

# Symmetry S2

## 2<sup>nd</sup> Generation CMOS EBSD Detector

The Symmetry S2 combines CMOS speed with fibre-optics sensitivity, enabling analysis speeds in excess of 4500 patterns per second (pps) yet retaining the flexibility to characterise even the most challenging samples. This performance is driven by the power and simplicity of the AZtecHKL data acquisition software and completed by the newly developed AZtecCrystal data processing platform, ensuring more time focused on results and less time worrying about analyses.

EBSD is such a versatile and rapidly developing technique that it is impossible to predict what material or application field you will be working on in 12 months' time. Symmetry S2 is a genuine all-rounder that has every base covered.

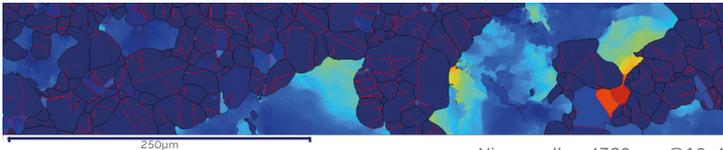


- Software-controlled tilting enables analysis of any sample type in an optimum geometry
- Full megapixel resolution diffraction patterns with sub-pixel distortion, ideal for high angular resolution (HR) EBSD
- Unique proximity sensor (patent pending) prevents expensive collisions

\*Typical performance on Ni

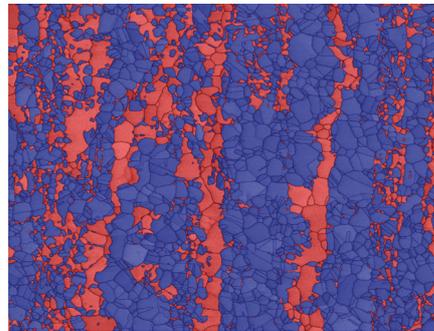
Highest Speed	>4500 pps
Highest Sensitivity*	>800 pps/nA
Highest Resolution	1244 x 1024 pixels
Speed at Max. Resolution	>240 pps
Tilting Interface	Software Controlled
Integrated FSDs	Up to 5
Proximity Sensor	Yes
Fibre Optic Lens	Yes
Infra-red Filter	Optional

Analytical throughput is vital for every laboratory. Symmetry S2 delivers market-leading speeds for all materials, attainable using its custom-designed CMOS sensor and unique fibre optics.



Ni superalloy: 4728 pps @10nA

- Routine analysis speeds >4500 pps at 156 x 88 pixel resolution
- Optimised EBSP processing and Tru-I indexing routines within AZtec deliver superb data quality at high speeds "out of the box"



Phase map of duplex steel: 76s analysis @ 4716 pps

Speed is nothing without sensitivity. Symmetry S2's fibre optics deliver 2-3× better sensitivity than other lens-based CMOS EBSD detectors, ensuring not just excellent data from beam-sensitive materials but also performance benefits on all sample types.

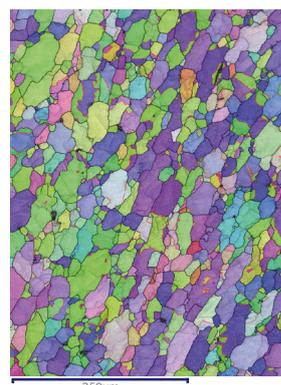


◀ Additively manufactured Ti64 alloy analysed using 20 nA beam current:

- Symmetry S2: 3100 pps (39 mins)
- Standard CMOS\*: 1350 pps (1.5 hrs)

Mylonitic quartz (SiO<sub>2</sub>) rock analysed using 29 nA ▶

- Symmetry S2: 1870 pps (4 mins)
- Standard CMOS\*: 650 pps (11 mins)



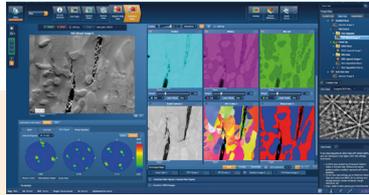
All-in-One

Speed

Sensitivity

## AZtecHKL

Guided workflows coupled with advanced tools ensure that AZtecHKL delivers the highest quality data from every sample. Every step of the acquisition process has been optimised to give perfect results every time, with a host of advanced tools and analytical options to satisfy the expert user. In addition, a single click seamlessly launches data into AZtecCrystal for further in-depth processing.



## AZtecCrystal

Data analysis is a key stage of any EBSD experiment and AZtecCrystal represents the most modern EBSD data processing software on the market. Developed to cope with the large datasets generated using CMOS-based detectors, AZtecCrystal combines ease of use with speed, with an advanced package offering multiple high-end materials analysis tools.



Feature	Description	AZtecHKL Standard	AZtecHKL Advanced	AZtecHKL Automated
AZtec EBSD Mapping	Point Analyses, LineScans and Maps	✓	✓	✓
ReAnalysis	Reprocess datasets with stored patterns	✓	✓	✓
AZtec Synergy	Fully integrates Oxford Instruments EDS & EBSD systems with simultaneous EDS and EBSD maps / linescans	✓	✓	✓
AZtec PhaseID	Combines EDS & EBSD data to identify unknown phases	✓	✓	✓
AZtec Data Analysis	Data Clean, Grain Detection & Size Analysis, Map Editor	✓	✓	✓
AZtecCrystal Standard	Modern, standalone EBSD data processing software incl. maps, pole/inverse pole figures and grain analysis	✓	✓	✓
AZtec TruPhase	Real-time differentiation of similar crystal structures using EDS	○	✓	✓
AZtec Autolock	Predictive and reactive specimen drift correction	○	✓	✓
Colour FSD	Colour visualisation of orientation and Z-contrast images	○	✓	✓
PseudoSymmetry	Solves orientation measurements in materials where different orientations deliver similar EBSPs	○	✓	✓
AZtecHKL Steel	Reclassify phase tool for phase separation and dedicated steel phase database	○	✓	✓
AZtecCrystal Advanced	Comprehensive standalone data processing package, incl. ODFs, materials properties and an advanced classify tool	○	✓	✓
AZtec Large Area Mapping	Acquire and stitch multiple fields to characterise large sample areas	○	○	✓
AZtec Image Registration	Register and use an image for specimen navigation	○	○	✓
AZtec MapQueue	Schedule acquisition of multiple experiments	○	○	✓
CIF Import	Import "Crystallographic Information File" for phase definition	○	○	✓
Magnetic Field Correction	Correct EBSD pattern distortion from immersion lens fields	○	○	○
AZtec 3D	Automated acquisition of 3D datasets on compatible FIB-SEMs	×	○	○

Software features marked ○ are optional

Visit [nano.oxinst.com/SymmetryS2](http://nano.oxinst.com/SymmetryS2)

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