PATTERNED ILLUMINATION

PRODUCT OVERVIEW

Whether in the life science field or for industrial applications, Mightex offers a select number of solutions designed with microscopy and imaging in mind. Mightex provides intuitive and efficient illumination solutions that are designed to be easily integrated into multiple setups based on microscope configurations and illumination requirements. We also offer our FilterReader spectrophotometer to test the spectrum specifications of filters and beam splitters, often integral parts of microscopic imaging.



POLYGON DMD ILLUMINATOR

Mightex's Polygon DMD illuminator integrates stateof-the-art spatial light modulators and high-power LEDs using a proprietary Etendue-preserving optical design to deliver high-intensity illumination patterns with diffraction-limited resolution. A Texas Instruments' DLP spatial light modulator is used to display a user defined image pattern. At the heart of the Polygon is a unique optical system that carefully delivers light from LED sources to the DLP panel and then through a microscope to the specimen plane. Such a systematic approach makes it possible to achieve maximum optical intensity while maintaining diffraction-limited imaging performance.

Temporal performance is key to many intended applications for Polygon. With a frame rate of up to 6,600 fps and fast-switching LEDs, Mightex Polygon

FEATURES

- Programmable multiwavelength patterned illumination
- Arbitrary shape/size of illumination pattern
- Simultaneous illumination of multiple regions of interest
- No cooling fan, no vibration
- Widerange of available LED wavelengths
- Pattern swithcing up to 6600 frames per second
- Built-in LEDs, or external light sources through a fiber/ lightguide
- Adapters for various microscopes
- USB2.0/USB3.0 interface, TTL trigger
- Diffraction-limited projection
- High-throughput Etendue-preserving design
- Intuitive software for spatial/temporal/spectral control

can deliver illumination patterns with micro-second precision. A dedicated software allows users to generate illumination patterns as well as control illumination intensity and timing. The software also supports alignment between illumination patterns and images acquired through any digital cameras on a microscope.

Mightex Polygon is designed to be easily inserted into the infinity path of a microscope. For inverted microscopes, the preferred inserting point is usually the back port of the microscope where a fluorescence attachment is commonly placed. A filter cube is required to fold the Polygon light path into the microscope. The filter cubes used for fluorescence observation serves this purpose well. For upright microscopes we provide a beam combiner cube to be inserted below the binocular/trinocular unit. The dichroic or mirror in the beam combiner directs the Polygon beam into the microscope light path.

MODELS

Polygon1000-G

DSI-K2-000 | 3mm-core liquid lightguide input, 350nm-1000nm

Polygon1000-DL

DSI-K2-L20 | SMA fiber optic input, 400nm-1000nm

Polygon1000-DI

DSI-K2-DI20, DSI-K3-DI20 | lightguide input 350nm-1000nm SMA fiber optic input, 400nm-1000nm

Polygon-UHC

DSI-K3-UHC-000 | SMA fiber optic input, 400nm-1000nm





PERFORMANCE SPECIFICATIONS ILLUMINATION PROJECTION AREAS & RESOLUTION

Polygon1000-G

Field of View	Projection Area Dimensions	Commercial Microscope (1X Objective) ^a				
		Leica	Nikon	Olympus	Zeiss	
Standard	Height mm	6.2	6.2	5.5	5.1	
	Width mm	9.9	9.9	8.9	8.1	
	Diagonal mm	11.6	11.6	10.5	9.6	
	Pixel Size μm	7.6	7.6	6.9	6.3	
Large ^c	Height mm	12.4	12.4	11	10.2	
	Width mm	19.8	19.8	17.8	16.2	
	Diagonal mm	23.2	23.2	21	19.2	
	Pixel Size µm	15.2	15.2	13.8	12.6	

^a To calculate illumination field-of-view and pixel resolution at the specimen, simply divide the above numbers by the magnification of the objective.

^c Requires large field-of-view front tube lens. Sold separately.

Polygon1000-DL

Field of View	Projection Area Dimensions	Commercial Microscope (1X Objective) ^a				
		Leica	Nikon	Olympus	Zeiss	
Standard	Diameter ^₅ mm	12.4	12.4	11	10.2	
	Pixel Size μm	15.2	15.2	13.8	12.6	

^a To calculate illumination field-of-view and pixel resolution at the specimen, simply divide the above numbers by the magnification of the objective.

 $^{\rm b}$ Polygon1000-DL has a circular illumination field-of-view.

Polygon1000-DI

Optical Input	Field of View	Projection Area Dimensions	Commercial Microscope (1X Objective) ^a				
			Leica	Nikon	Olympus	Zeiss	
Liquid Light guide	Standard	Height mm	6.2	6.2	5.5	5.1	
		Width mm	9.9	9.9	8.9	8.1	
		Diagonal mm	11.6	11.6	10.5	9.6	
		Pixel Size μm	7.6	7.6	6.9	6.3	
	Large ^c	Height mm	12.4	12.4	11	10.2	
		Width mm	19.8	19.8	17.8	16.2	
		Diagonal mm	23.2	23.2	21	19.2	
		Pixel Size μm	15.2	15.2	13.8	12.6	
Multimode fiber	Standard	Diameter ^ь mm	12.4	12.4	11	10.2	
		Pixel Size µm	15.2	15.2	13.8	12.6	

^a To calculate illumination field-of-view and pixel resolution at the specimen, simply divide the above numbers by the magnification of the objective. ^c Requires large field-of-view front tube lens. Sold separately.



Polygon-UHC

Model	Field of View	Projection Area Dimensions	Commercial Microscope (1X Objective) ^a			
			Leica	Nikon	Olympus	Zeiss
POLYGON1000-UHC	Standard	Diameter ^d mm	12.4	12.4	11	10.2
		Pixel Size µm	15.2	15.2	13.8	12.6

^a To calculate illumination field-of-view and pixel resolution at the specimen, simply divide the above numbers by the magnification of the objective.

^c Requires large field-of-view front tube lens. Sold separately.

CONTROL & TIMING				
Maximum Frame Rate fps*	up to 6,600			
Input Trigger	TTL, BNC connector			
Input Trigger Delay µs	50			
Output Trigger	TTL, BNC connector			
Output Trigger Delay	User Programmable			

* Values at 1bit depth. For grayscale features please contact Mightex for more information.

* Applicable to all models

SOFTWARE COMPATIBILITY

Mightex PolyScan4 software included free of charge

3rd Party Nikon's NIS Elements

Support Micro-Manager Open Source Microscopy Software

SYSTEM & COMMUNICATION

Operating SystemWindows XP, Vista, 7, 8, 10 and 11InterfaceUSB2.0 and USB3.0Power Supply5Vdc 3A input powerScreen Resolution1,366x768 or higher

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