



## 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  $2\theta$  angular range. The detector can be used in SNAPSHOT mode (fixed  $2\theta$  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  $10^\circ$   $2\theta$  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	
<b>Active area</b>	50 mm x 16 mm (in the scattering plane x perpendicular)
<b>Maximum capture angle</b>	SNAPSHOT mode 10° 2θ at 500 mm measurement circle diameter
<b>Maximum 2θ range</b>	<b>Scanning mode</b> -10° up to 161° 2θ (depending on setup) <b>SNAPSHOT mode</b> 167° (depending on setup)
<b>Wavelength range</b>	From Cr-Kα up to Mo-Kα – factory setting by default for Cu-Kα
<b>Energy resolution</b>	<25%
<b>Spatial resolution</b>	<60 μm; >1500 individual readout channels
<b>Compatibility</b>	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
<b>Software</b>	DIFFRAC <sup>plus</sup> measurement software, version 2.4 or higher DIFFRAC.SUITE measurement software, version 1.10 or higher
<b>Accessories</b>	(required) Fast Diffraction Controller, order number 7KP29128BA
<b>Accessories (optional)</b>	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.

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