

1920 x 1200 Analog Spatial Light Modulator

Resolution: 1920 x 1200      Fill Factor: 95.6%  
Array Size: 15.36 x 9.60 mm      0<sup>th</sup> Order Diffraction Efficiency: 76 - 91% (λ dependent)  
Pixel Pitch: 8.0 x 8.0 μm      0<sup>th</sup> Order Diffraction Efficiency: 87 - 98% (dielectric mirror)  
Backplane Refresh: 1.35 kHz      Controller: HDMI

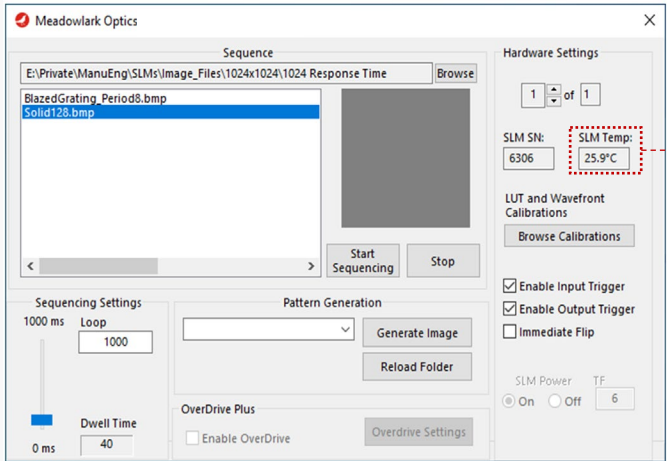
Standard Calibration Wavelengths	STANDARD SPEED Liquid Crystal Response Time			Calibrated Wavefront Distortion
	AR Coating Range 400 – 800 nm	AR Coating Range 500 – 1200 nm	AR Coating Range 850 – 1650 nm	
405 nm	≤ 14.0 ms	–	–	λ/5
532 nm	≤ 15.0 ms	≤ 19.0 ms	–	λ/7
635 nm	≤ 15.0 ms	≤ 20.0 ms	–	λ/8
785 nm	≤ 16.0 ms	≤ 23.0 ms	–	λ/10
1064 nm	–	≤ 33.0 ms	≤ 40.0 ms	λ/10
1550 nm	–	–	≤ 55.0 ms	λ/12

1024 x 1024 Analog Spatial Light Modulator

Resolution: 1024 x 1024      Fill Factor: 97.2%  
Array Size: 17.4 x 17.4 mm      0<sup>th</sup> Order Diffraction Efficiency: 75 - 87% (λ dependent)  
Pixel Pitch: 17 x 17 μm      0<sup>th</sup> Order Diffraction Efficiency: 90 - 98% (dielectric mirror)  
Backplane Refresh: 1.436 kHz      Controller: PCIe with 752 Frames of On-Board Memory

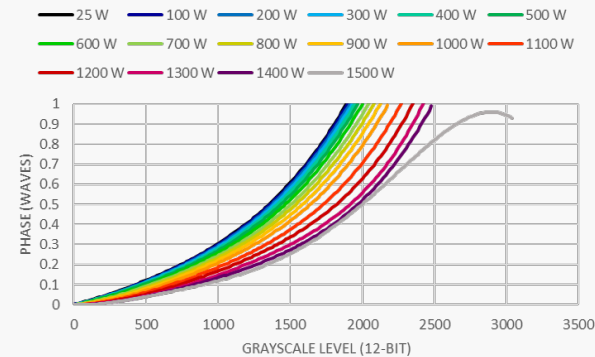
Standard Calibration Wavelengths	HIGH SPEED Liquid Crystal Response Time			Calibrated Wavefront Distortion
	AR Coating Range 488 – 850 nm	AR Coating Range 500 – 1200 nm	AR Coating Range 850 – 1650 nm	
532 nm	≤ 1.0 ms	≤ 1.4 ms	–	λ/5
635 nm	≤ 1.3 ms	≤ 1.8 ms	–	λ/6
785 nm	≤ 1.8 ms	≤ 2.4 ms	–	λ/7
1064 nm	–	≤ 3.4 ms	≤ 6.0 ms	λ/10
1550 nm	–	–	≤ 9.0 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



Temperature control is available on both the 1920 x 1200 and the 1024 x 1024 models. Cooling options for high power lasers and phase stability or heating options to increase switching speed. On chip temperature sensors allow the user to monitor the SLM temperature either through the example program or the software developer kits.

ULTRA HIGH POWER 1024 x 1024  
≥ 1 kW at 1070 nm



Maintaining full phase modulation under high power loads

Measured phase-voltage response at 1070 nm showing the SLM's ability to maintain a full wave of calibrated phase control. Tools are available so the SLM can be calibrated for well-controlled performance at every operating power level in range.

## 1536 x 1536 Analog Spatial Light Modulator

**Resolution:** 1536 x 1536

**Array Size:** 30.7 x 30.7 mm

**Pixel Pitch:** 20.0 x 20.0  $\mu\text{m}$

**Pixel Voltage:** 12 V

**Fill Factor:** 96.0%

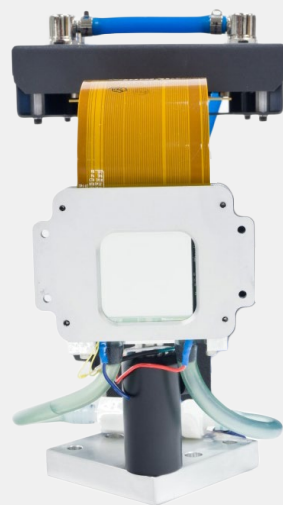
**Max Hologram Frame Rate at 1064:** >600 fps

**Response for On-Board Holograms:** 6  $\mu\text{s} \pm 3 \mu\text{s}$

**Controller:** PCIe (up to 2,045 frames of On-Board Memory)

**Remove the computer bottleneck.** The SLM drive electronics can store a library of up to 2,045 user specified phase masks on the driver board. These masks can be selected in any sequence using on-board OverdrivePlus transition calculation for high-speed switching and extremely precise timing, without being limited by computer computation and data transfer speeds.

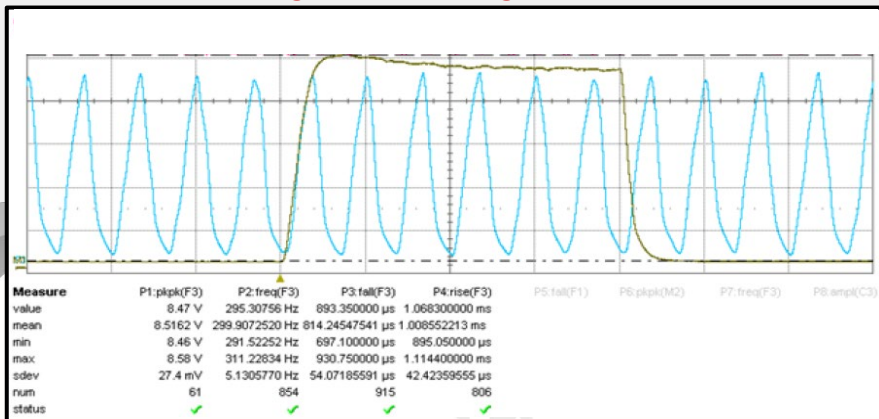
**High power handling.** The 1536 SLM combines a large 3 cm x 3 cm active array with liquid cooling to support high laser powers. Delivering more power on target for applications that need it, from multi-spot photostimulation to laser welding.



# SPATIAL LIGHT MODULATOR

== SELECTION GUIDE ==

## Fast Hologram-to-Hologram Operation



**High Resolution Holography at 600 fps!** Oscilloscope traces show diffracted spots generated by 1536 SLM at 600 Hz vs 100 Hz.

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