

**SCHOTT**  
glass made of ideas



# ColdVision Series

Fiber optic illumination for machine vision  
and stereo microscopy

Pioneering. Responsibly. Together. These attributes have characterized SCHOTT, global manufacturer of specialty glass, glass-ceramics and other innovative materials, for over 130 years. As #glasslovers and inventor of specialty glass, we are reliable partners for high-tech industries to enable new market launches and applications. Our goal is to become climate neutral by 2030.

SCHOTT's Lighting and Imaging offers solutions for machine vision and microscopy applications for many decades. With easy-to-integrate solutions in light transfer, we enable highly accurate measurements for industrial processes in challenging environments.



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# Discover our ColdVision Series

SCHOTT ColdVision Fiber Optic illumination for machine vision and stereo microscopy brings together LED light sources, fiber optic light guides and accessories in a single, versatile service where the products are specially designed to work together.



## Designed for demanding situations

ColdVision light sources come with a robust metal housing while the light guides offer strong protection against pressure and other mechanical challenges for improved fiber longevity – despite their light weight. Those properties make the series the ideal choice for harsh environments in industrial applications.



### **Measurements with high precision and speed**

By using glass optical fibers with high incoupling efficiency in combination with powerful light sources, the SCHOTT ColdVision Series offers a homogeneous and at the same time high light output. As a result, measurements can be done with highest precision and speed.

# ColdVision Fiber Optic Light Sources

SCHOTT ColdVision Light Sources provide flexible and versatile illumination. The robust metal housing, high quality components and long lifetime of the light sources make them the ideal choice for harsh environments in industrial applications.



## Advanced control options

SCHOTT ColdVision Light Sources have been developed for efficiency, reliability and functionality, with a range of hardware interfaces to provide seamless integration with existing and new illumination systems. Industrial Ethernet, USB and RS232 ports, and a remote control option, offer highly versatile connectivity and control.

## Features

An at-a-glance guide to the features of SCHOTT's range of ColdVision Light Sources.

Feature	CV-LS	MC-LS
Lamp type	LED	LED
Lightflux (lm)	1350	850
Max. active light guide Ø (mm)	13	13
Wide range power supply	•	•
Continuous dimming	•	•
Filter compatible (attached to Light Guide)	•	•
Fan cooling	•	•
Connectivity	USB RS-232 Dual Ethernet Multiport (Analog)	USB RS-232 Analog
Input voltage	100-240 VAC	100-240 VAC

## Benefits



### Homogeneous lighting

Light sources are perfectly harmonized with SCHOTT ColdVision Light Guides.



### Low power consumption

Smart engineering leads to high energy efficiency.



### Retro fitting

Existing SCHOTT and Fostec light sources can be seamlessly upgraded to new LED models.



### Remote control

Options with industrial Ethernet, RS232 und USB connectivity for remote control available.

# Light Source Variants



## CV-LS

The CV-LS light source is the flagship of the SCHOTT ColdVision series, offering high efficiency output in a compact footprint with versatile connectivity. This connectivity makes it ideal for machine vision applications, while the high brightness LED light engine greatly increases light output – far beyond 150 W EKE halogen lamp levels for the cool white model.

### Characteristics

- Internal light feedback stabilization
- Fast triggered strobe (25 $\mu$ s rise time, 1 $\mu$ s precision)
- Analog and digital remote control: USB (Virtual RS232), RS232, Dual Ethernet, Mutliport-Wide range power supply according to international standards
- Cool White, Warm White, and RGBW models are available

### Advantages

- All connectors with retention mechanisms
- High resistance to vibration and shock
- ESD Immunity
- Maintenance-free LED engine with 50,000 operating hours







## MC-LS

As the standard LED fiber optic light source in the SCHOTT ColdVision range, the MC-LS delivers exceptional light output from its high-brightness LED engine. Developed for stereo microscopy, the design of the light source makes it highly suitable for desktop usage, where its USB port can easily connect to application software systems.

### Characteristics

- Can be controlled by digital remote control via USB port (virtual RS232) or built-in 9-pin connector (analog)
- Wide range of power supplies, all compliant with international standards
- Continuous dimming from 0-100%
- Temperature monitoring for protection of the LED light engine



### Advantages

- Robust industrial design with a small footprint and ultra-quiet operation
- High resistance to vibration and shock
- Long-life, high-efficiency, maintenance-free LED light engine
- Low power consumption
- Over 10% higher output than EKE halogen light sources\*
- Stable light output with minimal variation in color temperature
- ETL approved, RoHS compliant
- Compatible with ColdVision light guides

\*Light sources compared at the output of a SCHOTT ColdVision fiber optic light guide, Ø13mm active, length 1m (A08051.40 bundle), 23°C ambient, typical output

# ColdVision Fiber Optic Light Guides

SCHOTT ColdVision Fiber Optic Light Guides deliver modular fiber optic illumination for machine vision and stereo microscopy. As the light is guided from the source by our light guides, heat at the object is kept to a minimum.



## Broad product portfolio

The large range of products in our ColdVision Light Guides portfolio offers the ability to create all common illumination techniques. As well as the standard range, we also manufacture a variety of specialty light guides, such as back lights, ring lights, goosenecks, and flexible bundles.





### Top quality optical fibers

The technical properties of SCHOTT Light Guides and their range of light sources and accessories enable the precise camera systems in machine vision equipment to achieve optimum performance. Since consistency is key for decision-making, our light guides have built-in accuracy and reliability.

### Benefits



#### Mechanical stability

Light guide designs include protection against pressure and other mechanical challenges for improved fiber longevity.



#### Homogeneous lighting

Perfectly harmonized system with SCHOTT ColdVision Light Sources.



#### Specialized design

60 years of experience provides SCHOTT with highly advanced light guide design capability.



#### High compatibility

A broad portfolio of adapters offers high compatibility with almost all product designs.

# Light Guides Variants



## Gooseneck Light Guides

Gooseneck light guides deliver incident illumination that remains in place after positioning. Generally used to highlight structures through shadows in space-constrained applications, these trusted light guides offer both flexibility and mechanical stability.

### Characteristics

- Flex and stay light guides
- Available with 1 or 2 branches
- Available as chrome plated semi-obedient metal or black dekabon versions
- Available as 2-branch Gooseneck plus flexible bundle (Combination Light Guide)
- Available as dual focusing gooseneck with permanently attached spot lenses
- Focusing optics and filter accessories available

### Advantages

- Mechanical stability enables long-term usability
- Flexibility enables precise positioning for complete control of light placement
- The Combination Light Guide can be stationary, fixed at the microscope post
- Dual models illuminate a workspace with a single light source
- Gooseneck legs placed in opposing positions create shadow-free illumination





## Flexible Bundles

As the name suggests, SCHOTT ColdVision Flexible Bundles are highly bendable and generally used to highlight structures through shadows. In contrast to gooseneck light guides, they offer a higher flexibility and need to be held.

### Characteristics

- Variety of standard sizes with tight bending radius for easy routing
- Available with 1, 2, or 4 branches
- Available as randomized versions to improve spot uniformity
- Focusing optics, filters and mechanical accessories available

### Advantages

- High flexibility for different light requirements, as well as remote illumination
- Randomized bundles with multiple outputs can be calibrated to deliver a matching output within ~5 % bundle-to-bundle
- Compatible with ColdVision light guides





## Ring Lights

SCHOTT ColdVision Ring lights offer absolute shadow-free illumination. Using a range of diameters and mechanical adapters, the ring lights can be configured to fit many different objective sizes.

### Characteristics

- The “Universal Ring Light” fits microscope and camera objectives from 33 to 81 mm with appropriate clamps
- 4” Ring Light is available with randomized fiber bundle for optimum uniformity
- With housing made of rugged, black anodized aluminum, and the fiber bundle protected with flexible metal PVC sheathing, SCHOTT Ring Lights are tough, dependable and long-lasting

### Advantages

- Annular Ring Lights offer absolute shadow-free illumination
- Vertical exit bundle option increases work space and prevents the bundle from interfering with surrounding objects
- ESD (Electro Static Discharge) option is available





## Line Lights

Suitable for narrow and elongated illumination in microscopy and machine vision inspection, SCHOTT ColdVision Line Lights offer high uniformity thanks to randomization. With a range of accessories and customized options, we can develop a bespoke line light solution for your application.

### Characteristics

- Line Lights offers intense calibrated homogeneous illumination
- Available as randomized line light for maximized uniformity and redundancy
- Different slit slices available
- Rugged aluminum body and light source ferrule with black anodized finish
- PVC covered metal tubing protects the fiber bundle
- Perfect illumination for line scan cameras

### Advantages

- Our line light accessory range includes cylindrical, apertured lenses and mechanical holders
- Accurately positioned fiber line within the body on all three planes assures that the fiber axis will be parallel with the mounting surface of the body
- Custom lengths, bundle exits, multiple combinations (dual, quad, etc.) and line widths can be designed for your unique requirements
- The 1", 2", & 3" size of line light offer a narrow, elongated body design





## Back Lights

SCHOTT ColdVision Back Lights can be used to create a crisp edge definition or soft, diffuse incident light for a range of applications with limited space. Those applications include glass inspection, edge detection, photography and instrumentation display.

### Characteristics

- All units come with a protective IR filter
- The back light housing is made of rugged, black anodized aluminum
- The fiber bundle is protected with flexible PVC covered metal tubing
- Dual and quad backlights increase lighting versatility

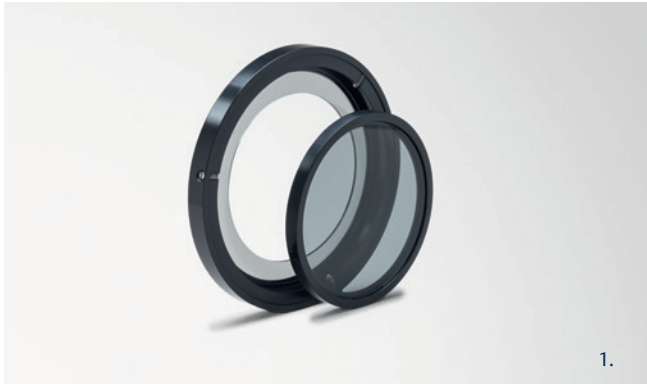
### Advantages

- Compact, low profile housing fits in small spaces
- The white acrylic diffuser plate and calibration process provides the optimum combination of uniformity and intensity





# Accessories



SCHOTT ColdVision series comes with a range of accessories, which offers even more options for contrast enhancement. Our optical accessories include focusing lenses, cylindrical lenses for line lights, and a wide variety of filters, while mechanical accessories include an articulated arm and base, as well as holders for different size light guides, focusing lenses and adapters for ring lights.

## Characteristics

All ColdVision accessories are designed for stability, easy handling and optimum performance. While focusing lenses can increase light intensity at the spot center, additional contrast can be achieved with a range of optical filters. Adapters are also available for different lens sizes.

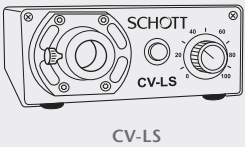
## Advantages

- Polarization filters have a perfect extinction ratio.
- Color filters demonstrate high transmission and remain unaffected by light-entrance angle.
- Mechanical accessories offer precise positioning of light guides.
- Ease of replacement of competitor light sources.

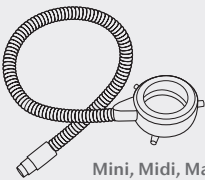
- 1 | Polarizer and Analyzer  
2 | Spot lens  
3 | Articulated arm  
4 | Color filter

# System diagram

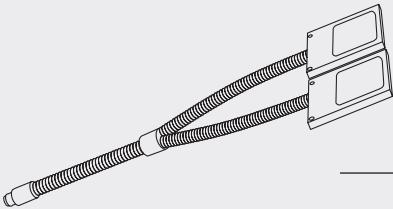
CV-LS | MC-LS



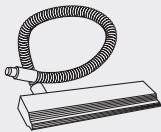
CV-LS



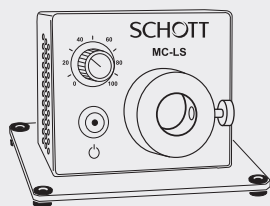
Mini, Midi, Maxi Ring Light  
Ring Light 66 mm  
Universal Ring Light  
Darkfield Ring Light



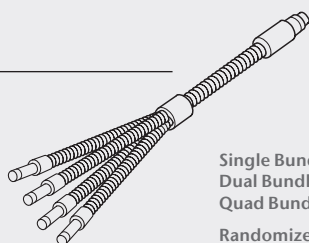
Single Back Light  
Dual Back Lights



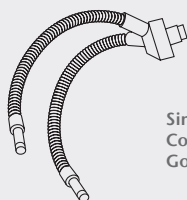
1" - 16" Line Lights  
Custom Line Lights



MC-LS

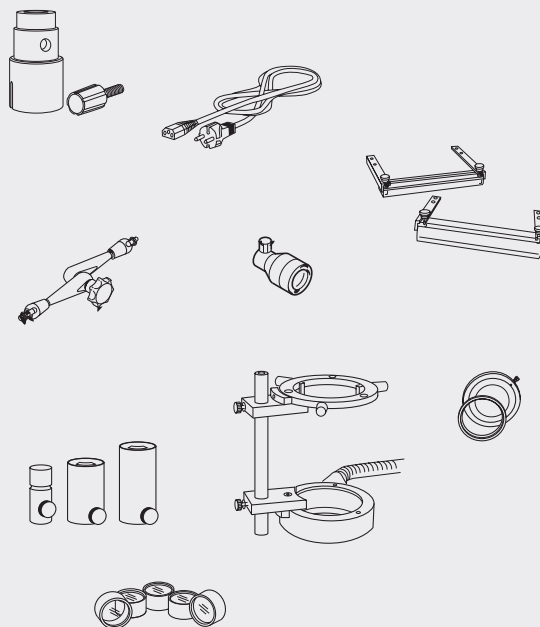


Single Bundle  
Dual Bundle  
Quad Bundle  
Randomized and Calibrated  
Models available



Single and Dual Goosenecks  
Combination  
Goosenecks/Bundles

## Accessories:



Articulated Arm  
Base  
Clamps, Polarizers & Analyzers  
Light guide Holder  
Bundle Extenders  
Filters and Adapters

Input Adapters  
Power Cords  
Spot Lenses  
Polarizing Cap  
Cylindrical Line Light  
Lenses



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