

PILATUS100K

**High speed and excellent
performance for a broad range
of applications**



PILATUS100K

The PILATUS 100K detector system is a versatile instrument which is very easy to handle and can be used for demanding X-ray applications.

It is based on the newly developed CMOS hybrid-pixel technology and operates in single-photon-counting mode. It excels with its compact size, high frame rate and the outstanding capabilities which are common to all DECTRIS detector systems.

The PILATUS 100K detector system is air-cooled and therefore very simple in its operation and handling. It is ready to use and comes as a complete system with detector, PC with Linux OS and the data acquisition and analysis software TVX.



Complete PILATUS 100K detector system

Applications

- Material science (MS)
- X-ray diffraction (XRD)
- Surface diffraction (SD)
- Small-angle scattering (SAXS)
- Time-resolved experiments
- X-ray imaging
- Nondestructive testing

Key features

- Direct detection of X-rays in single-photon-counting mode
- Radiation-tolerant design
- High dynamic range
- Short readout time
- High frame rates
- High counting rates
- No dark current or readout noise
- Adjustable threshold to suppress fluorescence
- Excellent point-spread function
- Electronically gateable
- Shutterless operation

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Technical specifications

Number of modules	1
Sensor	Reverse-biased silicon diode array
Sensor thickness	320 μm
Pixel size	172 x 172 μm^2
Format	487 x 195 = 94,965 pixels
Area	83.8 x 33.5 mm^2
Dynamic range	20 bits (1:1,048,576)
Counting rate per pixel	$> 2 \times 10^6$ X-ray/s
Energy range	3 – 30 keV
Quantum efficiency (calculated)	3 keV: 80% 8 keV: 99% 15 keV: 55%
Energy resolution	500 eV
Adjustable threshold range	2 – 20 keV
Threshold dispersion	50 eV
Readout time	2.7 ms
Framing rate	300 Hz
Point-spread function	1 pixel
Data formats	Raw data, TIF, EDF, CBF
External trigger/gate	5V TTL, 3 different modes
Software interface	Through socket connection; clients for EPICS, SPEC and stand-alone operation are available
Cooling	Air-cooled
Power consumption	15 W
Dimensions	275 x 146 x 85 mm
Weight	4 kg