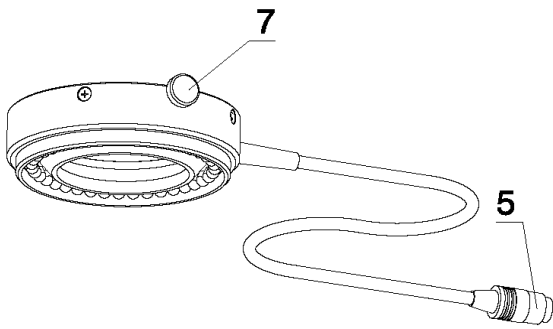


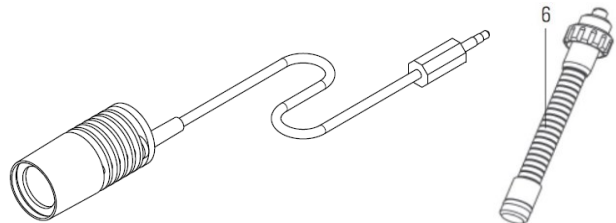
Operating Instruction
Bedienungsanleitung

LED ringlights and spots
LED Ringlichter und Spots

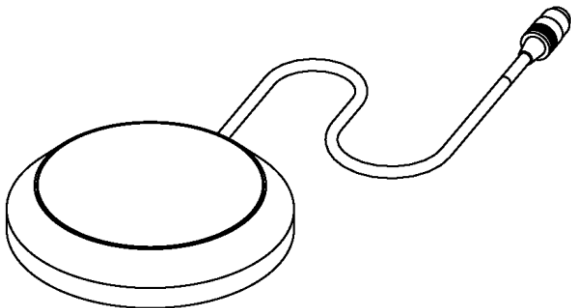




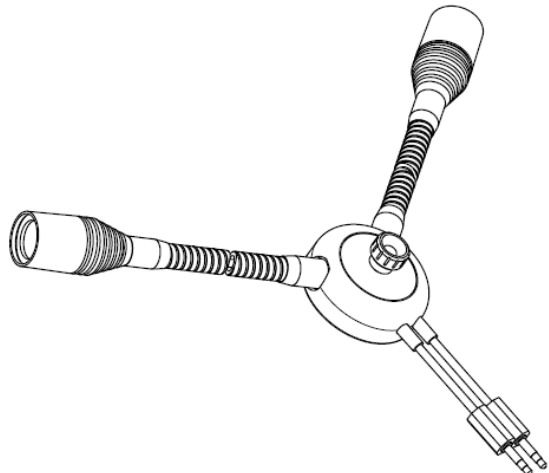
LED ringlight | LED Ringlicht



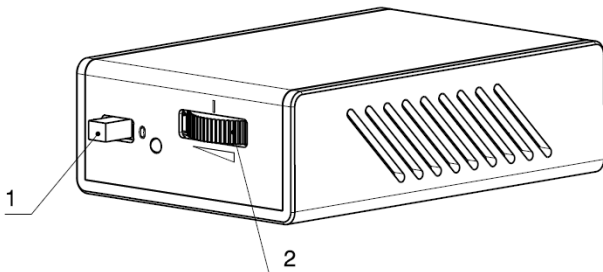
HighPower-Spot | HighPower-Spot



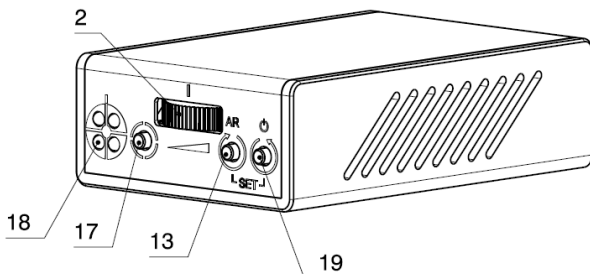
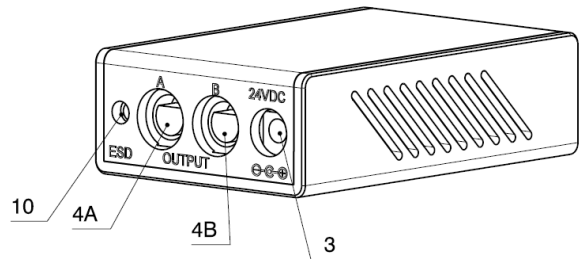
Universal Backlight | Universal-Durchlicht



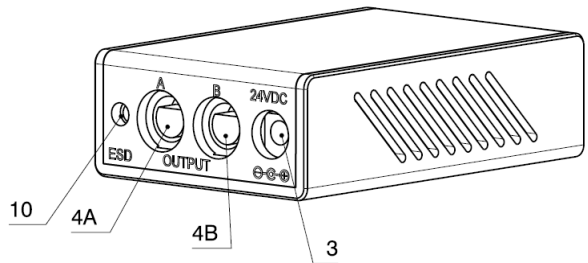
2-arm Spotlight | 2-armiger LED-Spot

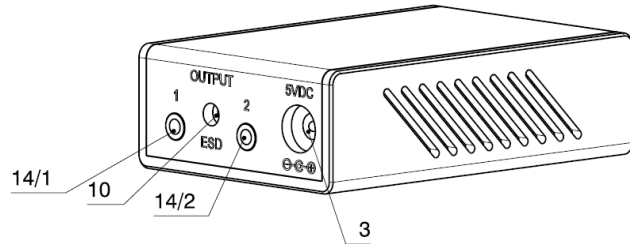
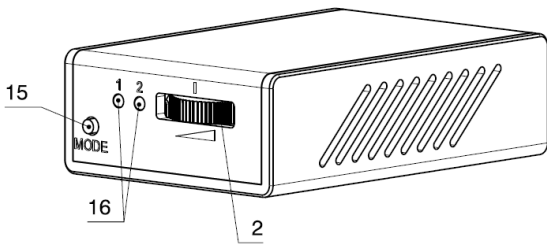


Standard Controller | Standard-Steuereinheit

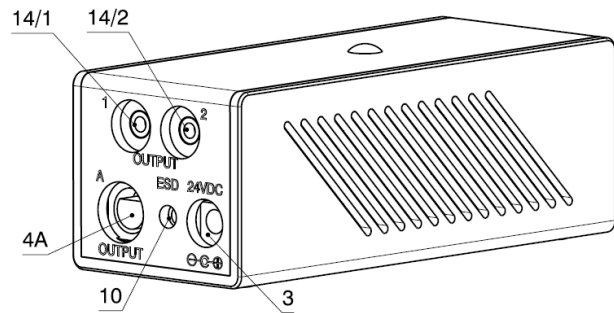
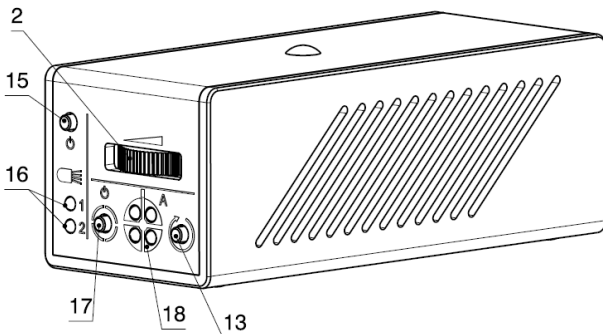


Segment Controller | Segment Steuereinheit





HighPower-Spot Controller | Steuereinheit HighPower-Spot



Combicontroller | Combi-Steuereinheit

- | | | |
|------------|---------------------------------------|------------------------------------|
| 1 | Ein-Aus Schalter | ON-Off Switch |
| 2 | Helligkeitsregelung | Brightness control |
| 3 | DC Versorgung | DC power supply |
| 4A/B | Port A/B für Spot/Ringlicht | Port A/B for spot/ringlight |
| 5 | Stecker für 4A/B | Plug for 4A/B |
| 6 | Spothalter | Spotholder |
| 7 | Klemmschraube | Fixing screw |
| 10 | ESD Stecker | ESD connector |
| 13 | Segmentrotation | Segment rotation |
| 14 | Port 1/2 für Hi-Power Spot | Port 1/2 for Hi-Power Spot |
| 15 | Port 1/2/Ein/Aus Taster | Port 1/2/on/off button |
| 16 | Betriebsanzeige HiPowerSpot | Operating mode display HiPowerSpot |
| 17 | Segmenttaster | Segment push button |
| 18 | Betriebsanzeige Segment | Operating mode display Segment |
| 19 | Ein/Aus/Rot. Gegenuhrzeigersinn | On/Off/rotation counter clockwise |

Operating Instruction

This new type of LED illumination device (Light Emitting Diode) has been developed for stereomicroscopy illumination purposes in industrial and laboratory settings.

In purchasing this product, you have acquired a high-quality LED illumination unit for all applications requiring intensive light with minimal heat generation. LEDs are employed as the illuminant.

Please, carefully read this instruction manual before setting up and operating the device.

Safety Information

The following danger symbols are used throughout this document.



Caution: Risk of electrical shock



Caution: Dangerous area. Warning: Refer to accompanying documentation.

This section contains safety information which must be strictly observed when using this device. IT IS IN YOUR OWN INTERESTS TO PAY ATTENTION TO ALL WARNINGS on the unit and in this manual.

Target audience: Users who operate the device must read the sections which are relevant to their work. This applies especially to the chapter entitled “Safety information”.

Product monitoring obligation: The operator must report all operational irregularities or changes to components which are relevant to device safety immediately to the responsible supervisor or the manufacturer.

Storage of operating instructions: We recommend storing these operating instructions near the device to ensure quick access by operating staff.

Legal provisions: National and local safety and accident prevention regulations must be strictly observed in addition to the operational guidelines issued by the operating entity.



Do not make any technical modifications to the device under any circumstances!

Refer to specifications in “Technical Data” section for binding operational limits.

DO NOT USE this unit near water or in any area with excessive moisture. WARNING: In order to prevent electric shock, do not expose this appliance to rain or high humidity.

NEVER SPILL LIQUID ON THE UNIT OR INSERT OBJECTS INTO THE UNIT! This could result in electric shock or damage to the unit.

DO NOT PLACE FLAMMABLE MATERIALS on or near the unit at any time. Keep unit AWAY from other sources of HEAT. The device has not been approved for operation in areas subject to explosion hazards!

The device may only be operated using the mains voltage indicated.

NEVER OPEN THE APPLIANCE OR ANY COMPONENTS, unless instructed expressly to do so by these instructions.



Never look directly at the LEDs when switched-on, otherwise you risk eye injuries. In accordance with the EN 62471 these LED illuminations are classified as products of risk group 0.

Cleaning: Disconnect unit from the mains power supply before cleaning and only clean with a damp cloth. Never use combustible or flammable liquids. If fluids accidentally enter the device, unplug the mains cable and let the unit dry thoroughly before using again.

Spare parts: Use only original spare parts. Failure to do so can lead to personal injury and material damage.

Responsibility: As the ultimate legal entity, the operating institution is responsible for ensuring the proper use of the device, for specifying the competencies required to operate the device and for providing other

operators with the necessary information.

DISCONNECT THE MAINS CABLE when the unit is not being used for an extended period of time. ONLY USE THE ORIGINAL MAINS CABLE. Route cable so that it cannot be jammed or broken. FOR SAFETY REASONS always use a grounded 3-pin plug.

Repairs which are not described in this document must only be carried out by authorized service points!

The manufacturer is not liable for any damage resulting from a failure to comply with the above instructions!

Current technology: These LED illumination devices constitute state-of-the-art technology and employ recognized safety standards and EC directives.

Installation and Connection

Remove the individual system components from their packaging and place them onto a horizontal surface.

To obtain optimal functionality, the LED illumination system must be positioned correctly. Observe the following criteria:

No high atmospheric humidity (see Technical data)

No high room temperature (see Technical data)



The device may only be operated at the rated mains voltage. Only connect the unit to grounded sockets. The control unit must only be operated with the power-supply provided!



Keep air vents free!

Supply controller with attached power supply. If necessary, use the ESD connector (10) for potential equalisation.



Plug the LED lighting into the control unit. Only use Port A of the control unit for the LED ringlight 66/40 (and all future products with 40 LEDs). LED spot, backlight and ringlight 38/20 (and all future products with 20 LEDs) can be used on Port A and B. The total number of LEDs connected on port A and B must not exceed the maximum allowed LEDs (see technical data)!

The LED ringlight can now be mounted directly onto the objective of all microscopes with 66 mm diameter by means of a clamping ring which does not damage the surface of the objective. For objectives with any other diameter there is a wide range of adapters available.

For mounting the LED spot, spotholder (6) of different lengths and threads are available, allowing the LED spot to be pointed in any desired direction. The one end (with the O-ring) of the spotholder is inserted into the opening of the LED spot. The other end can be screwed directly onto the microscope or optionally into a base plate.

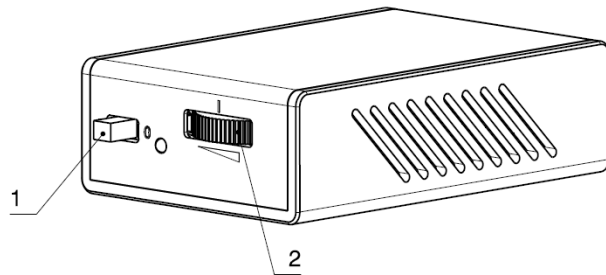
Operation



Do not open the unit or its individual components.

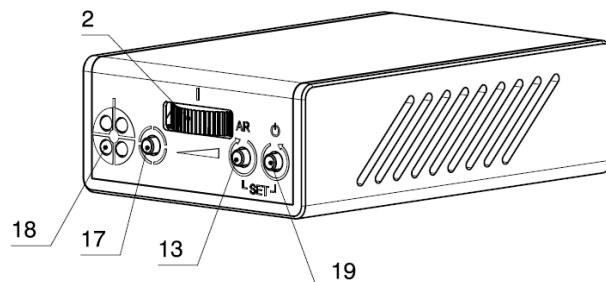
The potentiometer wheel (2) is used to control the brightness. Please note that the current level in fluences not only the brightness, but also the service life of the LEDs. The approximate potentiometer wheel setting can be read from the scale on the wheel.

Standard controller



The LED illumination unit can be switched on using the on/off switch (1) located on the control unit (I: On; 0: Off).

Segment control unit



Press (19) to turn on the control unit. Segments can be selected using (17), which can be rotated clockwise using (13) and anticlockwise using (19). Pressing down (13) rotates the segments automatically in a clockwise direction (AR...Autorotation), briefly press (13) again to stop autorotation. A long press of (19) for longer switches off the control unit and saves the current setting.

Set-up mode:

Holding down buttons (13) + (19) simultaneously activates the set-up mode, where the following settings can be made (This mode is indicated by a flashing upper LED on the left):

1/8 Segment size: Press (17) to switch from 1/4 segment size (lower left LED OFF) to 1/8 segment size (lower left LED ON).

1/8 Segment increment: Press (13) to switch from 1/4 segment increment (lower right LED OFF) to 1/8 segment increment (lower right LED ON).

Activation mode: = Start up upon application of supply voltage: Pressing (19) switches from activation mode OFF (= Safety mode, upper right LED OFF) to activation mode ON (= Multipoint connector mode, upper right LED ON). In this mode, the most recently saved segments light up immediately after the supply voltage is applied.

Holding down the buttons (13) + (19) simultaneously terminates Set up mode and saves the current state.

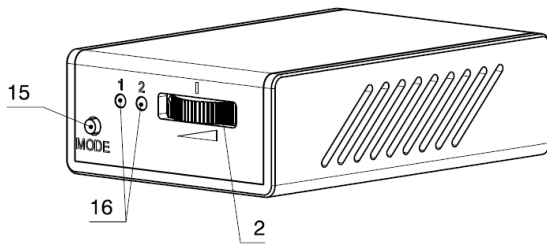
Although this control unit is only designed for 40 LEDs, it is possible to operate for example a RL66/40 on Port A and a backlight with 40 LEDs on Port B, albeit with the following limitations (this also applies to the standard control unit):

- The luminance diminishes as the control unit has to operate 80 LEDs.
- It is possible that the luminance of the LED products on Port A and B diminish at a different rate.
- It is possible that the brightness of single segments (groups with 5 LEDs) differ.

The pinning of port A and B are different, so when using a ringlight with 1/8 segment size -and increments please use port A.

A special LED ringlight with 80 Leds can be operated on port A. For this, a power supply with more power is needed (see technical data)

HiPower spot controller



Connect one or two LED spots to port 1 and 2 (14) of the control unit. Connect low voltage cable (9) to control unit (3) and apply mains power to the power supply unit provided. Use only the power supply provided with the control unit, which has a matching output voltage, as power supply voltage and power ratings may vary for other types of control units.

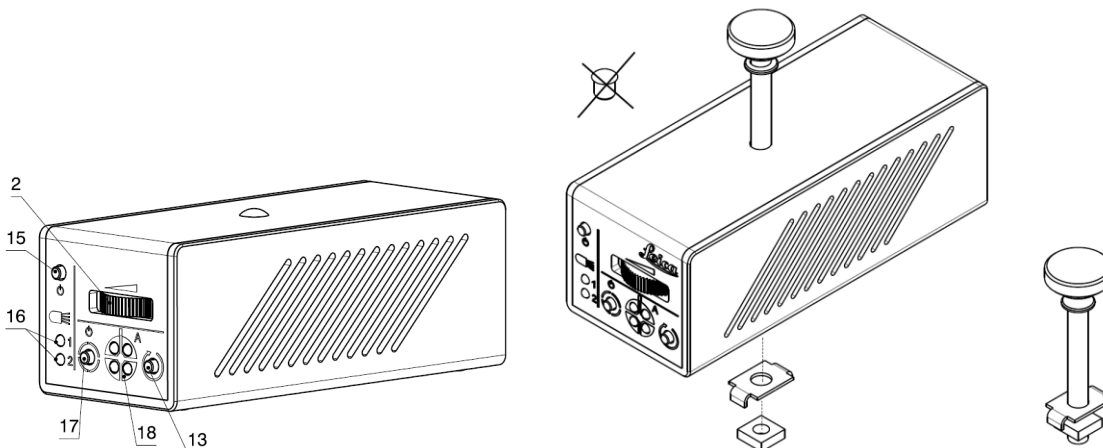


Caution: Use of unsuitable power sources can cause damage to both control unit and LED spots. Always use the control unit supplied to operate the LED spots.

With the brightness control (2) the desired brightness can be set. Using the push button (15) the following modes can be selected: “both ports on” – “port 2 on and 1 off” – “port 1 on and 2 off” – “both ports off”. The LED spot connected to port 1 is toggled on and off alternately with each push of the button, so preferably use port 1 when working with only one LED spot. The indicator LEDs (16) show the currently selected mode of operation for port 1 and 2.

Combi controller

Up to 2 HiPower spots and 1 LED product with 40 LEDs (e.g. Ringlight 66/40 or backlight) can be connected to this control unit. It can be used as a table mounted device or with special microscopes by fastening it to the column by means of the screw included.



Normal mode:

Switch on the HiPower spots with button (15) and also switch between the ports (Port1/Port2/both). Similarly, switch the ringlight on with button (17) and then switch the segment image. The active segments can be rotated using button (13). Holding down the buttons (15) or (17) deactivates the HiPower spots or Port A respectively and pressing them briefly switches them on again. If the power supply has not been disconnected in the meantime, the last state set appears after switching it on, otherwise all the ports/segments are illuminated. The potentiometer wheel (2) sets the brightness for all three ports simultaneously.

Memory mode:

Make the desired adjustments in normal mode first and then hold down the buttons (13) and (17) for a few seconds at the same time. Memory mode is indicated by x3 blinking. Apart from the brightness setting, no other settings can be selected in this mode. Holding down the button (15) or (17) deactivates it, while pressing the same button briefly switches it on.

The way the device behaves when it is switched on in the event of disconnection from the power supply can be set by holding down the button (13). Switch it as often as required until the desired state is achieved (ON or OFF). It can be switched between: “Memory illumination pattern ON” or “OFF” when the supply is

connected. This can be practical if the control unit is switched off by disconnecting the supply and is meant to illuminate again automatically after supply reconnection or is intentionally meant to remain switched off. To exit memory mode, press buttons (13) and (17) for a couple of seconds, indicated by blinking twice.

Lifetime

LED chips have a typical lifetime of about 100,000 hours. The actual service life depends to a great extent upon the ambient temperature and the operating current of the LEDs. A higher operating current produces not only more light but also more heat, which reduces the life span of the LEDs.

Depending on the brightness setting a service life of up to 25,000 hours can be achieved, meaning a decrease to 50 % of the original brightness level.

To increase the lifetime of the LEDs, the brightness should be adjusted to the actual level required at any point in time.

Faulty LEDs can be replaced. Contact your dealer or the manufacturer with respect to this matter.

Technical Data

LED ringlight 66/40

LEDs	40 white LEDs
Color temperature	5000K
Dimensions	outer \varnothing : 94x25mm inner \varnothing : 66mm
Attachment	circumferential clamp with spring and screw
Working distance	55-120mm, measured from ringlight

LED ringlight 66/80

LEDs	80 white LEDs
Color temperature	5000K
Dimensions	outer \varnothing : 112x23,5mm inner \varnothing : 66mm
Attachment	circumferential clamp with spring and screw
Working distance	35-120 or 120-300mm, measured from ringlight

LED ringlight 38/20

LEDs	20 white LEDs
Color temperature	5000K
Dimensions	outer \varnothing : 60x25mm inner \varnothing : 38mm
Attachment	circumferential clamp with spring and screw
Working distance	50-100mm, measured from ringlight

LED universal backlight

LEDs	40 white LEDs
Color temperature	5500K
Dimensions	\varnothing 120x19mm
Surface	milk glass \varnothing 90mm
Illuminated area	\varnothing 55mm

HighPowerSpot

LED	1x HighPower LED
Dimensions	\varnothing 25 x 51mm
Connections	M6 thread for bracket

LED incident 2-arm HighPower-Spot


LEDs	2x HighPower LEDs
Connections	by means of incident adaptors

Controller	Standard	Segment
Power supply	24 V DC +/- 5 %, barell plug 5,5 x 2,1 mm 250mA	250mA (500mA for 80 LEDs)
Dimensions WxHxD	64 x 29 x 95,5 mm	
Total amount of LEDs	40	40 (Port A 80, when used with stronger power supply)
Connectors	2x 9-pin miniature DIN socket	
On/Off switch	✓	
Segment rotation pushbutton	---	2 (incl. autorotation)
Potentiometer wheel	ca. 1–25 mA, with index markers	
ESD connector	4 mm banana plug	
Ambient temperature	10–40 °C (*)	
Rel. humidity	30–70 %	
Mark of conformity	CE	

HighPowerSpot-Controller	for max. 2 Spots
Supply	5VDC ±5 %, barell plug 5,5 x 2,5mm 1,2A
Dimensions WxHxD	64 x 29 x 95,5 mm
Connectors for HighPower Spot	2x 3,5mm stereo jack
ESD connector	4 mm banana socket
Control	Potentiometer, pushbutton for Port1/Port2/On/Off with LED display

Combi-Controller	for max. 2 HighPower-Spots and 1 LED Ringlight
Supply	24VDC ±5 %, barell plug 5,5 x 2,1mm 0,75A
Dimensions WxHxD	52x45x126 mm
Total allowed LEDs	1 LED ringlight 40 + 2 HighPower-Spots
Connectors	2x 3,5mm stereo jack & 1x mini-DIN
ESD connector	4 mm banana socket
Control	Potentiometer, 3 pushbuttons with LED Display

(*) LEDs are suitable for use at temperatures up to 40 °C. However, increasing temperature and humidity results in a reduction in lifetime. For optimal use, the ambient temperature should be 25 °C (or lower) and the relative humidity 50 % (or lower)

 shows compliance to relevant EC directives



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 improvements. 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.