

Article Overview

Key vendors of spatial light modulators include Thorlabs, Meadowlark Optics, and Digital Light Innovations (DLi), offering LCOS and DMD-based devices for research and industrial applications.

Overview of SLM Types

Spatial light modulators (SLMs) are devices that modulate light spatially, controlling amplitude, phase, or polarization. The main types are:

- o Electrically Addressed SLMs (EASLMs): Convert electrical signals into spatially modulated light, commonly using Liquid Crystal on Silicon (LCOS) or Digital Micromirror Devices (DMDs). LCOS is preferred for precise phase modulation, while DMDs are used for high-speed binary amplitude modulation .
- o Optically Addressed SLMs (OASLMs): Convert incoherent light into modulated light using a photoconductor and liquid crystal modulator, though they are less common due to lower sensitivity and manufacturing challenges .

Notable Vendors

- o Thorlabs: Offers Exulus(R) LCOS SLMs with high-resolution reflective phase modulation, supporting applications like computer-generated holography, diffraction, and laser beam shaping. Devices feature HDMI/USB input, software GUI control, and high-power handling up to 200 W/cm .
- o Meadowlark Optics: Provides LCOS SLMs with high birefringence, low-voltage operation, and fast pixel switching. Their devices are suitable for optical processing, adaptive optics, and holography, with custom solutions available .
- o Digital Light Innovations (DLi): Specializes in DMD-based SLMs, focusing on high-speed light modulation and integration of hardware/software for advanced applications .
- o Other Suppliers: RP Photonics lists additional SLM suppliers and provides a buying guide for comparing LCOS and DMD devices, including criteria for adaptive optics, holography, optical tweezers, and pulse shaping . ThomasNet also lists U.S. and Canadian manufacturers, including Amperite Co., which produces custom light modulators for automotive and industrial applications .

Applications

SLMs are widely used in:

- o Laser beam shaping for flat-top or complex intensity profiles
- o Adaptive optics in microscopy, retinal imaging, and free-space optical communications

- o Holography and 3D displays for computer-generated holograms
- o Optical tweezers for particle manipulation
- o Pulse shaping for ultrafast laser control

Selection Considerations

When choosing a vendor or SLM model, consider:

- o Modulation type: Phase vs. amplitude
 - o Resolution and pixel count
 - o Wavelength range and power handling
 - o Speed and refresh rate
 - o Software and interface support
 - o Customizability for specific applications
- These factors help ensure the selected SLM meets the technical requirements of your optical system or research project.

Delivering the highest quality optics for over 40 years: polarizers, waveplates, liquid crystal devices, spatial

Industrial, biomedical, and display technologies are spurring spatial light modulators into an era of speed, durability, and adaptability.

The Spatial Light Modulator (SLM) offers high-resolution phase modulation, first-class stability and versatile

Spatial Light Modulators Spatial Light Modulators that use both translucent and reflective liquid crystal micro-display technology to

Spatial light modulator (SLM) is a general term describing devices that are used to modulate amplitude, phase, or polarization of light

Spatial Light Modulators (SLM) are used to modulate the amplitude, phase or polarization of light as a function of time. Find and filter

HOLOEYE's Spatial Light Modulator systems are based on translucent (LCD) or reflective (LCOS) liquid

The Spatial Light Modulator from Meadowlark Optics offers an ideal combination of high-resolution phase

Was ist ein Spatial Light Modulator? Ein Spatial Light Modulator (SLM) ist ein optisches Bauteil, das die

unequal distribution of

We develop custom spatial light modulators with segmented micromirror arrays and a high pixel

Digital spatial light modulators (SLMs) provide fine-grained control of light, allowing the creation of two-dimensional light patterns with

Learn about Spatial Light Modulators (SLMs), including optically addressed and electrically addressed types, their drawbacks, and a

Our liquid crystal on silicon (LCoS) spatial light modulators boast exceptional speed, efficiency, and high

As a product carrier for digital optical technology applications, spatial light modulators can change the amplitude, polarization state or

Spatial light modulators (SLMs) form the heart of several current and future optical technologies. These include but

Spatial light modulators (SLMs) are devices used to modulate the phase, amplitude, or polarization of light spatially across a two

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