



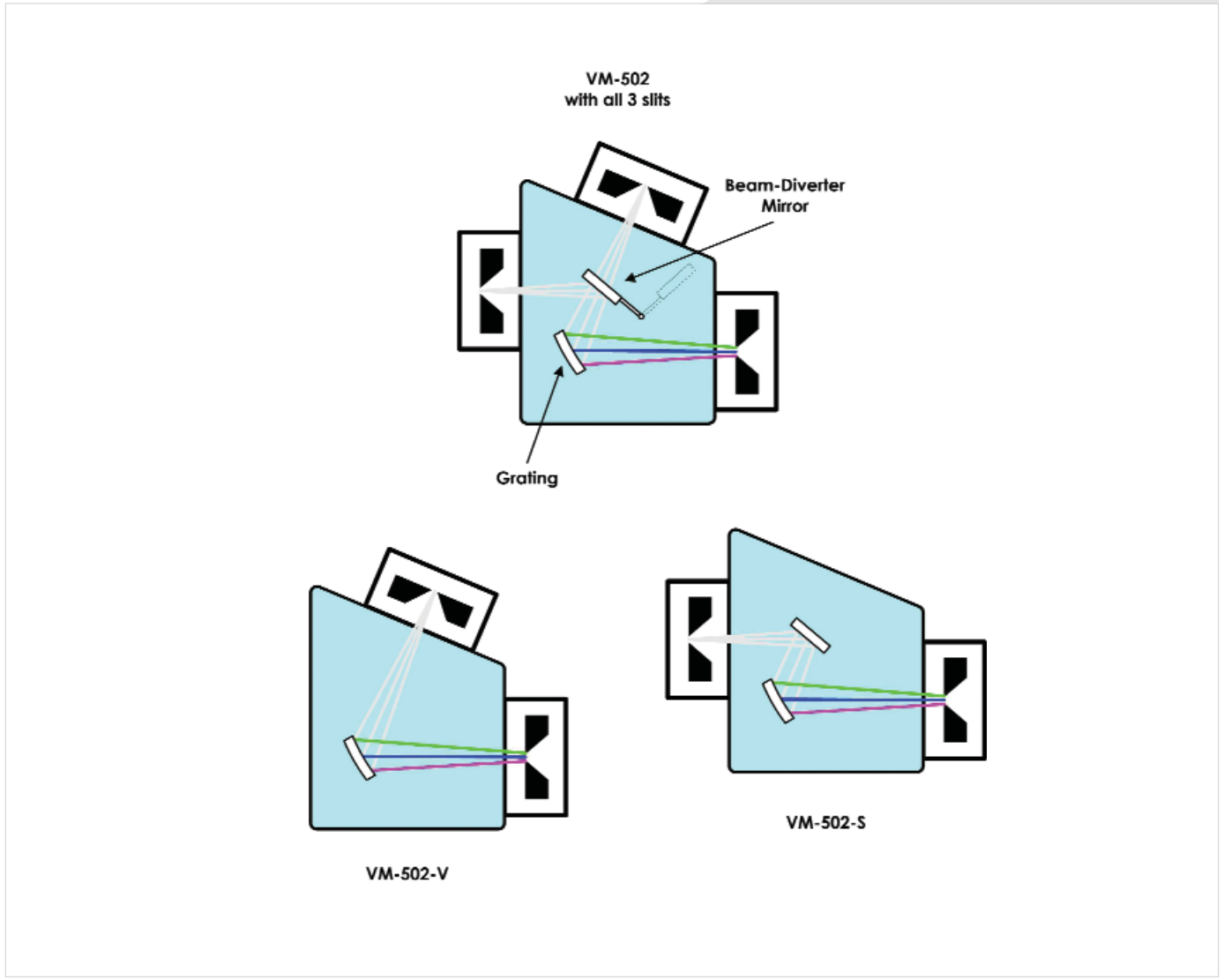
The Acton VM Series vacuum monochromators and spectrographs offer the highest quality instrumentation available for evacuated operation in the wavelength range below 200nm. Our vacuum instrumentation include high-performance Acton coatings, such as the Acton #1200 Al+MgF₂ with the highest reflectance available in the industry at 120nm. The Acton VM series is available with a multi-slit option, allowing dual entrance and dual exit ports to be used on a single instrument. These vacuum spectrographs offer the most versatility and can also be provided for nitrogen purge operation on request.

Applications: Plasma Diagnostics, EUV Lithography, Transmission / Reflection / Absorption Spectroscopy, Light Source Research

Features	Benefits
Triple grating turret (VM-504 only)	Permits grating changes while under vacuum conditions
Kinematic mount grating (VM-502, 521)	Easily change between gratings when needed
Direct digital scanning system (VM-504 only)	Permits computer control of triple grating turret to change gratings while maintaining correct wavelength and alignment
Sine drive scanning system (VM-502, 521)	Highest precision and accuracy
High efficiency optical coatings	Proprietary coating process provides 78-83% reflectance at 120 nm. Other optimized coatings available upon request.
Internally welded construction	Creates a high vacuum environment with no areas for trapped contamination
Full range of accessories	Including light sources, detectors, filter wheels, and sample chambers
Optional image corrected optics available (VM-504 only)	Permits multistripe imaging with a CCD detector
CCD compatibility	Allows multichannel data acquisition for quicker results
Lubricated drive mechanisms	External to vacuum environment to prevent contamination of the optical surfaces

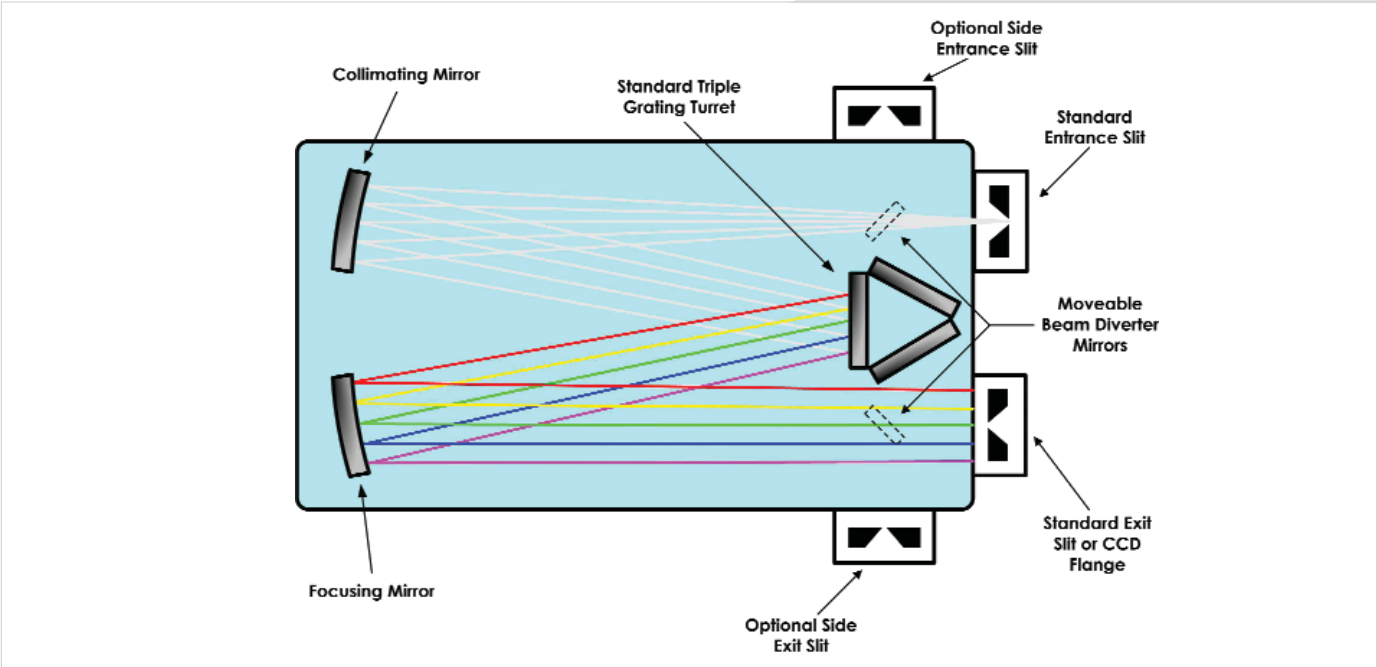
Acton VM Specifications (with 1200 g/mm grating)

	VM-502	VM-504	VM-521
Focal length	200 mm	390 mm	1000 mm
Aperture ratio	f/4.5	f/5.4	f/10.4
Linear dispersion (@ 435.833 nm)	4 nm/mm	2.1 nm/mm	0.83 nm/mm
CCD resolution (20 µm pixel, 20 µm slit)	0.24 nm	0.12 nm	0.05 nm
Single point resolution (10 µm slit size)	0.1 nm	0.06 nm	0.014 nm
Wavelength coverage (across 26.8 mm CCD)	107 nm	56 nm	22 nm
Optical design	Concave Holographic	Czerny-Turner	Normal Incidence Concave Grating
Scan range	0 – 550 nm (up to 2.2 µm with available gratings)	115 nm – 1.4 µm (up to 84 µm with available gratings)	0 – 325 nm (up to 1.3 µm with available gratings)
Grating size	40 x 45 mm	68 x 68 mm	110 mm diameter
Grating mount style	Single grating Kinematic	Triple grating Turrets	Single grating (dual grating optional)
Grating turrets	No	Interchangeable (optional)	Interchangeable (optional)
Focal plane size (front exit port)	25 mm wide	27 mm wide x 12 mm high	30 mm wide x 12 mm high
Standard manual slits (micrometer adjustable)	5 µm – 3 mm	5 µm – 3 mm	5 µm – 3 mm
Accuracy	± 0.1 nm	± 0.2 nm	± 0.05 nm
Repeatability	± 0.005 nm	± 0.05 nm	± 0.005 nm
Size	13.5 in (343 mm) L 12.2 in (310 mm) W 10.2 in (259 mm) H	19 in (482 mm) L 16 in (406 mm) W 9.5 in (241 mm) H	45.5 in (1156 mm) L 16 in (406 mm) W 13.8 in (351 mm) H
Optical axis height	7.2 in (183 mm)	4.9 in (124 mm)	9.25 in (235 mm)
Weight	35 lb (15.9 kg)	75 lb (34 kg)	300 lb (136 kg)
Computer interface	USB and RS232	USB and RS232	USB and RS232



Available Gratings for Acton VM-502

Part number	Groove Density	Blaze Wavelength	Nominal Dispersion
02-060H-02	600 g/mm	Holographic	8 nm/mm
02-120H-02	1200 g/mm	Holographic, #1200 Al & MgF ₂ coated	4 nm/mm
02-120H-03	1200 g/mm	Holographic, Iridium coated	4 nm/mm



Available Gratings for Acton VM-504

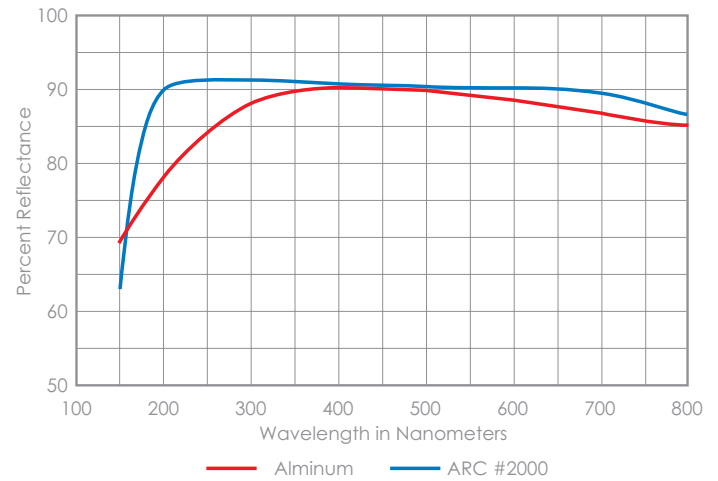
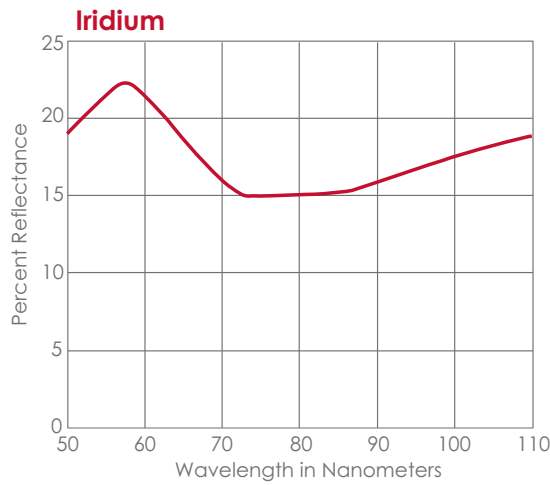
Part number	Groove Density	Blaze Wavelength	Nominal Dispersion
1-05-600	50 g/mm	600 nm	51 nm/mm
1-075-8	75 g/mm	8 μm	34 nm/mm
1-015-300	150 g/mm	300 nm	17 nm/mm
1-015-500		500 nm	
1-015-800		800 nm	
1-015-1.25		1.25 μm	
1-015-4		4 μm	
1-030-300	300 g/mm	300 nm	8.4 nm/mm
1-030-500		500 nm	
1-030-750		750 nm	
1-030-1		1 μm	
1-030-1.2		1.2 μm	
1-030-2		2 μm	
1-060-150	600 g/mm	150 nm	4.2 nm/mm
1-060-300		300 nm	
1-060-500		500 nm	
1-060-750		750 nm	
1-060-1		1 μm	
1-060-1.6		1.6 μm	
1-120-150	1200 g/mm	150 nm	2.1 nm/mm
1-120-300		300 nm	
1-120-500		500 nm	
1-120-750		750 nm	
1-120-HUV		Holographic, UV optimized	
1-120-HVIS		Holographic, VIS optimized	
1-180-500	1800 g/mm	500 nm	1.4 nm/mm
1-180-HUV		Holographic, UV optimized	
1-240-150	2400 g/mm	150 nm	1.05 nm/mm
1-240-240		240 nm	
1-240-HUV		Holographic, UV optimized	
1-240-HVIS		Holographic, VIS optimized	
1-360-130	3600 g/mm	130 nm	0.7 nm/mm
1-360-240		240 nm	
1-360-HUV		Holographic, UV optimized	

Note: All gratings blazed at 200nm or lower are coated with Acton#1200 Al & MgF₂

Available Gratings for Acton VM-521

Part number	Groove Density	Blaze Wavelength	Nominal Dispersion
021-030-700	300 g/mm	700 nm	3.33 nm/mm
021-060-90	600 g/mm	90 nm Iridium coated	1.66 nm/mm
021-060-150		150 nm #1200 Al & MgF ₂ coated	
021-060-200		200 nm #1200 Al & MgF ₂ coated	
021-060-300		300 nm	
021-120-80	1200 g/mm	80 nm Iridium coated	0.83 nm/mm
021-120-120		120 nm #1200 Al & MgF ₂ coated	
021-120-150		150 nm #1200 Al & MgF ₂ coated	
021-120-250		250 nm	
021-240-80	2400 g/mm	80 nm Iridium coated	0.41 nm/mm

Coating Efficiency Curves



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