Why Choose Meadowlark Spatial Light Modulators?

High Voltage Backplanes = Fastest Response Times – Meadowlark Optics SLMs use custom backplanes, and proprietary drive schemes to achieve response times down to 0.5 ms (wavelength dependent). Most other liquid crystal spatial light modulators utilize display backplanes built with standard Nematic liquid crystal, limiting response time to >30 ms.

High Stability, High Speed – Our backplanes are custom designed to allow high refresh rates, and direct analog drive schemes. Refreshing the voltage at the pixel at rates far surpassing the response time of the liquid crystal ensures high temporal phase stability. Further, use of direct analog drive schemes, as opposed to digital dithering, greatly reduces optical flicker.

Low Inter-pixel Cross Talk = higher useable resolution and diffraction efficiency – Our backplanes are custom designed to offer high voltage at the pixel (5 – 10 V). Further, our SLMs are built with Meadowlark Optics proprietary liquid crystal which minimizes the required thickness of the LC layer in the SLM. By maximizing the ratio of pixel pitch to LC thickness, we are able to offer SLMs with minimal inter-pixel effects.

Analog is Better– All Meadowlark SLMs have been designed for phase modulation. Unlike many display LCoS backplanes which require a pulse width modulation (PWM) scheme, Meadowlark backplanes utilize analog addressing to maximize stability.

High Bit Depth Controllers = Broad Wavelength Range - Using the 8-bit input/12-bit out controllers enables one SLM to support a broad wavelength range without losing linear phase levels.

Software - Meadowlark Optics' SLMs are supplied with a Graphical User Interface and software development kits that support LabVIEW, Matlab, Python and C++. The software allows the user to generate images, to correct aberrations, to calibrate the global and/or regional optical response over 'n' waves of modulation, to sequence at a user defined frame rate, and to monitor the SLM temperature.

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Spatial Light Modulator

SELECTION GUIDE

1920 x 1200 Analog Spatial Light Modulator

Resolution: 1920 x 1200
Array Size: 15.36 x 9.60 mm
Pixel Pitch: 8.0 x 8.0 µm
Backplane Refresh: 1.35 kHz
Fill Factor: 95.6%
0th Order Diffraction Efficiency: 76 - 91%
0th Order Diffraction Efficiency: 92 – 98% (dielectric mirror)
Controller: HDMI

Standard Calibration Wavelengths	STANDARD SPEED Liquid Crystal Response Time			Calibrated Wavefront Distortion
	AR Coating Range 350 – 850 nm	AR Coating Range 500 – 1200 nm	AR Coating Range 850 – 1650 nm	
405 nm	≤ 13.4 ms			λ/5
532 nm	≤ 14.0 ms	≤ 17.0 ms	–	λ/7
635 nm	≤ 14.5 ms	≤ 17.5 ms	–	λ/8
785 nm	≤ 20.5 ms	≤ 22.5 ms	–	λ/10
1064 nm	–	≤ 25.0 ms	≤ 27.5 ms	λ/10
1550 nm	–	≤ 43.0 ms	≤ 45.0 ms	λ/12

Model Number Guide:

1920 x 1200 SLM with HDMI Controller

1024 x 1024 SLM with PCIe Controller

1024 x 1024 Analog Spatial Light Modulator

Resolution: 1024 x 1024
Array Size: 17.4 x 17.4 mm
Pixel Pitch: 17 x 17 µm
Backplane Refresh: 1.436 kHz
Fill Factor: 97.2%
0th Order Diffraction Efficiency: 75 - 87%
0th Order Diffraction Efficiency: 92 - 98% (dielectric mirror)
Controller: PCIe with 752 Frames of On-Board Memory

Standard Calibration Wavelengths	HIGH SPEED Liquid Crystal Response Time			Calibrated Wavefront Distortion
	AR Coating Range 488 – 850 nm	AR Coating Range 500 – 1200 nm	AR Coating Range 850 – 1650 nm	
532 nm	≤ 1.0 ms	≤ 1.4 ms	–	λ/5
635 nm	≤ 1.3 ms	≤ 1.8 ms	–	λ/6
785 nm	≤ 1.8 ms	≤ 2.4 ms	–	λ/7
1064 nm	–	≤ 3.4 ms	≤ 5.5 ms	λ/10
1550 nm	–	–	≤ 8.0 ms	λ/12

Standard Calibration Wavelengths	ULTRA HIGH SPEED Liquid Crystal Response Time			Calibrated Wavefront Distortion
	AR Coating Range 488 – 850 nm	AR Coating Range 500 – 1200 nm	AR Coating Range 850 – 1650 nm	
532 nm	≤ 0.6 ms	≤ 0.7 ms	–	λ/5
635 nm	≤ 0.7 ms	≤ 0.9 ms	–	λ/6
785 nm	≤ 0.9 ms	≤ 1.2 ms	–	λ/7
1064 nm	–	≤ 1.7 ms	≤ 2.0 ms	λ/10
1550 nm	–	–	≤ 3.9 ms	λ/12

Model Number Guide:

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