



**DECTRIS®**

*detecting the future*

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EIGERR 1M



*Maximum resolution with  
minimal dimensions*

*laboratory and industry*



# EIGER R 1M

The EIGER R 1M is the first high resolution Hybrid Photon Counting detector for the laboratory. It combines renowned single-photon sensitivity with high resolution. Featuring a mega-pixel sensor with a pixel size of only 75  $\mu\text{m}$  guarantees ultimate resolution and turns the EIGER R 1M into a versatile tool for X-ray detection in a variety of laboratory applications. Exploit the single-pixel point-spread-function to resolve large unit-cell protein crystal axes or to record high-resolution powder diffraction patterns from textured samples. Further

improve the signal-to-noise ratio of your most demanding samples by taking advantage of the continuous energy threshold and an image depth of 32 bit. Strongest Bragg spots from small molecule crystals are accurately measured thanks to count-rate capabilities of up to  $5 \cdot 10^8$  phts/s/mm<sup>2</sup>. Last but not least, this full-blown detector system was designed with an impressively compact housing to fit into the tightest laboratory environment.

## Key advantages

- Hybrid Photon Counting: Direct detection of X-rays in single-photon-counting mode
- No readout noise or dark current for best signal-to-noise ratio
- Small pixels and excellent point-spread function for highest spatial resolution
- Continuous readout with global shutter
- Frame rates up to 10 Hz with duty cycle > 99.7%
- Count rates up to  $5 \cdot 10^8$  phts/s/mm<sup>2</sup>
- Continuous threshold for fluorescence suppression
- Extremely compact housing
- Room temperature operation of all detector components
- Service-free systems with minimal maintenance

## Applications

- Macromolecular crystallography (MX)
- Single crystal diffraction (SCD)
- Powder diffraction (PD)
- Small- and wide-angle X-ray scattering (SAXS/WAXS)
- X-ray imaging
- Surface diffraction
- Diffuse scattering

## Technical specifications

	EIGER R 1M
Number of detector modules	1 × 2
Sensitive area: width × height [mm <sup>2</sup> ]	77.2 × 79.9
Pixel size [ $\mu\text{m}^2$ ]	75 × 75
Total number of pixels	1030 × 1065 = 1,096,950
Gap width, vertical [pixel]	37
Inactive area [%]	3.5
Defective pixels [%]	< 0.03
Maximum frame rate [Hz]	10
Readout time	continuous readout, 3 $\mu\text{s}$ dead time, duty cycle > 99.7 %
Point-spread function	1 pixel
Sensor thickness [ $\mu\text{m}$ ]	450
Threshold energy [keV]	2.7 - 18
Maximum count rate [phts/s/mm <sup>2</sup> ]	$5 \cdot 10^8$
Image bit depth [bit]	32
Dimensions (WHD) [mm <sup>3</sup> ]	114 × 133 × 240
Weight [kg]	3.9
Power consumption [W]	75

Specifications are subject to change without notice

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