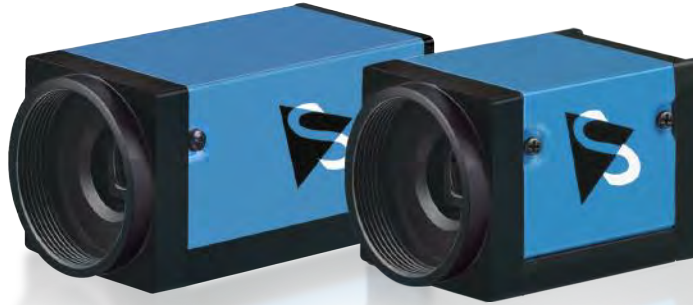


Polarization Cameras

featuring IMX250MZR / IMX250MYR Sensors



GigE VISION USB VISION Polarsens

USB 3.0 Polarization Cameras

Dimensions: 29 x 29 x 43 mm Mass: 65g

| Model | Resolution | Frame Rate | Pixel Size | Sensor | Format | Shutter | Chroma |
|-------------|------------|------------|--------------------|----------------|----------------------|---------|--------|
| DZK 33UX250 | 5.1 MP | 75 fps | 3.45 μm | Sony IMX250MZR | $\frac{2}{3}$ " CMOS | global | mono |
| DYK 33UX250 | 5.1 MP | 75 fps | 3.45 μm | Sony IMX250MYR | $\frac{2}{3}$ " CMOS | global | color |

GigE Polarization Cameras

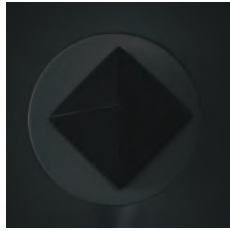
Dimensions: 29 x 29 x 57 mm Mass: 65g

| Model | Resolution | Frame Rate | Pixel Size | Sensor | Format | Shutter | Chroma |
|-------------|------------|------------|--------------------|----------------|----------------------|---------|--------|
| DZK 33GX250 | 5.1 MP | 24 fps | 3.45 μm | Sony IMX250MZR | $\frac{2}{3}$ " CMOS | global | mono |
| DYK 33GX250 | 5.1 MP | 24 fps | 3.45 μm | Sony IMX250MYR | $\frac{2}{3}$ " CMOS | global | color |

Sony's Polarsens™ 5.1 MP global-shutter CMOS image sensors (IMX250MZR / IMX250MYR) capture visual data which cannot be obtained using other standard monochrome and color sensors. The sensor's Polarsens technology uses four-directional (0°, 45°, 90°, 135°) nanowire micro-polarizers placed in front of each 2x2 pixel array (calculation unit) to deliver multi-directional polarized images.

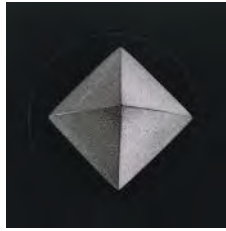
Many materials, such as plastics, glass, metals and liquids display intrinsic polarization properties. The sensors' polarization filters make use of this to visualize material stress and surface scratches as well as to reduce unwanted glare, improve edge detection or to enhance contrast in low-contrast materials. The supplied IC Measure software supports various methods of processing the 2x2 pixel arrays.

The 5.1 MP cameras are available as color and monochrome variants with either a GigE (max. 24 fps) interface or a faster USB 3.0 interface (max. 75 fps).



Visible-light intensity image

Black pyramid displaying poor contrast overall with ambient light



Images from DZK 33UX250 camera with Polarsens sensor

Image using DoLP image data, removes shadows and adds contrast

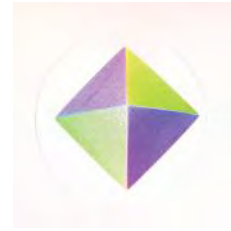


Image using AoLP image data and HSV color mapping for effective segmentation

Glare Reduction



Standard visible-light intensity image with glare on windshield obstructing view inside.



Image from DZK 33UX250: DoLP image data to reduce glare, making inside-view of cabin possible.

Presence Detection



Standard visible-light intensity image of pills in blister pack. Glare and low contrast make presence detection difficult.

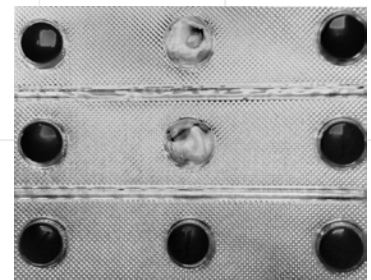


Image from DZK 33UX250 showing reduced glare and added contrast, enabling more precise presence detection.

Visualization of Residual Stress



Standard visible-light intensity image of plastic cutlery displaying almost no useful visual data.



Image using AoLP data from DZK 33 UX250 and HSV color mapping visualizes residual stress in plastics and glass (birefringence).

