

200mm f.l. Vacuum Monochromator

The Monarch is a 200 mm focal length, vacuum compatible, aberration corrected monochromator with f/4.5 aperture. It has 0.1 nm fwhm spectral resolution with 1200 g/mm grating. Its precision slits are micrometer adjustable from 0.01 to 3 mm. The Monarch features a digital counter which can be convert to wavelength using the supplied software, and a sine drive providing years of accurate and reproducible wavelength positioning. The new sine drive is controlled using a new stepper driver* and a new open source Python software. The high performance masterpiece diffraction gratings provide excellent performance from the extreme ultraviolet to the UV.



Use the Monarch monochromator for any deep UV or vacuum ultraviolet application. The compact housing is easily adapted to most experiments. Microchannel plate and CCD adapters are available. Combined with one of our vacuum UV light sources it also makes a great UV tunable source.

Aberration Corrected | Gratings rotate about apex | Precision Drive | Dual Grating Turret

Optical Design	Aberration Corrected Seya-Namioka
Angle of Incidence	32 degrees
Focal Length	200 mm
f/no.	4.5
Wavelength Range	refer to grating of interest for range
Wavelength Accuracy	+/- 0.10 nm (with 1200 g/mm grating)
Wavelength Reproducibility	+/- 0.025 nm (with 1200 g/mm grating)
Grating Size	40 x 45 mm (single kinematic grating holder, turret optional)
Slits	Continuously variable micrometer actuated width 0.01 to 3 mm. Settable height.
Vacuum	High vacuum 10E-6 torr standard, UHV optional
Focal Plane	25 mm microchannel plate or direct detection CCD

Ordering Information

Part Number: 100-114725-0= Model Monarch Aberration Corrected Vacuum Monochromator, 200mm, f/4.5, adjustable entrance and exit slits

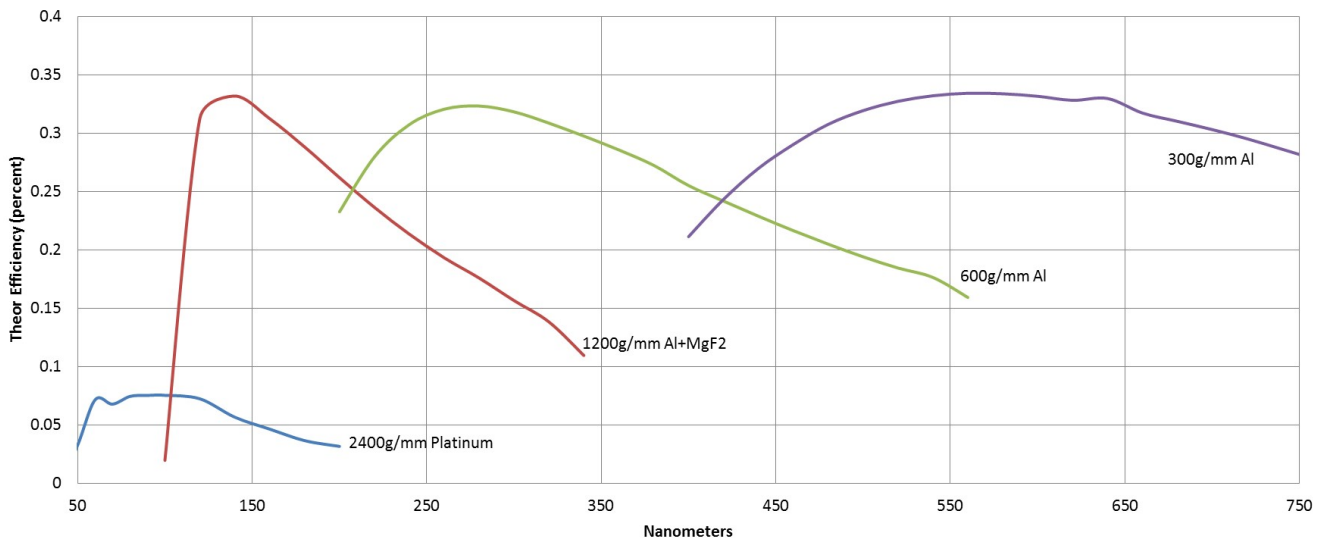
*Thorlab KST101 Kinesis® K-Cube™ Stepper Motor Controller (USB)

Performance with different gratings

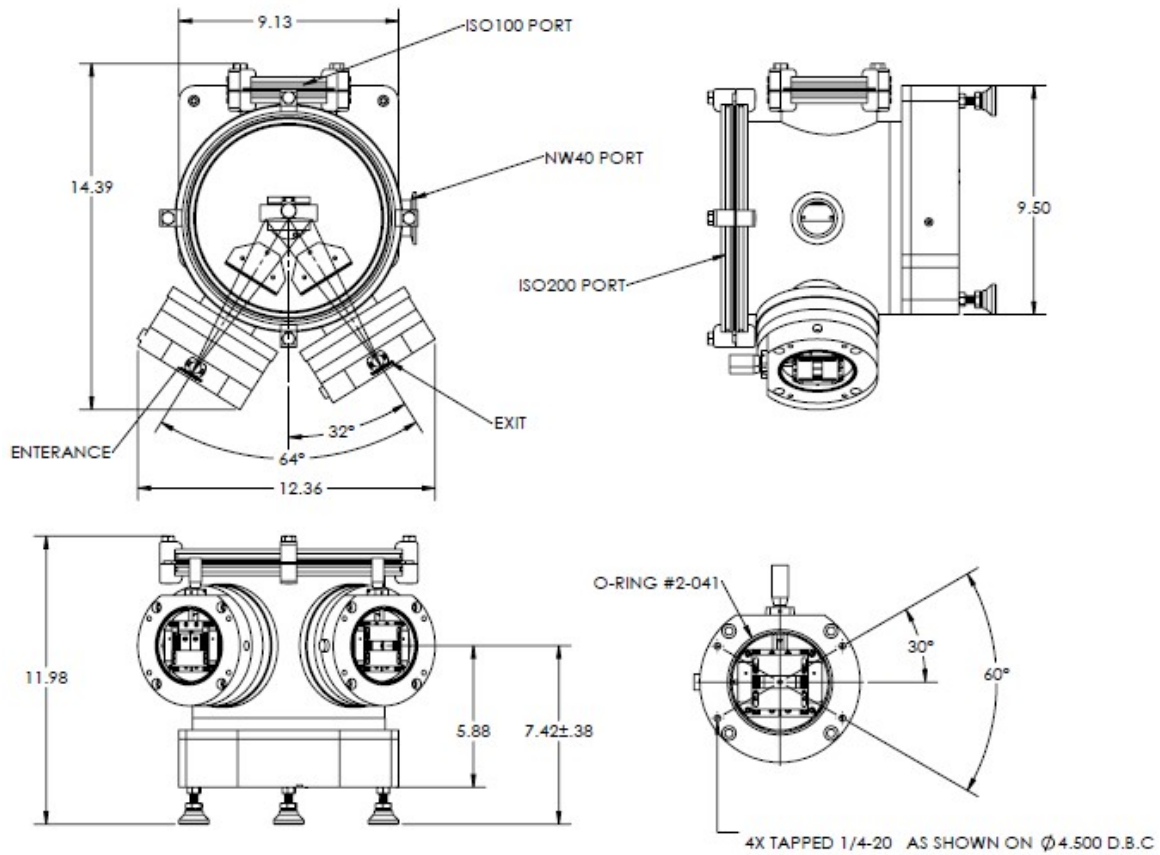
Grating Groove Density (g/mm)	2400	1200	600	300
Spectral Resolution (nm,FWHM) ¹	0.05	0.1	0.2	0.4
Dispersion (nm/mm)	2	4	8	16
Wavelength Range up to (nm)	225	550	1100	2200
Holographic Optimization: (nm) ²	80	140	140	140
	140		300	

1. Tested in scanning mode at 185 or 312 nanometers with 10 micron wide slits at slowest aperture ratio
2. Gratings work best from 2/3 blaze wavelength to 3/2 blaze wavelength

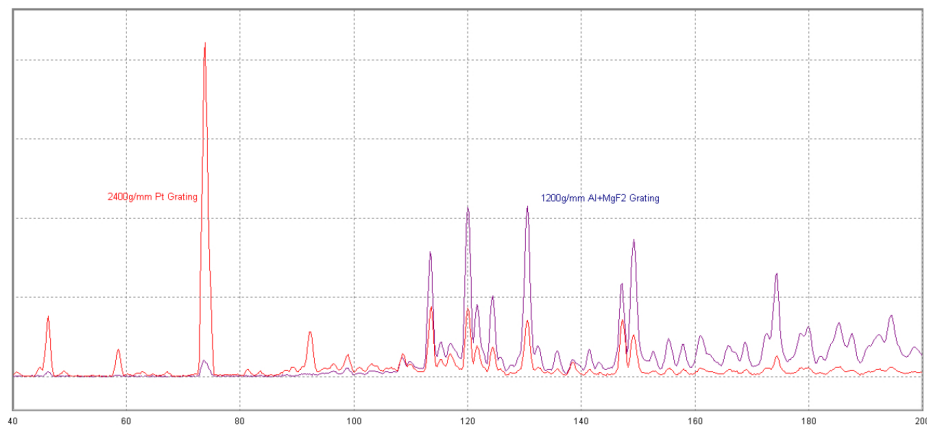
Grating selection



Monarch Dimensions

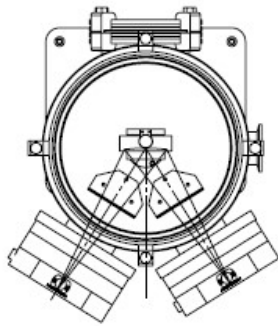


Monarch Sample Spectrum from 40 to 200 nanometers (hollow cathode source)

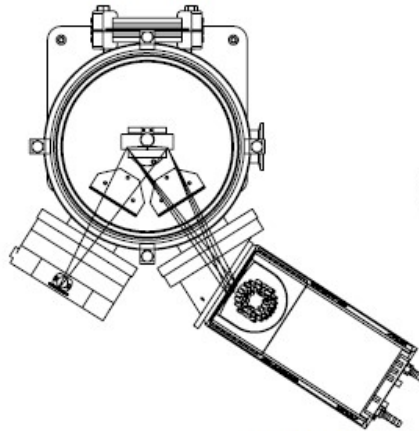


Instrument Configurations

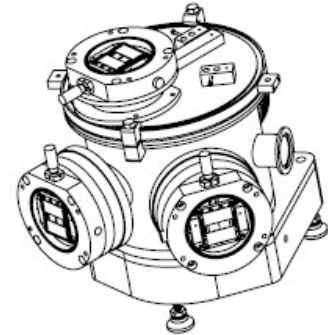
Scanning Monochromator



Spectrograph

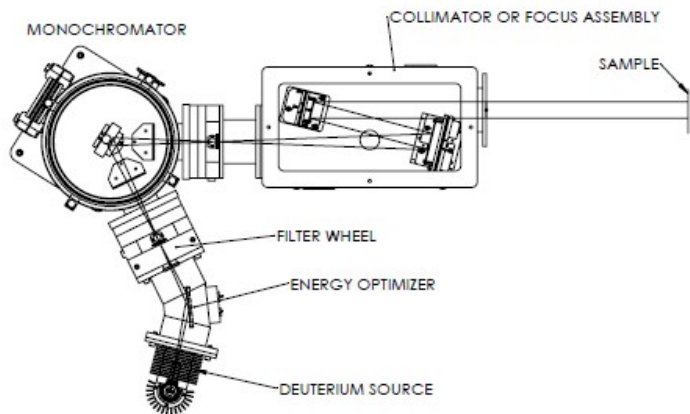
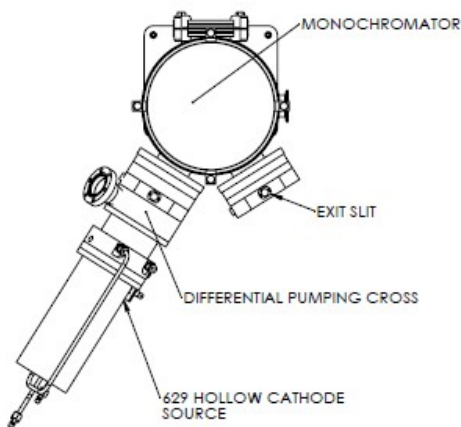


Multi-Port



System Example 1- Extreme UV
Tunable Light Source 30 to 160 nm

System Example 2- Deep & VUV
Tunable Light Source 120 to 220 nm



System Example 3-
120 to 220nm Tunable Light Source with UV/VVis to IR Emission

