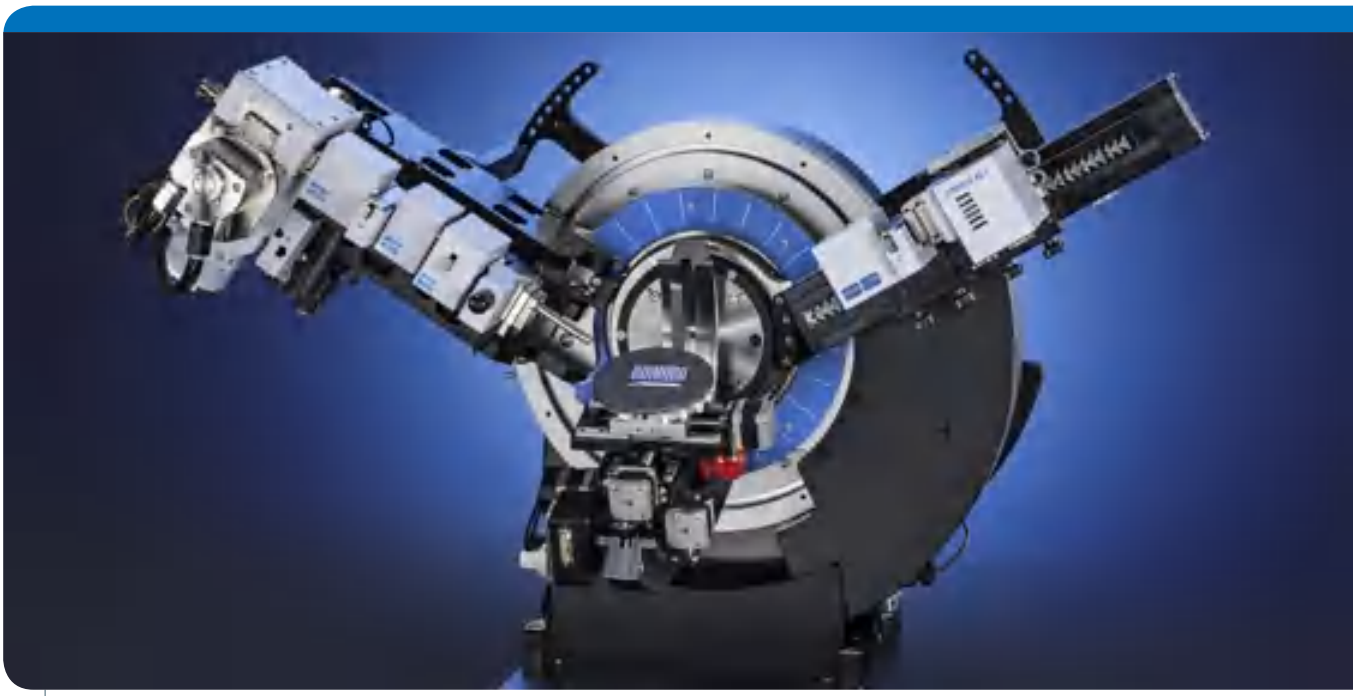


Product Sheet XRD 45

D8 DISCOVER Plus

- ATLAS™ Goniometer and High Efficiency Turbo X-Ray Source

The D8 DISCOVER Plus equipped with the ATLAS goniometer and the High Efficiency Turbo X-ray Source (TXS-HE) sets a new benchmark for X-ray diffraction systems in two respects: data integrity and ease of use. The vertical geometry enables horizontal sample mounting while the strengthened ATLAS goniometer ensures the angular accuracy.

Combining the compactly designed TXS-HE with multi beampath optics (TWIN or TRIO) and next generation detectors (LYNXEYE XE-T or EIGER2 R 500K) the D8 DISCOVER Plus is an unrivaled analytical X-ray diffraction solution.

Benefits of ATLAS™

- Industry leading accuracy - guaranteed
- Designed for long lifetime without need for maintenance
- All-inclusive compatibility with the D8 Family DAVINCI design

Benefits of TXS-HE

- Up to 5 times more intensity compared to industry-standard sealed tube
- Optimized performance for line and spot focus applications
- Compact design for maximum photon utilization
- Minimal maintenance for maximum uptime

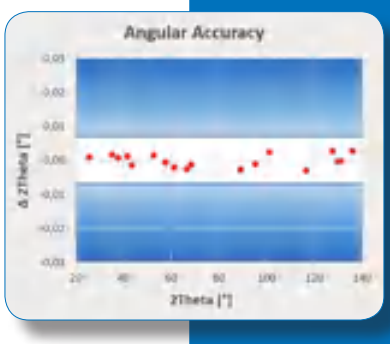
The ATLAS™ Goniometer - Enhanced Strength for Maximum Analytical Power

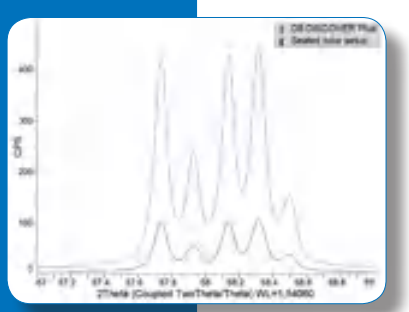
In X-ray diffraction the base for an accurate sample analysis is the goniometer and the precise orientation of the mounted components particularly while measuring. The ATLAS goniometer exactly meets these requirements by design:

- Robust and maintenance-free goniometer
- High-precision stepper motors with high resolution optical encoders
- Precise and software monitored interfaces for mounting components

Consequently, indeed the D8 DISCOVER Plus equipped with the ATLAS goniometer comes with the Bruker AXS generic alignment guarantee: the angular deviation Δ2Theta of measured and certified peak positions 2Theta is ≤ 0.007°. This is verified by measuring the NIST certified standard SRM 1976 on each individual instrument.

A further check for the sustainable efficiency of an XRD instrument is the availability of various components and accessories, in order to adapt the instrument to current and future analytical needs. The comprehensive compatibility with the design of the D8 family ensures that the D8 DISCOVER Plus with the ATLAS goniometer is a future-proof investment.





High Efficiency Turbo X-ray Source (TXS-HE)

Whether the key measure of an analytical x-ray tool is data quality, defined as signal-to-noise and signal-to-background, or sample throughput, one constant is that more signal is always an advantage. The High Efficiency Turbo X-ray Source (TXS-HE) has been designed to boost signal while minimizing the downtime and maintenance associated with rotating anode technology.

- Line focus setup with unsurpassed focal spot brightness
- Ideal coupling with optics for maximum flux
- Reduced beam path length to minimize air scatter
- Lightweight design for vertical geometry

Efficiency is also maximizing tool uptime and minimizing time spent on maintenance.

- Pre-aligned, pre-crystallized, quick change filament cassette
- Anode and seals are contained in a single assembly for fastest exchange during maintenance
- Direct drive, self rotating anode for long maintenance interval
- Reduced vacuum chamber size for fastest startup
- Single screw source to diffractometer alignment

Multipurpose XRD Configurations

A D8 DISCOVER Plus with ATLAS and TXS-HE is the perfect platform to support a wide range of applications without the need for reconfiguration. The range of supported methods can be extended at any time with additional components.

Multipurpose powder diffraction configuration for phase ID, phase quantification and structure solution.

Multipurpose materials research configuration for texture, residual stress, high-resolution diffraction, reflectometry and micro-diffraction.

Dedicated XRD Solutions

D8 DISCOVER Plus dedicated solutions are optimized for a customized set of applications; ideal for labs with a single research focus or industrial process support. Dedicated solutions include a task-tailored component set and software suite to ensure the best data quality and minimum time for measurement and analysis.

Dedicated transmission powder diffraction configuration for total scattering analysis.

Thin film analysis configuration for analysis of polycrystalline and epitaxial layers.

Ultimate resolution diffraction configuration for analysis of the highest quality epitaxial thin films.

Better efficiency and low maintenance requirements

- Pre-aligned and pre-crystallized filament cassettes are easily exchanged in almost no time
- Extended anode and filament lifetimes ensure the longest uptimes and maximum productivity
- Anode and seals are provided in a self-contained assembly

Technical Data

Goniometer	
Type	Theta/Theta, vertical
Source to sample distance	Preconfigured at 280, 390, 480 mm
Sample to detector distance	Continuously variable between 100 … 400 mm
Theta range	-5 … 100°
Maximum 2Theta	>160° for all radii, depending on accessories
Angular positioning	Stepper motors with optical encoders
Verifiable absolute accuracy	≤ ±0.007° 2Theta for SRM1976 by NIST
Precision	Reproducibility ±0.0001° (constant cooling water temperature and in air conditioned environment)
Smallest addressable step size	0.0001°
Maximum positioning speed	>400°/min depending on accessories
X-ray Source	
Type	6 kW high-efficiency TXS
Focus	Line focus, 0.3x3 mm²
Focal spot brightness	6kW/mm² for 0.3x3 mm² focus.
Filament	Tungsten, pre-aligned
Anode material	Cu, Co, Cr, Mo
X-ray flux stability	Better than ±0.2%
Generator power	Max. voltage 50 kV, max. power depending on anode material: Cr 3.2 kW, Cu/Mo 5.4 kW, Co 2,8 kW
Mains supply	3 phase, 200 … 415 V, 32 A, 47 … 63 Hz
Cooling	
Requirements	Mandatory external water/water chiller, bi-distilled water, minimum flow 14 l/min, water temperature 15 - 18°C
Miscellaneous	
Operating conditions	Ambient temperature (15 … 35°C), 20 … 80 % rel. humidity (no condensation), max. 2000 m altitude
Compliances	Radiation safety < 1µSv/h H*(10), RÖV, NJC,FDA, NFC 74-100, TÜV, EN 13849, full CE compliance (electrical equipment (2006/95/EC), electromagnetic compatibility (2004/108/EC), machinery directive (2006/42/EC))