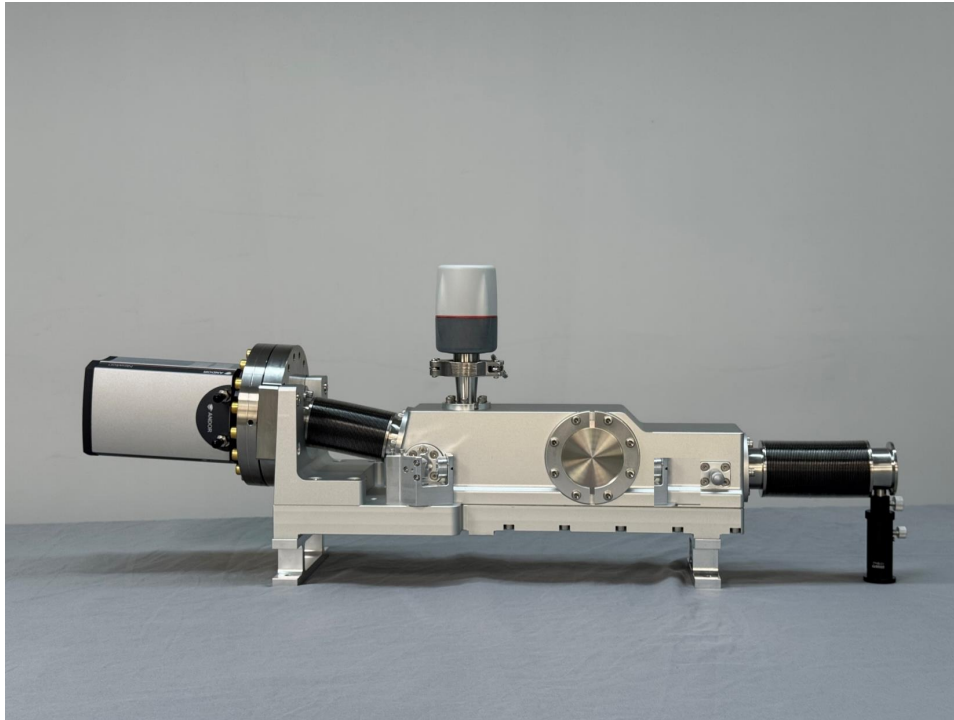


UES235-S1-120

VUV Flat-Field Grating Spectrometer



WaveQuanta UES235 series in laboratory configuration with Andor Newton CCD detector and KF40 vacuum interface.

Wavelength range	Spectral resolution	Grating density	Incidence angle
50–200 nm	0.2 nm @ 120 nm	120 l/mm	87°

Request for Quote

Each system is configured to your target wavelength, detector, and vacuum interface.
Email sales@waveqanta.com — typical lead time 12–16 weeks after PO.

Working Principle

The UES235-S1-120 is a flat-field grating spectrometer optimized for the 50–200 nm (VUV) range. EUV and soft X-ray photons enter through a fixed-position in-line slit (5–300 μm , externally adjustable without vacuum break) and reach a 120 l/mm concave grating at 87° grazing incidence.

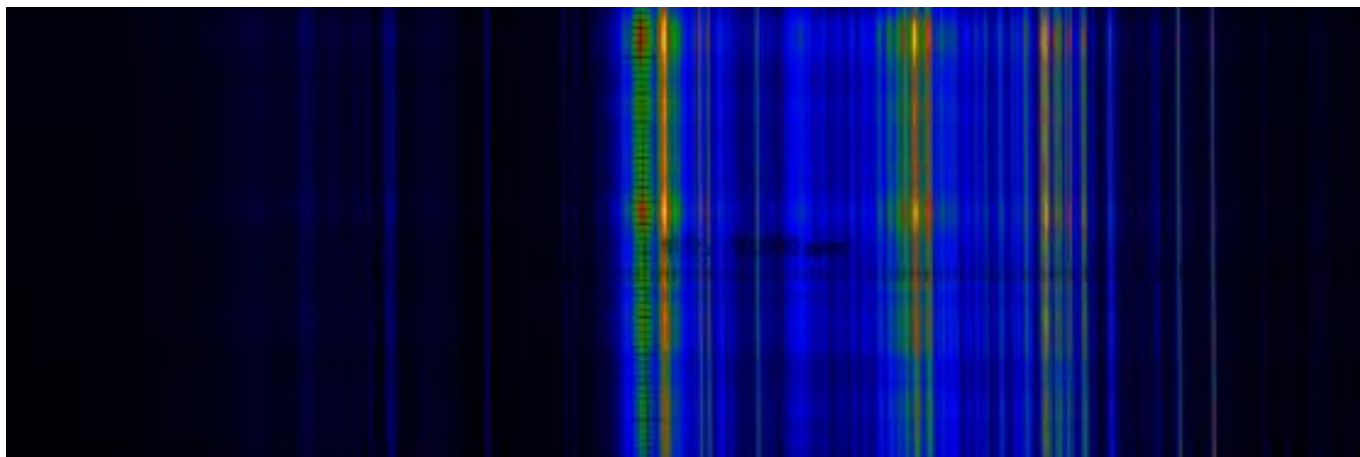
The grating disperses the incoming radiation by wavelength along its flat focal plane. A two-dimensional area detector (CCD, MCP, or sCMOS — selectable per application) sits on this focal plane, capturing the entire spectrum in a single exposure.

Because the grating produces a flat field, no scanning is required — the full wavelength range is acquired simultaneously. This makes the system ideal for single-shot diagnostics on transient sources (HHG, laser-produced plasma, FEL pulses).

A laser-assisted alignment system projects a visible reference beam co-linear with the EUV input axis. Operators can pre-align the input source on the optical bench with a He-Ne laser before evacuating the chamber, cutting commissioning time from hours to minutes.

Demonstration · Xenon discharge spectrum

Single-shot 2D image captured on the CCD focal plane — vertical streaks are individual Xe emission lines dispersed by wavelength.



Specifications

Model	UES235-S1-120
Spectral band	Vacuum-UV / VUV
Wavelength range	50–200 nm
Grating type	Concave flat-field, 120 l/mm
Incidence angle (grazing)	87°
Spectral resolution	0.2 nm @ 120 nm
Resolution test conditions	Detector pixel pitch 13.5 μm, minimum slit width
Vacuum compatibility	1 × 10⁻¹¹ Pa baseline (UHV options to 10⁻¹⁰ Pa)
Entrance slit	5–300 μm in-line adjustable (no vacuum break required)
Alignment system	Built-in laser-assisted alignment (visible He-Ne)
Detector options	CCD (Andor, PI, Hamamatsu) · MCP (Hamamatsu, Photonis) · sCMOS (Andor Z)
Spectrometer interface	KF40 standard; CF flanges (CF40 / CF63 / CF100) optional
Filter mount	Inline metal-film filter holder; aperture customizable on request
Mechanical envelope	~ 600 × 200 × 250 mm (LxWxH, varies by config)
Mass	~ 12–18 kg depending on detector head

Configuration Options

- Detector head: Andor DO920P-BEN CCD (1024×255, 26 μm pitch) · Andor Newton 940 · Hamamatsu C13440 sCMOS · MCP+phosphor+CCD combo for time-gated operation
- Grating coating: Au, Pt, Ni — selected for maximum reflectivity in the target wavelength sub-band
- Differential pumping: dual-stage between source and spectrometer for source pressures up to 1 mbar
- Custom slit drive: motorized + remote-controllable entrance slit (instead of manual micrometer)
- In-line filter wheel: 4 or 8 position automated filter changer (Al, Zr, Sn, Si3N4, Be foils)
- Synchronization output: TTL trigger I/O for FEL/laser shot-by-shot synchronization

Applications — Vacuum-UV / VUV

VUV plasma diagnostics

Glow-discharge, RF plasma, microwave plasma chemistry — identify excited-state lines of N, O, H, Ar, He in 50–200 nm band.

VUV light source qualification

Characterize deuterium lamps, hollow-cathode lamps, gas-discharge VUV sources used in photo-electron spectroscopy and surface analysis.

Material absorption / reflectance

Measure transmission of thin films, coatings, and optical windows in the VUV band — relevant for ArF (193 nm) and F2 (157 nm) photolithography optics.

Synchrotron / FEL VUV beamlines

In-line VUV diagnostic for beamline commissioning and stability monitoring at storage-ring facilities.

Sample measurement data available on request

Reference measurements for VUV band — including HHG comb, plasma emission and source-qualification spectra — are available via NDA. Contact sales@waveqanta.com to request the application notes pack.