SLM
Spatial Light Modulators
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HOLOEYE’s Spatial Light Modulator (SLM) systems are based on translucent or reflective liquid crystal microdisplays. These devices can modulate light spatially in amplitude or 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 software or an image source and can be transferred by a computer interface.

Implementation is accomplished using the HDMI port of a standard PC graphics card. The SLM can be used just like an external plug & play monitor.

SLM Software Features
All HOLOEYE Spatial Light Modulators can be controlled by a Configuration Manager (Windows). This software gives the opportunity to control all relevant image parameters and provides an easy gamma control to configure the device for different applications and wavelengths.

Additionally an SLM Pattern Generator Software is delivered with the SLM. Key features are:
- computation of computer generated holograms (CGH) from user defined images
- generation of SLM signals representing basic optical functions such as lenses, gratings, axicon and vortex functions
- superposition of CGH’s with basic optical functions to combine functionalities

For easy display of images and image sequences on the Spatial Light Modulator an SLM Slideshow Player software is also delivered with the kit.

Besides that an SLM Display Software Development Kit (SDK) is available which provides APIs (Application Programming Interface) for National Instruments™ LabVIEW, MathWorks® MATLAB®, Octave and Python™ environments.
PLUTO-2 - High Reflectivity Versions

Some PLUTO-2 SLM display versions are equipped with a dielectric mirror coating to increase the reflectivity. Due to the increased reflectivity less absorption occurs and these display versions can be used with higher incident laser power compared to the standard versions.

LETO - Phase Only Spatial Light Modulator Series

The LETO phase modulator is based on reflective LCOS microdisplays with 1920 x 1080 pixel resolution. With a pixel pitch of only 6.4 μm and small interpixel gaps of 0.2 μm the LETO SLM provides a high fill factor of 93% and thereby high light efficiency.

The LETO is also prepared to work in color-field-sequential (CFS) mode. For operation with color-switchable LASER the LED connector can be used to synchronize the light source with the device.

The LETO series covers a version for the visible (420 - 650 nm), the near IR (650-1100 nm) and a version for the area of 1400-1700 nm.

GAEA-2 Phase Only Spatial Light Modulator Series

The GAEA-2 phase modulators are based on reflective LCOS microdisplays with 4160 x 2464 pixel resolution and 3.74 μm pixel pitch. The phase displays can be addressed at 3840x2160 pixel or 4000x2464 pixel resolution at 60 Hz. The full physical resolution of 4160 x 2464 pixel can be used at 58 Hz frame rate.

The GAEA series covers a version for the visible (420 - 650 nm), the near IR (650-1100 nm) and a version for Color Sequential (CFS) operation in the visible.

LC 2012 Translucent Spatial Light Modulator

The LC 2012 is a basic Spatial Light Modulator system based on a translucent liquid crystal microdisplay with a resolution of 1024 x 768 pixel (XGA). The device can be used for phase or amplitude modulation in the visible range (however, phase shift may be limited, e.g. ~2 \( \pi \) at 450 nm, ~ 1.8 \( \pi \) at 532 nm). The LC 2012 is addressed by a standard HDMI interface.