LED light source
F3000 | F5100 | F5100 Endo | F5000

ESD USB DC in

7 8 9 10

Foot switch

11
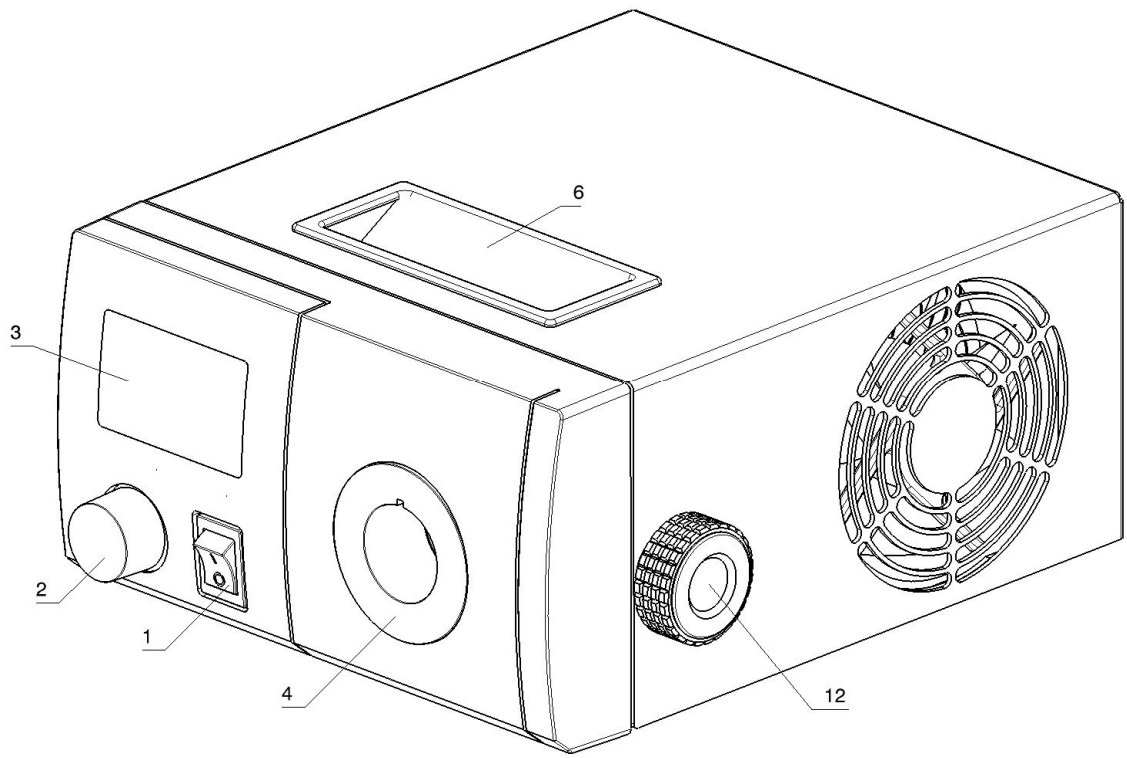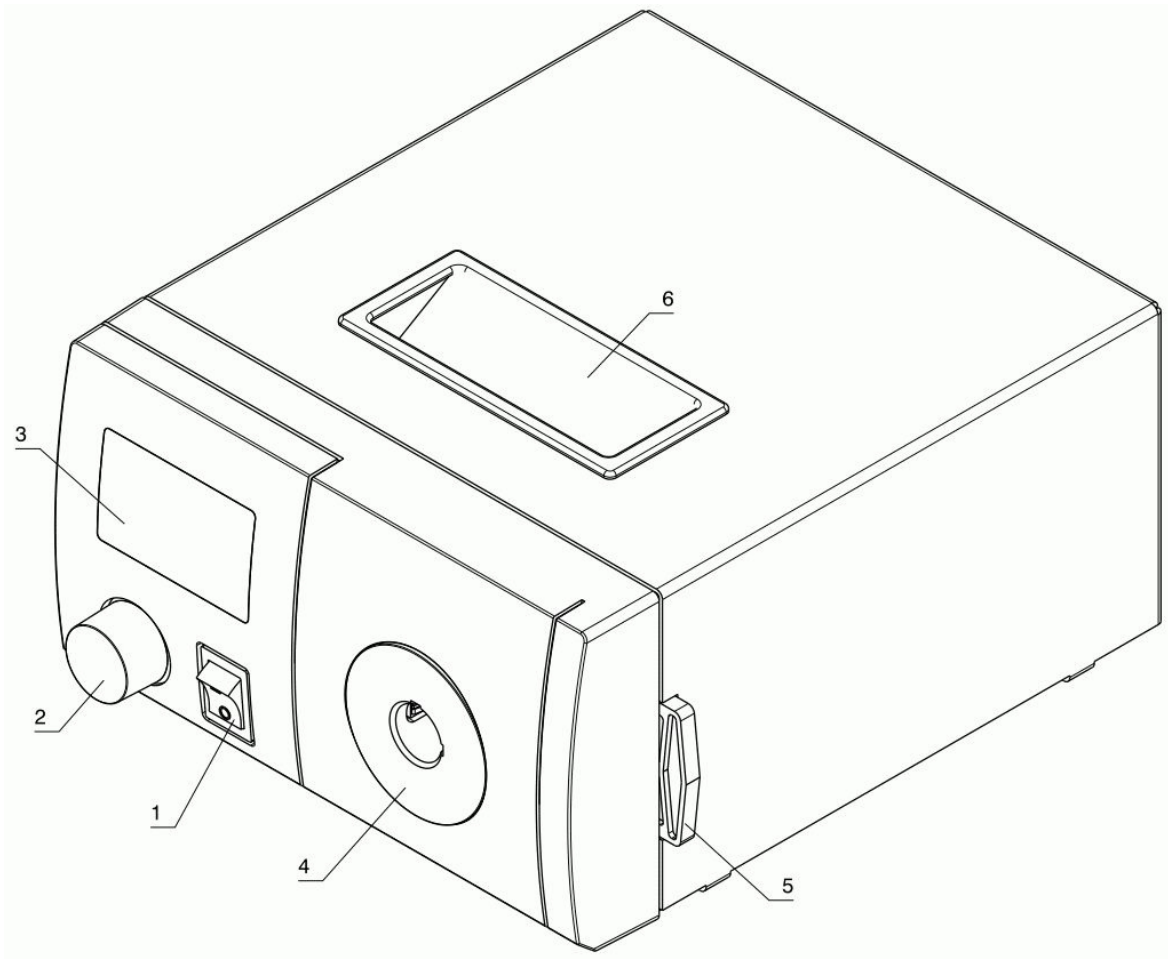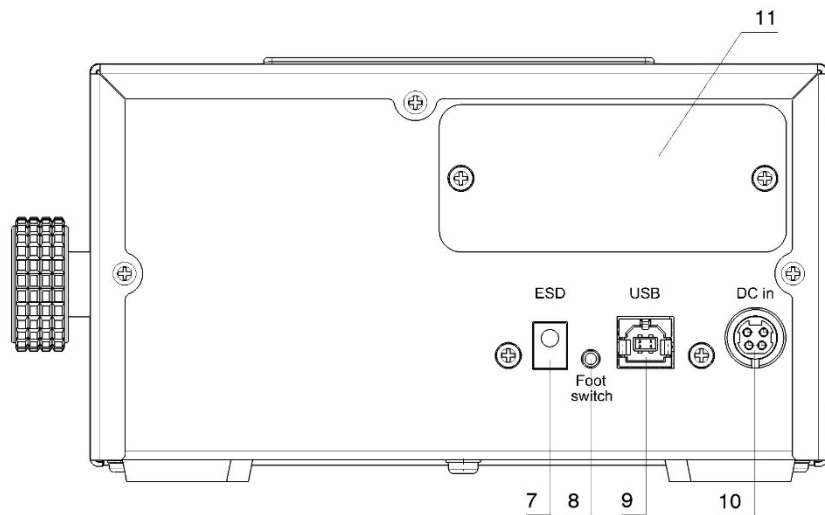
Design depending on device

13

74,2 2)

M5 (2x)

1)

40 90 (40)
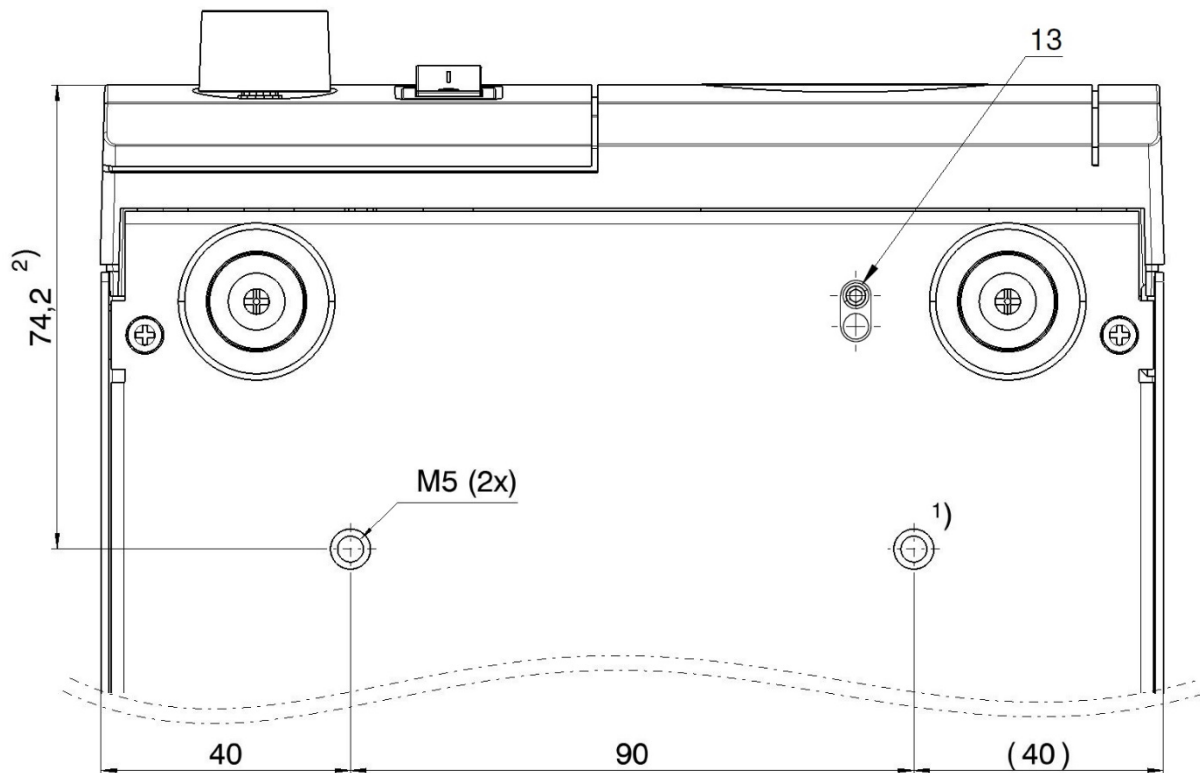
1) max. screw-in depth 7mm measured from outer housing surface
2) measured to vertex of front

1....... On/Off switch
2....... Rotary knob with pushbutton function
3....... Display
4....... Light guide connection
5....... Filter holder
6....... Handle
7....... ESD socket
8....... Socket for footswitch
9....... USB connection
10..... Supply socket
11..... cover for optional modules
12..... light guide fixture
13..... adapter fixture

Designated use

This product has been developed and is intended for illumination purposes in the sector of stereo microscopy and endoscopy for industry and laboratory use. The applicable standards and guidelines are listed in the Chapter "Technical data".

This light source generates light that can be passed through a light guide to the microscope or object to be illuminated. Numerous light guides, such as e.g. flexible light guides, goosenecks or ring lights are available. Comprehensive accessories such as e.g. filters, focusing lenses and adapters are also available.

We would like to say thank you for choosing to purchase this high-quality product and wish you lots of success whilst using it.

Instructions for your safety

The following danger symbols are used in this operating manual:

⚠️ Warning of a danger area! Caution, please refer to documentation!

⚡ Warning of dangerous electrical voltage!

♨️ Warning of hot surfaces!

☀️ ATTENTION: Dangerous optical radiation! Do not look into the light!

This chapter deals with safety instructions that must be complied with when using the device. In your own interests, please comply with all safety instructions that are listed on the device and in this manual.

⚠️ The operating instructions must be read before using the device. It is recommended to store the operating instructions close to the device to ensure that it can be read immediately by the user in case of need. The user must inform a responsible person or the manufacturer immediately if there are any changes in the operating behaviour or to any safety-relevant device components. The operator is responsible for the correct use of the product and for the training of the user. The generally application legal national safety and accident prevention regulations must be complied with in addition to the supplementary user guidelines of the operator. The manufacturer is not liable for any damages due to incorrect operation or non-compliance with the danger instructions!

⚡ Never open the device or its components, unless specifically indicated in this manual as you could otherwise risk physical injury or damage. If necessary, contact your retailer. Technical modifications to the device are not permitted under any circumstances and repairs should only be carried out by the manufacturer or authorised service points. Only original spare parts must be used. Only use original spare parts approved by the manufacturer for this product.

Do not operate the device in the vicinity of water or in rooms with extreme humidity. Do not spill any liquids onto the device and do not push any foreign bodies into the product, you could be electrocuted or cause damage to the device. Do not position any flammable materials in the direct vicinity of the device. The device must be kept away from all sources of heat and is not approved for use in explosion hazard areas! The device may only be used in closed rooms.

Never allow the device to operate unsupervised! The device may only be operated with the specified supply voltage. Only use as much brightness as required for working. A higher brightness setting can irritate the eyes, stresses the object and also reduces the service life of the device.

⚠️ Always keep the ventilation openings of the device free to avoid causing any overheating. Ensure that the free air circulation is not hindered by anything and that there is a sufficiently large gap between the ventilation openings and other objects. Keep the environment of the device clean (above all, dust and lint-free), so that any device fans cannot suck in any dirt.

⚠️ ATTENTION: dangerous optical radiation, do not look into the light, can injure your eyes

The device emits light with a high intensity! Never look directly into the light, any light-emitting device openings or into the light guide end as you will risk injury to the eyes. The emitted light is absorbed by materials and converted into heat. Never cover the light emission aperture of the device or the light guide outlet end with the hand, any other parts of the body or any materials. To illuminate objects correctly, always ensure there is an appropriate gap between the object and the light guide outlet end, and an appropriate brightness level to avoid thermal damage or fire. Never leave the light guide end lying around freely.

Before cleaning, disconnect the product from the mains and allow it to cool for at least 15 minutes. Use a dry cloth for cleaning or a cloth moistened with water or a 5% ethyl or isopropyl alcohol solution, but do not use combustible or flammable liquids under any circumstances. Allow the device to dry thoroughly before use. If any liquid penetrates the device accidentally, pull the plug immediately and bring the device to a service point. If dust has collected on the ventilation openings, it must be removed carefully. Excessively intensive cleaning or the use of solutions that are too concentrated can lead to scratches, discoloration or other damage to the surfaces of the device.

Operation

Unpack the light source and remove any protective foils. Some models are shipped with a protective cover at the light guide connection (4). Please remove it before turning on the light source and keep it for later use during transportation and storage.
Pick up the light source with the handle (6) and position it on the required location. Insert the light guide to be used in the appropriate opening (4) on the light source and position the guide as required.

⚠️ Please ckeck the light guide for cleanness before inserting into the light source, otherwise you risk to burn the light guide and the light source. Due to the high light flux, glued fibers can be distroyed. Only use certified and tested fibers.

⚠️ ⚠️ Please comply with the safety instructions while doing so!

Connect the light source at the inlet (10) with the supplied power unit. With some power supplies the handle piece of the DC plug must be pulled backwards to fit correctly to the socket (10). Also pull handle piece when unpluging from (10). An appropriate ESD discharge cable can be connected to the ESD port (7) in ESD-sensitive areas. The light source can now be switched on by pressing the switch (1).
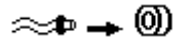
Brightness control
Turn the rotary knob (2) to adjust the brightness in 100 steps. Please note that the light source is not switched off when the position "0" is selected.
Pressing the rotary knob (2) directly selects steps previously saved in the menu.

Display
The display (3) shows all information relevant to operation. It displays the current brightness level and also a graphic progress bar. Numerous symbols also provide information about the operating state. The meaning of these symbols is explained in the following table. For the different light sources the symbols can vary or even missing completely.

Symbol	Description
≈🔌 ➝ ⓪)	Insert the light guide in the connection
⊶0	Prevents brightness control directly at the device
⊸	Brightness control via remote
⊶⛁	Light source is connected to the PC via USB
⏻	Standby (triggered by menu, footswitch or USB)
P1…P10	Displays brightness presets that have been called
⊓⊓⊓⊔⊔⊔	Progress bar, displays the brightness graphically

Filters (not available for all models)
Various filters can be installed as required in the filter holder (5). Simply pull the filter holder out of the device for this purpose. Only use clean filters approved by the manufacturer.

⚠️ Please note that the filter can be hot during operation and immediately afterwards!

Light guide adapter (not available for all models)
Some models allow the use of adapters, which can be placed into the light guide connection (4) until it snaps. For hard fixing the adapter, tighten adapter fixture (13) with allen key.
For installing the light guide, losen (12) and insert light guide into (4). While pressing smoothly the light guide into the connector (4), gently tighten (12) again. Check that screw (12) really is fixing the light guide and is not irradiating by the light.
Some light guide - adapter combinations allow a snap-in installation of the light guide without fixing the light guide with (12). In such case the screw (12) can be replaced by a cover, but store the screw (12) in a save place for later use.
Please bear in mind that the light guide tip must be in close contact with the optics inside the light source for maximum light output. Tolerances can cause a small gap between light guide and optics when using snap-in light guide installation, which lead to losses in luminous flux.
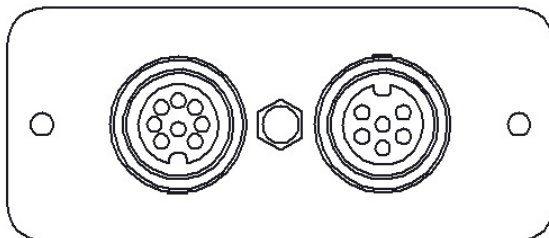
⚠️ ⚠️ Always Disconnect device from mains when installing an adapter. Please notice, that adapters can be hot, so let them cool down before changing.
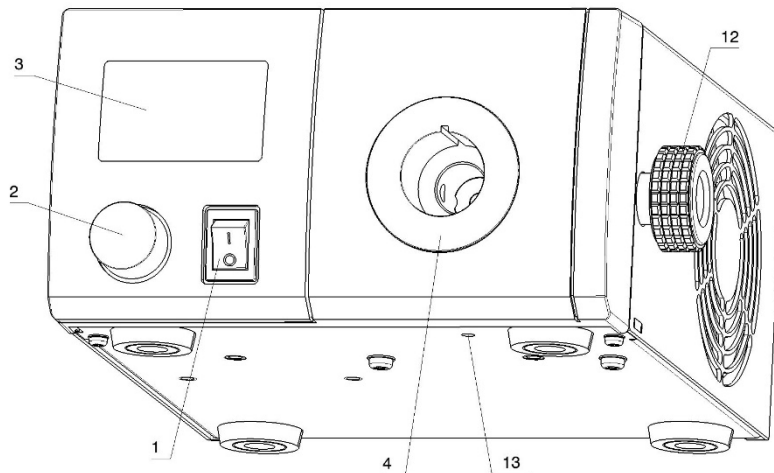
Module (optional)
On the back at (11) special modules can be installed. E.g. an analog module for automated control of the light source via DIN sockets.

Menu
Press the rotary knob until the menu appears with the following setting options:

The menu can be exited at any time by keeping the rotary knob pressed down.
For new features please check our website or ask your local dealer.

F3000 | F5000

Menu item	Value range	Note
SETTINGS		
STARTUP	0-100%, LAST	Brightness value after switch-on
LOWER LIMIT	0-100%	Smallest settable value
UPPER LIMIT	0-100%	Largest settable value
PRESET 1-10	0-100%, SKIP	Memory presets for brightness values, this memory preset is not used if SKIP is selected
<MAIN MENU		Back to the main menu
STROBE		
LEVEL	0-100%	Brightness value for the strobe function
PULSE	0.1-5000.0ms	Pulse duration
RATE	0.2-5000.0Hz	Pulse frequency
RUN/STOP	ACTIVE, STOPPED	Start/Stop strobe function
<MAIN MENU		Back to the main menu
SYSTEM		
SHUTTER	LIGHT ON, LIGHT OFF	The shutter function can be used
USB MODE	STANDARD	Photonic protocol
	LEICA	Leica LAS protocol
STEP SIZE	1-5%	Step size for dimming
FOOTSW.	TOGGLE+DIM	Switch on/off with footswitch, hold footswitch down for dimming.
	TOGGLE	Switch on/off with footswitch
	PUSH ON	Light source activated while pressed
	PUSH OFF	Light source deactivated while pressed
	PRESETS	Press to scroll through Presets
	DUAL KEY	Dimming with 2 external key buttons
FOOT DIM SPEED	1-10X	Dimming speed for TOGGLE+DIM and DUAL KEY
PANEL LOCK	YES, NO	Prevents brightness control directly at the device
FIRMWARE		Version display of the firmware
RESET SETTINGS	YES, NO, DONE	Reset to factory settings
LCD CONTRAST	0-100%	Display contrast
LCD BRIGHTNESS	0-100%	Display brighness
<MAIN MENU		Back to the main menu

F5100 | F5100Endo

Menu item	Value range	Note
SETTINGS		
SHUTTER	ON | OFF	The shutter function can be used
STARTUP	ON | OFF | LAST	Shutter value after switch-on
STARTUP B.	0-100% | LAST	Brightness value after switch-on
STEP SIZE	AUTO | 1-100%	Step size for dimming
LOWER LIMIT	0-100%	Smallest settable value
UPPER LIMIT	0-100%	Largest settable value
PUSH	SHUTTER | PRESETS	Function of encoder when pushed
PRESET 1-10	SKIP | 0-100%	Memory presets for brightness values, this memory preset is not used if SKIP is selected
FLASH		
MODE	FREE RUN	
	TRIG. (DELAY)	
	TRIG. (PHASE)	
BRIGHTNESS	30-100%	
PULSE	>10µs	Pulse duration

PERIOD	µs	cycle duration
SHUTTER	LIGHT ON | OFF	Start/Stopp of flash

SYSTEM

FOOTSW.	TOGGLE+DIM	Switch on/off with footswitch, hold footswitch down for dimming.
	TOGGLE	Switch on/off with footswitch
	PUSH ON	Light source activated while pressed
	PUSH OFF	Light source deactivated while pressed
	PRESETS	Press to scroll through Presets
	DUAL KEY	Dimming with 2 external key buttons
FOOT DIM SPEED	1-100	Dimming speed for TOGGLE+DIM and DUAL KEY
FOOT DIM STEP	1-100%	Step size for dimming
PANEL LOCK	YES, NO	Prevents brightness control directly at the device
DISPLAY	1-100%	Display brighness
1% TRIM	ca. 1-1000mA	LED current for 1% setting
RESET		Reset to factory settings
SELF CALIBRATION		Self calibration for flash mode
*FIRMWARE		Version display of the firmware

Footswitch

In the standard setting, the light source can be shuttered, i.e. switched on/off by means of a footswitch connected to the relevant port (8). In addition, keeping the footswitch pressed down changes the brightness (dimming). Once the required brightness is reached, simply release the footswitch. Other functions can also be programmed depending on the menu setting.

Remote control via USB

The light source can be controlled from the PC via USB (9). You will need a commercial USB cable and a driver. All protocol information can be obtained on request from the manufacturer.

Technical data

	F3000	F5000	F5100	F5100 Endo
Dimensions (WxDxH)	approx. 170x196x98 without protruding parts	approx. 170x205x98 without protruding parts		
Weight	approx. 3.8kg	approx. 2kg	appr. 3,8kg	appr. 2kg
Illuminants	High Power LEDs			
Brightness	approx. 470lm with fiber Ø 5x1000mm approx. 640lm with fiber Ø 8x1000mm	approx. 900lm with fiber Ø 5x1000mm PWM dimming below "30", Set brightness >30 when use with cameras	approx. 1200lm with fiber Ø 8x1000mm	approx. 1000lm with fused fiber Ø 5x1000mm
Color temperature	approx. 5800K	approx. 6200K	appr. 6500K	appr. 6500K
Maximum fiber diameter	9mm	5mm	9mm	5mm
Service life L_{70}	approx. 25.000h (70% of initial brightness)			
Cooling system	Axial ventilator			
Supply	12VDC, 5420mA	12VDC, 8500mA	24VDC, 4100mA	
Power consumption	Max. 65 Watt	Max. 100 Watt		
Operating conditions	10-40°C, max. 80% relative humidity, max. 2000m sea level			
Storage and Transportation	-25 to +70°C, max. 80% relative humidity non. condensing			
Light guide connection	Diameter 15mm	Adapter system	Diameter 15mm	Adapter system
Connections at the back	USB: for control with PC Mono jack 2.5mm: Footswitch (tip: signal, back: ground) ESD socket DC socket			
Display	Graphic display for operation display and comprehensive menu functions		Oled Display	
Fixation	2xM5 thread in distance of 90mm			
Approval (CE)	EMC directive 2014/30/EC			
Classification EN62471	Risk group 2			
Mains wire	original or VDE/HAR 3x0,75mm² 10A/250V			

Disposal

Do not dispose of the product in household waste, take it to the appropriate collection and disposal points. Comply with the national and local disposal guidelines and laws. Please help to keep our environment clean.

The development of this product is subject to continuous development. Although we try to keep this operating manual up to date, we reserve the right to change device data at any time without prior notice. The operating manual is produced subject to errors and printing errors.