

STOE IPDS II

New Dimensions in Imaging Plate Technology



STOE's completely new designed IPDS II combines years of experience with imaging plate diffraction systems and the advances in state-of-the-art computer technology and engineering. It guarantees the well known data quality and accuracy, the long-term stability and reliability of all STOE instruments.

The two-circle goniometer, the 340 mm imaging plate, the video CCD camera and the optimized high-speed read-out section are covered by a light-shielding X-ray protection hood.

Equipped with a planar graphite monochromator and an optional X-ray fibre optic high intensity is provided. Other intensity enhancing primary optics can be installed. Whether sealed tube or rotating anode, the IPDS II can be adapted to any kind of X-ray source providing Mo, Cu or Ag radiation. Realignment is straightforward.

The hardware design offers high sensitivity, low intrinsic noise and an unsurpassed dynamic range $> 1:10^5$. The large imaging plate with an active scan diameter of 340 mm gives access to a maximum 2θ of 77° .

The IPDS II guarantees efficient collection of highly redundant data sets with an excellent completeness.

The combination of the two-circle goniometer with a video CCD camera and the Faceit^{Video} software allows precise determination of crystal size and shape as well as semi-automated face-indexing, leading to an excellent numerical absorption correction.

With STOE's IPDS II superstructures are detected easily and accurately, in many cases structure solutions of grown-together or twinned crystals are straightforward.

Powder samples can also be measured and the resulting Debye-Scherrer rings can be converted into powder diagrams.

The sensitive and precise detection of reflections together with a comprehensive and powerful software package supports the experienced crystallographer as well as the newcomer in performing measurements of outstanding quality.

- Features**
- Active imaging plate diameter of 340 mm, max. $2\theta = 77^\circ$
 - Imaging plate scanning diameters adjustable
 - New two-circle goniometer, $180^\circ \omega$ range, φ range unlimited
 - Combination of goniometer and Faceit^{Video} system for excellent absorption correction
 - Solutions for grown-together and twinned crystals
 - Accurate detection of super-structures
 - X-Area data collection and evaluation software
 - X-Step³² structure evaluation and presentation software

Software based on MS Windows®

Detailed view of the two-circle goniometer and the video CCD camera.

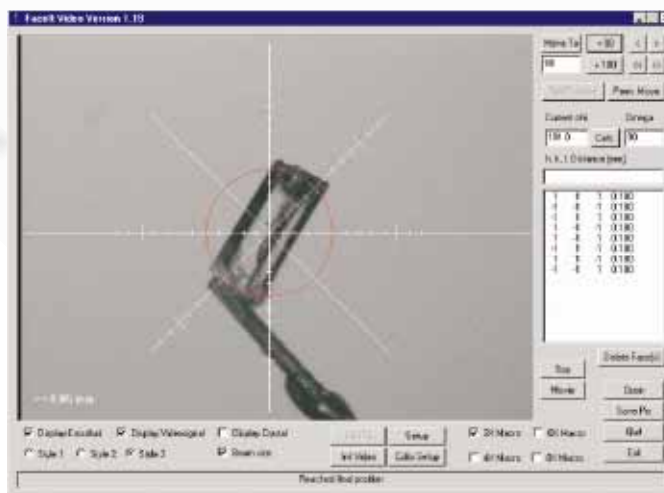


STOE IPDS II

A matter of sensitivity

Carefully designed with high quality components the IPDS II ensures data collection of outstanding quality and accuracy. A large dynamic range, low intrinsic noise and high sensitivity, which are fundamental characteristics of imaging plate technology, allow extremely long exposures yielding brilliant counting statistics even for weakest reflections.

A frame collected on the IPDS II is characterised by an excellent signal/noise ratio and a remarkable strong/weak signal ratio without any interference by additional electronic noise, increased background or hot-spots as with other area detector techniques.



Viewing and centring crystals is performed quickly using the video CCD camera and the fast phi circle (both controlled by Faceit^{Video}).

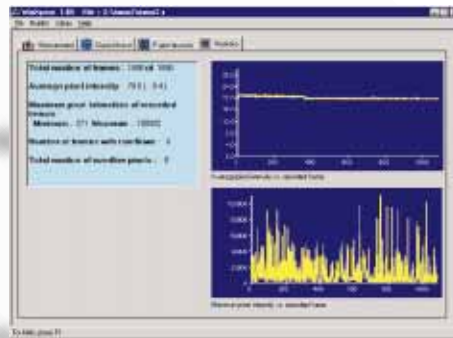
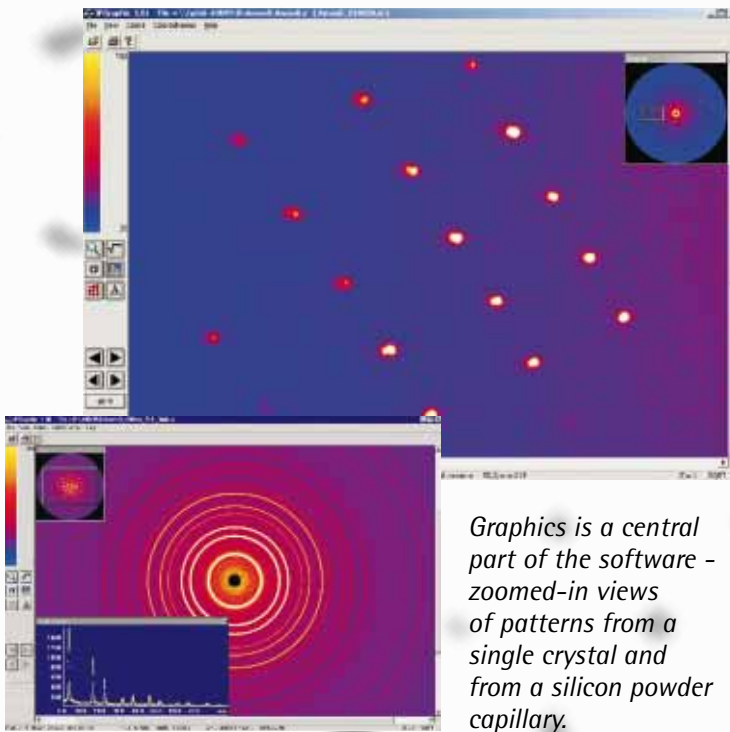
Faceit^{Video} is also an efficient tool for on- or offline indexing of crystal faces.

A matter of experience STOE has been designing software for its area detector systems for more than 10 years. Because of the close contact between our programmers and customers, many new ideas could be realised during that period.

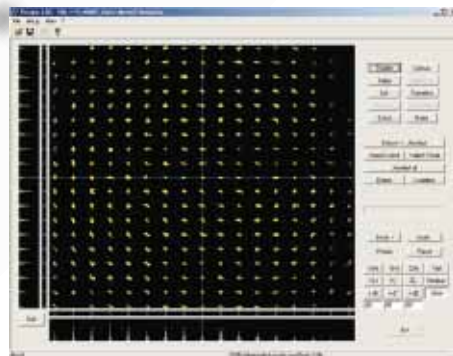
Experience gained from the development of the software package for the IPDS laid the foundation when writing the completely new program system X-Area.

It is based on C++ sources and provides the typical functionality of Windows applications on a PC.

The variable size of recorded frames (depending on the selected scan range) and the unlimited number of peaks (detected during a peak search) are two examples for flexible handling of data structures.



A measurement can be set up easily. During a measurement statistical parameters are monitored all the time; thus the state of the crystal can be controlled by visual inspection of diagrams.



A powerful solution for analysing complicated situations (e.g. multi-domain crystals) is viewing the reciprocal space. STOE was the first manufacturer providing a reciprocal space viewer. Based on this know-how additional ideas have been realized as new features and novel programs since that time.



Standard set-up of an IPDS II with the diffractometer, tube housing and monochromator on the worktop as well as the cabinet containing generator, interface and PC.

Weight (complete system) about 300 kg, size (l, w, h) 1700 x 940 x 2110 mm.

STOE IPDS II

Imaging Plate

340 mm active diameter, maximum $2\theta = 77^\circ$
 Intrinsic noise < 2 photon equivalents
 Linear dynamic range $> 1 : 10^5$
 Detector distance between 40 and 200 mm
 Minimum $d/\text{\AA}$: 0.45 Ag $K\alpha$, 0.57 Mo $K\alpha$, 1.24 Cu $K\alpha$
 Easy to change and to align

Goniometer

2-circle goniometer with 180° omega range and resolution of $0.002^\circ/\text{step}$
 360° phi range with standard IUCr mount
 Integrated PC and flat screen for data collection and evaluation
 Optimum accessibility due to wide doors and moveable beam stop
 Improved alignment and on-site service

Additional Attachments

X-ray fibre optics, focusing multilayer mirrors or plane graphite monochromator
 Various low- and high-temperature devices
 CCD video camera with the Faceit^{Video} system

Software

X-Area for data collection and evaluation, running under Windows
 X-Step³² for structure evaluation and presentation
 Liberal license policy, free of charge software upgrades for three years
 Specifications without obligation and subject to change without notice

STOE & Cie GmbH • P.O.Box 101302 • D-64213 Darmstadt
 Phone: (+49) 6151 / 98 870 • Fax: (+049) 6151 / 98 87 88
 E-mail: stoe@stoe.com • <http://www.stoe.com>