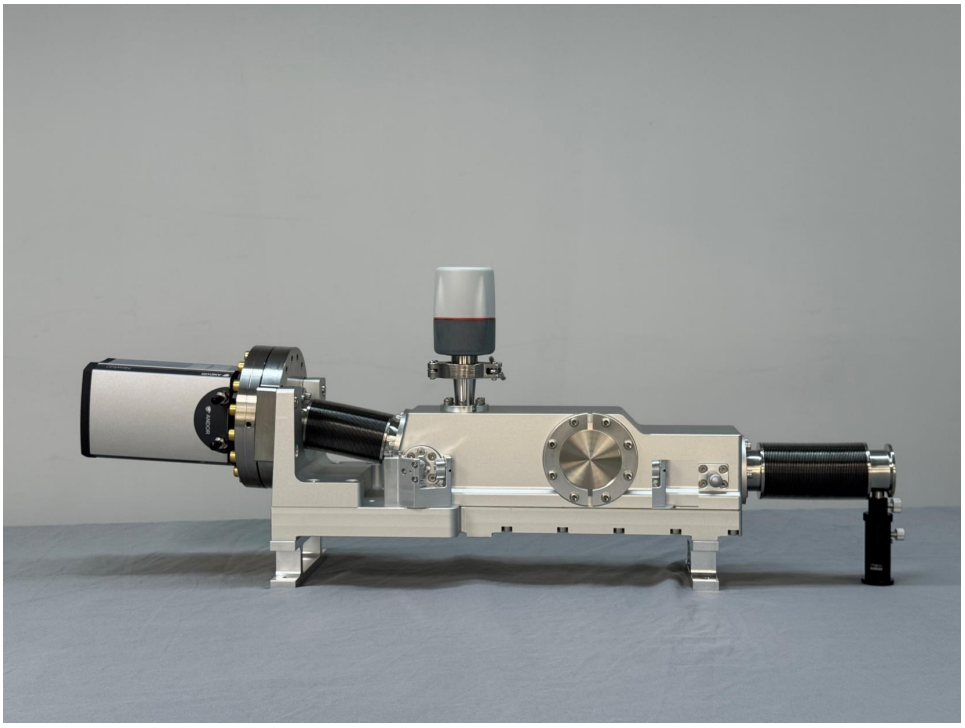
UES235-S1-300

EUV 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
20–80 nm	**0.15 nm @ 50 nm**	**300 l/mm**	**87°**

Request for Quote

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

Working Principle

The UES235-S1-300 is a flat-field grating spectrometer optimized for the 20–80 nm (EUV) 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 300 l/mm concave grating at 87° grazing incidence.

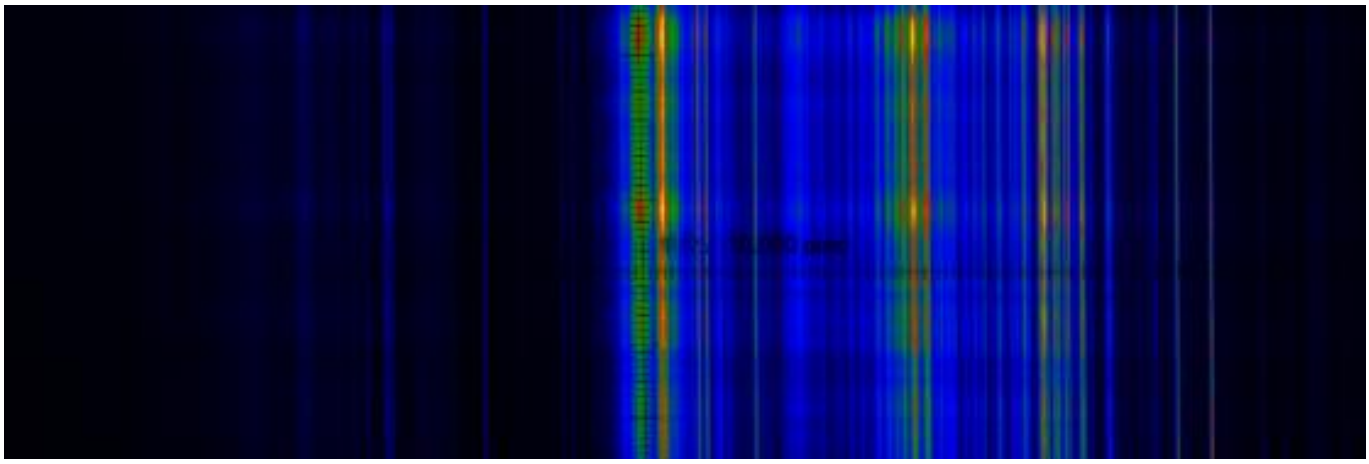
The grating disperses the incoming radiation by wavelength along its flat focal plane. A two-dimensional area detector (CCD, MCP, or sCMOS — selectable per application) sits on this focal plane, capturing the entire spectrum in a single exposure.

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-S1-300**
Spectral band	**Extreme UV / EUV**
Wavelength range	**20–80 nm**
Grating type	**Concave flat-field, 300 l/mm**
Incidence angle (grazing)	**87°**
Spectral resolution	**0.15 nm @ 50 nm**
Resolution test conditions	**Detector pixel pitch 13.5 μm, minimum slit width**
Vacuum compatibility	**1 × 10■■ Pa baseline (UHV options to 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 — Extreme UV / EUV

EUV source qualification (DPP / LDP / LPP)

Discharge-produced, laser-discharge, and laser-produced plasma sources — measure conversion efficiency, in-band power, and out-of-band debris.

High-harmonic generation (HHG) diagnostics

Map the full HHG comb (15th–60th harmonic of an 800 nm driver) in a single shot — quantify cut-off energy and harmonic spacing.

EUV optic reflectometry

Characterize multilayer mirrors (Mo/Si, Mo/Be, etc.) and Schwarzschild objectives across their full operating window.

Astrochemistry / atmospheric science

Measure solar EUV simulators; reproduce thermospheric ionizing radiation in lab.

Sample measurement data available on request

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