Close-up of 4 State Pixelated Polarizer Array

Pixelated polarizers are designed to align with CCD/CMOS camera arrays. Pixelated polarization enables real-time 3D imaging without camera image overlay. Traditional 3D imaging requires two images be taken with different polarizations and two cameras precisely aligned to each other. The resulting image data must then be carefully overlaid and aligned which requires added time, equipment, space, and precision. Pixelated polarizers enable real-time, clear imaging when speed and resolution is critical. Contact Moxtek for alignment options.

Applications

- Polarimetry and 3D Cameras
- Biometric facial recognition
- Biological Analysis
  Cell differentiation
- Polarization Microscopy
- Polarized Fiber-optic Probes
- Remote Sensing
- Target discrimination
- Interferometry
- Pollution Detection

Features	Benefits
Nanowire® Technology	Brightness and contrast uniformity
	±20˚ AOI without depolarization
	Wavelength and AOI independent
	Visible and IR wavelengths
	Broadband
Pixelation	User defined geometries
	Low cross-talk
	Accurate registration
	Allows for single camera systems
Inorganic	High heat resistance

Standard Product Options

Product Name	Description
PIX058C	5.8µm pixels
PIX065C	6.5µm pixels
PIX074C	7.4µm pixels
PIX080C	8.0µm pixels
PIX090C	9.0µm pixels

Standard products come with visible AR Coating. For non_AR coated requirement, please contact us for more information.

Other customized pixel sizes are available. Please contact us for more information.

4 state polarizers are standard. 2 state polarizers also available. For other options, please contact us for more information.

See OPT-DATA-1011 for size and mounting options

General Specifications

|	Visible Options	IR Options
Wavelength Range:	400-700nm (400-2500nm upon request)	3-5µm, 8-12µm
Substrate Type:	Display Grade Glass	Silicon
Thickness:	0.7 ± 0.07mm	0.675 ± 0.095mm
Index of Refraction:	435.8nm: 1.5198 643.8nm: 1.5078	10.33nm: 3.421 4.132nm: 3.427
Thermal Expansion:	$31.7 \times 10^{-7}/°C$ (0-300˚C)	$2.6 \times 10^{-6}/°C$
AOI (Angle of Incidence):	0˚± 20˚	0˚± 20˚
AR Coating:	Optional and depends on operation wavelength	Optional and depends on operation wavelength
Maximum Temperature:	200˚C > 5,000 hours	200˚C > 5,000 hours
Transmission Axis (TA):	Referenced to long side	Referenced to long side
TA Tolerance:	± 1˚	± 1˚
Dimensional Tolerance:	± 0.2mm	± 0.4mm
Edge Exclusion:	2mm	2mm
RoHS:	Compliant	Compliant
Transmission:	>80% @ 633nm at pixel center	Contact us for information
Contrast Ratio:	>200:1 @ 633nm at pixel center	Contact us for information

MOXTEK®

Standard Dimensional Specifications

Pixel Pitch (X, Y): 5.8, 6.5, 7.4, 8.0, 9.0μm standard (custom pitch sizes available)

Feature Dimensions(x, y): Pixel aperture dimensions (typical pitch: -1μm)

Feature Spacing (S): ≥1μm

Max Number of Polarization Axes: 4 angle (α, β, γ, and δ) line scan row arrangement available also
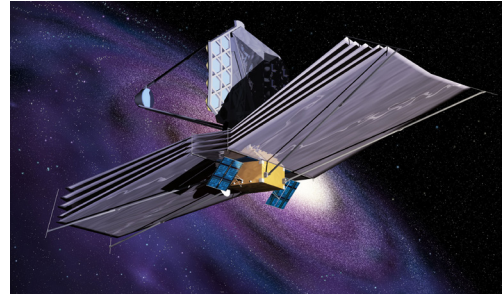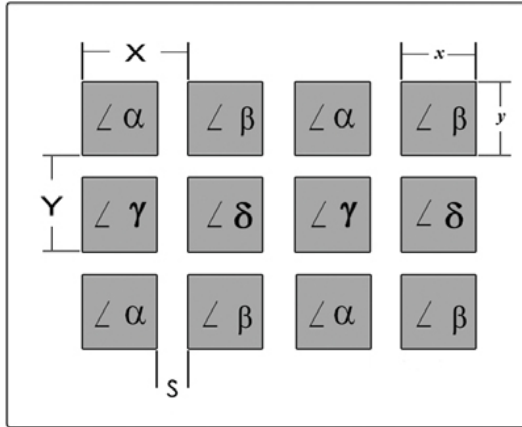
Courtesy ESA. To meet the extreme polishing and surface requirements of the James Webb Telescope, a new interferometer was developed with advanced, state-of–the-art defining capabilities using Moxtek's pixelated polarizer technology.

Application Example of Dynamic Quantitative Phase Imaging

The pixelated phase mask sensor enables a number of different types of images to be obtained simultaneously as illustrated in images of a protozoa in the figure below.
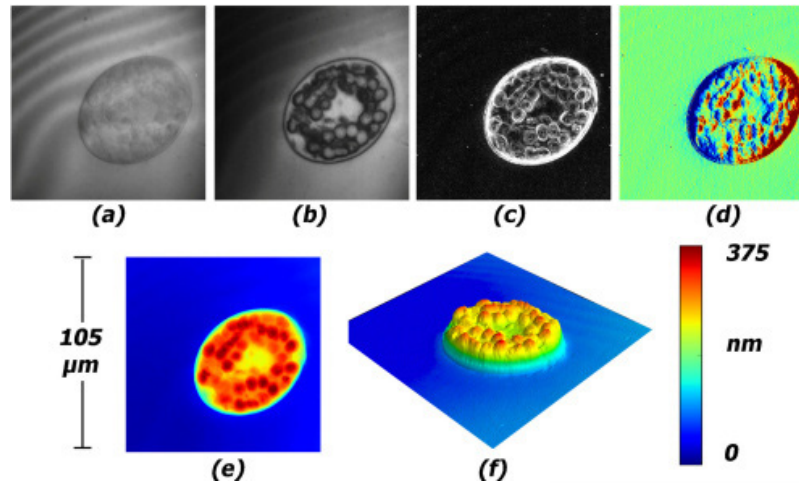
Images of a protozoa determined from pixelated phase data. (a) Brightfield (irradiance/intensity). (b) Phase contrast (interference – a single interferogram). (c) Phase gradient magnitudes (simulated dark field). (d) Simulated DIC (x gradient). (e) Pseudo-colored optical thickness (from phase). (f) 3D optical thickness (from phase).

Dynamic quantitative phase imaging for biological objects using a pixelated phase mask, Biomedical Optics Express, Vol. 3, Issue 11, pp. 2866-2880 (2012)

For warranty and ordering information, please visit www.moxtek.com.

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