



Spec Sheet XRD 17

VANTEC-1

Detector for super speed X-ray diffraction

The VANTEC-1 detector features fast simultaneous recording of X-ray diffraction patterns over a wide 2θ angular range. The detector can be used in SNAPSHOT mode (fixed 2θ mode) or in scanning mode. When compared to a point detector, the VANTEC-1 reduces overall measurement times drastically (providing similar angular resolution).

For the in-situ investigations of reactions or crystalline phase transitions, the VANTEC-1 offers SNAPSHOT capabilities with data collection times as little as 100 ms with about 10° 2θ coverage. With a series of SNAPSHOTS, a kinetic process is recorded like an X-ray movie.

The VANTEC-1 detector incorporates Bruker AXS' patented MIKROGAP™ technology featuring very high amplification, high peak-to-background ratio, high sensitivity for a wide range of X-ray wavelengths, and very good energy resolution. In addition, the VANTEC-1 detector provides extreme radiation hardness for long lifetime; an accidental exposure to the direct X-ray beam does not damage the detector. The energy window of the detector can be adjusted electronically. This allows optimizing the detector for a specific wavelength and minimizing the impact of background scattering due to fluorescence.



Fig. 1: VANTEC-1 X-ray Detector.

Thanks to its large active area, guaranteed without any dead area, the VANTEC-1 is capable of taking diffraction snapshots more than 100 times faster than any conventional scanning detector.

Table 1. Technical specifications

Specifications	
Active area	50 mm x 16 mm (in the scattering plane x perpendicular)
Maximum capture angle	SNAPSHOT mode 10° 2θ at 500 mm measurement circle diameter
Maximum 2θ range	Scanning mode -10° up to 161° 2θ (depending on setup) SNAPSHOT mode 167° (depending on setup)
Wavelength range	From Cr-Kα up to Mo-Kα – factory setting by default for Cu-Kα
Energy resolution	<25%
Spatial resolution	<60 μm; >1500 individual readout channels
Compatibility	D4 ENDEAVOR and D8 FOCUS, order number A17D11 D8 ADVANCE and D8 DISCOVER, Series 2, order number A17D10 D8 ADVANCE and D8 DISCOVER, with DAVINCI design, order number A17D40
Software	DIFFRAC ^{plus} measurement software, version 2.4 or higher DIFFRAC.SUITE measurement software, version 1.10 or higher
Accessories	(required) Fast Diffraction Controller, order number 7KP29128BA
Accessories (optional)	Set of Debye slits, order number A17D12 4° Soller slit, order number A17B26 Radial soller slit, order number A17D18 Kβ filters for Co-, Cr-, or Mo-radiation, order numbers A17B20, A17B21, A17B22 Extended anti-scatter slit assembly, order number A17B31

The VÅNTEC-1 detector includes front-end readout and supply electronics as well as mounting and optics assembly, including Cu-Kβ filter, Soller slit, and a primary beam stop.

All configurations and specifications are subject to change without notice. Order No. DOC-S88-EXS017.
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