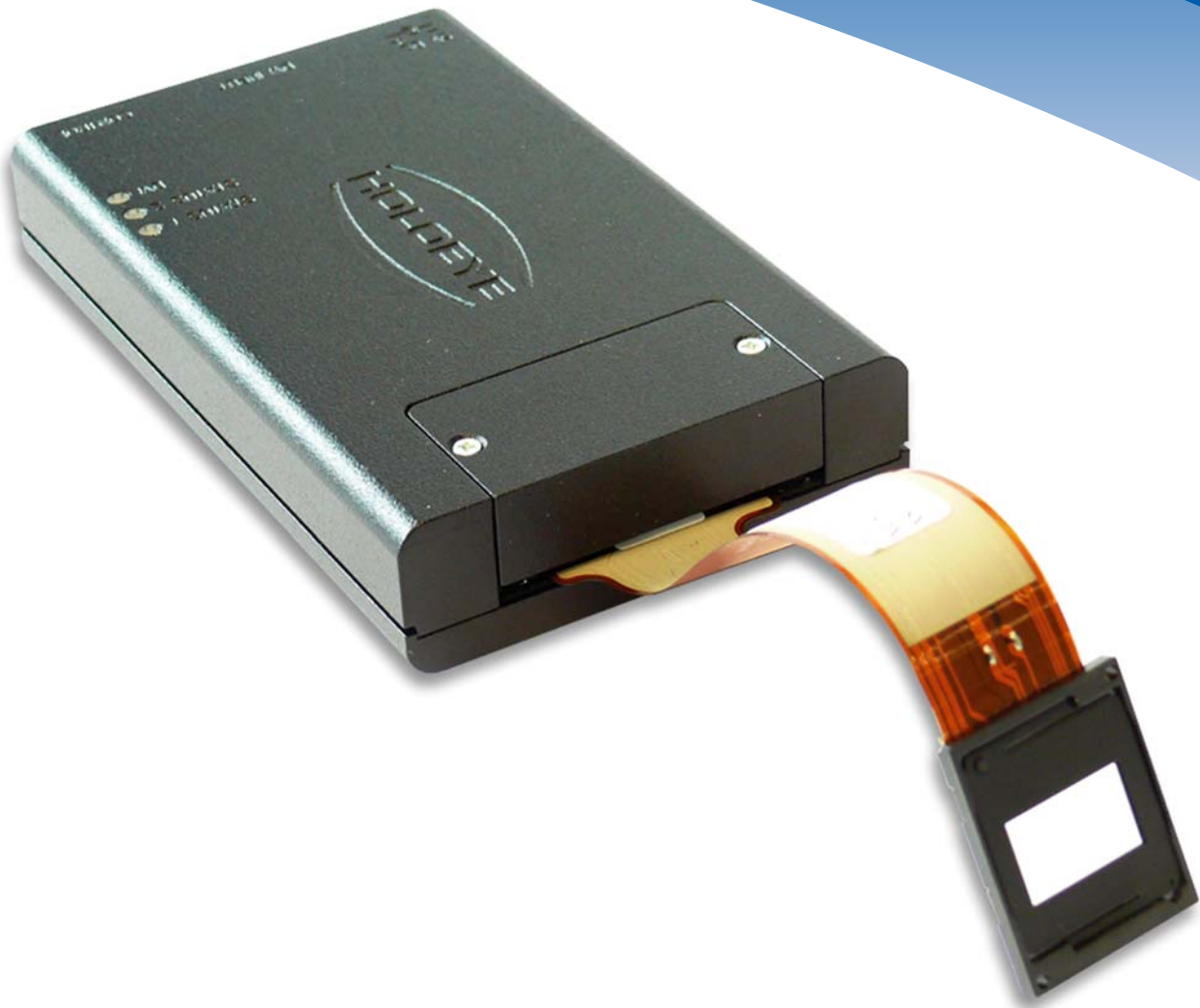


PLUTO

Phase Only Spatial Light Modulators



Pioneers in Photonic Technology

PLUTO - Phase Only Spatial Light Modulators

The PLUTO phase modulator models are based on reflective LCOS microdisplays with 1920 x 1080 pixel resolution. The PLUTO devices are packaged in a compact housing to ensure an easy integration into optical setups and applications. The PLUTO phase modulator series includes 4 versions, optimized for the visible, the near infrared around 1064 nm, a version optimized for typical telecommunication wavelengths around 1550 nm and one version for a broad wavelength band centered at 850nm.

Display Type	Reflective LCoS
Resolution	1920 x 1080 Pixel
Pixel Pitch	8.0 μm
Fill Factor	87 %
Addressing	8 Bit
Frame Rate	60 Hz
Signal Format	DVI - HDTV Res.

PLUTO - Optimized for Different Wavelength Bands

HOLOEYE provides 4 versions of the PLUTO modulator:

- ⊗ PLUTO-VIS: This version is optimized for the visible because of a broadband AR (anti reflection) coating for this spectral range.
- ⊗ PLUTO-NIR: This version is optimized for 1064 nm because of an AR coating for 1064 nm and adopted thickness of the LC layer.
- ⊗ PLUTO-NIR-2: This version is usable for a broad wavelength band around 850 nm and in the lower visible.
- ⊗ PLUTO-TELCO: This version is optimized for telecommunication wavelength band around 1550 nm.

New Software Features

The PLUTO Spatial Light Modulator kits are now delivered



with an extended software package. A software for real-time live hologram calculation which is processed directly on an NVIDIA™ graphics card GPU is now

included. This is meant to be a helpful tool for optical tweezer or holographic projection applications. A LabView SubVI for easy addressing of optical functions was also added which can be implemented in a user defined LabView program for e.g. closed loop applications.

In addition some new configuration files for stabilized addressing and more accurate adaptation of the SLM for various applications were added.

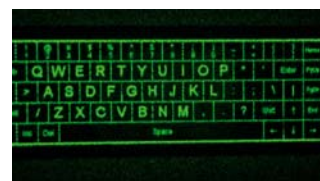
PLUTO – software package to tailor the device performance

The PLUTO devices are highly programmable and come with a driver software to control all settings and relevant image parameters. The software provides a very easy gamma control to configure the modulator for different applications and working wavelength which is a convenient tool to tailor the performance of the device to a desired result.

Besides geometry and gamma correction different addressing sequences can also be loaded to the drive board. In addition, our tailored SLM application software allows easy generation of diverse dynamic optical functions like gratings, lenses, axicons and apertures, as well as the calculation of diffractive optical elements (DOE) based on user defined images.

PLUTO-NIR-2 Broad Wavelength Operation

Even though the PLUTO-NIR-2 is optimized for a broad



wavelength range centered at 850 nm, also operation at 405 nm with exceptional high phase shift is possible. This could be interesting for e.g. maskless lithography, aberration correction and beam shaping applications.

The adaptation of the high phase shift to a linear 2π phase response at 256 phase levels can be done by straight forward gamma correction using the supplied calibration software.

λ	Average Reflectivity	Maximum Phase Shift	Addressable Phase Levels
405nm	59 %	7.7π	256
543nm	58 %	4.9π	
633nm	60 %	3.7π	
850nm	62 %	2.7π	
1064nm	63 %	2.0π	

