

### Optically Addressed Spatial Light Modulator - NIR

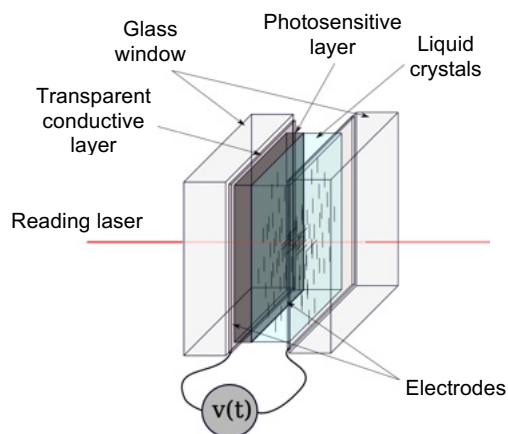
#### FEATURES

Liquid Crystal *Optically Addressed Spatial Light Modulator* with a continuous photosensitive substrate at the place of pixels.

- Photosensitive substrate in the NIR
- Spatial resolution 80 $\mu$ m
- Transmission and reflection mode
- Phase or amplitude modulation
- Response time 15ms
- Clear aperture 20mm

#### DESCRIPTION

The OASLM-NIR, also called a Light-Valve (LV), is a spatial light modulator made with a photoconductive layer of semi-insulating GaAs instead of pixels.



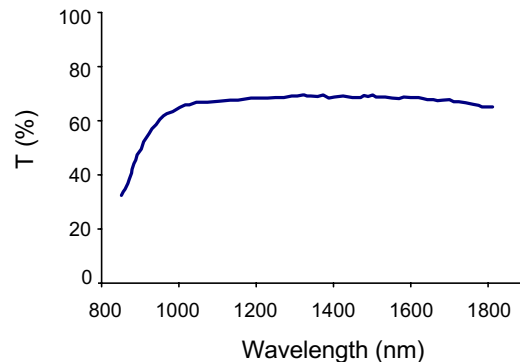
The addressing is optically made by shining the GaAs side with light in the NIR region. Optimal sensitivity is in the range 800 - 2000nm.

The OASLM-NIR is mounted in a compact aluminum housing, with an SMA connector for electrical driving.

The optical addressing can be performed with any external light in the wavelength range of 800 - 2000nm.

The refractive index of the device is directly related to the intensity profile of the addressing light.

Spectral transmission is shown from 850 to 1850 nm; light is linearly polarized along the LC director.



The device can modulate the reading light in phase or intensity (if placed in between crossed polarizers).

The OASLM-NIR also provides a Kerr-like optical response with a tunable nonlinear coefficient.

#### APPLICATIONS

- Wavelength conversion
- Adaptive Holography and Interferometry
- Nonlinear Optics
- Optical wave-mixing
- Laser beam shaping
- SWIR and LWIR imaging

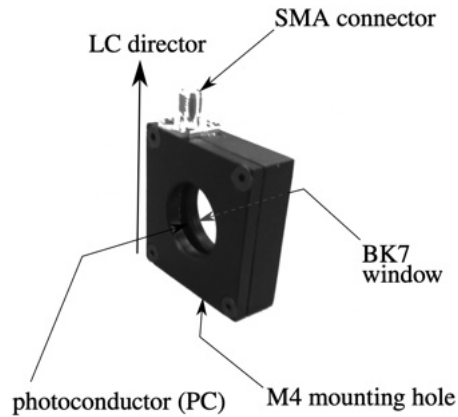
#### Examples

- Wavelength conversion
- Opto-acoustic sensing
- Beam cleanup
- Vibrometry



## Optically Addressed Spatial Light Modulator - NIR

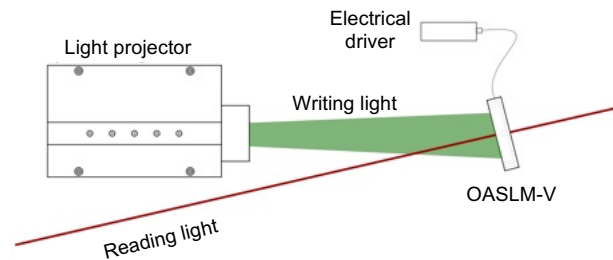
### VIEWS



### DEVELOPMENT KIT

A development kit includes the OASLM-NIR, its electrical driver and its specifically designed light projector.

Software for controlling the driver and for generating the optical masks are provided with the kit.



### CHARACTERISTICS

| Item  | OASLM - NIR                |
|---|----------------------------|
| Operating mode  | Transmission               |
| Power consumption (V=20 Vrms, f=1kHz)                             | <80 mW                     |
| AR coating  | NIR (or custom wavelength) |
| Optical transmission ( $\lambda=1030\text{nm}$ )                  | >0.65                      |
| Transverse spatial resolution                                     | 80 $\mu\text{m}$           |
| Clear aperture  | 20 mm                      |
| LC refractive index ( $\lambda=632\text{nm}$ )                    | 1.74 – 1.52 (T=20 °C)      |
| LC thickness  | 9 $\pm$ 0.05 $\mu\text{m}$ |
| Photoconductive layer refractive index ( $\lambda=632\text{nm}$ ) | 3.86                       |
| Weight  | 70 gr                      |
| Dimensions  | 40 mm x 40 mm x 20 mm      |

### RECOMMENDED OPERATING CONDITIONS\*

|                                  | Minimum | Typical    | Maximum | Units              |
|----------------------------------|---------|------------|---------|--------------------|
| Supply AC** voltage              | 7       | 20         | 28      | Vrms               |
| Driving voltage frequency        | 30      | 1k         | 10k     | Hz                 |
| Driving voltage waveform         |         | Sinusoidal |         |                    |
| Writing light optical wavelength | 800     |            | 2000    | nm                 |
| Writing light intensity          | 0.2     |            | 3.5     | mW/cm <sup>2</sup> |
| Working temperature              | 4       |            | 80      | °C                 |

\*\* Optimized response of the device is obtained for an applied AC Voltage with no DC component.  
Electrostatic or DC Voltage applied for several hours could damage permanently the device.