

# Sunoptic

TECHNOLOGIES®

## Illumination Solutions



Our ability to support the needs of OEM and Private Label customers is grounded in three key areas of Company strength:

- ENGINEERING SOLUTIONS** - consultation, design, prototyping, production
- EXPERTISE** - glass, optics, fiberoptics, illumination
- REGULATORY** - full range of regulatory and certification services

### Core Competencies:

- Lightsources
- LED Light Engines
- Glass & Optical Fiber Processing
- Glass Fusing & Forming
- Electro-Mechanical Design & Assembly
- Regulatory Support

### R&D Competencies:

- Optical Engineering
- Mechanical Engineering
- Electrical Engineering
- Software Engineering
- Thermal Management

### Key products include:

- LED lightsources
- Xenon lightsources
- Fiberoptic cables & lightguides
- Optical fiber & components
- Clad rod components & tapers
- Ring lights

### Market Segments:

- Medical Technology
- Life Science
- Industrial/Machine Vision
- Dental

### Certifications

- FDA Registered
- cGMP Compliant
- 510(k) Submissions
- ISO 13485 certified
- ISO 9001 certified

### Lightsource Platforms

- LED3000
- LED2000
- 400W Xenon
- 300W Xenon
- 175W Xenon

## Optical Glass Fiber Capabilities

- Diameter - 0.0012 – 0.003" (0.030 – 0.076 mm)
- Numerical Aperture – 0.44, 0.55, 0.66
- Length – up to 31 feet (9.5 m)
- Bundle Diameter – 0.020 – 1" (0.5 – 25 mm)

## Optical Clad Rod Capabilities

- Diameter – 0.060 – 0.512" (1.5 – 13 mm)
- Numerical Aperture – 0.57
- Length up to 6 feet (2 m )
- Outer Clad colors – clear, blue, black

## Sheathing

- Silicone Sheath colors – clear, red, blue, green, purple, gray, other on request
- Silicone Strain-Relief standard colors: Black, Gray, other available on request
- Silicone armored, PVC/Monocoil, Interlocking Stainless Steel, other available on request
- Standard Medical Fittings ACMI, Wolf (Dyonics), Storz, Olympus and other fittings
- Endfitting materials: Stainless Steel, Aluminum, Brass

## Fiber Bundle Ends

- Fused bundle
- Conventional Epoxy cure
- Clad rod
- Lensed



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LED 3000 Lightsource

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### Sunoptic Technologies Family of LED Products

Sunoptic Technologies Family of LED Products provide the next level in lighting for procedures involving endoscopic equipment in a surgical or industrial setting. The long-life LED units, with light quality and output comparable to Xenon, make inconvenient, time-consuming and expensive lamp changes a thing of the past. The low power consumption and minimal cooling make for a smaller, lighter and more portable unit as well.

## LED 3000 Lightsource

Sunoptic Technologies® LED3000 is a state-of-the-art LED lightsource designed for compactness, portability, and brilliant white light output. The output is comparable to most 250W Halogen and 180W Xenon, and even some 300W Xenon, lightsources. The expected LED life of 30,000 hours provides over 15 years of operation at 8 hours/day, Monday – Friday, meaning you'll never have to replace a lamp again.

The LED3000 can be custom-designed to include your logo on a custom overlay. Also you can choose a four-port turret with ACMI, Wolf (Dyonics), Storz and Olympus fittings (other fittings also available) or as a single port unit with one of those fittings or a proprietary fitting if desired.

The light port also includes a sensor to determine if a fiberoptic cable is inserted. If a cable is not inserted the LED3000 goes into a stand-by mode with the LED powered down.

The LED3000 also includes integral software controls for thermal management, dimming control (either Analog or PWM) and providing feedback on LED and electronics temperature and fan speed.





## LLS-3000 Medical Grade Solid State (LED) Lightsource

- Compact, efficient, durable source of brilliant “daylight” quality light.
- Lumen output comparable to Xenon units but with no lamp change – EVER!
- Expected LED life: >30,000 hours.
- Color temperature: 7000°K typical.
- Dimming control - Analog and Electronic (PWM)
- High-level Command Interface facilitates remote control and system status access via integral RS232 and USB ports.
- End-tip sensor turns off LED when light cable is removed from active port.
- Ergonomically designed turret includes ACMI, Olympus, Storz, & Wolf ports; single port versions are also available.
- Wide array of customization options available.
- Accepts 100-240V AC, 50/60 Hz input power for worldwide operation.
- Regulatory plan: UL60601 3rd Edition, CE mark, 510(k)
- Dimensions: 11” (279mm) W x 4.5” (114mm) H x 11” (279mm) D
- Weight: 7.5 lbs (3.4kg)

## Ordering Information

LLS-3000T - 100W LED lightsource with standard four-port (ACMI, Wolf, Storz, and Olympus) turret and flat front panel with overlay

LLS-3000X - 100W LED lightsource with single port and flat front panel with overlay

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LED 2000/Rover

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## Illumination Solutions

### Sunoptic Technologies Family LED of Products

Sunoptic Technologies Family of LED Products provide the next level in lighting for procedures involving endoscopic equipment in a surgical or industrial setting. The long-life LED units, with light quality and output comparable to Xenon, make inconvenient, time-consuming and expensive lamp changes a thing of the past. The low power consumption and minimal cooling make for a smaller, lighter and more portable unit as well.

### LED 2000 Lightsource

Sunoptic Technologies® LED2000 is a state-of-the-art LED lightsource designed for compactness, portability, and brilliant white light output. The output is comparable to most 150W Halogen and 75W Metal Halide lightsources. The expected LED life of 50,000 hours provides over 25 years of operation at 8 hours/day, Monday – Friday, meaning you'll never have to replace a lamp again.

The LED2000 can be custom-designed to include your logo on a plastic bezel or as an overlay. You can also choose a four-port turret with ACMI, Wolf (Dyonics), Storz and Olympus fittings (other fittings also available) or as a single port unit with one of those fittings or a proprietary fitting if desired.



### Rover III LED Lightsource



SunopticTechnologies LED Rover III is a compact, portable source of brilliant white light, ideal for use with small rigid or flexible endoscopes. Connects directly to post on the endoscopes via integral ACMI or Wolf light port.

## LLS-2000 Lightsource - 50W Solid State LED Light

- Compact, efficient, durable “daylight” light
- Premium LLS-2000 utilizes new high efficiency design
- Color temperature: 6500° K nominal
- Typical LED life: >50,000 hours
- Low power consumption: 52W typical
- Electronic (PWM) intensity control from 0-100%
- Four-port turret and single port versions available
- Standard ports are ACMI, Olympus, Storz and Wolf; other ports available
- Option of front bezel or overlay
- Accepts 100-240V AC, 50/60 Hz input power for worldwide operation
- Regulatory: UL60601-1, CAN/CSA C22.2 No. 601.1, EN60601-1-2; CE marked
- Dimensions: 4.65” (118mm) W x 3.32” (84mm) H X 7.25” (184mm) D
- Weight: 2.5 lbs (1.14 kg)

## Rover III LED Lightsource – 3 Watt Portable LED Light

- Compact, portable source of brilliant white light for office or field use with rigid or flexible endoscopes
- Connects directly to endoscope via integral ACMI or Wolf light port
- Delivers brighter, whiter light than conventional “light-handles”
- Adapters available for Storz / Olympus and Olympus GP scope connections
- Color temperature: 6500°K nominal
- Typical LED life: 50,000 hours nominal
- Uses disposable CR-123 Lithium batteries (included); typical run time 2 hours
- Rechargeable Lithium-ion batteries with external AC charger also available
- Pushbutton on/off control at end of body
- FDA Class II device, CE marked
- Dimensions: 5.1” (13cm) long; 1.25” (3.2cm) diameter at heatsink
- Weight: 3.7 oz. (105g) including batteries

## Ordering Information

### LED 2000 Lightsource

- NLB-LLS-2000T NO BRAND LABEL BEZEL, 50w LED, with 4-port turret
- NLB-LLS-2000X NO BRAND LABEL BEZEL, 50w LED, with Single port
- NLO-LLS-2000T NO BRAND LABEL Overlay, 50w LED, with 4-port turret
- NLO-LLS-2000X NO BRAND LABEL Overlay, 50w LED, with Single port  
(X= First letter of port required for single port units)

### Rover III

- NLLLS-3LBA Rover III Portable LED Light with ACMI Port
- NLLLS-3LBW Rover III Portable LED Light with WOLF Port
- NLLLS-3LBA-R Rover III Portable LED Light with ACMI Port, Rechargeable Battery
- NLLLS-3LBW-R Rover III Portable LED Light with WOLF Port, Rechargeable Battery

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### LED Light Engines

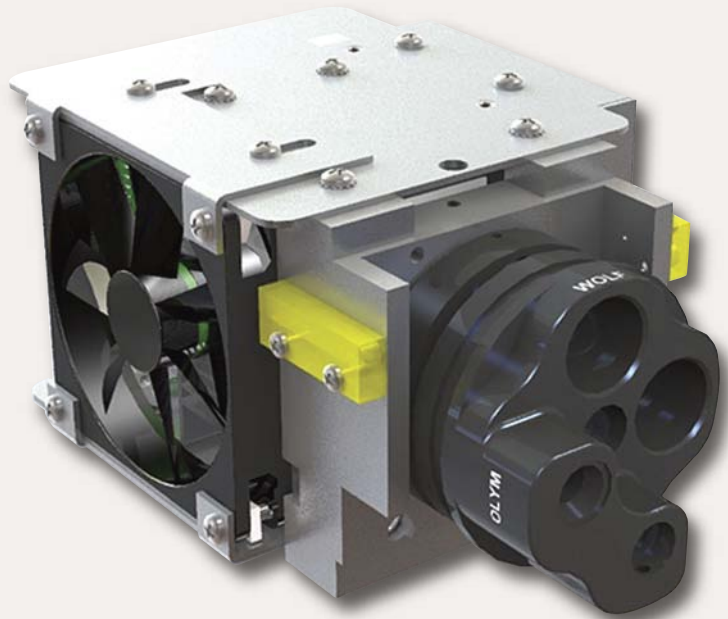
Designed for endoscopic usage, the LED Light Engine is the heart of the Sunoptics line of LED light sources and unique to Sunoptics design. The LED Light Engines are available in two base models: LE-2000 and LE-3000, offering you multiple levels of light output and control, when combined with supplemental option packages. Both light engines are available in single-port or four-port turret configuration (ACMI, Wolf, Storz, Olympus).

#### LE-3000

- CCT ~ 7000°K
- Typical LED life – 30,000 hours

#### LE-2000

- CCT ~ 6500°K
- Typical LED life – 50,000 hours
- Basic engine includes: LED with integral thermistor, heat sink, fan, optics, turret base and mounting in a fully assembled module
- Options include: universal power supply, dimming controller, thermal cut-off switch, single port or turret assembly, and mounting chassis.



LE-3000 Engine



LE-2000 Engine

## LE 3000 - Features

- Color rendering index - 78 nominal
- Color Temperature: 7000°k nominal
- Typical LED Life: ~30,000 hours
- Accessory power 5VDC @500mA
- Local ambient operating temperature 0 to 50°C with minimum 10CFM airflow
- Fixed or user configurable LED current
- Engine chassis is electrically isolated and may be referenced to application chassis
- Optically isolated interface
- High frequency PWM dimming up to 32kHz to eliminate video flicker
- Accepts arbitrary dimming waveform for video synchronization or "timing light" applications
- Thermal sensors allow monitoring LED and electronics temperatures
- Sensor detects presence of fiber optic end tip in port
- Fan speed feedback and fan control
- Dimensions: 3.58" (91mm) H  
x 4.62" (117mm) W x 6.95" (176mm) D
- Weight: ~2.6lbs (1179g)



## LE 2000 - Features

- Color rendering index - 78 nominal
- Color Temperature: 6500°k nominal
- Typical LED Life: ~50,000 hours
- Accepts 12VDC input voltage
- LE-2000 utilizes new high efficiency LED
- Color temperature: 6500°K.
- Typical LED life: >50,000 hours (varies with power setting and cooling).
- Low power consumption: 3.3V @ 9A typical (varies with power setting).
- Basic engine includes: LED chip with integral thermistor, heatsink, fan, collecting optics, turret base and mounting blocks, fully assembled into a single module.
- Dimensions: 2.75" (70mm)H x 2.75" (70mm)W x 2.57" (65mm)D
- Weight: ~0.6lb (270g)

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## Sunoptic Technologies Xenon Lightsources

provide state of the art lighting technology and ergonomic design. The reliable and efficient light provided from our lightsources is bright, "daylight" quality that enhances tissue color allowing you to get the most out of your time and skill in your demanding environment.

### Xenon Lightsources

#### 400W Xenon Lightsource

The 400 watts of Bright White light is the only lightsource on the market that delivers this amount of light to the surgical site.



#### 300W Xenon Lightsource

Our top model offers the brightest and whitest illumination required for surgical procedures. Standard to this model is a 650 hour prorated lamp warranty, lamp life hour meter and 5600k color temperature.



#### XLS-300 Xenon Lightsource

The XLS-300 model saves you valuable space with it's vertical mounting base included for retro-fitting onto surgical microscopes while providing all the technical features of a 300 watt xenon lightsource.



## 400W Xenon Lightsource

- Lamp Type Ceramic 400 Watt Xenon (With Lamp Hour Meter on Module)
- Lamp Power Rating 400 Watts
- Lamp Color Temperature 5,600°k
- Lamp Warranty 1000 Hours Prorated
- Front Panel Controls On/Off Switch, Attenuator Control, Turret
- Input Voltage Range 100 – 120 VAC 50 /60Hz, 220–240VAC 50Hz
- Power Consumption 720 Watts
- Regulatory UL60601, EN 60601-1, EN 60601-1-2, CAN/CSA, C22.2, No 601.1-M90, CE marked
- Operating Environment +10° to +40° C (50° to 104° F) 30 to 85% 700 to 1060 hPa
- Dimensions 355mm (14") W x 130mm (5") H x 250mm (10") D
- Weight 6.98 kg (15.4 lbs)
- Rear Panel Display Resettable Lamp Age Meter

## 300W Xenon Lightsource

- Powerful source of brilliant "daylight" quality light
- Color temperature: 5600°K
- Prorated lamp life: 650 hours
- Lamp life hour meter display on rear panel
- Removable lamp module with side access port for easy lamp change
- Variable intensity control from 0-100%.
- New ergonomically designed Multi-port turret (ACMI, Wolf, Storz, Olympus)
- PFC power supply accepts wide range of input power for worldwide operation
- Regulatory approvals: UL 60601, CSA, IEC 60601-1-2, CE marked
- Dimensions: 5" (12.7cm)H x 10" (25.4cm)D x 14" (35.5cm)L
- Weight: 13.2 lbs. (6 kg)

180W also available

## XLS-300 Xenon Lightsource for ENT Microscope use

- Compact, efficient, durable source of brilliant "daylight" quality light
- Lamp Type: Ceramic Lamp 300 Watts
- Color temperature: 5,600°K.
- LampWarranty: 650 Hours Prorated
- Power consumption: 450 Watts
- Single port to accept Zeiss fiber cable on most Zeiss Microscopes
- Accepts 100-120 VAC 50/60Hz, 220-240 VAC 50Hz
- Regulatory: UL60601-1, CAN/CSAC22.2 No. 601.1, EN60601-1-2; CE marked
- Dimensions: 4.65" W x 3.32" H X 7.25" D (~10" overall)
- Weight: 13.2 lbs (6.0 kg)

180W also available

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## Sunoptic Technologies Cables

Sunoptic Technologies Endoscopic cables are manufactured to a high standard of quality, performance, and reliability. They are precisely manufactured in-house with medical grade materials and a quality management system that complies with FDA regulations, and ISO 13485 certification. New to our extensive line of Endoscopic cables is Sunoptic Technologies Ultra Grip handle, a patented ergonomic design feature that provides added strain-relief, plus durability, and ease of cable removal from the lightsource.

Our cables are designed to deliver the maximum light output and performance. The patented process of fusing the fiber bundle at the proximal end combined with using a high quality lens to focus the light results in an increase in light transmission outperforming the competition.

### Endoscopic Cables

Sunoptic Technologies fiberoptic cables are designed to deliver maximum light when coupled to a medical grade fiberoptic lightsource. They are compatible with virtually all endoscopes, medical instruments, and microscopes. The cables can be manufactured with bundle diameters ranging from 3.0 mm to 5.0 mm to match the bundle of the instrument being used to provide optimal lighting. We offer eight different opaque colors of medical grade silicone sheathing for customization and identification. All of our endoscopic cables are hermetically sealed and can be sterilized using steam autoclave, cold soak, Steris, or Sterrad.

### UltraGrip Endoscopic Cables



### Endoscopic Cables - Universal Style

Sunoptic Technologies Universal cables can be used with various adapters according to the lightsource and instrument that is to be used for a procedure. Each end of the cable has to be fitted with a thread on adapter to properly function. This gives the versatility of creating a custom cable by simply changing the adapters on each end.

### Universal Cables

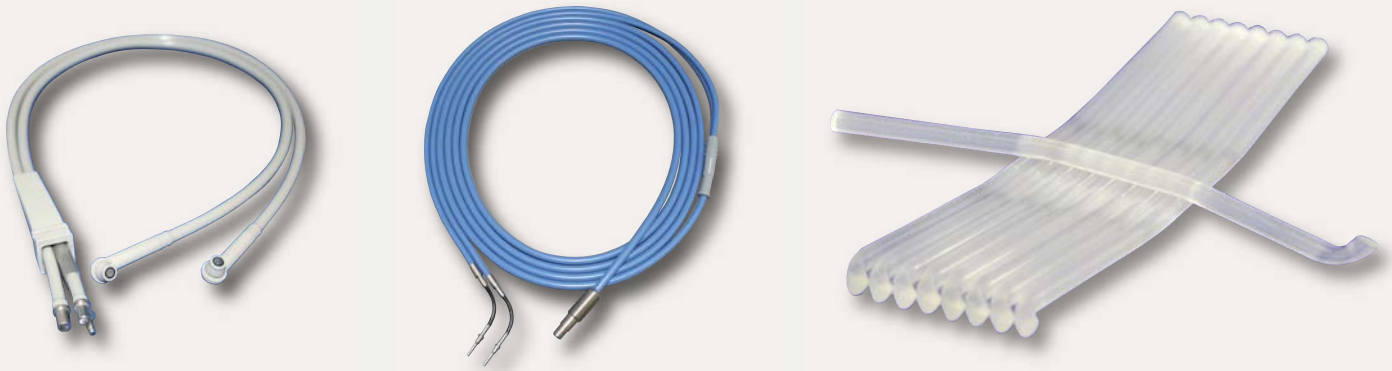


## Optical Glass fiber

- Diameter - 0.0012 – 0.003" (0.030 – 0.076 mm)
- Numerical Aperture – 0.44, 0.55, 0.66
- Length – up to 31 feet (9.5 m)
- Bundle Diameter – 0.020 – 1" (0.5 – 25 mm)

## Optical Clad rod

- Diameter – 0.060 – 0.512" (1.5 – 13 mm)
- Numerical Aperture – 0.57
- Length up to 6 feet (2 m)
- Outer Clad colors – clear, blue black



## Sheathing

- Silicone Sheath colors – clear, red, blue, green, purple, gray, other available on request
- Silicone Strain-Relief standard colors: Black, Gray, other available on request
- PVC/Monocoil, Interlocking Stainless Steel, Armored Sheathing and others available on request
- Standard Medical Fittings ACMI, Wolf (Dyonics), Storz, Olympus and other fittings
- Endfitting materials: Stainless Steel, Aluminum, Brass

## Fiber Bundle Ends

- Fused bundle
- Conventional Epoxy cure
- Clad rod
- Lensed

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