



The Princeton Instruments/Acton MicroSpec™ series of imaging spectrometers offers research microscopists the greatest variability of spectral range and resolution for unrestricted spectral studies of biological and materials science samples. Unlike fixed optical modules which limit flexibility, MicroSpec offers a variety of interchangeable wavelength dispersion modules, as well as an entrance aperture both of which may be computer controlled enabling automated selection of your desired spectral range and resolution over your CCD. This variability is performed with research grade accuracy, precision and repeatability. This optical platform has been proven as the industry leader in research spectrometers since 1988.

**MicroSPEC™**

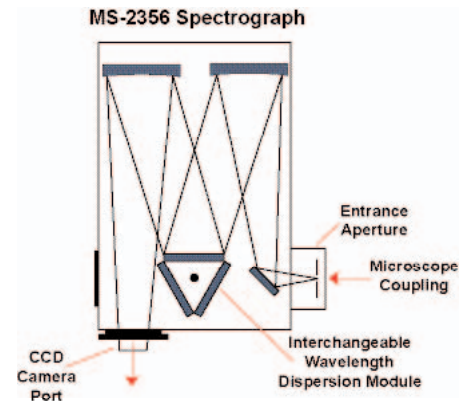
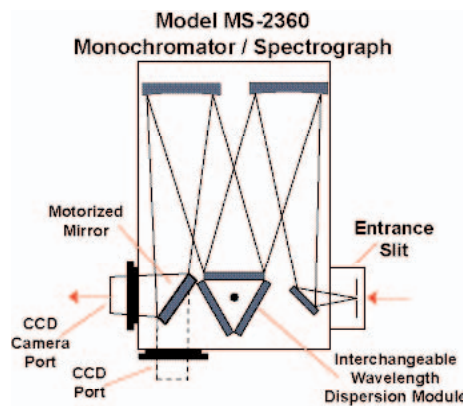
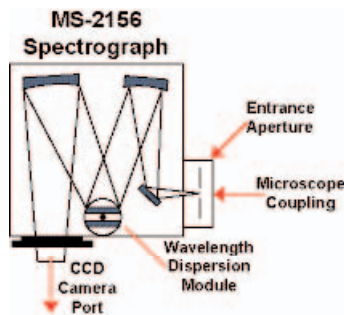
Features	Benefits
Optimized optical design	Considering the unique optical design of modern wide-field microscopes, MicroSpec provides maximum throughput and minimizes vignetting.
Fully reflective system	Eliminates varying effects of chromatic aberrations in transmissive systems.
Carefully engineered high efficiency gratings	Provides excellent linearity of wavelength dispersion and polarization balance.
High spectral resolution	Excellent discrimination of narrow and adjacent spectral features.
Acton Research Optical Coatings	Proprietary optical coating processes further enhance the optical system efficiency.
Proven optical platform	Quality, precision, reliability. Demonstrated research grade performance since 1988.
Coupling designed for your microscope	Direct coupling of the MicroSpec spectrometer to your microscope is easily made via a video C-mount.
Flexible camera mounting options	Accepts a multitude of CCD cameras.
Interchangeable Wavelength Dispersion Modules	Hassle-free interchangeability provides widest choice of wavelength range and resolution possibilities.
Variable Imaging Aperture	Allows simple switching between direct imaging (non-dispersed) and spectral imaging (dispersed) modes.
USB and RS232 Interfaces	Seamless, plug-and-play connection to PC notebooks and desktops.
2 base models	Select the system which best suits your requirements.

Model	MS-2156	MS-2356 / MS-2360
Focal Length	150mm	300mm
Aperture Ratio	1. Optimized for Microscopy 2. User interchangeable to f/4	1. Optimized for Microscopy 2. User Interchangeable
Scan Range	0 to 1400 nm	0 to 1400 nm
Spectral Resolution (using 1200g/mm grating)	0.4 nm using 10 $\mu$ m slits @ 435.8 nm	0.1 nm using 10 $\mu$ m slits @ 435.8 nm
Accuracy	+/- 0.25nm (+/- 0.14 nm typical)	+/- 0.2 nm(+/- 0.1 nm typical)
Repeatability	+/- 0.05 nm (+/- 0.02 nm typical)	+/- 0.05 nm (+/- 0.02 nm typical)
Drive Step Size	0.005 nm	0.0025 nm
Focal Plane Size	25 mm x 10 mm	27 mm x 14 mm
Imaging Aperture (WxH)	12 mm x 10 mm	12 mm x 10 mm
Spectroscopy Aperture (WxH)	"10 $\mu$ m to 3 mm" x 12 mm	"10 $\mu$ m to 3 mm" x 12 mm
Dispersion Modules	Interchangeable	Interchangeable
Size (lxwxh)	178mm x178mm x 165mm	337 mm x 254mm x 203mm
Weight	10 lb (4.5 kg)	35 lb (15.9 kg)

All specifications subject to change without notice.

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Optical Drawings



**Princeton Instruments**



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### Interchangeable Wavelength Dispersion Modules

These interchangeable modules are easy to use and maintain their precision alignment for hassle-free removal and replacement. Each module provides an imaging mirror in one position for use while performing non-dispersed imaging, and one grating in a second position for use while performing spectral imaging. The wavelength dispersion modules used in the 300mm focal length model offers a third position to install an optional second grating choice for even greater spectral coverage options.



Model	Module Number	~ Spectral Dispersion nm/mm @ 500nm	Example: ~ spectral coverage over an 8.2mm CCD	~ Bandpass (nm) with 100um wide entrance slit
MS-2156	MS-ITC-150-40	40	328nm	4nm
	MS-ITC-150-19	19	155nm	1.9nm
	MS-ITC-150-09	9	74nm	0.9nm
	MS-ITC-150-04	4	33nm	0.4nm
MS-2356 / MS-2360	MS-ITC-300-21	21	172nm	2.1nm
	MS-ITC-300-10	10	82nm	1.1nm
	MS-ITC-300-05	5	41nm	0.5nm
	MS-ITC-300-02	2	16nm	0.23nm

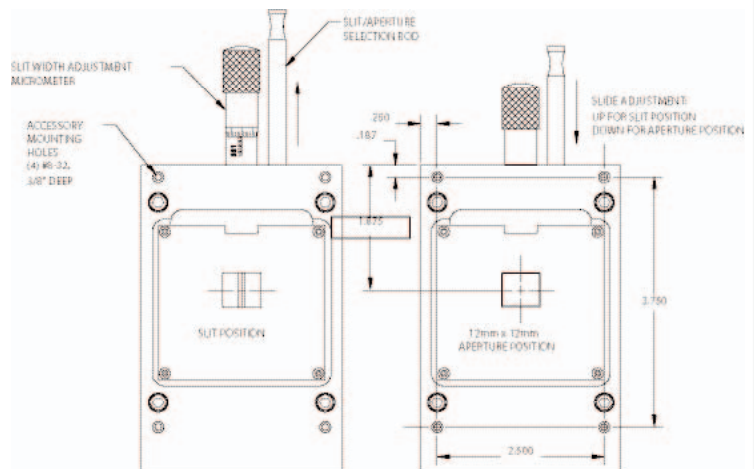
### Spectral Resolution

MicroSpec imaging spectrometers have been designed to provide the research microscopist the greatest variability of spectral resolution. This variability enables studies of samples requiring very high spectral resolution in one application, and lower resolution in another. This is accomplished by combining a wavelength dispersion module with the appropriate wavelength coverage per millimeter, to the input slit width required for the feature being viewed.

#### Variable Imaging Aperture

The standard MicroSpec entrance aperture has two manually selectable positions, direct imaging and spectral imaging. The direct imaging position provides a full fixed 12mm<sup>2</sup> aperture, enabling large area viewing of your non-dispersed image (mirror position of dispersion module) of your sample to your CCD. The spectral imaging position provides a high-precision 14mm tall aperture which is micrometer adjustable from 10 microns to 3mm wide.

An automated entrance aperture which is 12mm tall and variable from 10 microns to 12mm wide, in 5 micron steps, is optional. This is a great tool for simplifying your selection of spectral resolution, as well as switching between direct imaging and spectral imaging modes.



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