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L U X A M Lighting For Museums

# FIBER OPTIC SYSTEMS

**Product Catalog** 



WORLD'S LEADING
MUSEUM SHOWCASE
LIGHTING COMPANY

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## INTRODUCTION TO FIBER OPTICS

"For internal lighting of display cases, the most sustainable, maintainable, preventive conservation solution is a combination of LED light source with fiber optic light guides in the case." The RP-30 (ANSI recommended practice), which is the standard for American museums.

The Luxam lighting philosophy is to enhance the beauty and story of the object while respecting its conservation requirements, and for the lighting to have the ability to adapt to the needs of the display over time.

The Luxam Micro Fiber Optic System enables each object to benefit from an individual lighting that puts forward its details, color, textures, and its organic differences. Our concept makes it possible to rigorously control the visual ergonomics (multiple levels of lighting, reflections, and highlights) offering an optimal perception of objects and text for the observer.

Fiber optics are still the only way to avoid heat and electricity to enter the case. Our miniature optical terminals are easily hidden from visitors. The LED illuminators are installed outside of the case avoiding any problems of obsolescence due to the evolution of the LED and ensuring that every system benefits from the latest technology available.

This 'obsolescence proof' system will technically match the expected life of the display case.

Fiber Optic system is the best long-term investment for museums when looking at a 10, 20, 30-year period. The only part that would require changing are the illuminators, and each illuminator can enable up to 24 spots of lights. Many of our museum partners change out all their illuminators after 10-15 years and immediately have the best of the latest technology and color rendering, at a fraction of the cost that it would be to replace an entire system.





## **HOW THE LUXAM FIBER SYSTEM WORKS**

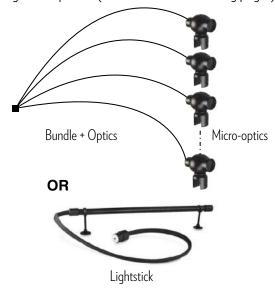
The Fiber system is very simple and has 3-4 elements to consider depending on the system chosen. Each system is individually chosen and manufactured depending on the needs of the display cases and the artifacts housed within them.

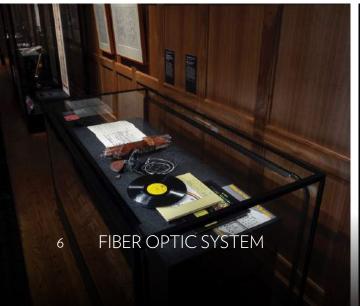
The variables to consider when picking the right system for you:

- 1. What type of lighting would be best: Spotlights or Lightsticks
  Optics will offer a highly precise and contrasted lighting especially useful to illuminate rounded and 3D objects. Lightsticks will offer an even linear lighting best suited to books and texts.
- 2. The Illuminator We currently have 7 types of illuminators traditional illuminators with onboard dimmers, DMX compatible, and two interactive illuminators.
- 3. The best attachment solution for each option: grid, bars, towers, or different lighstick options. (More info in the following pages)

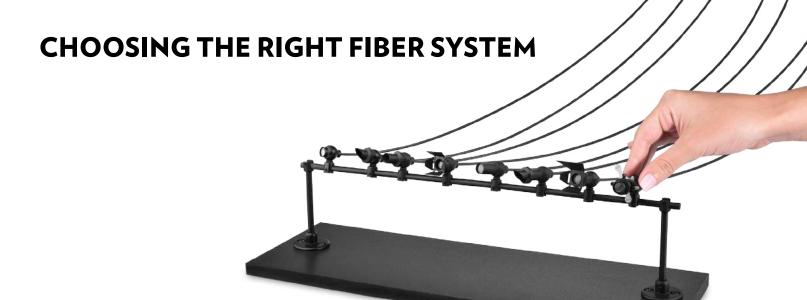


Illuminator









What to consider when choosing a Fiber Optic System:

- 1. The Illuminator: Do you need a simple system with onboard dimming, one that is DMX compatible, or an interactive option when various lights can be controlled separately? We currently have 7 types of illuminators. (More info from page 18)
- 2. The Optic size We have 3 sizes: Nano, Micro, and Mini. The Micro Optic size is by far the most common and practical it can light the smallest of the object as well as full medieval gowns. All options come with an extensive range of accessories.
- 3. The Bundle size There are three aspects to a bundle: size of the fiber, number of strands, and length of each strand. The size of the optics will determine the millimeter of the fiber, which will determine the max number of fibers you can have per bundle. For example, the micro-optics use 2mm fiber and you can have up to 24 strands per bundle. As each bundle is custom made there are a multitude of options. We do not recommend for strands to be more than 7 meters long



## FIBER BUNDLE SPECIFICATIONS

#### **SPECIFICATIONS**

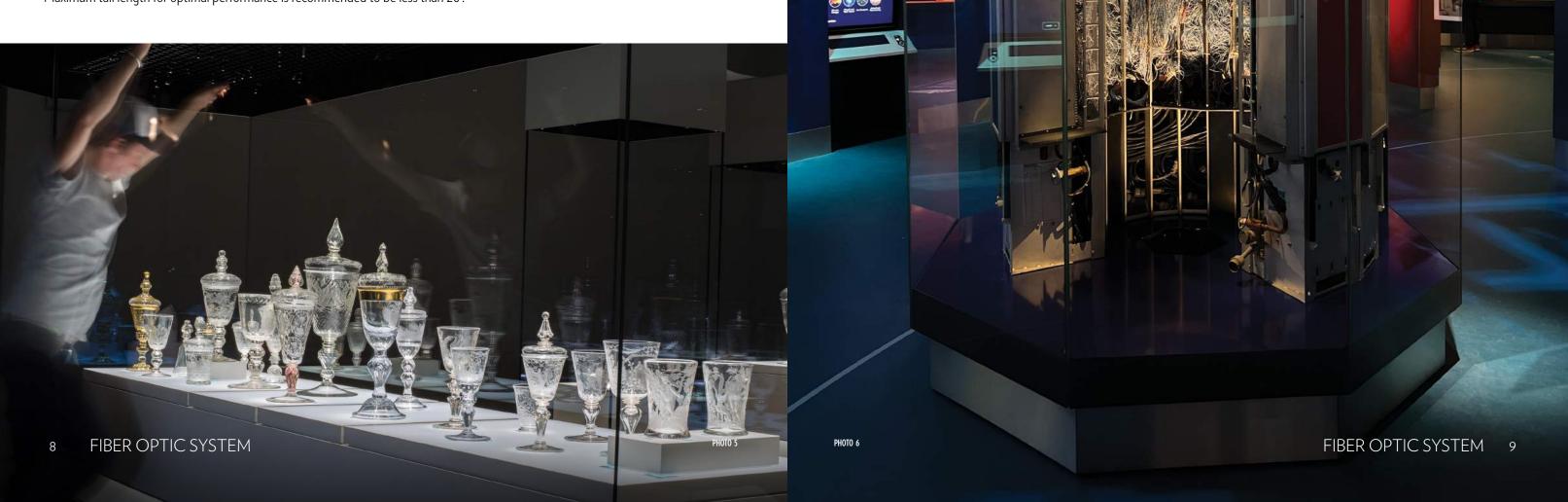
Active Diameter	1.5mm	2.0mm	3.0mm	4.0mm	5.0mm
Outside Diameter	2.0mm	2.8mm	6.0mm	7.0mm	8.0mm
Minimum 90° Turning Radius	20mm (3/4")	40mm (1/75")	50mm (2")	60mm (3")	65mm (4")
*Optimal Fibers/Connector	30	24	20	12	4

#### TYPICAL FIBER BUNDLES W/ ORDER CODE

Bundle 1.5 x 24 x 3	1.5mm x 24 tails x 3 meters, to common connector
Bundle 2 x 16 x 3	2.0mm x 16 tails x 3 meters, to common connector
Bundle como 1.5 x 10 x 3 + 2 x 10 x 3	Combo 20 trails, $10 \times 1.5$ mm and $10 \times 2 \times 3$ meters to common connector
Bundle 3 x 12 x 4	3.0mm x 12 tails x 4 meters, to common connector

Custom Fiber bundles of any length and combination of diameters available as standard order.

Maximum tail length for optimal performance is recommended to be less than 20'.



## FIBER OPTIC MICROTOWERS

Self supported fiber optic MicroTowers are for most vertical applications.

This flexible system uses pins that can be adjusted to provided the desired focus according to the objects. For Vitrines and Four-Sided viewing when you cannot attach the lighting to the casework sides. Mounting options include a flange mount for the base and/or ceiling.

\*\* Note INSERTS between pins are an option to beadded and hide the fiber further.





## FIBER MICRO OPTIC PHOTOMETRICS

MICRO FIXTURE 5 DEGREES (55-207) WITH 2MM FIBER

## 55-207\_5° Open Intensity Level (lux)

Illuminator/					
Distance (m)	0.5	1m	1.5m	2m	2.5m
20W 300k	1328	332	148	83	53
30W 300k	1536	384	171	96	61
45W 300k	1960	490	218	123	78

Distance (m)	Lighting Spot Diameter (m)
0.5	0.04
1	0.09
1.5	0.13
2	0.17
2.5	0.22

## 55-207\_55° Open Intensity Level (lux)

0.5	1m	1.5m	2m	2.5m
108	27	12	7	4
120	30	13	8	5
156	39	17	10	6
	108 120	108     27       120     30	108     27     12       120     30     13	108     27     12     7       120     30     13     8

Distance (m)		Lighting Spot Diameter (m)
0.5	ı	0.71
1		1.43
1.5		2.14
2	ā	2.86
2.5		3.57

## 55-210\_10° Open Intensity Level (lux)

0.5	1m	1.5m	2m	2.5m
1140	285	127	71	46
1284	321	143	80	51
1736	434	193	109	69
	1140 1284	1140 285 1284 321	1140     285     127       1284     321     143	1140     285     127     71       1284     321     143     80

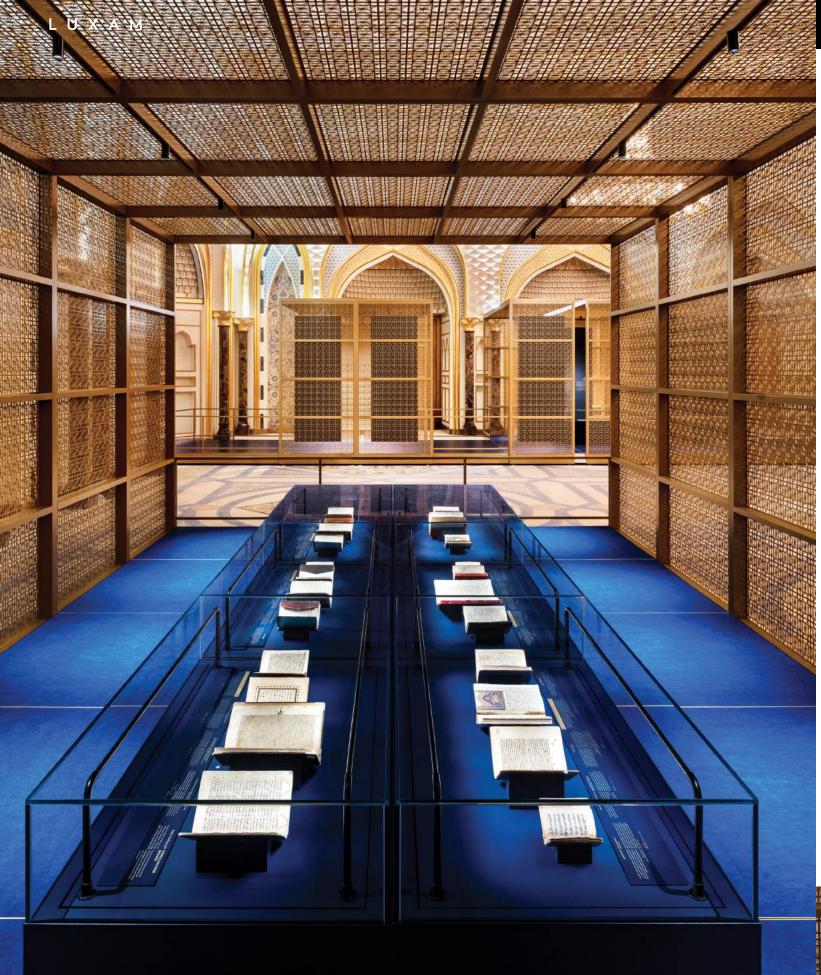
Distance (m)	Lighting Spot Diameter (m)
0.5	0.9
1	0.18
1.5	0.26
2	0.35
2.5	0.44

## 55-210\_65° Open Intensity Level (lux)

Illuminator/					
Distance (m)	0.5	1m	1.5m	2m	2.5m
20W 300k	140	35	16	9	6
30W 300k	168	42	19	11	7
45W 300k	212	53	24	13	8

Distance (m)	Spot Diameter (m)
0.5	1.07
1	2.14
1.5	3.22
2	4.29
2.5	5.36





## FIBER OPTIC LIGHTSTICKS

Fiber Optic Lightsticks are the linear expression of fiber optic lighting. They are designed to illuminate two-dimensional surfaces with an even spread of light.



#### **SPECIFICATIONS**

Custom fabrication to your exact specifications

Perfect for documents, books, and text panels

Provides a show less wash of light

Uniform base light in a 3D space for small cases

Standard focus at 60° wash

Tight focus capable at 30°

Wide focus capable for vitrines at 90°

Length measurement must include Live End Cap and End Cap

#### LIGHTSTICK SPECIFICATIONS AND FIXATIONS

Lightstick Diameter	20mm (standard)	16mm	10mm
Lightstick length max	Up to 2.5m	Up to 1.95m	Up to 0.5m
Tail length	Up to 5m	Up to 5m	Up to 5m
Beam Angle Options	30° / 60° / 90°	30° / 60° / 90°	60°

16mm Lightstick has 40% less light because of the turn of the fiber.

#### **ELBOW GANTRY WITH FLANGE**

90° elbow for 16mm and 20mm for gantry and thrust mounting in table cases, vitrines, and wall cases. To specify stick lenght for elbows - provide drawing.



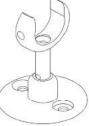
#### **CLAM SHELL**

- Base support for 16mm black 22-105
- Base support for 20mm black 22-101



#### **VERTICAL FLANGE**

• for 16mm - 22-104



#### C-CLAMP WITH 65-103 BASE

- C-clamp with surface mount 16mm 65-502
- C-clamp with surface mount 20mm 65-503
- C-clamp with surface mount 24mm 65-504

#### **STEMS**

• Stems 15, 30, 60, 75, and 90 mm

#### **C-CLAMP SIZE**

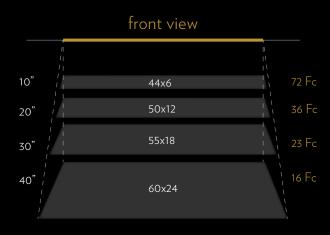
- Code x stem length, mm
- Order Code example: 65-502-15

## LIGHTSTICK PHOTOMETRICS

## 40" LIGHSTICK - 10-200-B 35W ILLUMINATOR @ 700 MA

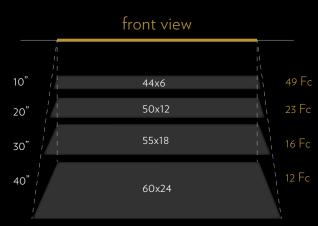
## 30° light beam





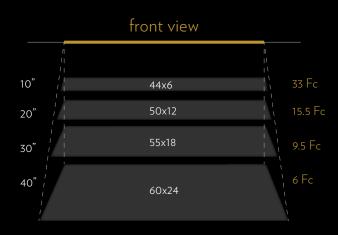
## 60° light beam





## 90° light beam





## **LED ILLUMINATORS**

Mated to our fiber optic bundle CAX2 brings the light directly to our Microfixtures inside the casework.



#### 15-122/20W SPECIFICATIONS

Max power consumption	20W
Input Voltage	190~240V AC
Input Current	1A
CRI	3000K-97
ССТ	3000K
Dimmer function	Yes
Operating temp	Natural Convection
Weigh	1.24kgs / 2.75lbs
Dimensions	152mm x 81mm x 125mm
Material	Alum. Alloy / PC

#### **PRODUCT CODES**

**CCT 3000K** 15-121-3K



## 10-200-BP 30/35W

#### **SPECIFICATIONS**

lax power consumption	30-35W
nput Voltage	90~240V AC 60Hz
nput Current	1A
CRI	3000K - 97, 3500K - 90+, 4000K - 90+
CCT	3000, 3500, 4000
Dimmer function	Yes
perating temp	+5° <ta<40°c< th=""></ta<40°c<>
Veigh	1.4kgs / 3lbs
Dimensions	199.5mm x 131.7mm x 98.5mm
Material	Alum. Alloy / PC

#### PRODUCT CODES

)-200-B P-4K
)-200-BP-3.5K





max power consumption	70-02
Input Voltage	90~240V AC 60Hz
Input Current	1A
CRI	3000K - 97, 3500K - 90+, 4000K - 90+
ССТ	3000, 3500, 4000
Dimmer function	Yes
Operating temp	+5° <ta<40°c< th=""></ta<40°c<>
Weigh	1.44kgs / 3.2lbs
Dimensions	193.6mm x 166.7mm x 98.5mm
Material	Alum. Alloy / PC

#### **PRODUCT CODES**

CCT 3000K	10-200-BP-DMX-3K
CCT 4000K	10-200-BP-DMX-4K
CCT 3500K	10-200-BP-DMX-3.5K

## LED ILLUMINATORS (AVAILABLE IN EUROPE)



## 15-135 / 35W SPECIFICATIONS

Max power consumption	35W
Input voltage	110-220 V
Input current	1A
CRI	3000K-97
ССТ	3000k, 4000k
Dimmer function	yes
Operating temp	+5 < Ta < +40°C
Weigh	1.25kg
Dimension	191mm x 150mm x 96mm
Material	Alum. Alloy / PC

#### PRODUCT CODES

CCT 3000K	15-135-3K
CCT 4000K	15-135-4K



## **15-145 / 45W** SPECIFICATIONS

Max power consumption	45W
Input voltage	110-220 V
Input current	1A
CRI	3000K-97
ССТ	3000k, 4000k
Dimmer function	yes
Operating temp	+5 < Ta < +40°C
Weigh	2.5kg
Dimension	191mm x 180mm x 122mm
Material	Alum. Alloy / PC

#### PRODUCT CODES

CCT 3000K	15-145-3K
CCT 4000K	15-145-4K



## **LED ILLUMINATORS - INTERACTIVE**

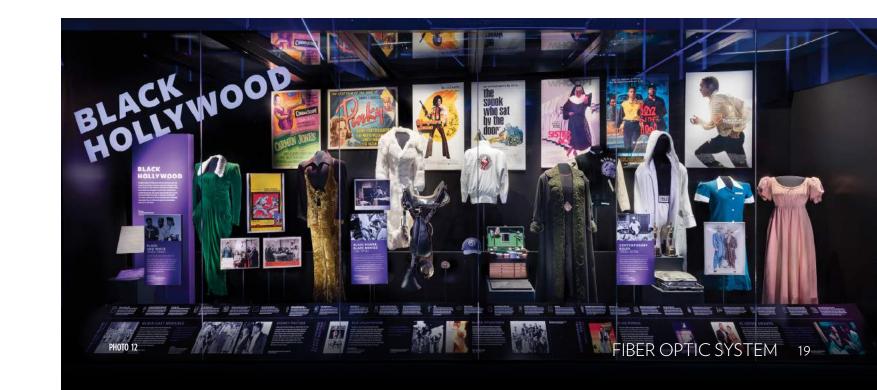
By combining the best attributes of LED's and fiber optic delivery systems, the dynamic interactive showcase is now possible. We have two options: The 80-101 is a 24 channel illuminator with 24 LED's - each with a unique fiber strand. The 80-105 5 Port has 5 ports, each can accommodate up to 10 strands of fiber.





## 15-122/ 20W

SPECI	IFICATIONS
5 chan	nels/ DMX dimming capable
5 chan	nel of control via PC console for timed transitions
Remot	re location keeps out heat and electric power inside the display
Stream	n content directly to visitor per sonal devices
Wirele	ss transmission to mobile server to modify on the fly
Мах ро	ower consumption: 35W
Input \	Voltage: 90-240V AC
Input (	Current: 1A
CCT: 3	000K or 4000K
Max op	perating temperature: +5° to 40°C
Use: Fo	or Indoor use only, IP20
Dimen	isions: 440mm*155mm*65mm



#### **INTEGRATING IN DISPLAY CASES**

After decades lighting display cases around the world, it's undeniable that integrating lighting systems within the original designs of the cases is the best way for lighting to 'disappear' while enabling objects to shine.

Integrating lighting correctly is a collaboration between the designers, fabricators, curators, and lighting provider. We are happy to provide counsel taking our experience of lighting thousands of cases worldwide from the very beginning of a project.

Our optics attach on 6mm rods and grid tops made of 6mm rods, there are also recessed options, single strand options etc

Some specifics to bear in mind:

- Grid Tops need 4 inches between the grid and the ceiling to move the fiber around. Ceiling should always be painted black.
- 6mm rods need to be at least 2 inches from the wall to give enough bend radius for the fiber to turn and affix to optics (for 2mm fiber more for larger fibers).
- Making sure the lighting will have the angles needed looking at depth, placement of objects.

## INSTALLATION AND FOCUS

Luxam fiber optic lighting requires more diligence during installation than standard wash lighting. Each individual fixture is focused onto objects mounted within the casework. Our expert focusers have been trained in the Luxam system and are lighting experts – making sure that the final focus of the lighting is done to the highest standard.

Our teams have been called in to do one case or worked for months to do the display lighting of entire museums.

For best museum quality results, we recommend our personnel do a final focus.

We are always happy to train on site teams who will care for the maintenance of the cases.

#### THERE ARE THREE STAGES OF INSTALLATION:

- BASIC FITTING The fibers or Lightsticks are installed into the cases. No optics are fitted to the tail ends and no tails are being fixed into position.
- FIRST FIX The Lightsticks or fibers are placed, directed, and fixed into position to give a wash over the artifacts. They are fixed into position at regular intervals and directed towards the interior of the case. The purpose and result of this stage is to have the lights on in the case.
- FINAL FOCUS In this stage, which is always taking place in cooperation with the curator, the lights are directed from the interior to the artifact. Final focus requires the objects and all labels to be in their final position within the case prior to our work beginning.













#### **MICRO-FIXTURES**



#### 55-101

10° micro-fixture, stirrup mount



#### 55-201

10° micro-fixture, staple mount for  $\emptyset$ .4" (10mm)



#### 55-202

5° micro-fixture, staple mount for 0.4" (10mm)



#### 55-203

 $5^{\circ}$  micro-fixture, staple mount for 0.63''



#### 55-204

5° micro-fixture, staple mount for 0.8" (20mm)



#### 55-205

5° micro-fixture, stirrup mount



#### 55-542

5° micro-fixture with front focalisation, staple mount for .63"



#### 55-543

 $5^{\circ}$  micro-fixture with front focalisation, staple mount for .8''



#### 55-545

10° focusable micro-fixture, staple mount for 0.4" (10mm)



#### 55-548

5° micro-fixture with front focalisation, stirrup mount



#### 55-549

10° focusable micro-fixture, stirrup mount



#### 55-210

10° micro-fixture, staple mount for 0.24"



#### 55-207

5° micro-fixture, staple mount for 0.24"



#### 55-301

10° micro-fixture, staple mount for 0.63"



#### 55-304

10° micro-fixture, staple mount for 0.8"



#### 55-535

5° micro-fixture with front focalisation, staple mount for .24"



#### 55-541

5° micro-fixture with front focalisation, staple mount for .4"

#### FRAMING MICRO-PROJECTORS



#### 55-430

Framing micro-projector, staple mount for 0.4(10mm), V-shaped blades.



#### 55-431

Framing micro-projector, staple mount for 0.63"



#### 55-432

Framing micro-projector, staple mount for 0.8"



#### 55-433

Framing micro-projector, stirrup mount, V-shaped blades.



#### 55-435

Framing micro-projector, staple mount for 0.24"

#### **MODULAR MICRO-COMPONENTS**



#### 55-100

10° micro optic head



#### 55-120

5° micro optic head



#### 55-405

0.4(10mm) micro-optic head/10° for micro-fixture body



#### 55-406

Micro-optic head/5° with double focusing device



#### 55-505

Micro-fixture body without 0.4(10mm) optic head, stirrup mount



#### 55-510

Micro-fixture body without 0.4(10mm) optic head



#### 60-311

25°/35° mini optic head assembly



#### 60-312

10° mini optic head assembly



#### 60-400

Mini fixture body for 20°/35° lens (reference 60-320), surface mount



#### 60-410

Mini fixture body for 20°/35° lens (reference 60-320), through pannel mount



#### 60-415

Mini fixture body for 20°/35° lens (reference 60-320), staple mount on 0.24" tube



#### 60-420

Mini fixture body for 20°/35° lens (reference 60-320), staple mount on Ø.4" tube

#### **MICRO-FLEXIBLES**



#### 55-404

10° micro-optic head for 06mm microflexible tube



#### 55-402

09mm micro-head without optic for 06mm micro-flexible tube



#### 55-545

10° focusable micro-fixture, staple mount for 0.4" (10mm)





#### 55-433

Framing micro-projector, stirrup mount, V-shaped blades.



#### 55-430

Framing micro-projector, staple mount for 0.4(10mm), V-shaped blades.



#### 55-505

Micro-fixture body without 0.4(10mm) optic head, stirrup mount



#### 55-510

Micro-fixture body without 0.4(10mm) optic head



#### 55-405

0.4(10mm) micro-optic head/10° for micro-fixture body



#### 55-406

Micro-optic head/5° with double focusing device



#### 65-160

Staple mount for 0,24" and 00,4" grid with 6mm rod 70mm length



#### 55-401 - 100

06mm micro-flexible tube for 01.5 and 02 fiber, 4"(10cm) long

#### 55-401 - 150

06mm micro-flexible tube for 01.5 and 02 fiber, 6"(15cm) long

#### 55-401 - 200

06mm micro-flexible tube for 01.5 and 02 fiber, 8"(20cm) long

#### 55-401

Micro-flexible tube, per meter

#### 55-420

Cut to length



#### 65-260

Staple mount for 0.24" grid and 0.24 rod/



#### 60-430-X

Mini holder without lens, adjustable, magnetic mounting plate



#### 60-310

Threaded mini holder



#### 60-330

Mini 10° adjuster for 20°/35° optic head (60-320)



#### 65-100

Adjustable coupler for  $\emptyset$ 3.4.5 optic cable to  $\emptyset$ .24" rod



#### 65-101

Through pannel threaded tube mount for 0.24" rod



#### **65-102**

Staple mount for Ø.4" grid and 0,24" rod/



#### 65-103

Surface mounting plate for Ø.24" rod



#### 65-310

Magnetic mounting plate for Ø,24" rod/



#### 65-110-25

0.24" rod, 1"

## 65-110-50

0.24" rod, 2"

#### 65-110-100

0.24" rod. 4"

#### 65-110-200

0.24" rod. 8"

#### 65-110-300

0.24" rod. 12"

#### 65-110-1000

0.24" rod. 39.5"

#### 65-110-2000

0.24" rod, 79"



#### 50-050

01,22" adustable micro-sphere, 10° optic, for .86" thick panel



#### 50-055

01,22" adustable micro-sphere, 5° optic, for .86" thick panel



#### 50-107

Adjustable mini-sphere, 18°/43° optic, 0.87″ for 03,4,5 optic cable, fixation by clamping on back flange



#### 50-108

Adjustable mini-sphere, 18°/43° optic, 0.87″ for 03,4,5 optic cable, fixation by 2 screws



#### 50-116

Adjustable mini-sphere without optic, for 03,4,5 optic cable, fixation by clamping on back flange



#### 50-117

Adjustable mini-sphere without optic, for 03,4,5 optic cable, front fixation by 2 screws



#### 57-302

Filter holder for nano-fixtures



#### 57-303

Barn-doors/filter holder for nano-fixtures



#### 57-304

Nano snoot for nano-fixture



#### 55-302

Filter holder for micro-fixture and semi-recessed adjustable mini sphere 50-116 and 50-117



#### 55-303

Barn-doors/filter holder for micro-fixture and semi-recessed adjustable mini sphere 50-116 and 50-117



#### 55-315

Asymmetric barndoors/filter holder for micro-fixture and semi-recessed adjustable mini sphere 50-116 and 50-117



#### 55-320

Micro snoot for micro-fixture and semi-recessed adjustable mini sphere 50-116 and 50-117



#### 55-325

Beveled micro snoot for micro-fixture and semi-recessed adjustable mini sphere 50-116 and 50-117



#### 60-110

Filter holder for mini optic



#### 60-115

Barn-doors/filter holder for mini optic



#### 60-120

Mini snoot for mini optic



## 60-125

Beveled snoot for mini-fixture/

#### PHOTO CREDITS

#### Photo 1 (Cover)

Museum: National Air and Space Museum Exhibition Designer: Haley Sharpe Design Exhibit Fabricator: Design and Production Lighting Designer: Abernathy Lighting Display Case Focusing: LUXAM Lighting, LLC

#### Photo 2

Museum: Australian Museum Lighting Designer: MEGS Lighting Case Fabricator: Goppion Exhibition Designer: Aaron Maestri Heritage Architect: Design 5 Photography Credit: Rosie Hastie

#### Photo 3

Museum: Bavarian National Museum Display case fabritcator: Glasbau REIER Display Case Focusing: LUXAM Lighting, LLC Photography Credit: Raffael Pollak

#### Photo 4

Museum: Goldkammer Museum Exhibit Fabricator: Barth Lighting Designer: Pfarré Lighting Design Display Case Focusing: LUXAM Lighting, LLC

#### Photo 5

University of Melbourne- Old Quad Exhibition: Multivocal Exhibition Lighting and Focus: Meas Lighting Photos by Christian Capurro

#### Photo 6

Museum: Bavarian National Museum Display case fabritcator: Glasbau REIER Display Case Focusing: LUXAM Lighting, LLC Photography Credit: Raffael Pollak

#### Photo 7

Museum: National Air and Space Museum Exhibition Designer: Haley Sharpe Design Exhibit Fabricator: Design and Production Lighting Designer: Abernathy Lighting Display Case Focusing: Luxam

#### Photo 8

Museum: Chateau de Versailles Scenography Design: Jerome Dumoux Case Fabrication: Muevo - Museum Evolution Mounting: Aïnu Lighting Focus: LUXAM Lighting, LLC Bavarian National Museum Photography Credit: Raffael Pollak

#### Photo 9

Museum: RMO LEIDEN Collection of Derek Content: Rijksmuseum voor Oudheden, Leiden Designer: Anika Ohlerich Lighting Designer: Chris Pype licht Graphic Design: Esther Devries Showcases: Glascom Film: Scheltens & Abbenes Bavarian National Museum Case Fabricator: Glasbau REIER Display Case Focusing: LUXAM Lighting, LLC Photography Credit: Mike Bink

#### Photo 10

Museum: QASR AL WATAN Case Fabricator: Meyvaert Photo Credit: Catalin Marin

#### Photo 11

Museum: QASR AL WATAN Case Fabricator: Meyvaert Photo Credit: Catalin Marin

#### Photo 12

Museum: National Museum of African American History and Culture Exhibit Designer: Ralph Appelbaum Associates Exhibit Fabricator: Design and Production Lighting Designer: Fisher Marantz Stone Display Case Focusing: Design and Production Photography: Alan Karchmer, Alex Jamison, Eric Long courtesy of NMAAHC

#### Photo 13

Musée de la Chasse et de la Nature, Paris Scenography/Museography: Scénos-Associés Display Case Light Focus: LUXAM Lighting, LLC Fondation François Sommer Painting of Dioramas: François Malingrey Photographer: Béatrice Hatala

#### Photo 14 and 15

Display case focus installation at Versailles and National Bavarian Museum

#### Photo 16

Cover: Museum: National Museum of US Army Exhibit Fabricator: Design and Production Case Fabricator: Meyvaert Lighting Designer: Available Light Exhibition Track and Lighting: LSI Display Case Lighting and Focusing: LUXAM Lighting, LLC Photography Credit: ©2020 Duncan R. Millar / Design and Production Incorporated.

Museum: Musée de l'Armée. Paris. France Photo credit: Anton Obshta

#### Photo 18

Photo 17

Tiffany case at the LUXES exhibit at the Musée des Art Décoratifs de Paris, France Photo credit: Martina O'Shea

#### REFERENCES

NORTH AMERICA Academy Museum of Motion Pictures. CA Alabama State Archives, Montgomery, AL American Museum of Natural history, NY Appomattox Court House Museum, VA Armenian Museum of America, MA Autry Museum of the West Babe Ruth Birthplace, MD Bank of Canada Museum, ON, Canada Boston Fine Art, Boston, MA Carnegie Museum of Natural History, PA Carnegie Museum of New Hampshire, NH Central Synagogue, Manhattan, NY Chicago History Museum, IL Chicago Museum of Science and Industry, Chicago, IL Cincinnati Art Museum, OH Cleveland Museum of Natural History. OH Collier County Museum, FL Cranbrook Institute MI Crystal Bridges Museum, AR Dior Exhbit, Brooklyn Museum, NY

Emory University, GA

Fine Arts Museum of San Francisco, CA First Division Museum at Cantigny, Wheaton, IL Ford's Theatre, DC

Frazier Historical Arms Museum, Louisville, KY Frick Collection, NY

George W. Bush Presidential Library, Dallas, TX Georgia State Capitol Museum, GA GIA Institute, CA

Hilllwood Estate Museum, DC Jamestown/Yorktown Foundation, VA

Jim Moran foundation, FL Knoxville Museum of Art. TN LSU Museum of Art. LA Marco Island Museum FI

Mariners Museum, VA Metropolitan Museum of Art, NY Mississippi Museum of Natural History, MI

Mississippi Museum of Natural history, Jackson, MS Mt. Vernon Education Center. VA

Museum of American Finance, NY Museum of Fine Art p Boston, MA Nantucket Whaling Museum, Nantucket, MA

National Archives, DC National Air and Space Museum, DC

National Civil War Museum, PA National Infantry Museum, GA National Museum of African American History and Culture, DC

National Museum of American Indians, NY National Museum of Natural history. DC National Museum of Natural History. DC

National Museum of American History, DC

National Museum of the American Indian, DC National Museum of United States Army, VA

National Museum of Women in the Arts, Washington, DC National Music Museum, SD National Portrait Gallery, DC National Postal Museum, DC

New York Historical Society, NY Newseum, DC Norton Museum of Art, FL

Old Conn. Statehouse. CT Peabody Essex Museum, MA Perfume Passage Foundation. Philadelphia Museum of Art. PA

Philipse Manor Hall, NY

Pitts Theology Library Emory University, Atlanta, GA

Polk County Museum, FL

Ronald Regan Presidential Library, CA Sandoway Nature Center, Delray, FL Smithsonian Libraries, DC

Sports Legends Museum – Camden Yards, Baltimore, MD

The Asia Society, NY

The Catholic Museum of America, DC The Cloisters, NY

The Henry Ford Museum, MI The Holy Land attraction, Orlando, FL

The Flight Path Museum & Learning Center LAX, CA

The Library of Congress, Washington, DC

The Mob Museum

The White House Porcelain Collection, DC UArizona Alfie Norville Gem & Mineral Museum, AR

University Conn Ballard Museum of Puppetry, CT University of Florida Harn Museum of Asian Art, Gainesville, FL

US Marine Corps Museum, VA US Mint, Philadelphia, PA

US Naval Academy - John Paul Jones crypt, Annapolis, MD

USC - Doheny Library Treasure Room, Los Angeles, CA US Golf Association Museum

Vassar College, NY

Virginia Museum of Fine Art, VA Walters Art Museum, Baltimore, MD

Walt Disney/ France Pavillion Epcot, FL

#### **SOUTH AMERICA**

Acheological Museum of Piura, Peru Museu Carlos Costa Pinto, Salvador de Bahia, Brasil Museum of Sacred Art, Belem, Brasil Museo de la moda, Santiago, Chile Museo de Bellas Artes, Santiago, Chile

#### **EUROPE**

Amsterdam University Library Archeological museum of Mykenae Army Museum, Bruxelles Ashmolean Museum .Oxford Australian Memorial Monash Villers bretonneux. France Blaschka collection, Aquarium, Liége Byzantyne Museum, Athens Carolus Borromeus, Antwerpen, Belgium Faberge and Icon exhibition.Vatican Hasselt Museum, Belgium Diamond museum, Antwerpen, Belgium Faberge Exhibition, Venaria Reale. Torino Gaasbeck castle, Belgium Historische Museum, Basel Holborn museum, Bath, UK Katoenatie museum, Antwerpen, Belgium Kina's Library British Museum, UK La Bibliothèque Nationale, Paris Landesmuseum Emden, Germany Le Musée d'Orsay, Paris Le Musée des Antiquités Nationales de Saint Germain en Lave Manching Kelt Museum, Germany

Le Musée Fragonard de Grasse

Le Palais de la Découverte. Paris

Les Archives Nationales, Paris

Maison Rouge, Paris

MAS, Antwerpen, Belgium

Mineralogy Museum, Liban

Library Braunschweg, Germany

National Bayaria Library, Munich, Germany

Middelheim Museum, Atwerppen, Belgium

**OCEANIA** 

Shindagha, Ďubai

Australia Museum "Sydnev "Australia Australian National Maritine Museum He Tohu .Wellington, New Zealand MONA, Hobart Tasmania National Gallery of Victoria, Melbourne, Australia State Library of Victoria, Melbourne, Australia

The Schrine Melbourne Australia

TMAG, Hobart, Tasmania

Musee parfum Fragonard, France

Musée de l'Armée, Invalides, France

Musée de la dentelle, Calais, France

Musée de la Toile de Jouy, France

Musée Delvaux Brussels, Belgium

Musée des Beaux Arts, Bruxelles

Musée L Louvain la Neuve, Belgium

Museum of Natural History, Madrid

National Archeological Museum of Athens

National Archeological Museum of Thessaloniki

National Bavaria Museum, Munich, Germany

Musée de la gendarmerie, Melun, France

Musée Historique de Strasbourg, France

Musee de la Chasse, France

Musée du Louvre, France

Musée M leuven, Belgium

National Museum of Iceland

National Museum of Ireland 1916

Palais Borely, Marseille, France

Palais de Tokyo Paris, France

Palais de Versailles, France

Pitt Rivers Museum, Oxford

Preston Porcelain Museum, UK

Saint Peter Babbey, Gent, Belgium

Valencia History Museum, Spain

Asian Civilization Museum, Singapore

Cartier & Women, Palace Museum, HK

Chiang Mai National Museum, Thailand

Dior Exhibit, National Museum of Qatar

Fireboat Museum, Hong Kong

Hubei history Museum, China

Indian Heritage Museum, Singapore Inner Mongolia Museum, China

Hunan Museum, China

Louvre Abu-Dhabi, UAE

National Library, Singapore

National Library, Singapore

National Museum of Singapore

QASR Al Watan - Abu Dhabi, UAE

Shenzen Regional Museum, China

The Chariots, The Terra Cotta Museum, Xian, China

Peranakan Museum, Singapore

Toy Museum, Luxembourg

Rijks egyptian colllection Leiden Holland

Royal Medieval Textile Museum, Burgos, Spain

RMO Leiden, National Museum of Antiques, Netherlands

Ceramic gallery, Reference Collection, Forbidden city, Beijing

Petit Palais, Paris, France

Royal Library Bruxelles

ASIA

Order of St John Museum, London, UK

Museum of London

Musée de l'esclavage, Pointe a pitre, Guadeloupe, France

Musée Borelli, France

Univerity of Melbourne, Old Quad, Multivocal, Australia

FIBER OPTIC SYSTEM





#### **LUXAM USA**

12201 NW 35th Street #534 Coral SpringS, FL 33065 P:+19547557354 Email: info@luxam.com

#### **LUXAM UK**

184 Park Avenue London NW10 7XL Email: info@luxam.com

#### **LUXAM EUROPE**

80 rue du Dessous des Berges 75013 Paris Phone:+33982272946 Email: france@luxam.com