

A green circular badge with the word "ECO" in white, bold, sans-serif capital letters.

## Product Sheet SC-XRD 501

# D8 QUEST ECO

- Full Experimental Flexibility and Performance with Minimal Installation Requirements

Combining full experimental flexibility, high performance, and ease-of-use with minimal installation requirements, reduced maintenance, lower cost of ownership and power consumption might seem like trying to square the circle. However, with carefully designed new system components, Bruker has mastered this challenge and is proud to introduce the improved D8 QUEST ECO. The D8 QUEST ECO features the new PHOTON II 7

CPAD detector. The system is easy to use and delivers excellent data quality, but at the same time addresses the rapidly growing demand for environmental awareness and protection of resources, such as water and electricity. The ECO configuration of the D8 QUEST helps save 1,700 m<sup>3</sup> of cooling water and 38,000 kWh of electrical energy per year when compared to a standard sealed tube system.

## Features

- PHOTON II 7 CPAD technology
- More than 2.5 times higher sensitivity for Mo radiation compared to HPC detectors
- Shutterless mode for unprecedented acquisition speed and data quality
- High intensity X-ray source for Mo- or Cu-radiation – no external cooling required
- Large enclosure with ample work space
- APEX3 software suite – the must have for crystallography
- 3-year warranty on PHOTON II 7 detector and X-ray tube
- 10-year warranty on the goniometer



## PHOTON II 7 CPAD technology – more than twice the sensor size

Charge-Integrating Pixel Area Detectors (CPADs) feature the most advanced detector technology available. With an unprecedented combination of large active area, quantum-limited sensitivity, and high speed, the PHOTON II 7 delivers more than twice the active area and more than two and a half times the sensitivity for Mo radiation compared to HPC detectors. CPAD technology is the perfect solution for high-performance crystallography.

Additionally, zero-maintenance CPAD sensors do not suffer from charge sharing or count rate saturation data loss. The PHOTON II 7 handles strong reflections much better than previous detector generations which significantly improves low-resolution data quality.

## Unprecedented Acquisition Speed and Data Quality

The PHOTON II 7 detector is operated in shutterless mode and continuous scan mode. With the larger sensor size and higher sensitivity, data sets can be acquired about five times faster. At similar wall-clock times, data quality is significantly improved with the PHOTON II 7 compared to HPC systems.

## Three-Axis Goniometer

Our high-precision 3-axis goniometer enables fast data collection with maximum efficiency. The crystal can be rotated around the omega and phi axes allowing complete coverage of reciprocal space for complete data sets. The chi axis is fixed at 54.7 degrees – the Magic Angle at which data are collected most efficiently.

## Best Hardware + Best Software = Best Structure

The best in class APEX3 software guides you through the complete experiment with minimal input and maximum graphical feedback, and allows you to focus on the structure determination at hand. The graphical user interface keeps you informed about the progress and quality of the structure determination process and has been optimized using extensive customer feedback. Underlying engines for data acquisition, unit cell determination, data integration, and scaling utilize the world's best algorithms producing superior data and structures. Benefit from built-in expert knowledge about instrument geometry and data collection strategies.

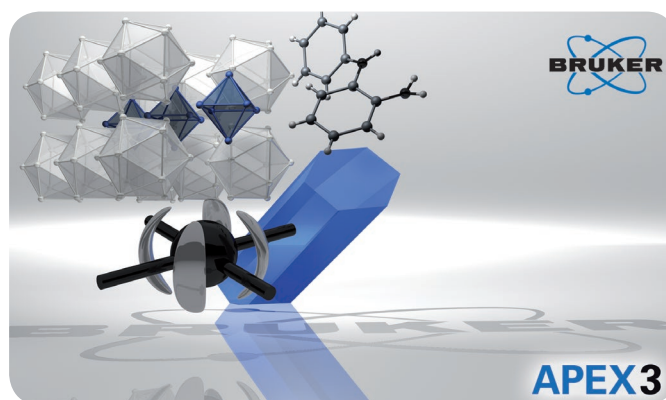
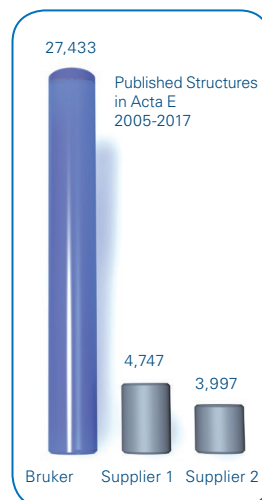
## XPRESSO - Automation at its Finest

The XPRESSO automation plugin is a great tool not only for expert crystallographers but also users who are less familiar with single crystal diffraction systems. XPRESSO offers a running start and drives the complete experiment – fully automated. You mount the crystal, you start XPRESSO, and D8 QUEST ECO provides the completely refined structure. XPRESSO is also a great help for experienced crystallographers, who are often overwhelmed by an enormous workload. While ordinary structures often do not pose a crystallographic challenge, the sheer number of crystals to be handled prevents crystallographers from focusing on challenging problems. XPRESSO is the best means to free up time for focusing on crystallographic challenges.

## Flexibility for the future

The flexibility of the D8 QUEST ECO helps you protect your investment. If your experimental requirements change in the future the D8 QUEST ECO can be upgraded with a number of high performance source and detector options, including the 1µS microfocus source and the PHOTON III detector.

Supplier search results Acta Crystallographica, Section E  
 Search terms:  
 Bruker OR Siemens OR  
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 OR Rigaku



## ECO

### ECOnomical and ECOlogical

We have designed the X-ray source and the PHOTON II 7 detector with economical and ecological principles in mind. Both feature low energy consumption and do not need water cooling. These benefits significantly reduce the cost of ownership and also improve reliability.

These cost savings come with no compromises. ECO configurations also feature very high performance.

- + Low energy
- + No water supply
- + Low maintenance

saves  
 33 t of CO<sub>2</sub>  
 emissions  
 per year



### No External Cooling Water

- Air cooled PHOTON II 7
- High intensity X-ray source
- No external chillers required

saves  
 1,700 m<sup>3</sup>  
 cooling water  
 per year



### Single Phase Power

- Ultra-low power consumption of the PHOTON II 7
- High intensity X-ray source for excellent system efficiency

saves  
 38,000 kWh  
 energy  
 per year

## Overview of Features and Benefits

<b>D8 QUEST ECO</b>	Exterior dimensions	187 × 130 × 114 cm (h × w × d) 73.5 × 51.2 × 44.7 inch (h × w × d)	Small footprint without sacrificing experimental flexibility Perfect sample illumination
	Weight	750 kg <sup>1)</sup>	
<b>Detector</b>	<b>PHOTON II 7</b>	Latest pixel array detector technology	4th generation Charge Integration Pixel Array technology for higher speed and sensitivity, best data quality
	Active area	70-cm <sup>2</sup> CMOS Sensor	
	Cooling	Air-cooled	
	Sensor format [pixels]	768 × 512	
	Pixel size [microns]	135	
	Operation mode	Shutterless data collection	
	Warranty	3 years	
<b>X-ray source</b>	Available wavelengths	Copper, Molybdenum	Optimized for service crystallography
	Monochromator	Graphite, TRIUMPH (optional)	
	Cooling water supply	No external cooling required (optional)	
	Power supply	Single-phase: 208 to 240 V, 50/60 Hz	
	Warranty	3 years	
<b>Goniometer</b>	<b>FIXED-CHI Stage</b>		Economical general purpose goniometer for high precision, fast data collection Very low sphere of confusion for smallest crystals Peace of mind
	Phi angular range	n × 360°	
	Chi	54.7° (Magic Angle)	
	Sphere of confusion (Stepper motor with optical encoders)	< 7 μm	
	Warranty	10 years	
<b>Software</b>	<b>APEX3</b> software suite including SHELXTL and IDEAL		Most comprehensive software package for single crystal X-ray diffraction (SC-XRD) using well-tested first-class algorithms. Unparalleled ease of use: from data collection and data integration to structure solution, refinement and structure publication.
<b>Low-Temperature Device</b> (optional)	<b>CRYOSTREAM 800</b>	Temperature range 80 K – 400 K	

<sup>1)</sup> depending on configuration and accessories

Bruker AXS is continually improving its products and reserves the right to change specifications without notice.  
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