

PILATUS **6M-F/2M-F/1M-F**

**Ultimate speed  
at unchanged  
high quality**

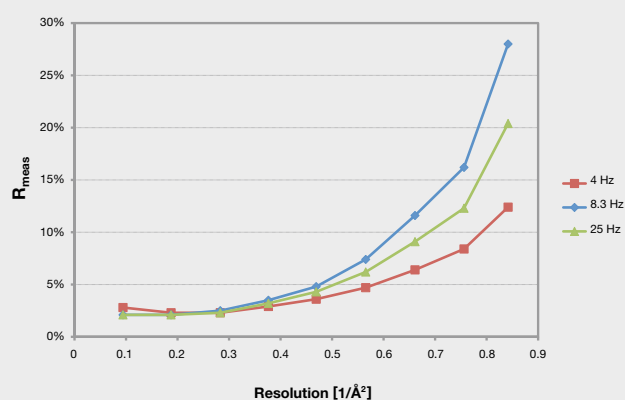
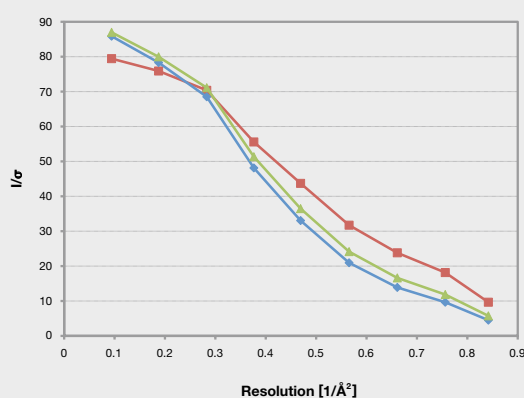


# PILATUS 6M-F/2M-F/1M-F

Based on our well-known PILATUS 6M, 2M and 1M detector systems, DECTRIS is launching the new PILATUS 6M-F, 2M-F and 1M-F. These detectors enable data acquisition at massively higher frame rates – a two-fold increase for the 6M-F, 2M-F and up to a four-fold increase for the 1M-F. All other technical specifications, including the detector operation, are identical to the standard versions of the PILATUS detectors, including the readout time per module of 2.3 ms.

The massive speed increase allows faster data collection with the same high quality as before. This makes the fast PILATUS detectors the instrument of choice for high throughput beamlines, and in particular for time-resolved experiments and phase transformation studies as well as scanning beam applications.

Existing installations of PILATUS 6M, 2M and 1M detectors can be upgraded to the fast versions. Upgrades take place on-site and include a replacement of the detector server and changes to the detector electronics.



**Speed comparison using lysozyme crystals and a PILATUS 6M-F. 180-degree datasets were collected at 4 Hz, 8.3 Hz and 25 Hz framing rate at constant angular speed. Datasets are of high quality at all framing rates (data courtesy of Dr. V. Olieric, PX beamline X06SA, PSI, Villigen, Switzerland).**

## Applications

- Raster-scanning crystal characterization [1]
- Time-resolved studies
- Macromolecular crystallography
- Small molecule crystallography
- Small angle X-ray scattering and scanning SAXS
- Phase transformation studies
- Diffuse scattering experiments
- Coherent diffractive and ptychographic imaging

## Advantages

- Massive framing speed increase
- Otherwise identical technical specifications and detector operation
- Upgrade possibility for existing detector systems

## Key features of PILATUS detectors

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

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## Technical specifications

### Framing speeds

1M: 35 Hz	1M-F: 135 Hz
2M: 31 Hz	2M-F: 60 Hz
6M: 13 Hz	6M-F: 25 Hz

[1] *Acta Cryst.*, D66, 1032–1035 (2010).