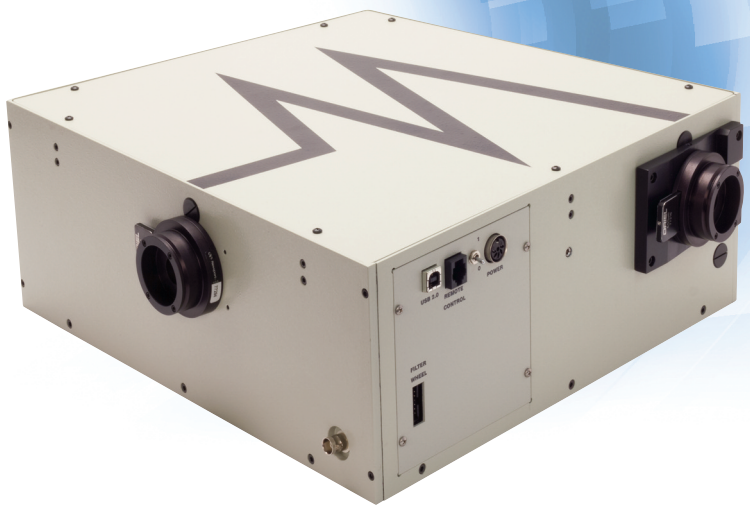
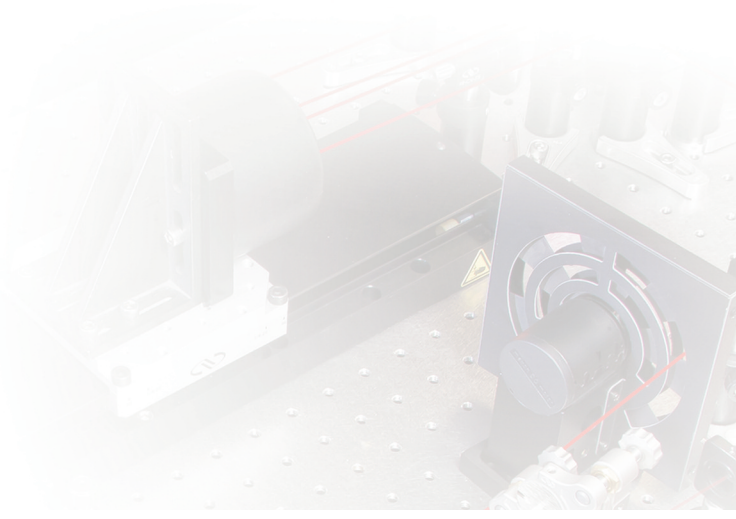
MS260i™ 1/4 m Imaging Spectrographs



The Oriel® MS260i™ is a high performance, economical and user-friendly imaging spectrograph – an ideal instrument for research and OEM applications. Oriel makes it easy to choose the right spectrograph based on the application, with pre-configured models to fit most needs. The MS260i product family is an economical alternative to the full-featured Oriel model 77782 MS257™ spectrograph. The MS260i design includes all the commonly used features of a spectrograph, with excellent performance. Models come preconfigured with diffraction gratings and input slit. They are available with USB, RS232 and IEEE-488 (GPIB) communication interfaces. Dual output port models include one output port for use with a camera, such as Oriel's Linespec™ CCD. The second output port is configured with the same slit as the input port, so that it can be used as a monochromator. This output slit may be removed and a second camera mounted for extended range scans.

The MS260i Imaging Spectrograph is available in a number of different configurations. The model shown here uses a fixed slit at the input port, providing high accuracy and repeatability. The MS260i is similar to the photo shown here, but has an adapter flange at the output port for mounting a camera.

- Models available for UV to NIR applications
- Motorized wavelength and grating selection
- Choice of micrometer adjustable slits, motorized slits or fixed slits
- Single or dual output port instruments available
- Interfaces USB, RS232, GPIB or optional hand controller
- Includes utility software at no extra cost



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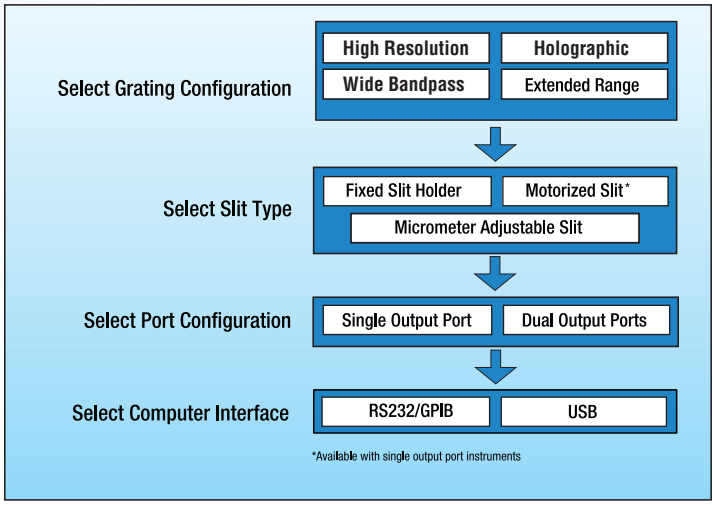
How to Select an MS260i™ Spectrograph



What's Included

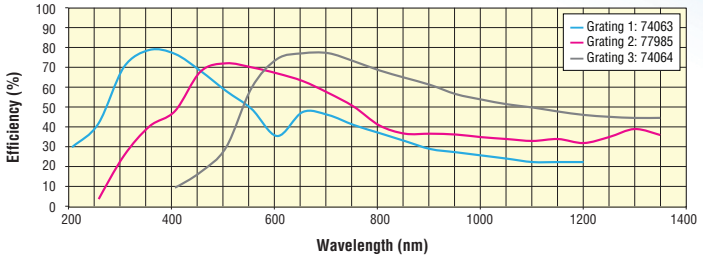
- Preselected diffraction gratings, installed and aligned
- Electronic shutter at input port
- A choice of single or dual output ports
- A choice of micrometer adjustable slits, motorized or fixed slit holders at the input port
- Matching output slit at the secondary output port included with dual output port instruments
- Mounting adapter flange at the axial output port, compatible with Oriel's LineSpec™ CCD camera
- A choice of electronics interface for GPIB/RS232 or USB communication
- LabVIEW™ based utility software and API
- Application Programming Interface (API) for LabVIEW™ with examples
- Certificate of Calibration

GRATINGS

The choice of gratings for any spectroscopic system depends on the application and must be made as one step in an iterative process of system design. The radiation source, radiation detector, polarization of radiation, spectral range of interest, desired resolution and bandpass all play a role in grating selection. Two or three gratings are installed into the MS260i imaging spectrograph. In general, the grating with the highest efficiency is chosen for particular wavelength range.

Grating Efficiency Curves

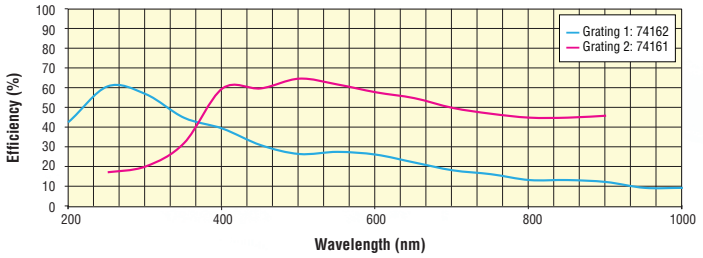
MS260i™ Imaging Spectrograph High Resolution Configuration



The efficiency curves above are relative (not absolute) and were measured using an in-plane near Littrow configuration. Please use the curves as a guide and not as absolute data.

Grating Efficiency Curves

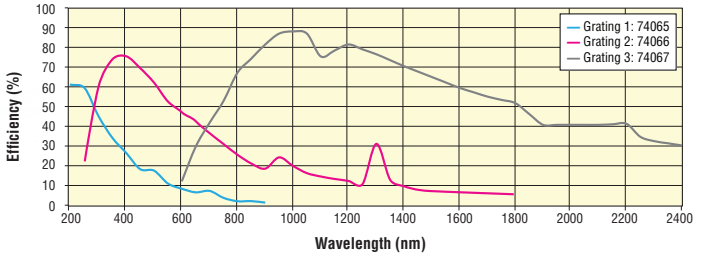
MS260i™ Imaging Spectrograph Holographic Grating Configuration



The efficiency curves above are relative (not absolute) and were measured using an in-plane near Littrow configuration. Please use the curves as a guide and not as absolute data.

Grating Efficiency Curves

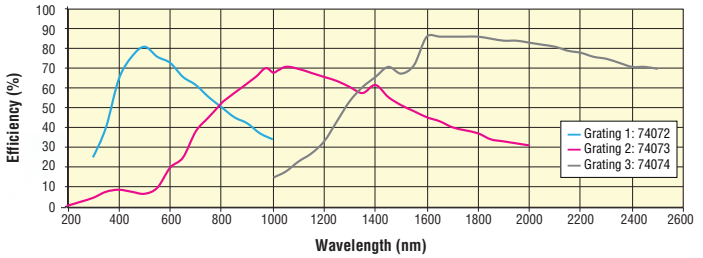
MS260i™ Imaging Spectrograph Extended Range Configuration



The efficiency curves above are relative (not absolute) and were measured using an in-plane near Littrow configuration. Please use the curves as a guide and not as absolute data.

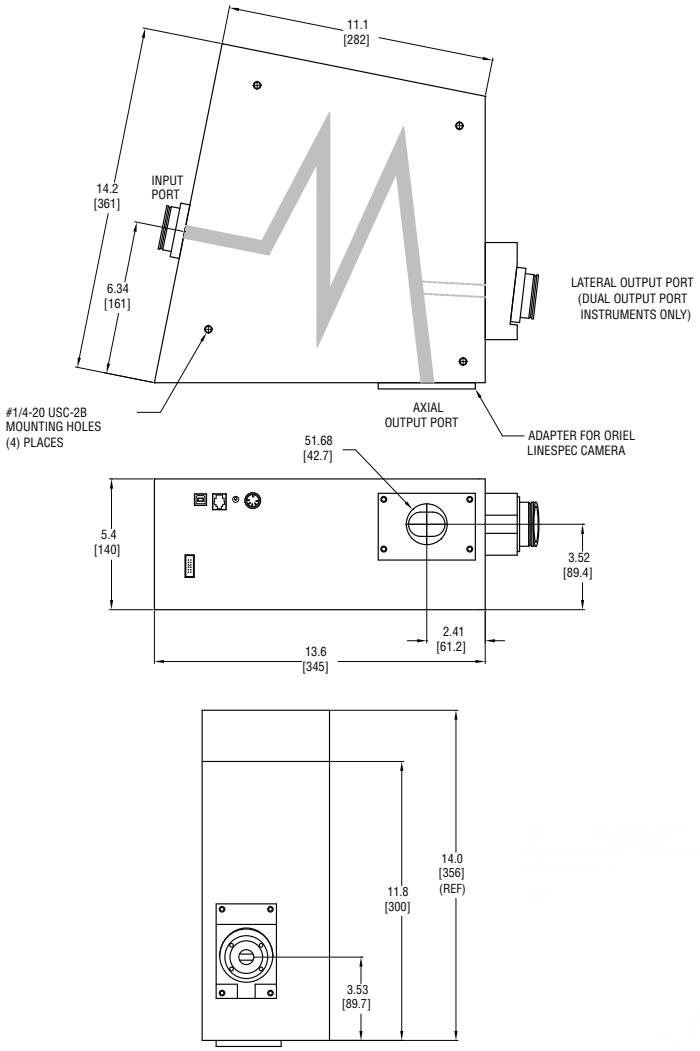
Grating Efficiency Curves

MS260i™ Imaging Spectrograph Wide Bandpass Configuration



The efficiency curves above are relative (not absolute) and were measured using an in-plane near Littrow configuration. Please use the curves as a guide and not as absolute data.

Dimensional Drawings



Micrometer Adjustable and Motorized Slits

Specifications	Micrometer Adjustable Slit	Motorized Slit
Width	4 µm to 3 mm	6 µm to 2 mm (6 µm increments)
Height	3 to 12 mm	15 mm
Repeatability	±10 µm	±5 µm
Accuracy	±10 µm (4 µm to 250 µm width) ±5% (250 µm to 3 mm width)	±10 µm

Built-In Shutter

Built-In Shutter Specifications	
Shutter Type	Normally Closed
Light Leakage	< 0.001%
Blade Coating	Black Anodized
External Control	BNC connector TTL low or shorted connector opens shutter
Minimum Exposure Time	0.2 s
Maximum Frequency	0.5 Hz
Transition Rise Time	~2 ms
Response Delay	~20 ms

Spectrographs

MS260i Imaging Spectrograph Specifications	
Input Focal Length	220 mm
Output Focal Length	257 mm
F/#	F/3.9
Wavelength Drive	Motorized
Imaging Spectrograph	Yes
Communication Interface	RS232 / GPIB (IEEE-488), USB 2.0, optional Hand Controller
Spectral Resolution[1]	Grating, input slit width and array dependent
Spatial Resolution (FWHM)[2]	40 um
Horizontal Magnification	1.1
Vertical Magnification	1.6
Usable Wavelength Range	180 nm to 25 µm, grating dependent
Wavelength Accuracy[3]	0.35 nm
Wavelength Precision[4]	0.08 nm
Maximum Slew Rate	205 nm/s with 1200 line/mm grating
Input Ports	1 input port, expandable to two input sources using optional 77765 Beam Steerer
Output Ports	Axial with LineSpec mounting flange (all models) Lateral with slit or slit holder (dual output port models)
Motorized Filter Wheel Compatibility	Filter Wheel Model 74010, Apex2 Filter Wheel
Utility Software Requirements	Windows 7 32-bit or 64-bit operating system (Windows XP compatible software also available)
Power Requirements	100-240 VAC, 47-63 Hz
Weight	21 lb [9.5 kg]

[1] Spectral Resolution: the ability to separate wavelengths, usually expressed as the Full Width Half Maximum (FWHM).
[2] Spatial Resolution: the ability of an imaging spectrograph to distinguish between two features perpendicular to the spectral axis. The aberration limited spatial resolution is defined as the Full Width Half Maximum (FWHM) of the smallest feature that can be resolved.
[3] Wavelength Accuracy: the capability of the monochromator to output the desired wavelength.
[4] Wavelength Precision: the ability of a wavelength to be consistently reproduced and the number of significant digits to which it has been reliably measured.

Fixed Slits

Resolution is listed for the MS260i using a 1200 line/mm grating set to output a center wavelength of 546.1 nm. A 2048 element array with 14 x 200 um pixels was utilized. The values listed in these tables are actual measured values.

Fixed Slit Model	Width	Height	Resolution (nm)
77222	10 µm	2 mm	0.25*
77220	25 µm	3 mm	0.13
77725	25 µm	6 mm	0.13
77221	50 µm	3 mm	0.18
77219	50 µm	6 mm	0.18
77728	100 µm	3 mm	0.33
77729	100 µm	10 mm	0.33
77730	200 µm	3 mm	0.6
77731	200 µm	10 mm	0.6
77732	500 µm	15 mm	1.6

* This value is valid for both 1024 and 2048 element arrays.

Note: fixed slits are ordered separately. When using a dual output port instrument, the slit size at the lateral output port should be the same size as the one installed at the input port.

Features Matrix

High Resolution Models (200 to 1350 nm)

Model	Fixed Slit Holders	Micrometer Slit	Motorized Slit	Single Output Port	Dual Output Ports	RS232/GPIB	USB
MS260i-RG-1-FH-A	•			•		•	
MS260i-USB-1-FH-A	•			•			•
MS260i-RG-1-FH-D	•				•	•	
MS260i-USB-1-FH-D	•				•		•
MS260i-RG-1-MC-A		•		•		•	
MS260i-USB-1-MC-A		•		•			•
MS260i-RG-1-MC-D		•			•	•	
MS260i-USB-1-MC-D		•			•		•
MS260i-RG-1-MT-A			•	•		•	
MS260i-USB-1-MT-A			•	•			•

Holographic Models (200 to 925 nm)

Model	Fixed Slit Holders	Micrometer Slit	Motorized Slit	Single Output Port	Dual Output Ports	RS232/GPIB	USB
MS260i-RG-2-FH-A	•			•		•	
MS260i-USB-2-FH-A	•			•			•
MS260i-RG-2-FH-D	•				•	•	
MS260i-USB-2-FH-D	•				•		•
MS260i-RG-2-MC-A		•		•		•	
MS260i-USB-2-MC-A		•		•			•
MS260i-RG-2-MC-D		•			•	•	
MS260i-USB-2-MC-D		•			•		•
MS260i-RG-2-MT-A			•	•		•	
MS260i-USB-2-MT-A			•	•			•

Extended Range Models (200 to 2400 nm)

Model	Fixed Slit Holders	Micrometer Slit	Motorized Slit	Single Output Port	Dual Output Ports	RS232/GPIB	USB
MS260i-RG-3-FH-A	•			•		•	
MS260i-USB-3-FH-A	•			•			•
MS260i-RG-3-FH-D	•				•	•	
MS260i-USB-3-FH-D	•				•		•
MS260i-RG-3-MC-A		•		•		•	
MS260i-USB-3-MC-A		•		•			•
MS260i-RG-3-MC-D		•			•	•	
MS260i-USB-3-MC-D		•			•		•
MS260i-RG-3-MT-A			•	•		•	
MS260i-USB-3-MT-A			•	•			•

Wide Bandpass Models (300 to 2500 nm)

Model	Fixed Slit Holders	Micrometer Slit	Motorized Slit	Single Output Port	Dual Output Ports	RS232/GPIB	USB
MS260i-RG-4-FH-A	•			•		•	
MS260i-USB-4-FH-A	•			•			•
MS260i-RG-4-FH-D	•				•	•	
MS260i-USB-4-FH-D	•				•		•
MS260i-RG-4-MC-A		•		•		•	
MS260i-USB-4-MC-A		•		•			•
MS260i-RG-4-MC-D		•			•	•	
MS260i-USB-4-MC-D		•			•		•
MS260i-RG-4-MT-A			•	•		•	
MS260i-USB-4-MT-A			•	•			•

For more information on the Oriel MS260i Imaging Spectrograph and other spectroscopy accessories, please visit www.Newport.com

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