Signal processing	
Multi-channel Analyzer	12bit, 80Msps AD. 4096 channels analyze ability with FPGA hardware and robust DSP algorithm to discriminate signal and noise
Maximum count rate	FPC:2Mcps SPC:1Mcps SC: 1.5Mcps
Pulse shift and Gain correction	Automatic
Dead time correction	Automatic

Software Interface




Skyray Instrument

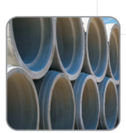
The Display Of Technical Arts • Skyray Instrument

TO BE A WORLD-LEADING ANALYTICAL TESTING SOLUTIONS PROVIDER

• Spectroscopy • Chromatography • Mass Spectrometry

WDX-4000

Sequential Wavelength-Dispersive X-ray Fluorescence Spectrometer

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Test data in this manual, if not noted, is our company's test data.
All information in this manual is for reference only, which is subject to any change without notice.

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115 Countries & regions are using Skyray Instrument up to now

The company adopts the ISO 9001 international quality certification system

www.skyray-instrument.com

Rapid / Accurate / Non-destructive

Skyray Instrument

WDX-4000

Sequential Wavelength-Dispersive X-ray Fluorescence Spectrometer

Based on years of R&D and production experiences on simultaneous wavelength-dispersive X-ray fluorescence spectrometer, Skyray Instrument proudly launched WDX-4000, the first sequential wavelength-dispersive X-ray fluorescence spectrometer which integrates unique and remarkable innovations. The performances of WDX-4000 meet the requirements of *JJG 810-1993 Verification regulation for Wavelength-dispersive X-ray Fluorescence Spectrometers*. It can be used in fields of geology, cement, steel and environmental protection, etc. By a large number of general designs, WDX-4000 provides reliable and economical maintenance to customers in time.

Main features:

Unique Goniometer design

- Innovative and igneous steel-belt-drive system. This remarkable design provides no friction, no backlash, stable motion which guarantee the most precise angular positioning
- θ/2θ spindle has independent drive system with servo motor and optical encoder feedback
- Permanent magnet synchronous motor (PMSM) provides the fastest and smoothest motion
- Optical encoders with 0.0001° resolution and 0.0006° accurary ensure that the integrated system reaches excellent performance

Multi-channel Analyzer

- 12bits, 80Msps, the most powerful AD sampling system, records signal completely and accurately
- 4096 (12bit) channels analyzer based on high speed FPGA architecture and robust DSP algorithm is able to discriminate proper X-ray from noise and stray light
- Energy-dispersive function is additional

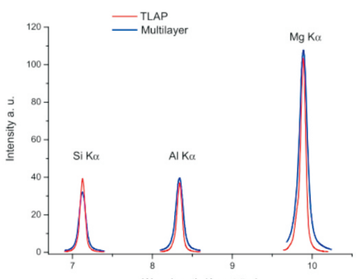
X-ray Tube and HV generator

- Standard 4kW power system gives the highest sensitivity for trace element analysis and a higher speed of analysis
- The thin beryllium window (50um or 75um) provides ultra-high transmission of X-ray, especial to low energy region
- Max. 60kV and 140mA, (75kV and 150mA is optional) and flexible setting helps analysis method to be much finer
- Dual water cooling circulation system, conductivity of deionized water kept much lower than 1uS by resin increases of tube's service life as long as possible

Miscellanea

- Multilayer analyzer crystal optimized on wavelength or intensity by customer's request. Higher resolution and reflectivity improves light element analysis ability

High resolution multilayer
Monochromators vs. TIAP crystals



- High stability is guaranteed by control temperature of spectrometer cabinet within 0.3˚C
- Automatic crystal, collimator, filter changer bring customer benefits to change experiment parameters

Software

- Complete and abundant functionality
- State-of-the-art 32-bit software with friendly graphic user interface and flexible operation, ease of use
- Matured empirical method provides accurate and reliable data by standard specimens
- Fundamental parameter method offers versatility analysis
- Integrated SQLite database stores your setting and analysis data

General specifications for WDX-4000

Sample Chamber	
Type	Vacuum for solids
Dimensions	51.5 mm Ø × 40 mm height, maximum
Weight	Max. 500 g including sample holder
Sample loading	Dual position with anti-dust filter and pre-vacuum pumping as standard feature. Analyzing one sample while pumping the next one
Sample changer	Automation robotic changer system, high capacity up to 168 samples
Spinner	3 spinning speed modes. (low, medium, high)

HV Generator	
Output	Selectable in steps of 1KV, 1mA as standard. Fine step is optional by 12bit DA
Long Term Stability	0.01%/8 hours
Temperature Coefficient	50 ppm/˚C (20 ppm/˚C optional)

Goniometer	
Type	Innovative steel-belt-drive system, no friction, no backlash, feedback by optical encoder, θ/2θ independent
Maximum slewing speed	6000 ˚ 2θ/min
Angular accuracy	0.003° θ and 2θ
Angular reproducibility	0.0002° θ and 2θ
Step scan range	Min. 0.0001°, Max.1°
Scanning angle range	PC:17° to 146°2θ SC: 0° to 120°2θ

X-ray tube	
Windows	The thin beryllium window, 50um or 75um, ultra-high transmission
Anode target material	Rhodium (Rh) as standard, option includes Copper (Cu), Molybdenum (Mo), Tungsten (W),Chromium (Cr), Platinum (Pt)
Operation	Tube remains powered on during sample holding
Cooling water	Dual tube cooling water circulation, conductivity of deionized water is much lower than 1uS

Rating	
Power	4kW
KV/mA	20-60KV, 75kV is optional 10-140mA, 150mA is optional

Optical path	
Channels masks	Single mask (fixed 27, 30 or 37mm)
Primary collimators	3 max: 100, 150, 300, 550, 700 or 4000 um, selectable
Primary beam filters	4 max: Pb, Al, Cu with different thickness
Crystals	8 max: LiF420, LiF220, LiF200, Ge111, PE002, InSb, TIAP, multilayers for light element
Detector	3 max: Flow proportional counter (FPC), Sealed Xe proportional counter (SPC), Scintillation counter (SC)
Optical Cabinet Past	Vacuum < 10Pa