Since 1991, the charter of Illumination Technologies, Inc. has been to provide turn-key lighting and optics solutions that will ensure the success of your vision project.

We know of no company or organization in the machine vision industry that offers superior products or lighting solutions than those that we provide.

The reason that Illumination Technologies exists is to satisfy your lighting challenges.

As you review the product offerings, please keep in mind that these products were created to satisfy real needs communicated to us by customers like you. Particular requirements of your lighting challenge may be unique enough that a custom lighting solution is the proper answer.

We are highly confident that you will find our comprehensive array of standard products capable of solving most, if not all, of your lighting application requirements. However, sometimes an application demands a unique, CUSTOM lighting solution …

…each year almost half of our business results from our unparalleled ability to bring a unique degree of both experience and expertise to solving non-standard lighting challenges.

If you have reason to believe that your particular lighting application might benefit from an non-standard lighting solution, Please contact us.

As well as being your supplier of choice for our standard lighting products displayed in this catalog,

ILUMINATION TECHNOLOGIES
would welcome the opportunity to discuss your CUSTOM LIGHTING REQUIREMENTS.
What is Light-lock™? Why is it essential to your vision system?

For your camera to perform at its best, your lighting solution must provide critical contrast ratios, and then maintain these ratios throughout the vision system’s lifetime.

Long-term lightsource stability is the critical parameter that ensures long-term system reliability. To a camera, changing light levels translates to ambiguous contrast ratios, causing faulty process and quality decisions, and ultimately vision system failure.

The Smart-Lite™ series of machine vision lightsources feature Light-lock™, the ultimate in long-term lamp stability … stability that quality conscience designers and buyers of machine vision systems have recognized as being an essential ingredient for a successful automated inspection solution.

Light-lock™ is an exclusive feedback technology that ensures stable light output, no matter what happens in your facility!

AC powered lightsources are unacceptable for vision applications because of output fluctuations. DC regulated sources only regulate the voltage to the lamp, they do nothing to compensate for the numerous real world variables that effect the actual light intensity. Our exclusive Light-lock™ circuitry samples the lamp output and sends an internal signal to the linear DC control electronics, guaranteeing a remarkable ±1% light output stability over the entire lifetime of the lamp.

Without Light-lock™ technology, the long term reliability of your vision system is in jeopardy. It may work today, but will it be working as robustly six days, six weeks or six months from now? Even if the system is working in the lab, will it work as expected on the production line? What is the cost to you whenever your camera’s ability to capture the data essential to your system is compromised?

Our line of Light-lock™ based products provide extremely stable light output by compensating for:

- Lamp output degradation with age (all lamps experience it);
- Ambient temperature effects (not all environments are created equal);
- Power line fluctuations (factory power can be quite dirty).

Without exception, Light-lock™ technology ensures that threshold values of your vision system are always valid, grayscale levels are always maintained, and color values remain stable and constant.

This translates to reduced downtime, higher system reliability, improved quality and enhanced overall system confidence. Light-lock™ is your best guarantee of reliable system performance and optimum customer satisfaction!

Remember... if your camera could talk, it would ask for Light-lock™
Date: __________________________ Rep/Distributor: __________________________

Company: __________________________ Telephone #: __________________________

Contact: __________________________ E-mail: __________________________

**Description of Application** (please briefly describe in the space provided)

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Definition of Lighting Structure**

1) Has feasibility testing been performed for this application? Yes No

2) If yes, has the required structure been defined application? Yes No

3) What is the digital resolution of the system? 8-bit 12-bit Other _____

4) What is the minimum contrast required in grayscale levels for each feature?

   ______ grayscale levels are required between ______ and ______ (Feature 1)
   ______ grayscale levels are required between ______ and ______ (Feature 3)
   ______ grayscale levels are required between ______ and ______ (Feature 5)
   ______ grayscale levels are required between ______ and ______ (Feature 7)

5) Have all detrimental and ambient lighting effects been eliminated? Yes No

   If No, explain: ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________
Definition of Spectral Properties

6) Will the application will use a monochrome or color camera? Mono Color
7) Have the spectral properties of key features been defined? Yes No
8) Have spectral properties been confirmed via spectrometer? Yes No
9) Is contrast enhancement via spectral manipulation expected? Yes No
10) Are either batch or vendor related color variations expected? Yes No

Definition of Intensity & Uniformity Requirements

11) Have absolute intensity requirements been determined? Yes No
12) If Yes, the Radiometric requirements are: _______ µW/cm²
13) The required Field of View (FOV) is: _______ cm or inches (circle one)
14) The Lighting Working Distance (LWD) is: _______ cm or inches (circle one)
15) The Camera Working Distance (CWD) is: _______ cm or inches (circle one)
16) The minimum uniformity required (1σ / Gaussian): 10% 5%

Definition of Maintenance Requirements

17) What are the minimal lamp lifetime requirements? _______ hours
18) What is the cost for scheduled Maintenance in this process? _______ $/hour
19) What is the cost for unscheduled Maintenance? _______ $/hour
20) Is long-term light stability critical to this inspection? Yes No

Definition of Schedule

21) What is the deadline for final installation? _______ _______
22) What is the desired date for prototype evaluation? _______ _______
23) What is the desired date for completion of feasibility testing? _______ _______
24) What is the desired date for starting this project? _______ _______
25) Is this a funded project? Yes No
Standard Product Solutions

Fiberoptic Lightsources

2900 - Core Vision Unit
3900 - Smart-Lite™
CF1000 - C-Lector
3900-ROLS - Remote Olympus Light System
3900-RZLS - Remote Zeiss Light System
4900 - Auto-Cal™
4910 - Calibrator

Lamp Options

HC Lamp Option - 4200K, High Color Temperature
ER Lamp Option - Extended Range 400 - 1500 nm
IR Lamp Option - Infrared Illumination 800 - 1500 nm
Receptacle Options - Use pre-existing lightguides

Specialized Lighting

1 Meter Lightlines
Modular Lightline Open Architecture
Modular Lightline NEMA Enclosure
Oblique Modular Lightline - Detects Direction of Travel Defects
3900-DD - Dirty Dog
3900-N12 - NEMA 12
6000 Series - Multi-Channel Lightsources
WLS-84 - 84” Lighting System

Accessories

Lightguide Attachments
Setup Kits
Filters
Replacement Lamps

Fiberoptic Lightguides

Ringlight - Annular Illumination
Lightlines - Linear Illumination
CABI’s - CoAxial Beamsplitter Illuminator
DRI’s - Diffuse Ring Illuminator
Backlights - Gauging Illuminator
Lightguides Point Source Illumination

LED Products

Backlights - 1”x1” and 2”x2” LED Backlights
Ringlights - φ44mm ID LED Ringlight
Ringlights - φ70mm ID LED Ringlight
Solid State DRI - φ70mm Diffuse Ring Illuminator
2x2 CABI - 2”x2” LED CoAxial Beamsplitter Illuminator
4x4 CABI - 4”x4” LED CoAxial Beamsplitter Illuminator
DML - Dual Mode Light - Independent High and Low angle Component Lighting
LAP Light - Large Area Projector
Lightbars - Solid State Web Lighting
**2900 Core Vision Unit™**
- Economical DC Regulated Fiberoptic Lightsource
- Best Competitive Specifications on the Market
- Output Voltage Regulation: 0.1% (RMS)
- Output Noise: 0.1% (RMS)
- Auto-switching Input Plug it in anywhere and go!

**3900 Smart-Lite™**
- Light-Lock™ Light Feedback - an it exclusive
- Maintains Light Output to within 1% over lamp life
- Output Voltage Regulation: 0.1% (RMS)
- Output Noise: 0.1% (RMS)
- Operator Lock-Out™ Eliminates Tampering
- RS-232/485 Remote Communication

**CF1000 C-Lector™**
- Light-Lock™ Light Feedback - an it exclusive
- Computer controlled Filter Wheel (8-positions)
- Change spectral properties "on the fly"
- Works well with ND filters or as a reliable Shutter
- RS-232/485 Serial Communications Interface
- All the great features of the 3900

**4900 Auto-Cal™**
- Light-Lock™ Light Feedback - an it exclusive
- Maintains Light Output to within 1% over lamp life
- +/- 3% Repeatability on Lamp Replacement
- +/- 4% Repeatability Unit to Unit
- Output Voltage Regulation: 0.1% (RMS)
- Output Noise: 0.1% (RMS)
- Operator Lock-Out™ Eliminates Tampering
- RS-232/485 Remote Communication
- Etherner Communications Option (4900-ET)

**4910 Calibrator**
- External Photonic Reference
- <1% Variation Unit to Unit
- Rejects Phontonically Inadequate Lamps
- Elimantes Premature Lamp Failures
- 4900 Independent

**3900-ROLS Remote Olympus Light System**
- Light-Lock™ Light Feedback - an it exclusive
- Same great features found in the 3900
- Retrofit Olympus U-LH100L-3
- Replaces TH-3 Supply
- Lamp Housing Remote from Power Supply

**3900-RZLS Remote Zeiss Light System**
- Light-Lock™ Light Feedback - an it exclusive
- Same great features found in the 3900
- Retrofit Zeiss 447217
- Lamp Housing Remote from Power Supply

**Lightsource Options Lamps and Receptacles**
- HC - High Color Temperature Option for Color Applications
- ER - Extended Range Option for high speed applications
- IR - Infrared Option for Semiconductor and Food Inspection Applications
- Receptacles for other Fiber optic manufacturers are also available

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**FIBEROPTIC ACCESSORIES**

**CABIs (Co-Axial Beamsplitter Illuminator)**

Brightfield Illumination Mode
On-Axis Illumination with Camera View-Through Port
Perfect for mixed reflective & non-reflective surfaces
Applications: PC Boards, Semiconductors, Leadframes
Also available in LED versions

- **9820 2”x2” Clear Aperture**
- **9840 4”x4” Clear Aperture**

**Lightlines**
Generates thin intense lines of light
Four (4) standard sizes (3 and 6 inch-singles & duals)
Cylindrical Lens options concentrate light
Applications: Linescan Scanning, Darkfield
High Uniformity: +/-10% (one standard deviation)
Also available in LED versions.

- **9130 6” Single**
- **9140 3” Dual**
- **9145 6” Dual**
- **9145 3” Single**
- **9145 6” Dual**

**Backlights**
Glass fibers - No plastic fibers to burn or melt
High Uniformity: +/-10% (one standard deviation)
High Luminance - Low profile designs
Applications: metrology, gauging, transparent objects
Also available in LED versions

- **9420B 2”x2” Active Area**
- **9435B 3”x3” Active Area**
- **9450B 5”x5” Active Area**

**Lightguides**
Light delivery for creating point source illumination
High throughput blue enhanced fiberoptics
Rugged, flexible, stainless steel sheathed
Swagged stainless steel ferrules for maximum durability

- **9230 Single 30”**
- **9240 Dual 30”**
- **9250 Single 30”**
- **9260 Dual 60”**
- **9270 Quad 48”**
- **9280 Small Liquid Core**
- **9285 Large Liquid Core**

**DRIs (Diffuse Ring Illuminators)**
Darkfield Illumination Mode
Low angle, highly diffuse structured light
High Uniformity: +/-5% (one standard deviation)
Perfect for raised or depressed features on flat surfaces
Applications: Populated PC Boards, Markings, Scratches
Also available in LED versions

- **9715 1” FOV**
- **9710 5” FOV**
- **9711 2” FOV**
- **9708 8” FOV**
- **9010B 8-Point Adjustable**
- **9021 60mm FOV**
- **9023 38mm FOV**
- **9021-TPL 60mm 3 inputs**
- **9025-TPL 30mm 3 inputs**
- **907x Series 150W μRinglight**
- **908X Series 5W μRinglight**

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**SPECIALIZED LIGHTING**

**9160 1 Meter Lightline**
Single Piece Glass Fiber Lightline  
Latest in Stripwound Technology  
Excellent Process Uniformity  
NO Sanding Output "Calibration"  
Lens Assembly Available for Higher Output

**Modular Lightline NEMA Enclosure**
Same features as open architecture  
Industrial enclosure withstands environment  
No purged air or liquid chillers

**Modular Lightline Open Architecture**
Patented Modular Technology  
6" Modules Bolt Together Seamlessly  
Excellent Uniformity  
Creates Lines of Any Length (2m+)  
EZ-Glide Lens Adjustment

**3900-DD Dirty Dog™**
- Economical Factory Floor Protection  
- Same great features found in the 3900  
- Industrial Enclosure withstands environment  
- Specialty Engineered Filter keeps debris out  
- No purged air or liquid chillers

**3900-N12 Rugged-Lite™**
- Robust Factory Floor Protection  
- Same great features found in the 3900  
- Fully Rated NEMA 12 Construction  
- High Performance Air-to-Air Heat Exchanger  
- No exchange of Factory air with Enclosure  
- No purged air or liquid chillers

**6000 Series NEMA Lightsource**
- All the great features of the 3900-N12  
- Multiple lightsource outputs - one enclosure  
- Reliable, oversize Air-to-Air Heat Exchanger  
- Specifically for Large Web Applications  
- P/N 6020 for Two Channel Operation  
- P/N 6030 for Three Channel Operation

**Oblique Lightline Cross Web Illumination**
Same features as standard modular lightline  
Provides Off-axis side lighting  
Detects defects in direction of travel

**WLS-84 84" Large Web System**
2 Meter (84") Length - Full NEMA Protection  
E-Z Glide Adjustable Lens Assy  
14 Channel Computer Controlled Output

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LED PRODUCTS

70mm LED Ringlights
Virtually shadow-free illumination
High intensity direct illumination
4” Standard Working Distance - others on request
Available in Red, White, Blue and NIR
Continuous or Strobed Models Available
• 5820-RED 660nm
• 5820-NIR 880nm
• 5820-WHT 400-700nm

LED DRI Diffuse Ring Illuminator
Darkfield Illumination Mode
Low angle, highly diffuse structured light
High Uniformity: +/-5% (one standard deviation)
Perfect for raised or depressed features on flat surfaces
Applications: Populated PC Boards, Markings, Scratches
• 5720-RED 660nm
• 5720-NIR 880nm
• 5720-WHT 400-700nm

Backlights
High Intensity Output
High Uniformity: +/-10% (one standard deviation)
Applications: Used for metrology and gauging applications
1”x1” Active Area
• 5624CW-BL 470nm
• 5624CW-GRN 525nm
• 5624CW-YEL 590nm
• 5624CW-ORG 610nm
• 5624CW-RED 660nm
• 5624CW-WHT 400-700nm

2”x2” Active Area
• 5632CW Red

DML Dual Mode Light
Brightfield Illumination Mode
On-Axis Illumination with Camera View-Through Port
Darkfield Illumination Mode
Low angle, highly diffuse structured light
Independent Brightfield and Darkfield components are adjustable for perfect balance
Perfect for mixed reflective & non-reflective surfaces
Applications: PC Boards, Semiconductors, Leadframes
• 5220-RED 660nm
• 5220-BL 470nm
• 5220-NIR 880nm
• 5220-WHT 400-700nm

LED Lightbars
Generates long lines of light for web applications
Long life linear backlight for transparent materials
Lengths from 8” to 116”
Front projection models available
Output Wavelength
P/N 5900-AL-OW-M
Active Length Mode F: Frontlight B: Backlight

LAP Lite (Large Area Projector) LED Strobe Lightsource
DC Regulation
TTL Trigger Interface
100,000 Hour Operation
Adjustable Strobe
Color Options
Rugged Enclosure
• 5380-R Red 660nm
• 5380-GR Green 525nm
• 5380-IR Infrared 880nm
• 5380-OY Yellow 600nm
• 5380-BL Blue 470nm
• 5380-RGB White

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**ACCESSORIES**

**SetUp Kits**
Software & Cables to get communications going
RS232 Version Includes Lightset 5.0 and Cable
RS485 Version Includes Lightset 5.0, Cables & Converter

**Filters**
High Efficiency Thin Film Interference Filters
More Light - Longer Lamp Lifetimes
Red, Green, Yellow, Blue, Orange, Cyan, Daylight

**Spare Lamps**
EKE Lamp, 3250K Color Temp (IT P/N 9582)
EKE-HC 4200K for Color Applications (IT P/N 9586)
EKE-ER 400 nm > λ > 1500 nm (IT P/N 9589)
EKE-IR Infrared Enhanced (IT P/N 9588)
5 Watt Micro Ringlight Spare (IT P/N 9090)

**Fiber Receptacles Optional**
**Receptacles for Major Manufacturers**
1010-401 Dolan-Jenner
1010-402 Fostec
1010-403 Volpi
1010-405 it Large
1010-406 Schott

**Attachments Lenses, Reflectors and Diffusers for**
**Altering Structure**
9510 Focusing Lens for f .310" lightguides
9530 Cylindrical Lens for 3" Lightlines
9535 Diffuser Assembly for 3" Lightlines
9560 Cylindrical Lens for 6" Lightlines
9565 Diffuser Assembly for 6" Lightlines
9557 Snap-On Diffuser for 9021
9558-30 Snap-On Reflector for 9025
9558-60 Snap-On Reflector for 9021

**Polarizers**
**Glare Reduction for**
**Lightguides, Ringlights, and Lightlines**
9511 Polarizer Cap for 9510
9536 Polarizer Assembly for 3" lightline
9566 Polarizer Assembly for 6" lightline
9552 Polarizer/Analyzer for 9025 9553 Polarizer/Analyzer for 9010
9554 Polarizer/Analyzer for 9021
9555 Polarizer/Analyzer for 9023

**Spare Fuses**
1010-202 T1.6 Amp, 5x20 mm (10 pieces)
1010-206 T3.2 Amp, .25" x 1.25" (10 pieces)