LC-R 2500

>> Spatial Light Modulators

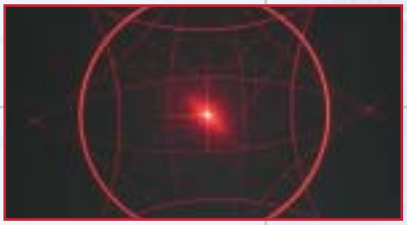



Spatial Light Modulators

HOLOEYES Spatial Light Modulator (SLM) systems are based on liquid crystal micro-displays. These devices can modulate light spatially in amplitude and phase, so they act as a dynamic optical element. The optical function or information to be displayed can be taken directly from the optic design or an image source and can be transferred by a computer interface. Implementation is very easy due to the smart system architecture and by an easy addressing using VGA or DVI signals directly from a computer graphics card.

LC-R 2500

The LC-R 2500 is an easy-to-use spatial light modulator system based on a reflective LCoS micro-display designed for prototyping in industrial development and research. It can be used to modulate light spatially in amplitude and phase, where the modulation function can be electrically addressed by a computer using a MS Windows software. The LC-R 2500 supports DVI-signals with a resolution of 1024 x 768 pixels. High efficiency due to the reflective LCoS display and a phase only modulation guarantee excellent optical performance. Flex extensions and a special display mount makes integration into optical systems easy.



The highest potential of SLMs is the use as a dynamic phase modulating device, which acts as an addressable diffractive element. Besides display applications particular laser applications, such as diffractive optics, Bio-photonics and medical laser applications to material processing, where strong laser pulses can be shaped by applied phase modulation are the main applications and challenges for this SLMs. Even though the realization of a zoom lens without moving parts is one of the goals for a SLM implementation.

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Applications

- Display Applications
- Beam Splitting
- Laser Beam Shaping
- Coherent Wavefront Modulation
- Phase Shifting
- Optical Tweezers
- Digital Holography
- Laser Pulse Modulation

The LC-R 2500 can be plugged directly to a computer graphics card by the DVI interface. Live addressing with the frame rate of the graphic card and the function as a MS Windows desktop is one reason why this spatial light modulator is so comfortable to use. The device is controlled by a HOLOEYE driver software, which is delivered with the kit, that runs on all Windows platforms. This software gives the opportunity of controlling all relevant image parameters and provides a very easy gamma control to configure the modulator for different applications. Furthermore a tailored SLM application software allows the simple generation of diverse dynamic optical functions like gratings, lenses, axicons and apertures as well as the calculation of diffractive optical elements (DOE) from user defined pictures.The good phase modulation properties, the high resolution, good fill factor caused by the reflective architecture of the display and the high light efficiency makes the system suitable as a dynamic diffractive element. To guarantee the best performance, individual optical characterization measurements (e.g. phase modulation) for each device are performed by HOLOEYE in advance.

Main Features:

LCoS Micro-Display (Reflective)
XGA Resolution (1024 x 768 Pixels)
72 Hz Image Frame Rate
Full Developers Kit (easy to run using a personal computer)
Microsoft Windows Driver Software (Windows 9x, NT 4.0)
Application Software

Display Features:

Pixels: 1024 x 768
Pixel Pitch: 19 µm
Fill Factor: 93%
Panel Size: 19,6 x 14,6 mm
Addressing: 8 Bit
Signal Format: DVI - XGA Resolution

Special Optical Features:

Amplitude or Phase Modulation
2 π Phase Shift between 400 and 700 nm
Intensity Ratio of 1000:1 @ 532 nm

Software Features:

Driver: Brightness / Contrast / Geometry / Gamma Control
Application: Basic DOE computations; Generation of optical functions (Circular Aperture, Fresnel Zone Lens, Axicon, Single and Double Slit ...); Gratings (incl. Blazed and Sinusoidal)

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