



## PLUTO Phase Only Spatial Light Modulator (Reflective)



### Model No: Pluto Series

#### Microdisplay Features:

<b>Display Type:</b>	<b>Reflective LCOS (Phase Only)</b>
<b>Resolution:</b>	1920 x 1080
<b>Pixel Pitch:</b>	8.0 $\mu$ m
<b>Fill Factor:</b>	87 %
<b>Active Area</b>	15.36 x 8.64 mm (0.7" Diagonal)
<b>Addressing</b>	8 Bit (256 Grey Levels)
<b>Signal Formats</b>	DVI – HDTV Resolution
<b>Frame Rate</b>	60 Hz

#### Special Optical Features:

- Reflective LCOS Microdisplay	- Phase Only Modulation
- $2\pi$ Phase Shift up to 1550 nm	- 8.0 $\mu$ m Small Pixel Size

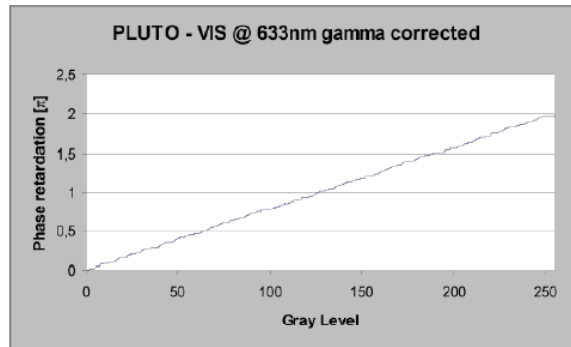
#### Optimized for Different Wavelength Bands HOLOEYE provides 6 versions of the PLUTO modulator:

- PLUTO-VIS: Optimized for the visible because of a broad-band AR(anti reflection) coating for this spectral range.
- PLUTO-NIR: Optimized for 1064nm because of an AR coating for 1064nm and adopted thickness of the LC layer.
- PLUTO-NIR- II : Usable for a broad wavelength band around 850nm and in the lower visible(400-1100nm).
- PLUTO-VIS-HR: High retardance version for the visible(high phase shift, low phase fluctuations).
- PLUTO-TELCO: Optimized for telecommunication wavelength band around 1550nm.
- PLUTO-BB-HR: High retardance version for a broad wavelength band 400-1100nm(high phase shift, low phase fluctuations).

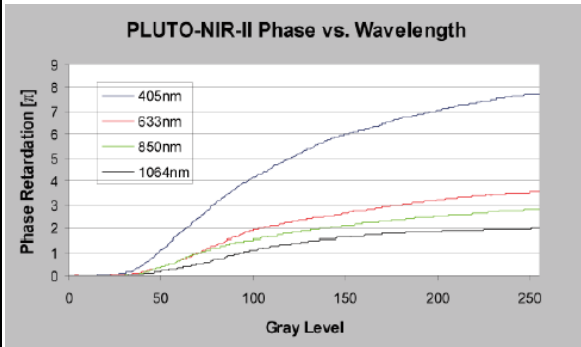


## PLUTO – Optimized for different Wavelengths Ranges

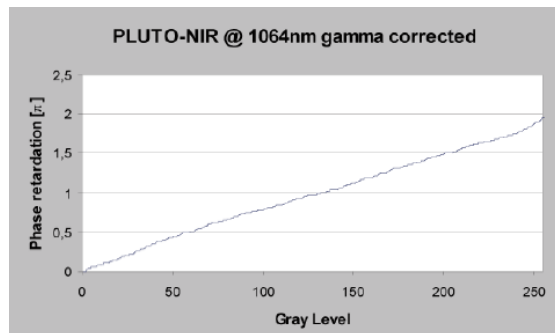
**PLUTO-VIS:** This version is optimized for the visible because of a broadband AR (anti reflection) coating for this spectral range.



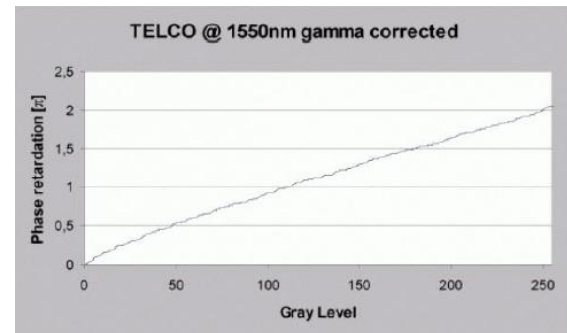
**PLUTO-BB (PLUTO-NIR-II):** This version is usable for a broad wavelength band around 850 nm and due to a broadband AR coating in the lower visible.



**PLUTO-NIR:** This version is optimized for the near infrared around 1064 nm with an AR coating for 1064 nm and a thicker LC layer.



**PLUTO-TELCO:** This version is optimized for common telecommunication wavelengths ranges around 1550 nm.



### PLUTO-VIS-HR and PLUTO-BB-HR (High Retardance SLM Display Versions):

HOLOEYE developed two new phase only panels (PLUTO-VIS-HR and PLUTO-BB-HR version) which show a considerably higher phase retardation compared to the standard panels which enables mod 4 Pi or even mod 6 Pi phase functions to be addressed. This can be beneficial for wave front functions as this enables higher slopes and can reduce transition points in the addressed function compared to mod 2 Pi encoding.

For some applications a stable phase response is required. This can be accomplished driving the High Retardance panels with adapted settings for  $2\pi$  phase retardation, however compromising the response time. The driving forces to the LC molecules in such a configuration are reduced and the phase signal typically shows a standard deviation of 0.2-0.7% (wavelength dependent).

Due to the high programmability of the drive electronics the same SLM can be adapted for different requirements.



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- PLUTO-VIS-HR: High retardance version for the visible (high phase shift, low phase fluctuations)
- PLUTO-BB-HR: High retardance version for a broad wavelength band 400-1100 nm (high phase shift, low phase fluctuations)