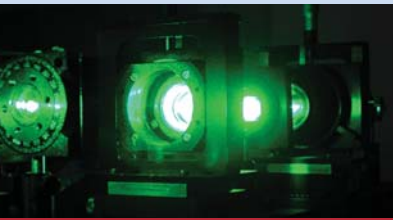


# LC 2002

## >> Spatial Light Modulators



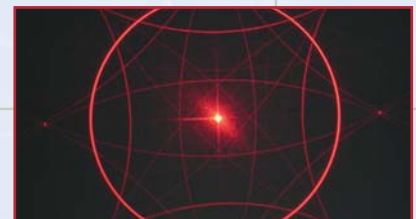
### Spatial Light Modulators

HOLOEYES Spatial Light Modulator (SLM) systems are based on liquid crystal microdisplays. 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 2002

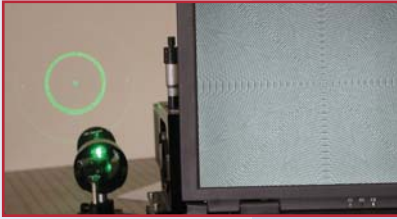
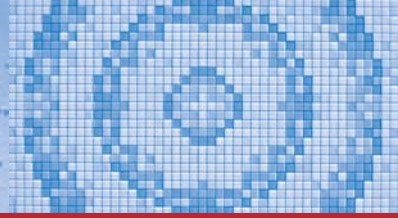
The LC 2002 is an easy-to-use spatial light modulator system based on an translucent LC microdisplay designed for prototyping in industrial development and research. It can be used to modulate light spatially, where the modulation function can be electrically addressed by a computer using a MS Windows software. Also strong laser pulses can be shaped by applied phase functions. The LC 2002 supports several display formats with a max. resolution of 832 x 624 pixels. High transmission efficiency and optimal contrast properties guarantee excellent optical quality. Minimized dimensions of the device enable easy integration into optical systems.



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 beam splitting and beam shaping, diffractive optics, digital holography and biological laser applications are the main applications and challenges for 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 spatial light modulator LC 2002 can be plugged directly to the VGA graphic card of your PC or notebook and behaves like an external monitor. 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 driven by a HOLOEYE driver software that runs on all MS Windows platforms. This convenient software for controlling all relevant parameters (e.g. contrast, image geometry) is delivered with the kit. Besides that, a simple programming interface allows the frequently required flexibility for incorporating the device in industrial systems. 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 images. The complete kit contains the modulator, a video splitter and all relevant cables for monitoring the addressed image data. Due to its small size and the transmittive display, the LC 2002 can easily be applied into optical systems by using the mounting ring which is also supplied with the kit. To guarantee the best performance, individual configuration measurements for each device are performed by HOLOEYE in advance.

### Main Features:

Liquid Crystal Microdisplay (Transmission)  
 SVGA Resolution (800 x 600 Pixels)  
 60 Hz Image Frame Rate  
 Full Developers Kit (easy to run using a standard PC)  
 Microsoft Windows Driver Software  
 Application Software



### Display Features:

Pixels: 800 x 600  
 Pixel Pitch: 32  $\mu$ m  
 Fill Factor: 55%  
 Panel Size: 21 x 26 mm  
 Addressing: 8 Bit (256 Pixel Values)  
 Signal Format: VGA, SVGA



### Special Optical Features:

Amplitude or Phase Modulation  
 $2\pi$  Phase Shift @ 532 nm  
 Intensity Ratio of 1000:1 @ 633 nm Coherent Light Source



### 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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