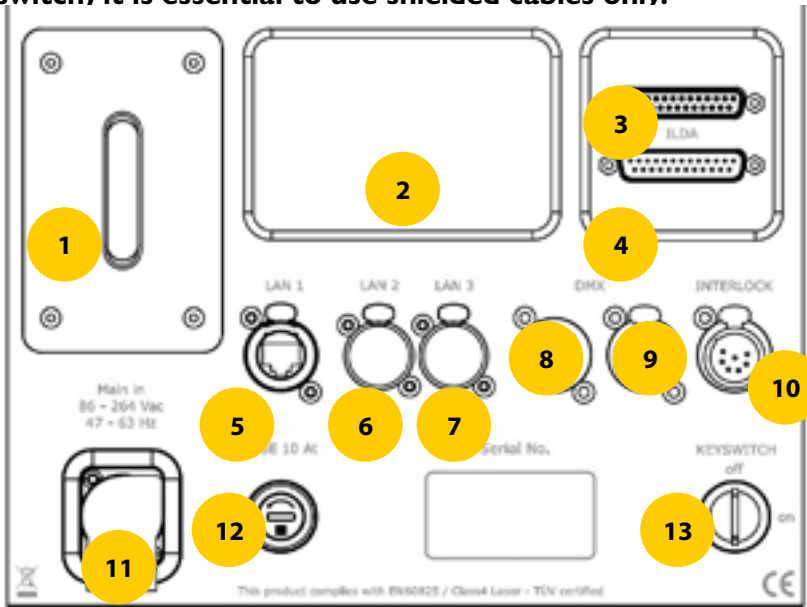


3 Device Connectors

3.1 Overview



All included signal cables are shielded.
In case you use other cables (e.g. for remote control, Interlock, external key switch) it is essential to use shielded cables only.



- 1. Loop for safety cord
- 2. ShowNET / FB4 interface
- 3. ILDA thru: 25pin D-sub female for daisy chaining to other projector
- 4. ILDA in: 25pin D-sub male to connect an ILDA compliant signal source
- 5. LAN RJ-45 jack to connect the projector to Ethernet network (LAS software)
- 6. LAN RJ-45 jack to connect the projector to Ethernet network (ShowNET)
- 7. LAN RJ-45 jack to connect the projector to Ethernet network (ShowNET)
- 8. DMX in: 5pin XLR male
- 9. DMX thru: 5pin XLR female
- 10. Interlock: 7pin XLR jack for connection of
 - emergency stop (E stop)
 - included Interlock plug (to close the Interlock loop)
- 11. Universal input: 86 VAC – 264 VAC, 47 – 63 Hz
- 12. Fuse
- 13. Key switch



3.2 Connections

3.2.1 Mains Connection

The projector can be operated with supply voltages of 86 VAC – 264 VAC / 47 – 63 Hz.

Note:
If the provided mains cable does not correspond with your existing mains supply please use an appropriate adapter for mains connection.



The projector must be operated with supply voltage with grounded protective conductor (PE) !

The highly-efficient power supply allows discharging external and internal disturbances via the protective conductor (PE). Internal filters are ineffective without protective conductor (PE).

Operation without grounded protective conductor (PE) can cause damage to the components of the power supply. For this we cannot provide any warranty!

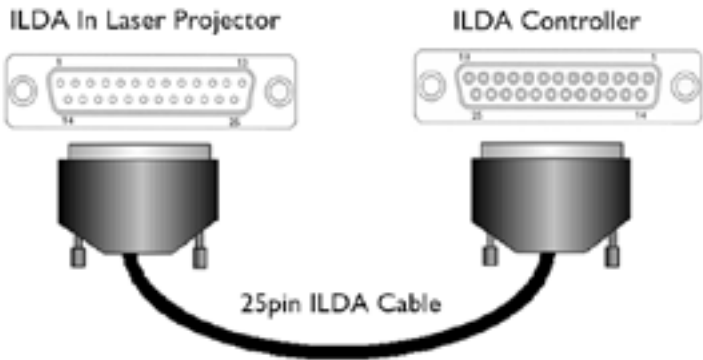
3.2.2 Connection Signal Source via ILDA

Be sure to use fully connected 25 wire 1:1 shielded cables only!

All significant ILDA signals are true differential inputs i.e. each signal line must have its “inverted signal” counterpart!

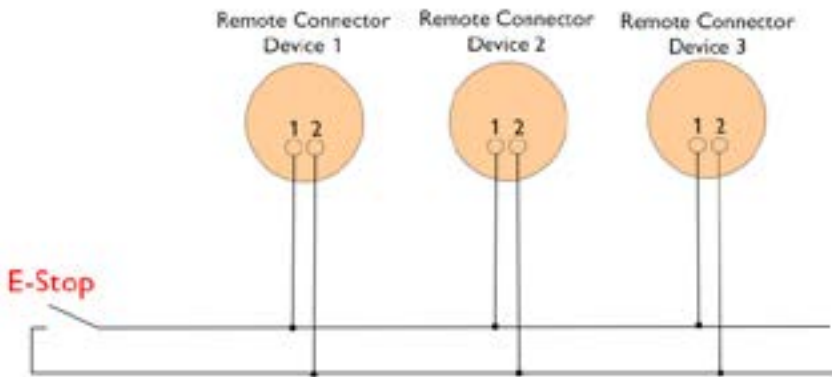
At the signal source “inverted signal” lines may be tied together and connected to GND. For reasons of best noise suppression also in this case a fully connected 25 wire cable should be used!

Connect your projector to the 25pin ILDA output of a laser show controller, e.g. Lasergraph DSP or another controller with an ILDA compliant output, e.g. “ShowNET” using a DSub25pin ILDA cable.



- ✓ **The operation of laser systems with lasers class 4 requires an emergency stop (E-Stop). Regardless of the way the laser is operated, an E-Stop must always be connected.**
- ✓ **Place the E-Stop so that you can reach it immediately in emergency situations.**
- ✓ **Run a test each time the laser is activated to ensure that it is turned off immediately by activating the E-Stop.**
- ✓ **After activating the E-Stop (opening the interlock loop) your device is blocked from any laser emission.**
To return to normal mode you have to deactivate (close the Interlock loop) and then to turn the Key switch to OFF an ON again.

Note:
On the remote connector the interlock loop is connected to pins 1 and 2.
In case more than one device is used the interlock can be connected in parallel. Therefore, several devices can be connected to one emergency-off button.



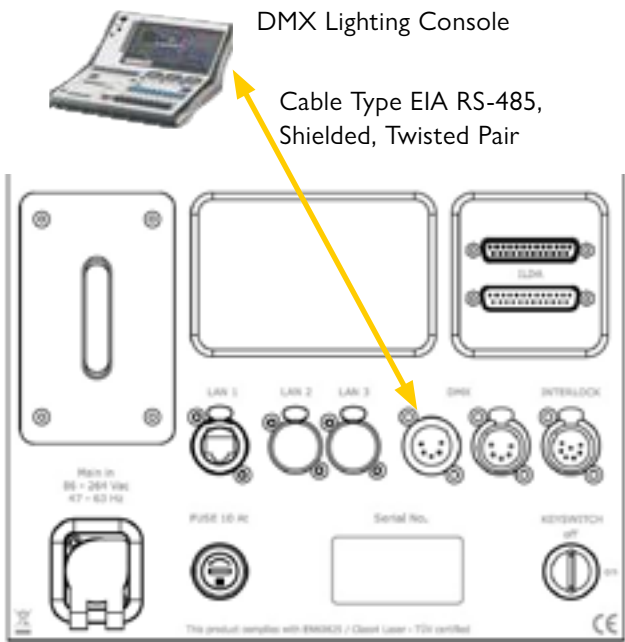
2. Interlock Plug

If no E-Stop shall be used it is necessary that the included Interlock plug is inserted for closing the Interlock loop:



3.2.5 DMX

The DMX in- and outputs are only available for ShowNET or FB4 control..



The applied DMX signal at “DMX in” is still available for transmission to other DMX devices at “DMX thru”.

Note:
Please note that “DMX in” is not terminated with 120 Ohm. This needs to be done externally (most easily using a terminating connector on “DMX thru”).

3.2.6 LAN

The laser unit can be integrated into an Ethernet network using the LAN interface and can be controlled using the LA Toolbox software installed on a PC or Mac. Use “LAN 1” port for this purpose.

The laser can be also controlled with different software usign integrated ShowNET card. Use either “LAN 2” or “LAN 3” for this purpose.

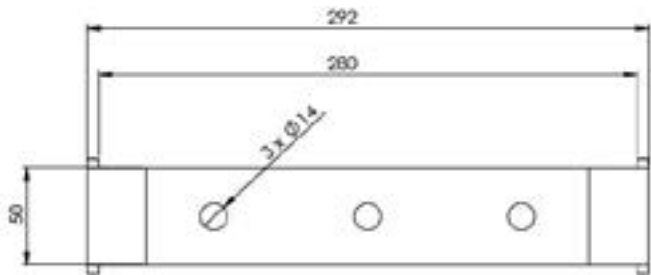
For the Ethernet connection, either direct or using a switch, use standard CAT 5 patch cables with RJ-45 connectors.

4 Installation and Commissioning

4.1 Installation

4.1.1 Hanging Operation

The laser unit is equipped with an extra stable stainless steel yoke for hanging operation (truss or tripod). For mounting you will need minimum one C-clamp (not included).



Make sure that the position is sufficiently ventilated.

Make sure that the projector is adequately secured by an additional steel cable during hanging operation.
The manufacturer does not assume responsibility for damage to persons or to property due to faulty attachment!

4.1.2 Standing Operation

Attention!
The air is supplied by the fans on the right side of the projector.
Do not block the fans on the right side !!!



Place the laser unit in **upright position** on a stable platform and make sure that the position is sufficiently ventilated.

Do not place the laser unit sideways and do not block the side panels because the air ventilation takes place through the side panels.

4.1.3 Hints for Application of the integrated Beam Blocker

A beam blocking cover is included with the shipment for safety reasons. This convenient cover can be used to blank the laser output in order to protect the audience in a certain area.



1. Loosen silver screw **1** by turning anticlockwise.
2. While holding the silver screw, slide it up and down until the beam blocking plate is in the desired position.
3. Tighten the silver screw by turning clockwise.

4.2 Commission

4.2.1 Power On

The device is not equipped with a power switch. The power supply should only be performed by connecting respectively disconnecting the unit to or from the mains.

1. Connect the included power cord to the mains input of your device: Pull the slider, insert the connector and turn it clockwise until the connector is locked.



2. Connect the device to a power outlet.
If mains power is available the fans will start
3. For power off the projector turn the connector counterclockwise and disconnect it from the mains input “Power”.

Note:
The powerCON TRUE1 connector can be connected or disconnected under load!

4.2.2 Laser On



Never look into the emission window while turning the laser on! Make sure that no persons or highly combustibile materials are located in the path of the laser beam.

1. Be sure you have opened the output window protector from the laser emission window.
2. Make sure that the Interlock loop is closed.
3. Insert the key and switch the laser on by turning the key to ON.



4. The laser can be switched-off without delay by turning the key switch to OFF position.

5 Control

5.1 LA.toolbox

The RTI PIKO can comfortably be controlled using the “LA.toolbox” software. This intuitive software allows monitoring important functions of the laser unit and adjusting operating parameters.

The LA.toolbox communicates via the LAN or the Remote interface with the laser projector.

The program LA.toolbox is available in following versions:

1. PC version for installation on a PC under Windows 7/8.1/10
2. Mac version for installation on an Apple Macintosh under Mac OS X 10.10 or newer

The PC and Mac versions as well as the detailed LA.toolbox manual are stored on the included USB memory stick. Additionally both versions and the manual are available in the “downloads” section of our website.



Install the “LA.toolbox” software on your PC or Mac. -> Compare the description in the LA.toolbox manual.

For further information please check “LA.toolbox” manual.

6 Maintenance Hints



Turn the laser off and disconnect the device from the mains before doing any maintenance!

Please check the fans on the bottom of the projector on a regular basis!



Depending on the operating environment large amounts of dirt can accumulate on the fans after some time. The dirt definitely has to be removed to guarantee trouble free operation! Please also check the air inlets or the outlets on both sides from time to time. Remove any dust between all ribs using a brush, a vacuum cleaner or an oil-free compressed air cleaner.

The housing of the device may be cleaned with a soft fluff-less cloth and a mild detergent.

Do not touch the laser emission window and always close it with the protector after operation.

The laser emission window can be polluted during the operation (fog machines, open air operation etc.).

A polluted window can reduce the laser output power and influence the beam quality.

We recommend the laser output window to be cleaned from time to time. Please use methanol (against finger prints) and/or acetone and lens paper for cleaning.

Be carefully during cleaning and do not touch the cleaning surface of the lens paper with your fingers!

Methanol and Acetone are hazardous materials: Please observe the related precautions!

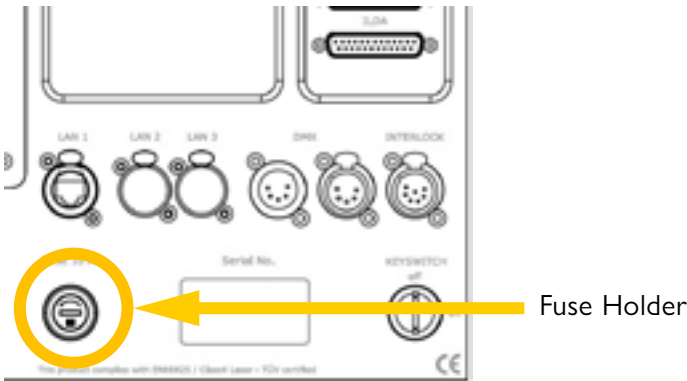
7 Malfunction

- Check the mains connection!

In case of malfunction please check the mains connection and mains cable first. If necessary change the mains cable.

- Check the fuse of the device!

The internal device fuse can be defective. It is easy to replace the fuse. For this purpose remove the fuse holder next to the mains connector using a coin or a screw driver.



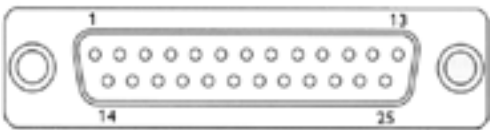
In case of other malfunctions please send the device to your dealer for inspection and repair in its original packing.

8 Pin Assignments

8.1 ILDA in, ILDA out



ILDA out (25pin D-sub female)



ILDA in (25 pin D-sub male)

- Notes:
- n.c. means not connected.
 - All signal lines are true differential.

Pin No.	Signal	Level	Remarks
1	X+	± 10V measured against X-	Beam position: +10V : right 0V : center - 10V : left
2	Y+	± 10V measured against Y-	Beam position: +10V : top 0V : center - 10V : bottom
3	Intensity+	0V or 5V measured against Intensity- digital signal	0V: Beam off / blanked 5V: Beam on Left open: Beam on Interpretation of this signal can be switched off.
4	Interlock A	Interlock loop	Connected with Interlock B
5	Red+	0V to +5V against Red-	0V : 0% red 5V : 100% red
6	Green+	0V to +5V against Green-	0V : 0% green 5V : 100% green
7	Blue+	0V to +5V against Blue-	0V : 0% blue 5V : 100% blue
8, 9, 10, 11,12	n.c.		
13	Shutter	0V to +5V against Shutter-	Signal not interpreted
14	X-	Return lead for X+	
15	Y-	Return lead for Y+	
16	Intensity-	Return lead for Intensity+	
17	Interlock B	Interlock Loop	Connected with Interlock A
18	Red-	Return lead for Red+	
19	Green-	Return lead for Green+	
20	Blue-	Return lead for Blue+	
8, 9, 10, 11,12	n.c.		
25	Shutter-	Return lead for Shutter+	

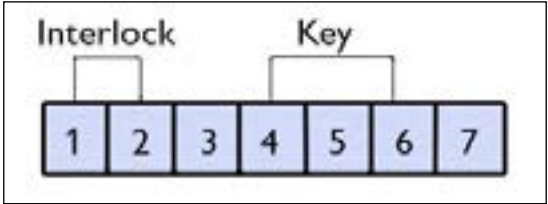
8.2 Remote Connector

7pin XLR-Jack female



Pin No.	Signal	Meaning
1	Interlock	Interlock loop: INTERLOCK ON : if both interlock lines are connected to each other
2	Interlock	
3	TxD	Data from laser (RS232-signal level)
4	Remote Key	KEY ON (external key switch): if connected to VCC (pin 6)
5	RxD	Data to laser (RS232-signal level)
6	VCC	+24V max. 250mA
7	GND	Ground

Interlock Plug (included)



Note:
Please use **only the silver colored** interlock connectors for the laser projectors. The black interlock connectors delivered with old Laseranimation products do not have the necessary bridge of pins 4 and 6.



8.3 DMX

Projectors with integrated ShowNET or FB4



DMX in (male) DMX thru (female)

Pin No.	DMX in	DMX thru
1	DMX Shield	DMX Shield
2	DMX In-	DMX THRU-
3	DMX In+	DMX THRU+
4	n.c.	n.c.
5	n.c.	n.c.

Please note that “DMX in” is not terminated with 120 Ohm. This needs to be done externally (most easily using a terminating connector on “DMX thru”).
Projectors with integrated Lasergraph DSP *compact* (with or without grating module):

Final statement

All our products and their packaging are individually checked and leave our facilities in a flawless and proper condition. If you notice any damage or defects when receiving the product, please contact your dealer immediately. Damages caused by improper handling are not subject to the manufacturer's or dealer's responsibility and no liability or warranty is assumed for it. The operator of the device must follow the local safety regulations and the warnings in the manual. If changes are made to this manual, we cannot inform you. Please contact your dealer for service and any other questions. Only use original spare parts.

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EC Declaration of Conformity



Manufacturer:
LaserAnimation Sollinger GmbH

Product Name:		
PIKO 30 RGB	PIKO 40 RYGB	PIKO 36 G OPSL
PIKO 33 RGB	PIKO 42 RYGB	PIKO 40G
PIKO 55 RGB	PIKO 36 ROGB	
PIKO 70 RGB	PIKO 38 ROGB	

We here declare that the product described above is in conformity with the following directives:

- 2014/35/EU Low Voltage Directive
- 2014/30/EU Electromagnetic Compatibility Directive

The following harmonized standards have been applied:

- DIN EN 61000-6-1 VDE 0839-6-1:2007-10
Electromagnetic compatibility (EMC)
Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- DIN EN 61000-6-2 VDE 0839-6-2:2006-03
Electromagnetic compatibility (EMC)
Part 6-2: Generic standards - Immunity for industrial environments
- DIN EN 61000-6-3 VDE 0839-6-3:2011-09
Electromagnetic compatibility (EMC)
Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments
- DIN EN 61000-6-4 VDE 0839-6-4:2011-09
Electromagnetic compatibility (EMC)
Part 6-4: Generic standards – Emission standard industrial environments
- DIN EN 60825-1 VDE 0837-1:2015-07
Safety of laser products
Part 1: Equipment classification and requirements
- DIN EN 55032:2016-02 VDE 0878-32:2016-02
Electromagnetic compatibility of multimedia equipment - Emission Requirements

The included technical documents (files) demonstrate that the product has been produced according to the requirements of the abovementioned directives.

The EC declaration of conformity is available for inspection by the market surveillance authorities at any time.

Berlin, 28.11.2022

(Date)

Martin Werner