MIGHTEX

Polygon

DMD PATTERN ILLUMINATORS

PATTERNED ILLUMINATION FOR OPTOGENETICS

FUNCTIONAL NEURAL CIRCUIT MAPPING AT YOUR FINGERTIPS

The Polygon is the market-leading DMD pattern illuminator, which provides precise spatio-temporal control of light with single-cell or subcellular resolution, making it the perfect illumination tool for life science research. Compatible with any upright or inverted microscope, the Polygon enables researchers to send light to anywhere on their specimen, and in any shape, size and complexity. In addition, multiple regions of interest can be illuminated simultaneously, and different wavelengths of light can be used with the Polygon for different bioscience applications. Also, the Polygon can be seamlessly integrated via TTL into a larger system with other equipment such as electrophysiology tools or cameras, and it can also be used in conjunction with Mightex's OASIS Implant system for freely behaving cellular-resolution optogenetics.

FEATURES

- Illuminate ROIs of Any Shape or Size
- Multiwavelength Illumination
- Simultaneous Multi-ROI Illumination
- Fast Pattern Switching
- Fits on Any Microscope
- External Device Syncronization
- Third-Party Camera Compatible

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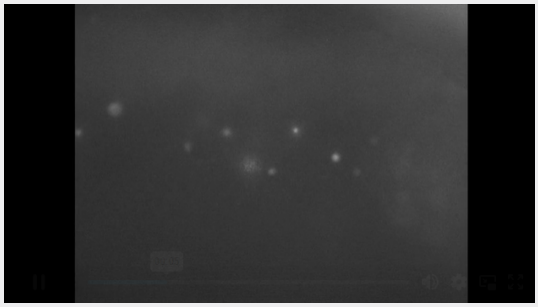
POLYGON1000

FEATURES

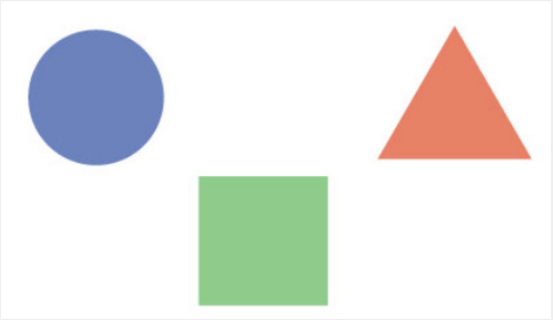
1 Simultaneous Optogenetic Stimulation of Individual Cells or Sub-Cellular Components

The Polygon enables scientists to precisely control where light will hit their sample. With subcellular resolution, the Polygon can illuminate any cellular feature in any shape or size simultaneously on their sample.



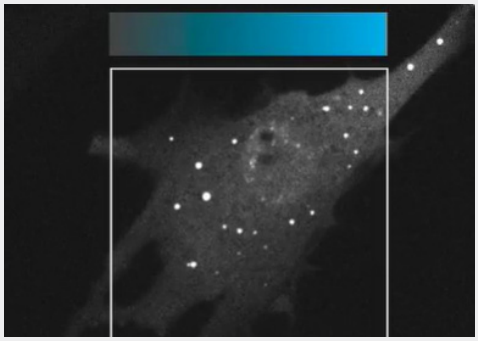
2 Stimulation of Any Optogenetics or Photostimulation Probe

The Polygon provides great flexibility when it comes down to wavelength selection. From UV to VIS/NIR range, the Polygon can project light of different colours suitable for your light-sensitive constructs.



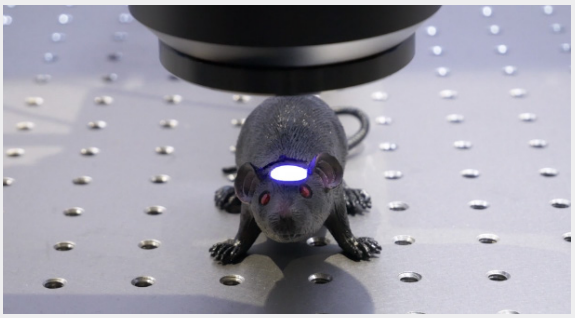
3 Spatio-Temporal and Intensity Control of Light

Control the initiation, duration, and intensity of light stimulation patterns using the Polygon. Create different waveforms to control the light intensity and duration outputted from the Polygon.



4 In Vitro and In Vivo Optogenetic Stimulation

The Polygon can be used with a wide-range light sources, including LEDs and lasers. The Polygon is also compatible with Mightex's OASIS Implant for freely-behaving imaging and optogenetics and OASIS Macro for cortex-wide imaging and optogenetics.



DMD TECHNOLOGY

The Polygon uses digital micromirror device (DMD) technology to illuminate multiple ROIs simultaneously. A DMD chip is composed of up to millions of micromirrors that can be individually turned ON/OFF to reflect light onto the sample. Thus, you can assign each mirror to control the area(s) of illumination and create any number of different-sized ROIs simultaneously. Unlike a laser scanner, all the micromirrors in a DMD are illuminated simultaneously, and as a result the Polygon allows scientists to achieve highly precise spatio-temporal control of the illumination.

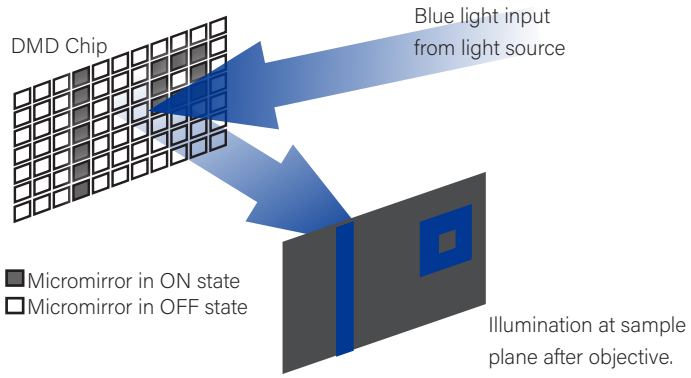


Figure 1. DMD-based patterned illumination.

VERSATILITY IN ILLUMINATION

The Polygon pattern illuminator models are now divided into two separate series:

POLYGON UHC

POLYGON UHC

P/N: DSI-K3-UHC-000

- Accepts SMA-connectorized optical fiber patch cord.
- Compatible with laser sources.
- Wavelength range: 350-1000nm.
- Ultra high contrast of 1:10,000,000

1000 SERIES

POLYGON1000-G

P/N: DSI-K3-000

- Accepts a 3mm-core liquid lightguide.
- Can be used with any light source.
- Wavelength range: 350-1000nm.
- Interchangeable front tubes available for fine resolution or large field-of-view.

* 1X Front Tube Standard. 2X Front Tube sold separately.

POLYGON1000-DL

P/N: DSI-K3-L00-2X

- Accepts SMA-connectorized optical fiber patch cord.
- Compatible with laser sources.
- Wavelength range: 350-1000nm.
- High-intensity or large field of view applications

* Focus readjustment may be needed when using two wavelengths that are greater than 350nm apart.

EASY MICROSCOPE INTEGRATION

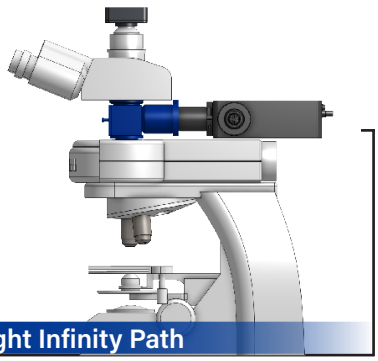
The Polygon can be coupled to most commercially available inverted and upright microscopes (Nikon, Leica, Zeiss, Olympus).

Infinity Path Configuration

This configuration projects the spatial patterns at infinity, and hence it is mounted directly into the infinity path of a microscope by using a beam-combiner (for upright microscopes) along with an adaptor that matches the exact make/ model of the microscope.

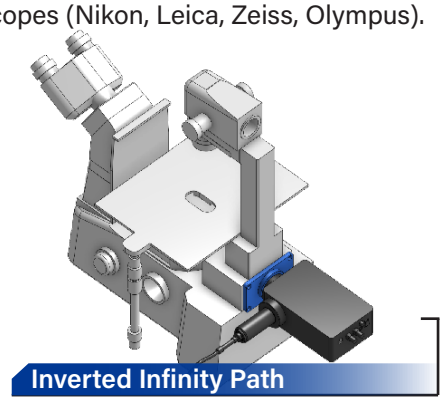
PLEASE CONTACT MIGHTEX FOR FURTHER DETAILS ON:

- **INTEGRATION OF MULTIPLE POLYGONS**
- **ALTERNATIVE MICROSCOPE INTEGRATION SOLUTIONS**
- **C-MOUNT CONFIGURATION**
- NIKON LAPP CONFIGURATION



Upright Infinity Path

The Polygon is coupled to a microscope adaptor placed between the trinoc and fluorescent turret. A beam splitter inside the adaptor directs the light from the Polygon onto the sample.



Inverted Infinity Path

The Polygon replaces the epi-illuminator at the back port of the microscope and is coupled via a ring/plate microscope adaptor.

TRUSTED AND PROVEN BY 650+ LABS WORLDWIDE

The Polygon is used by scientists all over the world for a wide range of research applications, with more than 120+ peer-reviewed, high-impact scientific publications that include experiments performed with the Polygon.

PRINCETON UNIVERSITY
HARVARD UNIVERSITY
OIST
UNIVERSITY OF CAMBRIDGE
Stanford University

JOIN MIGHTEX AND LET US HELP YOU ADVANCE OUR UNDERSTANDING OF THE BRAIN

Mightex develops cutting-edge all-optical cellular-resolution optogenetics, photostimulation, and imaging tools designed with life scientists in mind. From signaling networks inside cells to large-scale neural circuits in the brain, Mightex products enable scientists to investigate life's unanswered questions and push the boundaries of life science research.

MIGHTEX

130+PUBLICATIONS

nature neuro

Michael B. Sheets, Nathan Tague & Mary J. Dunlop *An optogenetic toolkit for light-inducible antibiotic resistance* (2023)

Molecular Cell

Moawiah M. Naffaa, Rehan R. Khan, Chay T. Kuo, Henry H. Yin *Cortical regulation of neurogenesis and cell proliferation in the ventral subventricular zone* (2023)

Developmental Cell

Jack A., Kim Y., Strom A.R., Lee D.S.W., Williams B., Schaub J.M., Kellogg E.H., Finkelstein I.J., Ferro L.S., Yildiz A., Brang-wynne C.P. *Compartmentalization of telomeres through DNA-scaffolded phase separation.* (2022)

Neuron

Anastasiades P.G., Collins D.P., Carter A.G. *Mediodorsal and Ventromedial Thalamus Engage Distinct L1 Circuits in the Prefrontal Cortex.* (2020)

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