

SPATIAL LIGHT MODULATORS



Meadowlark Optics' Spatial Light Modulator

consists of patterned arrays of independently controlled liquid crystal variable retarders. Our high-resolution spatial light modulators are electronically programmable and interface to our Model D3128 Multi-Channel Liquid Crystal Digital Interface. Meadowlark offers standard linear and hexagonal pixel geometries as well as custom pixel geometries.

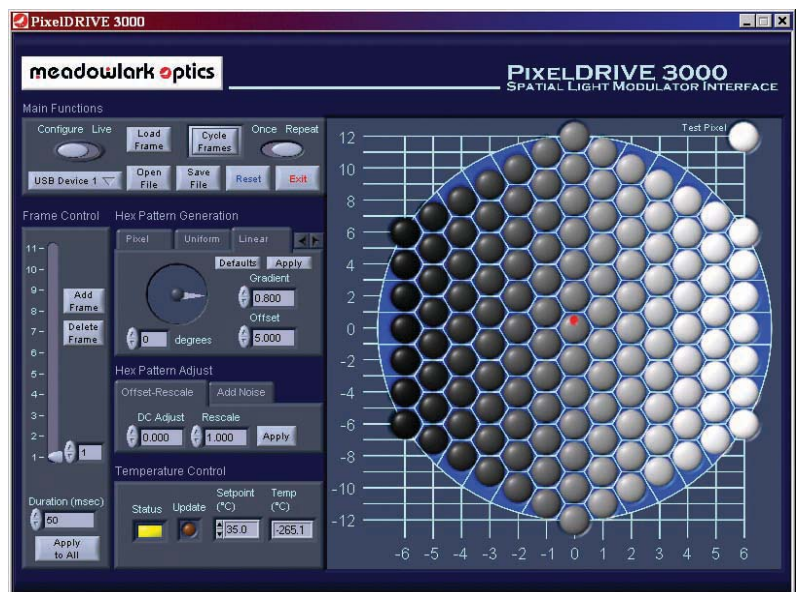
ShapeShifter Linear Array Spatial Light Modulator: The ShapeShifter Spatial Light Modulator has a linear pixel array geometry. This two-time award-winner can be used to alter the temporal profile of femtosecond light pulses via computer control. These Spatial Light Modulators find use in other applications including Hadamard spectroscopy, tunable diffraction grating, optical data storage, and wavefront compensation.

Hex Spatial Light Modulators: Our two dimensional spatial light modulators are designed for adaptive optics applications. A two-dimensional array of liquid crystal variable retarders acts as a real-time programmable phase mask for wavefront correction of a linear polarized source. Unwanted aberration effects are removed by introducing the opposite phase shift. The most common applications involve high-resolution imaging where viewing through an aberrant medium is unavoidable.

Spatial Light Modulator Applications:

Spatial Light Modulators are being used in a diverse range of new applications including:

- Wavefront correction
- Imaging polarimetry
- WDM add/drop modulators
- Optical transform masks
- Beam steering for live cell manipulation
- Optical data storage
- Arbitrary pulse shaping
- WDM gain flattening
- Multi-channel PMD correction
- Microscopy



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Specifications

Retarder Material:	Nematic liquid crystal
Substrate Material:	Optical quality synthetic fused silica
Full frame update rate:	10 msec to 50 days
Center Wavelength:	450-1800 nm (specify)
Retardance Range:	
Phase:	minimum 1 wave optical path difference
Amplitude:	minimum $\lambda/2$ wave
Retardance Uniformity:	< 2% rms variation over clear aperture
Transmitted Wavefront Distortion (at 632.8 nm):	< $\lambda/4$
Surface Quality:	40-20 scratch and dig
Beam Deviation:	< 2 arc min
Transmittance:	> 90% (without polarizers)
Reflectance (per surface):	< 0.5% at normal incidence
Optical Head Dimensions (L x W x H):	7.04 x 2.96 x 0.74 in. (179 x 75 x 19 mm)
Controller Dimensions:	9.6 x 6.3 x 1.6 in. (244 x 160 x 41 mm)
Recommended Safe Operating Limit:	500 W/cm ² CW, 300 mJ/cm ² 10 ns at 532 nm
Operating Temperature Range:	10° C to 45° C

Minimum System Requirements:

Windows® 98/ME/2000/XP • PC with Pentium class processor • 64MB RAM • 20MB hard drive space • CD ROM Drive
 • USB 1.1 or higher port • Use of LabVIEW™ Virtual Instrument Library requires LabVIEW™ version 6.1 or later full development system.

Ordering Information:

SLM Geometry	Pixel Width (µm)	Part Number
Phase Version (at least 1 wave optical path difference)		
1 x 128 A	98	SSP-128A- λ
Hex 127	1000	Hex-127P- λ
Amplitude Version (at least 1/2 wave)		
1 x 128 A	98	SSA-128A- λ
Hex 127	1000	Hex-127A-
Polarizers		
Type	Wavelength Range (nm)	Part Number
Visible	450-700	SDP-VIS
Near infrared	775-890	SDP-NIR
Near infrared	890-1800	SDP-IR

Please specify your operating wavelength λ in nanometers when ordering.



Key Benefits:

- Computer controlled
- Phase or amplitude modulation
- High transmission
- Slim housing design
- LabVIEW development option available

Meadowlark Optics

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