

# KL Series

Illumination for Stereo Microscopy applications



**SCHOTT**  
glass made of ideas

# SCHOTT

## Fiber Optic Light Sources



### Generations of know-how as clear as glass

SCHOTT has a longstanding tradition of developing, manufacturing and supplying specialty materials, components and systems to our customers. SCHOTT develops and melts our own glass types and creates technologies to manufacture our products.

Today, SCHOTT is a multinational group present around the world to serve our customers to the best of our abilities. This allows our customers to talk with a knowledgeable professional, in the comfort of their own culture and language, at their local site.

For more than 40 years, SCHOTT has developed fiber optic products for a diverse range of applications. Recently, SCHOTT developed LEDs for illumination components in our attempt to continuously offer our customers the most up to date technologies. SCHOTT Fiber Optic and LED components reach markets such as automotive, lighting, medical, industrial and defense.

By mastering glass, fibers, LEDs and processes for the production of fiber optic and LED components, SCHOTT develops outstanding, market-oriented products. With leading technological know-how and innovative ideas we contribute to the success of our customers – around the world, around the clock. The **future** of SCHOTT fiber optic and LED solutions starts **today**.



### In-depth expertise in Stereo Microscopy and Macroscopy

Numerous applications can benefit from regulated light, intense light, cooler light sources and longer lasting bulbs. SCHOTT's light sources are designed using quality materials and components. Long lifetime of the units is achieved by thermal overload protection in combination with quiet high throughput fans for optimized ventilation. Long lifetime of the light bulbs is achieved with the soft start feature of the electronic circuits.

### Private Labeling Options

SCHOTT offers the option of private labeling cold light sources to provide customers with the freedom to market their products as a complete package. Please contact us for further information and details.

Based on different types of high performance cold light reflector lamps, the design of each optical path has been optimized resulting in efficient coupling of the light into the light guides and excellent uniformity in the illuminated area.

Cold light sources are devices for intense illumination of objects with infrared-free "cold light". All heat radiation is filtered out by means of specifically optimized heat filters.

# KL 200

cold, compact and capable

The KL 200 is a versatile, compact and cost effective 20-watt halogen cold light source. Small space requirements combined with excellent light efficiency in an attractive modern design make this unit the right choice for a variety of general lighting applications in the fields of Stereo Microscopy, Macroscopy and Photography.

Simple light adjustment by means of a 3-step light intensity control, easy and safe lamp change, and quick exchange of light guides, allow extremely easy handling of this light source.

Special efforts are taken during the development of optimized convection cooling of the unit, which makes a fan redundant. Consequently, the light source in its injection molded housing is totally free of noise and vibration. This enables the unit to be utilized in varying environments from industry to biological labs, to photo studios or home-tech applications.

The light source is available in 120- and 230-volt versions. A broad range of light guides with active diameters of up to 7 mm (.28") as well as a selection of color filters, polarizers and focusing accessories completes the offering. Please refer to the system diagram on page 6/7 and the SCHOTT Standard Product Catalog for details.

The KL 200 has been approved and certified by CSA (C/US) (120-volt version). The 230-volt version carries the CE conformity label.



3-step intensity control button



Lamp change door for easy lamp and filter exchange



Self clamping light guide socket for active diameters up to 7 mm



Filter holder with yellow filter

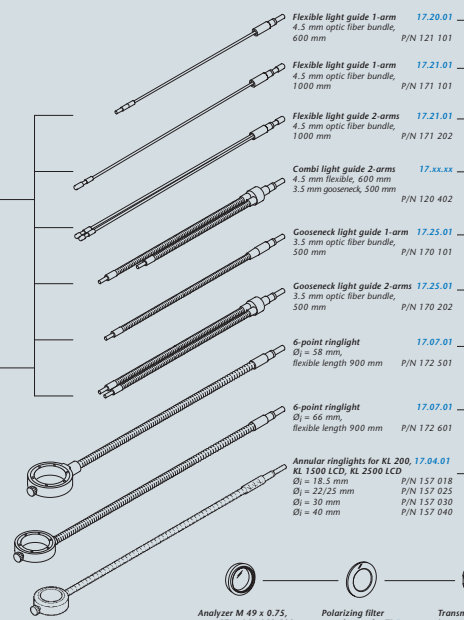
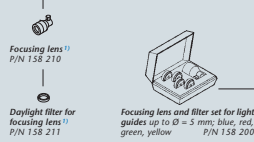
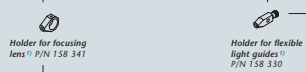
# System diagram KL 200

KL 200 03.01.01  
(230 V) P/N 120 100

KL 200 03.01.01  
(120 V) P/N 120 101

Insert filter holder for  
KL 200 Supplement kit  
17.20.01  
P/N 128 300

Insert filter Ø 17 mm  
17.20.03  
blue P/N 128 302  
red P/N 128 303  
green P/N 128 304  
yellow P/N 128 305  
daylight filter P/N 128 306



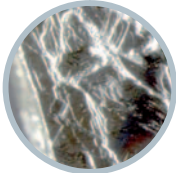
Analyzer M 49 x 0.75,  
type C<sup>2)</sup> P/N 158 505

Analyzer M 52 x 1, type  
LEICA<sup>2)</sup> P/N 158 510

Polarizing filter  
attachment for TL<sup>2)</sup>  
P/N 158 500

Transmitted light stage;  
insert diameter 84 mm;<sup>2)</sup>  
for flexible light guide up  
to Ø 5 mm P/N 122 150

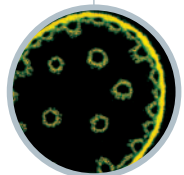
<sup>2)</sup> 17.04.01



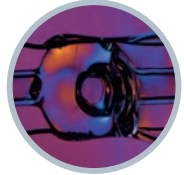
Pyrit with oblique illumination



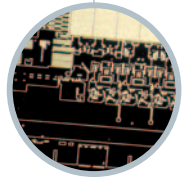
Leg of insect  
with brightfield illumination



Lily of the valley (Light guide –  
blue excitation fluorescence)



Halogen Bulb (Transmitted light  
stage with polarizer)



Wafer (Ringlight – incident darkfield)

# KL 1500 compact

## Outstanding in Price and Functionality

The KL 1500 compact is a new 150-watt halogen cold light source, developed and designed for applications in Stereo Microscopy and Macroscopy. With its modern and aesthetic design the typical "Look and Feel" of the KL family is maintained. Concentration onto basis features compared to the high-end LCD light sources allows an excellent price-performance-ratio.

The KL 1500 compact is driven by an autoswitching wide range power supply which covers a range from 85 to 264 volts at 47 to 63 Hz for world wide usage. The high frequency (approx. 20 kHz) light source is digital camera proof – no flicker effect at short exposure times in "Life Image" mode.

The cooling is optimized by an extremely low noise fan.

The optical system is the same as used in the KL 1500 LCD and is optimized for coupling the light of the EFR-type halogen lamp into small diameter light guides. A fixed focusing prism lens improves the light uniformity through the light guides. A soft starter system (2 s delay) increases lamp lifetime up to 250 hours at maximum dimming level.

All light guides and accessories of the KL series fit to the KL 1500 compact as shown in the system diagram.

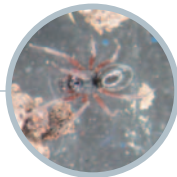
The KL 1500 compact has been approved and certified as laboratory and electromedical device by CSA (C/US) and is in compliance with the CE regulations.



*Balance spring of a clockwork movement with brightfield illumination*



*Bullet illuminated with oblique light*



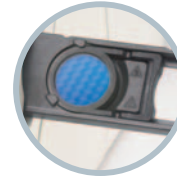
*Earth spider with darkfield illumination*



*Continuous dimming from 0 to 100 %*



*Easy light guide fixing mechanism with thumb screw*



*Filter slide with two positions*



*Easy lamp replacement*



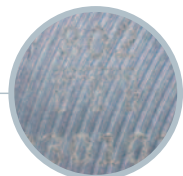
# KL 1500 LCD

## High Performance, elegantly cased

The KL 1500 LCD is the performance leader in the field of 150-watt halogen cold light sources. With its outstanding modern design combined with optimized, homogeneous light output and variable light control options, this light source has been designed for applications in Stereo Microscopy and Macroscopy in laboratory, industrial and life science applications.

The eye-catching Light Control Display indicates the color temperature of a halogen lamp as well as various operational modes. Continuous mechanical dimming enables a constant color temperature, whereas the step-less electronic intensity control allows for the optimization of lifetime of the halogen lamp. For short periods of light enhancement the new turbo position gives 30% more light as the standard setting. A swing-in optics tuned to the EFR-type halogen lamp optimizes light coupling into small diameter light guides. Thus, the light intensity and uniformity at the exit of light guide improves, which enables the use of thinner, more flexible and less expensive light guides. A broad range of light guides with active bundle diameters up to 9 mm (.35") is offered, completed by a selection of color filters and other accessories. Please refer to the system diagram on page 14/15 and the SCHOTT Standard Product Catalog for details.

The stackable injection molded housing is designed to keep direct stray light to a minimum. It offers comfortable and quick lamp change through the lamp compartment door, as well as an easy-to-change filter slide to help contribute to pleasant working conditions. Electronical stabilization of the lamp voltage provides constant light output in case of fluctuations of the AC input voltage. The KL 1500 LCD is available in 120- and 230-volt versions. The KL 1500 LCD has been approved and certified as laboratory and electromedical device by CSA (C/US) (120-volt version). The 230-volt version carries the CE conformity label.



Piston (Ringlight brightfield)



Piston (Ringlight with Polarizer)

Liquid crystal display indicating color temperature and various operating modes.



Stacking capability: The light sources can be stacked without impairing any function or ease of operation.



Fiber optic socket and swing-in lens for light guides with fiber bundle diameters up to max. 9 mm.



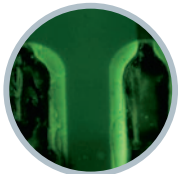
Functional lamp compartment: The time tested technology ensures easy lamp replacement without using any tools.



Two options are available for controlling light intensity:

- A voltage stabilized electronic dimmer which simultaneously adjusts light intensity and color temperature.
- A mechanical dimmer which controls the light intensity at a constant color temperature. The step-less control of the mechanical aperture optimizes uniform object illumination in all positions.

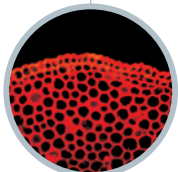




Electronic board (Light guide – blue excitation fluorescence)



Electronic board (Light guide brightfield)



Lily of the valley (Light guide – green excitation fluorescence)



Fingerprint (Light guide – blue excitation fluorescence)

# KL 2500 LCD

## The Benchmark in Performance

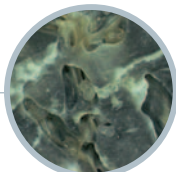
With its new design and unique performance spectrum, the KL 2500 LCD is setting a new benchmark in the field of halogen cold light sources. The premium model KL 2500 LCD offers a decisive advantage over its sister model KL 1500 LCD for light demanding applications: Fitted with a 250-watt cold light reflector lamp, the KL 2500 LCD transmits more than twice the amount of light of the KL 1500 LCD. This unparalleled performance makes the KL 2500 LCD the instrument of choice for the most challenging applications in Stereo Microscopy and Macroscopy as well as in Forensic Science.

Equipped with the same outstanding features as the KL 1500 LCD, the KL 2500 LCD accepts light guides with bundle diameters up to 15 mm (.6"), evenly illuminated with the ELC-type halogen lamp. The larger bundle diameters in combination with the 250-watt lamp power enable demanding applications as GFP fluorescence microscopy or short exposure macro-photography as well as light demanding incident darkfield illuminations. Please refer to the system diagram on page 14/15 and the SCHOTT Standard Product Catalog for details.

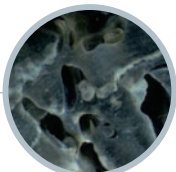
The KL 2500 LCD is equipped with a 5-position filter wheel, which makes filter selection quick and easy. Color filters and special GFP-fluorescence excitation filters are also available.

In addition, electronic accessories such as remote control or tilt switch can be connected to the analog socket in the front panel, enabling remote light source operation or connection of an RS-232-Interface.

The KL 2500 LCD has been approved and certified as laboratory and electromedical device by CSA (C/US) (120-volt version). The 230-volt version carries the CE conformity label.



Oyster shell (Ringlight brightfield)



Oyster shell (Ringlight darkfield)



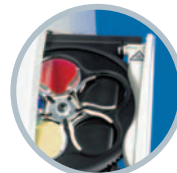
Light guide socket with adapter for active diameters up to 8 mm



Light guide socket without adapter for active diameters larger than 8 mm



Socket for electronic accessories such as remote control, tilt switch and RS-232-Interface



Filter wheel with five filter positions: Change of the wavelength range of the light with just a turn of the wheel.



# System diagram KL 1500 LCD | KL 1500 compact | KL 2500 LCD

