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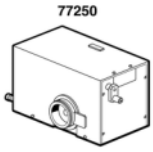
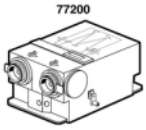
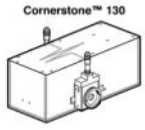
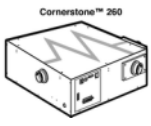
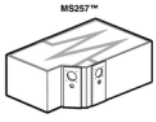
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Find the *Newport / Oriel 74125* at our website: ***Click HERE***

Overview of Oriel Monochromators

We offer manually operated and fully automated monochromators in focal lengths from 74 mm to 257 mm. They are suited to a wide variety of applications.

Table 1 Overview of Oriel Monochromators

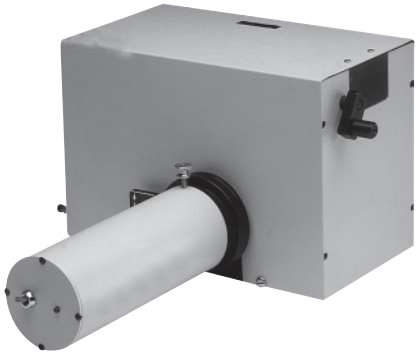
Monochromators	Special Features	Focal Length	F/#	Resolution (nm)*	Wavelength Accuracy	Wavelength Precision	Stray Light	Scan Speed (nm/s)	No. of Gratings Supported Simultaneously	Automated	RS-232	USB 2.0
	Compact size, lowest cost instruments, moderate resolution. Manual and motorized versions available.	74 mm		1.5 to 6 nm (model dependent)	2 nm	0.4 nm	0.03 %	500	1	Yes (model dependent)	Yes	
	Simple, low cost laboratory 1/8 m monochromator. Single interchangeable grating, manually operated.	125	F/3.7	0.5	1 nm	0.4 nm	0.03 %		1			
	General purpose 1/4 m monochromator, twice the light throughput of 77250 at the same resolution. Single interchangeable grating, manually operated.	250	F/4.4	0.15	1 nm	± 0.1 nm	0,14 %		1			
	Fully automated 1/8 m instrument with interchangeable, dual gratings. RS-232 or USB 2.0 computer interfaces; intuitive command language.	130 mm	F/3.7	0.5	0.50 nm	0.08 nm	0.03 %	350	2	Yes	Yes	Yes
	High throughput, good resolution, fully automated 1/4 m monochromator. Triple grating, dual output ports. RS-232 or USB 2.0 interfaces are standard.	260 mm	F/3.9	0.15	0.35 nm	0.08 nm	0.03 %	175	3	Yes	Yes	Yes
	1/4 m monochromator and spectrograph in one instrument. Superior resolution, negligible stray light. Supports 4 gratings simultaneously, and two outputs, automatic port switching. Comes standard with RS-232 or USB 2.0; IEEE-488 is optional.	257 mm	F/3.9	0.10**	0.2 nm	0.015 nm	0,03 %	280	4	Yes	Yes	Yes

*1200 l/mm grating and 10 µm x 2 mm slit.
**For MS257™ Monochromator, as an imaging spectrograph, the resolution is 0.15 nm.

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ORIEL INSTRUMENTS
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77250 Series 1/8 m Monochromator



- **Low cost, compact size and high performance**
- **Very efficient - high throughput and low stray light**
- **Usable from 180 nm to 24 μm with interchangeable gratings**
- **Wide range of bandpasses with interchangeable slits**

77250 1/8 m Monochromator with 6025 Hg (Ar) Spectral Calibration Lamp.

For general-purpose laboratory work or academic applications, the Oriel 77250 1/8 m Monochromator is a smart and economical choice. This simple, manually operated 1/8 m instrument has good resolution, low stray light and is very versatile. A large family of slits and gratings give a wide range of bandpasses and broad spectral coverage.

Optical Configuration

The optical configuration of the 77250 is the reason why throughput is so high while stray light performance is unrivaled. Fig. 1 shows the Ebert-Fastie design with two inline slits and an out of plane grating. Having the slits opposite each other lets you mount the complete optical system on a bench or rail. Having the grating out of plane eliminates re-entrant spectra.

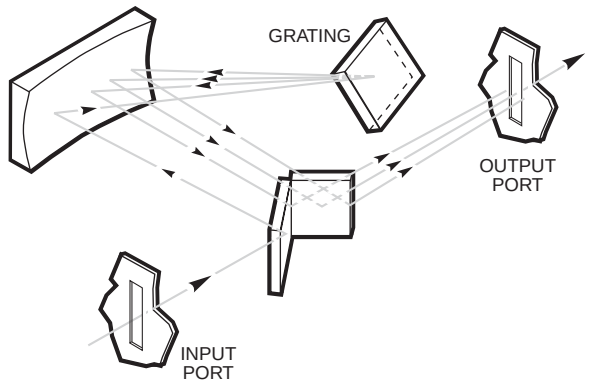


Fig. 1 Optical configuration of 77250 1/8 m Monochromator.

Manual Wavelength Drive and Readout

The 77250 uses a hand crank to turn the grating. A 3-digit counter displays the wavelength directly in nanometers when using a 1200 l/mm grating. A calibrated wheel marked in 0.2 nm divisions lets you position and read the wavelength to 0.1 nm. For gratings with other line spacings, multiply the wavelength on the counter by the "Wavelength Counter Multiplier" listed in Table 1. The readout is factory set so the wavelength indicated is correct to within 1 nm through the full range of a 1200 l/mm grating. For greater accuracy, you can reset the readout within any restricted spectral region. The precision of this instrument is better than 0.2 nm, limited by backlash.

Interchangeable Gratings

Each grating is mounted in a protective frame. The frame has a tab for quick and easy insertion and removal without touching the surface of the grating. The following 30 x 30 mm replicated gratings are for the 77250 only; they cannot be used in any of our other Monochromators.

Table 1 Grating Specifications for 77250 1/8 m Monochromator

Line Density (l/mm)	Blaze Wavelength	Type	Wavelength Counter Multiplier	Reciprocal Dispersion (nm/mm)*	Peak Efficiency (%)	Primary Wavelength Region**	Instrument's Upper Wavelength Mechanical Limit (for specificed grating)	Model
3600	405	Holographic	0.33	60	60	180 - 330 nm	330 nm	77310
2400	250	Holographic	0.5	3.3	65	180 - 500 nm	500 nm	77308
1800	500	Holographic	0.67	4.1	80	300 - 670 nm	670 nm	77309
1200	250	Holographic	1.0	6.7	65	180 - 650 nm	1000 nm	77296
1200	350	Ruled	1.0	6.6	80	200 - 1000 nm	1000 nm	77298
1200	750	Ruled	1.0	6.2	85	450 - 1000 nm	1000 nm	77306
600	200	Ruled	2.0	13.3	70	180 - 500 nm	2000 nm	77304
600	750	Ruled	2.0	13.2	75	450 - 2000 nm	2000 nm	77305
600	1	Ruled	2.0	13	90	600 - 2000 nm	2000 nm	77299
600	1.6	Ruled	2.0	90	90	900 - 2000 nm	2000 nm	77316
300	2	Ruled	4.0	26	90	1.1 - 4.0 µm	4 µm	77300
200	1	Ruled	6.0	40	85	0.6 - 2.2 µm	6 µm	77307
150	800	Ruled	8.0	80	80	425 - 1600	8 µm	77317
150	4	Ruled	8.0	52	75	2.5 - 8 µm	8 µm	77301
75	7	Ruled	16	105	80	4.5 - 16 µm	16 µm	77302
50	12	Ruled	24.0	157	80	7 - 23 µm	24 µm	77303

*At blaze wavelength
**The primary wavelength region is where the grating efficiency is >0.2. System efficiency will also be affected by the reflectivity of the mirrors and the grating angle at any wavelength.

Three Types of Slits

We offer three types of slit assemblies for the 77250 in various slit sizes. Choose the same type and size for the input and output. Our slit assemblies have a 1.5 Inch Series male flange.

Micrometer Driven Slit Assembly

- Slit width is continuously variable from 4 µm to 3 mm
- Slit height is adjustable from 1 to 15 mm
- ±10 µm repeatability
- ±10 µm accuracy from 4 µm to 250 µm; ±5% from 250 µm to 3 mm

Multiple Fixed Slit Assembly

- 8 fixed slit positions from 50 µm to 3.16 mm
- Slit height is adjustable from 1 to 12 mm

Fixed Slits

- Most economical for single slit size
- Fixed width and height

Mounting

Rod mounting the 77250 allows the greatest flexibility; you can vary the optical axis height to match your source or detector. To rod mount the 77250, order the 77387 Monochromator Mounting Plate and two optical rods and rod holders for rods and rod holders.

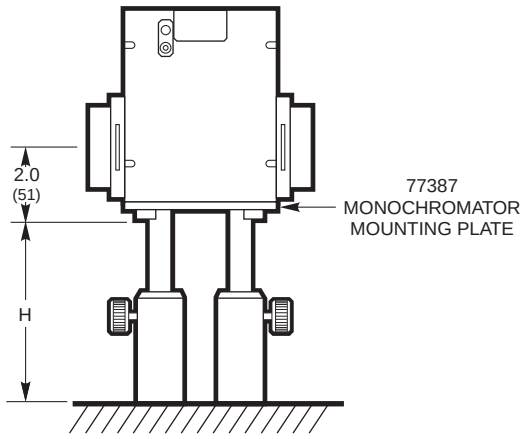


Fig. 2 77250 Monochromator rod mounted to an optical table using the 77387 Mounting Plate.

Specifications

Focal Length	125
Effective Aperture	F/3.7
Usable Wavelength Range	180 nm to 24 µm with interchangeable gratings; dry nitrogen purge lowers the limit to 175 nm
Resolution	0.5 nm with 1200 l/mm grating and 50 µm slit
Stray Light	0.03 %
Wavelength Readout	3 digit counter in nm with index marks every 0.2 nm
Wavelength Precision	0.4 nm
Weight	4 lb (1.8 kg)

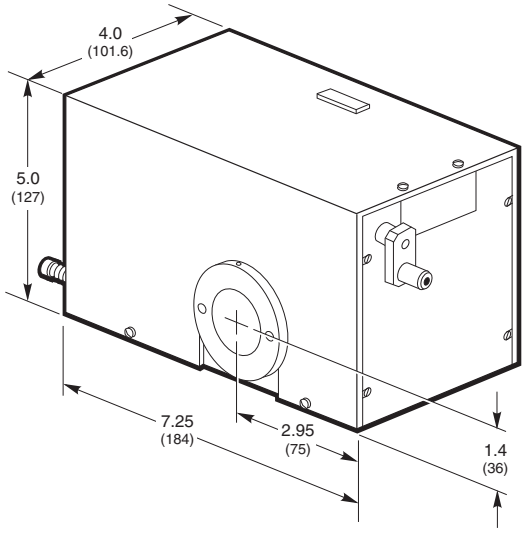


Fig. 3 Dimensional diagram of 77250 1/8 m Monochromator.

Ordering Information

Monochromator and Accessories

To order a complete 77250 Monochromator, you must specify a grating and (2) slit assemblies separately.

Model	Spectrometer System
77250	1/8 m Monochromator
74001	Micrometer Driven Slit Assembly
77269	Multiple Fixed Slit Assembly
77294	Fixed Slit Holder (order 1 fixed slit for each holder from table below)
77387	Inch Monochromator Mounting Plate (order 2 rod and rod holders separately)

Fixed Slits

Model	Description	Resolution at 500 nm (nm)**
77219	Fixed Slit, 50 µm Width, 6 mm Height	0.5
77218	Fixed Slit, 120 µm Width, 18 mm Height	1
77217	Fixed Slit, 280 µm Width, 18 mm Height	2
77216	Fixed Slit, 600 µm Width, 18 mm Height	4
77215	Fixed Slit, 760 µm Width, 18 mm Height	5
77214	Fixed Slit, 1240 µm Width, 18 mm Height	8
77213	Fixed Slit, 1560 µm Width, 18 mm Height	10
77212	Fixed Slit, 3160 µm Width, 18 mm Height	20
77211	Fixed Slit, 6230 µm Width, 18 mm Height	40

*Usable slit height is 12 mm.
**For 1200 l/mm gratings to obtain the resolution with other gratings multiply by the "Wavelength Counter Multiplier" in Table 1.

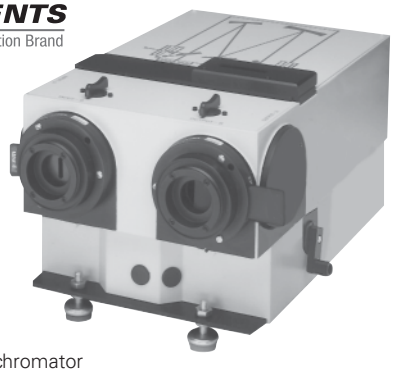
Gratings

Model	Line Density (l/mm)	Blaze Wavelength	Type	Primary Wavelength Region	Instrument's Upper Mechanical Limit (For Specified grating)
77310	3600	405	Holographic	180 - 330 nm	330 nm
77308	2400	250	Holographic	180 - 500 nm	500 nm
77309	1800	500	Holographic	300 - 670 nm	670 nm
77296	1200	250	Holographic	180 - 650 nm	1000 nm
77298	1200	350	Ruled	200 - 1000 nm	1000 nm
77306	1200	750	Ruled	450 - 1000 nm	1000 nm
77304	600	200	Ruled	180 - 500 nm	2000 nm
77305	600	750	Ruled	450 - 2000 nm	2000 nm
77299	600	1	Ruled	600 - 2000 nm	2000 nm
77316	600	1.6	Ruled	900 - 2000 nm	2000 nm
77300	300	2	Ruled	1.1 - 4.0 µm	4 µm
77307	200	1	Ruled	0.6 - 2.2 µm	6 µm
77317	150	800	Ruled	425 - 1600 nm	8 µm
77301	150	4	Ruled	2.5 - 8 µm	8 µm
77302	75	7	Ruled	4.5 - 16 µm	16 µm
77303	50	12	Ruled	7 - 23 µm	24 µm

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77200 1/4 m Monochromator

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77200 1/4 m Monochromator

- **Versatility and high performance at an affordable price**
- **Fast, F/4.4 optics**
- **Wide spectral range - 180 nm to 24 μm with interchangeable gratings**
- **Twice the dispersion of 1/8 m Monochromator**

For general-purpose laboratory work or academic applications requiring more throughput and higher resolution than an 1/8 m instrument, choose the Oriel 77200 1/4 m Monochromator. With 0.1 nm resolution, the versatility of a monochromator or spectrograph, low stray light, and wide F4/4 cone, the 77200 is a smart choice for applications not requiring the automation of our multi-grating, motorized Cornerstone 260™ instrument (described on page 1286). This is a simple, manually operated 1/4 m instrument supported by a large family of slits and gratings.

Optical Configuration

Fig. 1 shows the optical configuration of this Monochromator: an in-plane asymmetrical Czerny-Turner configuration. Placing the entrance and exit slits asymmetrically, with respect to the grating, allows the zero coma point to be located within the working wavelength range. This results in minimal aberration throughout the range.

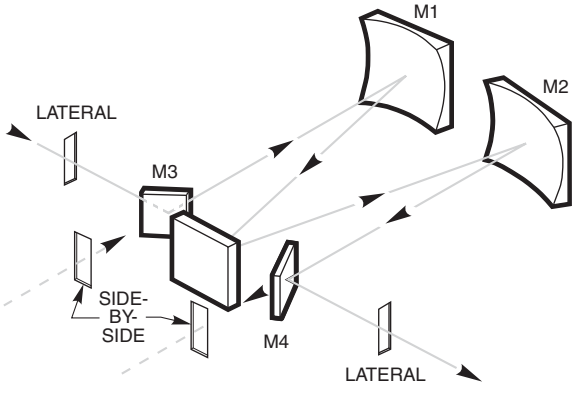


Fig. 1 Optical configuration of 77200 1/4 m Monochromator.

Interchangeable Gratings

The grating assemblies for the 77200 are 50 x 50 mm replicated gratings, prealigned in a protective frame. The frame has a tab so you can insert and remove the grating without touching its surface.

Three Types of Slits

We offer three types of slit assemblies for the 77200, in various slit sizes. Choose the same type and size for the input and output. Our slit assemblies have a 1.5 Inch Series male flange.

Micrometer Driven Slit Assembly

- Slit width is continuously variable from 4 μm to 3 mm
- Slit height is adjustable from 1 to 15 mm
- ±10 μm repeatability
- ±10 μm accuracy from 4 to 250 μm; ±5% from 250 μm to 3 mm

Multiple Fixed Slit Assembly

- 8 fixed slit positions from 50 μm to 3.16 mm
- Slit height is adjustable from 1 to 12 mm

Fixed Slits

- Most economical for single slit size
- Fixed width and height

Table 1 Grating Specifications for 77200 1/4 m Monochromator

Line Density (l/mm)	Blaze Wavelength	Grating Type	Wavelength Counter Multiplier	Reciprocal Dispersion (nm/mm)	Peak Efficiency (%)	Primary Wavelength Region**	Instrument's Upper Wavelength Mechanical Limit (For specified grating)	Model
2400 l/mm	250	Holographic	0.5	1.4	65	200 - 600 nm	600 nm	77230
1800 l/mm	500	Holographic	0.66	1.7	80	300 - 900 nm	792 nm	77253
1200 l/mm	250	Holographic	1.0	3.1	80	180 - 650 nm	1200 nm	77231
1200 l/mm	350	Ruled	1.0	3	80	200 - 1200 nm	1200 nm	77233
1200 l/mm	750	Ruled	1.0	2.5	80	450 - 1200 nm	1200 nm	77229
600 l/mm	200	Ruled	2.0	6.4	70	180 - 500 nm	2400 nm	77239
600 l/mm	300	Ruled	2.0	6.3	85	250 - 850 nm	2400 nm	77266
600 l/mm	750	Ruled	2.0	6	75	450 - 2000 nm	2400 nm	77243
600 l/mm	1	Ruled	2.0	5.7	80	600 - 2400 nm	2400 nm	77234
600 l/mm	1.25	Ruled	2.0	5.4	85	750 - 3000 nm	2400 nm	77279
600 l/mm	1.6	Ruled	2.0	4.9	90	900 - 3000 nm	2400 nm	77280
400 l/mm	500	Ruled	3.0	9.4	80	300 - 1200 nm	3600 nm	77240
400 l/mm	1.6	Ruled	3.0	8.5	85	900 - 2900 nm	3600 nm	77281
300 l/mm	1	Ruled	4.0	12.4	85	575 - 2500 nm	4800 nm	77282
300 l/mm	2	Ruled	4.0	11.4	90	1.1 - 4.8 µm	4800 nm	77235
246.16 l/mm	226	Ruled	4.87	15.7	60	190 - 450 nm	5.8 µm	77283
200 l/mm	1	Ruled	6.0	18.9	85	0.6 - 2.2 µm	7.2 µm	77244
150 l/mm	300	Ruled	8.0	25.8	70	190 - 800 nm	9.6 µm	77284
150 l/mm	800	Ruled	8.0	25.6	85	425 - 1600 nm	9.6 µm	77286
150 l/mm	1.25	Ruled	8.0	25.3	85	725 - 2800 nm	9.6 µm	77287
150 l/mm	4	Ruled	8.0	23	75	2.5 - 9.6 µm	9.6 µm	77236
50 l/mm	12	Ruled	24.0	68.6	80	0.7 - 23 µm	28.8 µm	77238

Specifications

Focal Length	250
F/#	F/4.4
Usable Wavelength Range	180 nm to 24 µm with interchangeable gratings
Resolution	0.1 nm with 1200 l/mm grating and 10 µm x 2mm slit
Wavelength Readout	5 digit counter in nm with index marks every 0.2 nm
Wavelength Dial Accuracy	±1 nm
Wavelength Precision	±0.1 nm
Weight	12 lbs (5.5 kg)

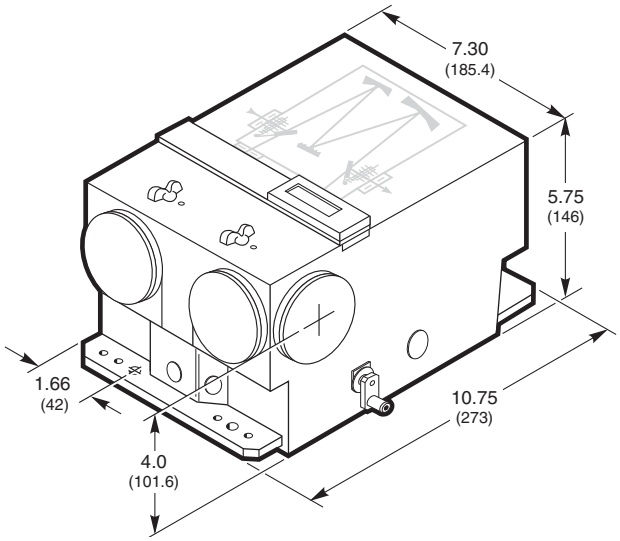


Fig. 2 Dimensional diagram of 77200 1/4 m Monochromator.

Ordering Information

Monochromator and Accessories

To order a complete 77200 Monochromator, you must specify a grating and (2) slit assemblies for use as a monochromator, and a grating and (1) slit assembly for use as a spectrograph.

Model	Description
77200	1/4 m Monochromator, Model 77200 Base Unit
74003	Micrometer Driven Slit Assembly
77249	Multiple Fixed Slit Assembly
77210	Fixed Slit Holder (order 1 fixed slit for each holder from table below)
77395	Mounting Kit, 2in 1000W Research Illuminator to 77200 Monochrometer, Inch Holes

Gratings

Model	Line Density (l/mm)	Blaze Wavelength	Grating Type	Primary Wavelength Range (nm)	Instrument's Upper Wavelength Mechanical Limit (For specified grating)
77230	2400 l/mm	250	Holographic	200 - 600 nm	600 nm
77253	1800 l/mm	500	Holographic	300 - 900 nm	792 nm
77231	1200 l/mm	250	Holographic	180 - 650 nm	1200 nm
77233	1200 l/mm	350	Ruled	200 - 1200 nm	1200 nm
77229	1200 l/mm	750	Ruled	450 - 1200 nm	1200 nm
77239	600 l/mm	200	Ruled	180 - 500 nm	2400 nm
77266	600 l/mm	300	Ruled	250 - 850 nm	2400 nm
77243	600 l/mm	750	Ruled	450 - 2000 nm	2400 nm
77234	600 l/mm	1	Ruled	600 - 2400 nm	2400 nm
77279	600 l/mm	1.25	Ruled	750 - 3000 nm	2400 nm
77280	600 l/mm	1.6	Ruled	900 - 3000 nm	2400 nm
77240	400 l/mm	500	Ruled	300 - 1200 nm	3600 nm
77281	400 l/mm	1.6	Ruled	900 - 2900 nm	3600 nm
77282	300 l/mm	1	Ruled	575 - 2500 nm	4800 nm
77235	300 l/mm	2	Ruled	1.1 - 4.8 µm	4800 nm
77283	246.16 l/mm	226	Ruled	190 - 450 nm	5.8 µm
77244	200 l/mm	1	Ruled	0.6 - 2.2 µm	7.2 µm
77284	150 l/mm	300	Ruled	190 - 800 nm	9.6 µm
77286	150 l/mm	800	Ruled	425 - 1600 nm	9.6 µm
77287	150 l/mm	1.25	Ruled	725 - 2800 nm	9.6 µm
77236	150 l/mm	4	Ruled	2.5 - 9.6 µm	9.6 µm
77238	50 l/mm	12	Ruled	0.7 - 23 µm	28.8 µm

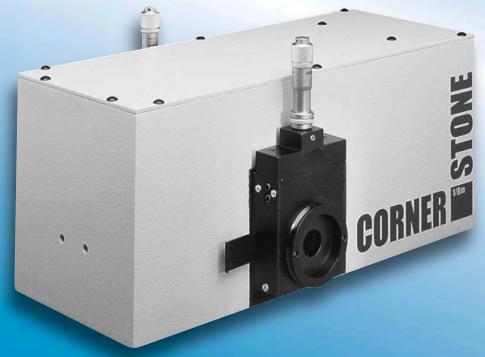
Fixed Slits

Model	Description	Monochromator Resolution* at 500 nm (nm)
77222	Fixed Slit, 10 µm Width, 2 mm Height	0.1**
77220	Fixed Slit, 25 µm Width, 3 mm Height	0.15**
77219	Fixed Slit, 50 µm Width, 6 mm Height	0.25**
77218	Fixed Slit, 120 µm Width, 18 mm Height	0.4
77217	Fixed Slit, 280 µm Width, 18 mm Height	1
77216	Fixed Slit, 600 µm Width, 18 mm Height	2
77215	Fixed Slit, 760 µm Width, 18 mm Height	2.5
77214	Fixed Slit, 1240 µm Width, 18 mm Height	4
77213	Fixed Slit, 1560 µm Width, 18 mm Height	5
77212	Fixed Slit, 3160 µm Width, 18 mm Height	10
77211	Fixed Slit, 6230 µm Width, 18 mm Height	20

*For 1200 l/mm gratings. **Resolution with an array detector is limited by array element width.

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Cornerstone™ 130 1/8 m Monochromator



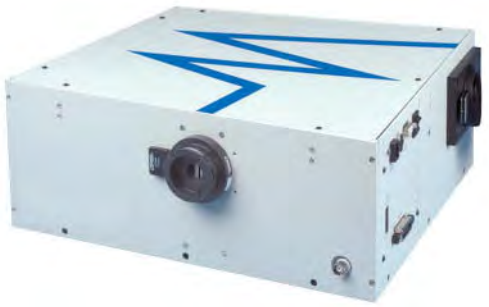
Cornerstone 130 1/8 m Monochromator

The Cornerstone™ 130 family of Oriel Monochromators supports two gratings simultaneously, which can be easily interchanged, has an integrated shutter, and is available with RS 232 and IEEE-488 interfaces or with USB 2.0. Its simplicity, high performance, and economical price make it an ideal instrument for research or OEM applications.

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Cornerstone™ 260 1/4 m Monochromator



- **New USB2.0 models**
- **Operate two or three gratings simultaneously, individually replaceable**
- **Dual output ports**
- **Superior resolution and very low stray light**

Cornerstone 260 1/4 m Monochromator with a detector mounted to each output port

The Oriel Cornerstone 260 1/4 m Monochromators are economical, fully automated, multi-grating instruments with dual output ports and exceptional optical performance. We offer a dual grating and a triple grating model; both were designed for fast, automated, continuous scanning over a broad spectral range. Simply program your filter, grating, and port changeover points, and walk away while Cornerstone 260 automatically scans from the UV through the far IR. Other standard features include a built-in electronic shutter, filter wheel control, USB 2.0 or RS-232 and IEEE-488 communications, and a family of interchangeable gratings and slits.

Why The Cornerstone 260?

Superior performance and ease of use at an economical price make the Cornerstone 260 Monochromator one of the best choices for UV-IR spectroscopy and radiometry. The dual grating instruments offer improved resolution, over the triple grating instruments. The grating mounts are interchangeable, so if you currently have a triple grating Cornerstone, you can easily convert it to a dual grating instrument for improved resolution in your spectral range of interest.

Optical Configuration

Fig. 1 shows the asymmetrical in-plane Czerny-Turner optical configuration of the Cornerstone 260. The input F/number is F/3.9. The resolution is 0.10 nm (dual grating instruments with a 1200 l/mm grating and 10 μm x 2 mm slit). Throughput is high and stray light is very low. We relied on our extensive research on optical flat black paints and baffles, and the use of high efficiency spherical mirrors and gratings to minimize surface reflections, and thus, stray light.

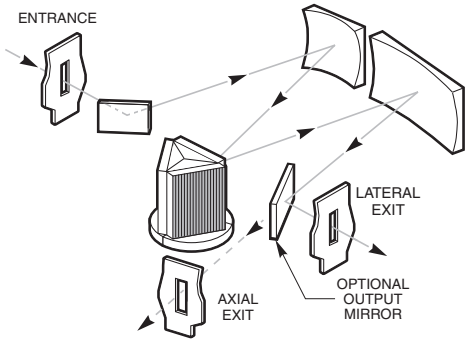


Fig. 1 Optical design of the triple grating Cornerstone 260 1/4 m Monochromator

Two Output Ports

The Cornerstone 260 has two output ports to allow continuous scanning over a broad wavelength range without breaking down the instrument to switch detectors. This flip mirror is commanded through the Cornerstone 260 software or hand controller. Note that with the help of model 77713 Motorized Beam Steerer (see page 1361), it is also possible to turn the monochromator into a dual input instrument.

Instrument Control

We offer Cornerstone 260 Monochromators with USB 2.0 or with RS232 and IEEE-488 interfaces. You can communicate with any of the Cornerstone 260 instruments in one of 3 manners.

Hand Controller

The 74009 Hand Controller is a dedicated interface just for the Cornerstone Monochromator Family. There is no need to memorize commands or key sequences; the 24 keys are clearly labeled with functions like "Step Up," "Go Wave," and "Shutter". The backlit LCD display provides constant information on grating lines/mm, filter wheel position, current wavelength, and shutter status. The 74009 provides intuitive access to nearly all the functionality of the Cornerstone 260.

Computer Control

The computer interface was also designed for simplicity and ease of use. The Cornerstone ASCII command set is simple to use via RS 232, USB, or GPIB. For example, close the shutter is "SHUTTER C" and change to the second grating is "GRAT 2".

Complete Software Packages

We offer various software applications for Cornerstone™:

Complete Software Packages

We offer various software applications for Cornerstone™:

- A simple utility program to get up and running right away (included with all Cornerstone 260 instruments)
- For LabView programming we offer VIs (included with all Cornerstone 260 instruments)
- TRACQ Basic™; this is an optional instrument control and data acquisition software package. It controls the Cornerstone 260, its accessories, the Oriel Merlin™ Digital Lock-in, and new Optical Power Meter. TRACQ™ Basic lets you set the monochromator parameters, i.e. grating changeover point, data collection points, etc., and walk away while Cornerstone does the work.
- A simple utility program to get up and running right away (included with all Cornerstone 260 instruments)
- For LabView programming we offer VIs (included with all Cornerstone 260 instruments)
- TRACQ Basic™; this is an optional instrument control and data acquisition software package. It controls the Cornerstone 260, its accessories, the Oriel Merlin™ Digital Lock-in, and new Optical Power Meter. TRACQ™ Basic lets you set the monochromator parameters, i.e. grating changeover point, data collection points, etc., and walk away while Cornerstone does the work.

Interchangeable Gratings

The Cornerstone 260 holds two or three gratings simultaneously. Each is mounted in an individual, prealigned mount. Simply drop it in place, and program the grating specifications into the Cornerstone through the Control/Utility Program or Hand Controller. If you intend to use the Cornerstone 260 as a triple grating instrument, choose your gratings from the "Triple Grating Assemblies" list in Table 1. If you intend to use the instrument as a dual grating monochromator, order two gratings from the "Dual Grating Assemblies" list.

Add Gratings in the Field

You can add and change gratings in the field without changing the instrument's grating turret. However, you may have to replace your current grating assemblies. If you want to change a dual grating instrument into a triple grating instrument, you cannot simply order a third grating; all three of your gratings need to be Triple Grating Assemblies. Similarly, if you wish to convert your triple grating Cornerstone 260 to a dual grating Cornerstone 260 (to improve resolution), you can't simply remove one grating; you will need to order two new Dual Grating Assemblies.

Four Types of Slits

We offer four types of slit assemblies for the Cornerstone 260. Choose the same size and type of slit for the input and output of your monochromator. All our slit assemblies have a 1.5 Inch Series male flange.

Motorized Slit Assembly

- Automated resolution control
- Variable width from 6 μm to 2 mm
- ±5 μm repeatability
- 6 μm resolution
- ±10 μm accuracy

This is our most versatile slit assembly. Change your instrument's resolution by varying the slit width from 6 μm to 2 mm, in 6 μm steps. To operate a motorized slit, you also need the 74116 Slit Control Board; this board operates up to three motorized slits. Control is via the 74009 Hand Controller, or software. Input and output motorized slits are slightly different due to the mounting blocks. Please order motorized slits at the time you order the monochromator, so that we may factory install them. We do not recommend the installation of motorized slits in the field.

Micrometer Driven Slit Assembly

- Continuously variable width from 4 μm to 3 mm
- Continuously variable height from 1 to 15 mm
- ±10 μm repeatability
- ±10 μm accuracy from 4 to 250 μm, ±5% from 250 μm to 3 mm

The 74001 is a more economical choice than the motorized assembly, if you need to change resolutions frequently. It uses a precision micrometer drive to adjust the slit width from 4 μm to 3 mm.

Multiple Fixed Slit Assembly

- 8 fixed slit positions from 50 μm to 3.16 mm
- Slit height is adjustable from 1 to 12 mm

The 77269 is a rotating disc with eight highly repeatable fixed slit positions. A manual wheel rotates the disc to the desired slit width; each position has a positive detent for high repeatability.

Fixed Slits

- Most economical for single slit size
- Fixed width and height

If you only need a few slit sizes, this is the most economical choice. These are precision slits fixed on a machined slide. You need the 77294 Fixed Slit Holder to hold the slit and mate it to the monochromator.

Table 1 Grating Specifications for Cornerstone 260 1/4 m Monochromator

These gratings are mounted in pre-adjusted holders that can be inserted and removed, at any time, from the Cornerstone 260.

Line Density (l/mm)	Blaze Wavelength	Type	Reciprocal Dispersion (nm/mm)*	Peak Efficiency (%)	Primary Wavelength Region**	Instrument's Upper Wavelength Mechanical Limit (for specificed grating)	Model	
							Dual Grating Assemblies	Triple Grating Assemblies
2400	250	Holographic	1.6	60	180 - 700 nm	700 nm	74160	74060
1800	500	Holographic	2.1	65	300 - 925 nm	925 nm	74161	74061
1200	250	Holographic	3.2	80	180 - 650 nm	1400 nm	74162	74062
1200	350	Ruled	3.2	65	200 - 1400 nm	1400 nm	74163	74063
1200	1000	Ruled	3.1	80	550 - 1600 nm	1200 nm	77990	77989
1200	750	Ruled	3.1	80	450 - 1400 nm	1400 nm	74164	74064
600	200	Ruled	6.4	90	180 - 500 nm	2800 nm	74165	74065
600	400	Ruled	6.5	80	250 - 1300 nm	2800 nm	74166	74066
600	1000	Ruled	6.4	75	600 - 2500 nm	2800 nm	74167	74067
600	1250	Ruled	6.4	70	750 - 2500 nm	2800 nm	74168	74068
600	1600	Ruled	6.2	85	900 - 2800 nm	2800 nm	74169	74069
400	1200	Ruled	9.7	80	700 - 2500 nm	4.2 µm	74170	74070
400	1600	Ruled	9.6	80	900 - 2900 nm	4.2 µm	74171	74071
300	500	Ruled	12.8	85	250 - 1150 nm	5.6 µm	74172	74072
300	1000	Ruled	12.9	80	575 - 2500 nm	5.6 µm	74173	74073
300	2000	Ruled	12.9	90	1100 - 5000 nm	5.6 µm	74174	74074
246.16	226	Ruled	15.5	85	190 - 450 nm	6.8 µm	74175	74075
200	1000	Ruled	19.3	85	600 - 2200 nm	8.4 µm	74176	74076
150	300	Ruled	25.5	80	190 - 800 nm	11.2 µm	74177	74077
150	800	Ruled	25.6	80	425 - 1600 nm	11.2 µm	74178	74078
150	1250	Ruled	25.7	80	725 - 2800 nm	11.2 µm	74179	74079
150	4000	Ruled	25.8	75	2.5 - 12 µm	11.2 µm	74180	74080
121.6	413	Ruled	31.3	80	250 - 1000 nm	13.8 µm	74181	74081
75	7000	Ruled	51.7	80	4.5 - 20 µm	22.4 µm	74182	74082

*At blaze wavelength.
**The primary wavelength region is where the grating efficiency is 20%. System efficiency will also be affected by the reflectivity of the mirrors and the grating angle at any wavelength.

Optional Motorized Filter Wheel

A 6-position filter wheel, model 74010, is offered, to hold order sorting and/or neutral density filters at the input of Cornerstone 260. For convenience, the filter wheel is controlled by Cornerstone 260 and commanded through software or the Hand Controller. The 74010 holds six 1.0 inch (25.4 mm) diameter filters; the clear aperture is 0.87 inch (22 mm). Coupling the 74010 to the input of Cornerstone 260 does not change the instrument's F/#; it remains F/3.9.

Simple Filter Interchange

With most filter wheels, you have to break down the setup to change filters, but with the 74010, the filters are held in individual mounts that snap into place from the top of the wheel. Six individual filter holders are included with each 74010 Filter Wheel. We also offer these separately under model 74011. Mount all your filters in 74011 Holders to protect them and have them ready for insertion into the filter wheel. The 74012 Rod Mount holds a 74011 Filter Holder atop an optical rod.

Built-In Shutter

We built a rugged, 0.5 Hz repetition rate shutter into the Cornerstone 260. The instrument drives the shutter; it is commanded via software or the hand controller. In addition to measuring background levels, the shutter is a convenient safety feature. You can close it when changing gratings or filters to protect your detector.

Shutter Specifications

Light Leakage	<0,001 %
Minimum Exposure Time	0.2 s
Maximum Frequency	0.5 Hz

Mounting

Cornerstone 260 is heavy enough (21 lbs; 9.5 kgs) to stand on its own with accessories mounted to the 1.5 Inch Series input and output slit assemblies. To simplify alignment of optical trains, order the 74105 Mounting Plate that bolts the Cornerstone 260 to inch (1/4-20) or metric (M6) optical surfaces. If you are coupling an Oriel Light Source into Cornerstone 260, order one of these kits:

- 74102; couples 7340/7341 Dual Source into Cornerstone 260
- 74104; couples 250 W Research Source into Cornerstone 260
- 70632; couples Apex Illuminator into Cornerstone 260

Specifications

Focal Length	260
F/#	F/3.9
Usable Wavelength Range	180 nm to 24 μm, with interchangeable gratings
Wavelength Accuracy	0.35 nm
Resolution (triple grating instrument)*	0.15 nm
Resolution (double grating instrument)*	0.10 nm**
Wavelength Precision	0.08 nm
Maximum Slew Rate	205 nm/s***
Weight	9,5 kg (21 lb)

*With 1200 l/mm grating, 10 μm x 2 mm slit.
**Optical resolution step size limit is 0.08 nm.
***With 1200 l/mm grating.

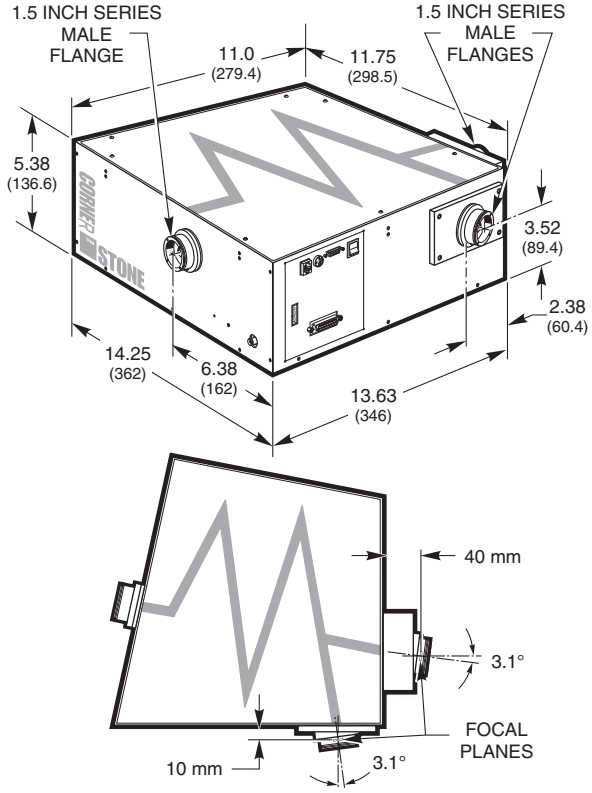


Fig. 2 Dimensional diagram of Cornerstone 260 1/4 m Monochromator

Ordering Information

Cornerstone 260 Monochromators and Monochromator Systems

Model (Metric)	Description	Grating Type Included	Slits Included
74125	Cornerstone™ 260 1/4 m Monochromator, USB 2.0	None; Order separately	None; Order separately
74126	UV-VIS Cornerstone™ 260 1/4 m Monochromator System, USB	(1) 74062 (1) 74063 (1) 74064	(2) 74001 Micrometer Driven Slit Assemblies
74127	High Res. Cornerstone™ 260 1/4 m Monochromator System, USB	(1) 74060 (1) 74061 (1) 74064	(2) 77294 Fixed Slit Holders (2) 77222 Fixed Slits
74128	VIS-NIR Cornerstone™ 260 1/4 m Monochromator System, USB	(1) 74066 (1) 74067 (1) 74069	(2) 74001 Micrometer Driven Slit Assemblies
74100	Cornerstone™ 260 1/4 m Monochromator, GPIB & RS-232	None; Order separately	None; Order separately
74110	UV-VIS Cornerstone™ 260 1/4 m Monochromator System, GPIB	(1) 74062 (1) 74063 (1) 74064	(2) 74001 Micrometer Driven Slit Assemblies
74111	High Res. Cornerstone™ 260 1/4 m Monochromator System, GPIB	(1) 74060 (1) 74061 (1) 74064	(2) 77294 Fixed Slit Holders (2) 77222 Fixed Slits
74112	VIS-NIR Cornerstone™ 260 1/4 m Monochromator System, GPIB	(1) 74066 (1) 74067 (1) 74069	(2) 74001 Micrometer Driven Slit Assemblies

When ordering a monochromator, gratings and slit assemblies are required and must be ordered separately.

WEB *See our website for more info*

Gratings

Line Density (l/mm)	Blaze Wavelength	Type	Primary Wavelength Region	Instrument's Upper Mechanical Limit (For Specified grating)	Triple Grating Assembly	Dual Grating Assemblies
					Model	Model
2400	250	Holographic	180 - 700 nm	700 nm	74060	74160
1800	500	Holographic	300 - 925 nm	925 nm	74061	74161
1200	250	Holographic	180 - 650 nm	1400 nm	74062	74162
1200	350	Ruled	200 - 1400 nm	1400 nm	74063	74163
1200	1000	Ruled	550 - 1600 nm	1200 nm	77989	77990
1200	750	Ruled	450 - 1400 nm	1400 nm	74064	74164
600	200	Ruled	180 - 500 nm	2800 nm	74065	74165
600	400	Ruled	250 - 1300 nm	2800 nm	74066	74166
600	1000	Ruled	600 - 2500 nm	2800 nm	74067	74167
600	1250	Ruled	750 - 2500 nm	2800 nm	74068	74168
600	1600	Ruled	900 - 2800 nm	2800 nm	74069	74169
400	1200	Ruled	700 - 2500 nm	4.2 µm	74070	74170
400	1600	Ruled	900 - 2900 nm	4.2 µm	74071	74171
300	500	Ruled	250 - 1150 nm	5.6 µm	74072	74172
300	1000	Ruled	575 - 2500 nm	5.6 µm	74073	74173
300	2000	Ruled	1100 - 5000 nm	5.6 µm	74074	74174
246.16	226	Ruled	190 - 450 nm	6.8 µm	74075	74175
200	1000	Ruled	600 - 2200 nm	8.4 µm	74076	74176
150	300	Ruled	190 - 800 nm	11.2 µm	74077	74177
150	800	Ruled	425 - 1600 nm	11.2 µm	74078	74178
150	1250	Ruled	725 - 2800 nm	11.2 µm	74079	74179
150	4000	Ruled	2.5 - 12 µm	11.2 µm	74080	74180
121.6	413	Ruled	250 - 1000 nm	13.8 µm	74081	74181
75	7000	Ruled	4.5 - 20 µm	22.4 µm	74082	74182

Be certain to order the correct grating format either dual or triple grating configuration.

Slit Assemblies

Model (Metric)	Description
74001	Micrometer Driven Variable Slit, 4 µm to 3mm Width, 2 to 15 mm Height
77269	Multiple Fixed Slit Wheel, 8 Slits, 50 µm to 3.16mm Width, 1-12 mm Height
74115	Motorized Input Slit Assembly (Requires 74116 Motorized Slit Control Board)
74117	Motorized Lateral Output Slit Assembly (Requires 74116 Motorized Slit Control Board)
74118	Motorized Axial Output Slit Assembly (Requires 74116 Motorized Slit Control Board)
74116	Motorized Slit Control Board (Controls up to 3 slit assemblies)
77294	Fixed Slit Holder (Order fixed slits separately)

Slit assemblies are required to achieve proper resolution.

Fixed Slits

Model (Metric)	Description	Resolution @ 546.1 nm** For triple grating CS260 (nm)
77222	10 µm Width, 2 mm Height	0.15
77220	25 µm Width, 3 mm Height	0.15
77219	50 µm Width, 6 mm Height	0.25
77218	120 µm Width, 18 mm Height	0.4
77217	280 µm Width, 18 mm Height	1.0
77216	600 µm Width, 18 mm Height	2.0
77215	760 µm Width, 18 mm Height	2.5
77214	1240 µm Width, 18 mm Height	4
77213	1560 µm Width, 18 mm Height	5
77212	3160 µm Width, 18 mm Height	10
77211	6230 µm Width, 18 mm Height	20

*Slit height is 18 mm; usable height in Cornerstone 260 Monochromator, is 12 mm.
**For 1200 l/mm gratings.

Accessories

Model	Description
77890	TRACQ Basic™ Data Acquisition and Spectroscopy Software
77891	InstaSpec Pro™ Data Acquisition and Spectroscopy Software
74009	Hand Controller, Cornerstone Monochromator
74105	Mounting Plate, Cornerstone 260
74102	Mounting Kit, 7340 Dual Light Source to Cornerstone 260, Universal
74104	Mounting Kit, 250 W Research Source to Cornerstone™ 260
70632	Cornerstone™ 260 to Apex Monochromator Illuminator Mounting Kit
74010	Motorized Filter Wheel
74011	Filter Holder
74012	Rod Mount for 74011 Filter Holder

ORIEL INSTRUMENTS
A Newport Corporation Brand

MS257™ 1/4 m Monochromator and Imaging Spectrograph



MS257 ¼ Monochromator/Spectrograph with 77529 F/# Matcher mounted to input slit assembly

- **1/4 m monochromator and imaging spectrograph in one instrument**
- **4 grating turret with automatic grating switching**
- **Two flat field output ports with automatic port switching**
- **Negligible stray light and no re-entrant spectra**
- **RS 232 can be configured with optional IEEE-488 (GPIB)**
- **USB model is USB only**

The MS257™ is a completely automated, efficient 1/4 m instrument, with enough versatility to satisfy most spectroscopy applications. It is an F/3.9 instrument with a focal length of 257.4 mm, usable as a monochromator or true flat field imaging spectrograph. Stray light is negligible, and there is no re-entrant spectra. The MS257 has 2 output ports, 1 input port (with optional accessory can support 2 inputs), and supports 4 gratings.

High Efficiency

The low F/number of 3.9 (a numerical aperture of 0.128) combined with slits of up to 5 mm wide x 20 mm high, gives an efficient throughput. The dispersion is similar to that of our other 1/4 m monochromators, and twice that of our 1/8 m systems. The mirrors and gratings in MS257 were designed to further enhance throughput. Each of the optics is uses an aluminum and a magnesium fluoride coating which improves their UV efficiency. (Contact a Sales Engineer for gold coated optics.) The 77708 Multiple Grating Turret allows you to choose up to four gratings to cover your wavelength range.

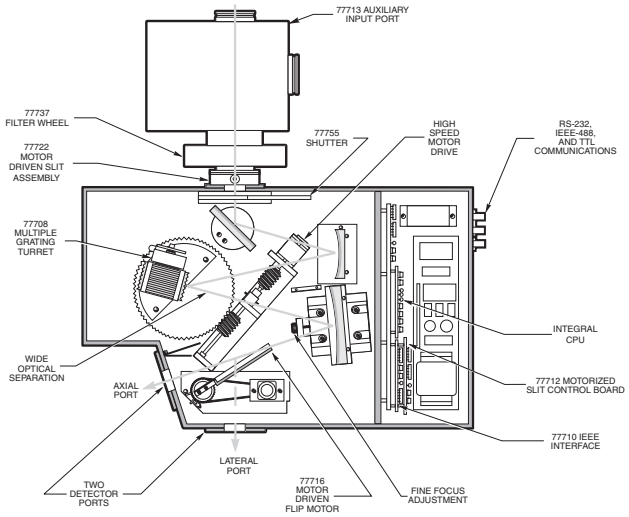


Fig. 1 MS257 Monochromator and Spectrograph with selected optional accessories

Optical Configuration

MS257 is designed around an asymmetric in-plane Czerny-Turner configuration. The input F/# is 3.9, and the input and exit focal lengths are unequal, 220.0 and 257.4 mm respectively.

The design was carefully optimized to:

- Minimize coma throughout the working wavelength range
- Eliminate re-diffracted light from either of the two main mirrors
- Eliminate re-diffracted light from reflections off the window or surface of a focal plane detector
- Provide the best flat focal field for the entire working wavelength range
- Provide the best imaging using corrected optics (toroids) over the entire working wavelength range

Input and Output Ports

MS257 has one entrance port and two output ports (see Fig. 2). Normally, the axial output port is used since this does not require a turning mirror and therefore prevents additional light losses at the extra reflecting surface. However, the in-line configuration of the lateral port offers greater detector mounting flexibility. To use just the lateral output port you'll need the 77718 Side Exit Mirror. This mirror is prealigned and can be inserted in the field.

If you intend to use both output ports, and regularly switch between them, you should use the 77716 Motorized Flip Mirror. You can pre-program MS257 to automatically change the output port at a particular wavelength. The mirror drive has excellent positioning reproducibility of better than 0.05 nm (with a 1200 l/mm grating). This precision is essential to obtaining reproducible scans when changing detectors in mid scan.

An Auxiliary Input Port, or Motorized Beam Steerer (model 77713 110V or 77765 220V), is available to convert MS257 to a four port monochromator or spectrograph. This is an external accessory and has a motor driven mirror which is similar to the output mirror drive of the 77716. It enables two sources to be

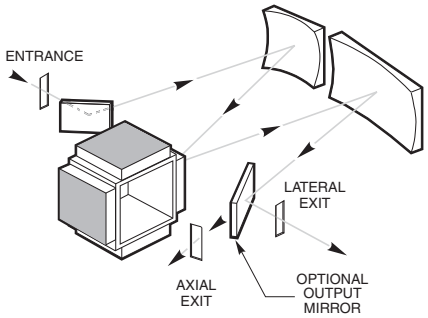


Fig. 2 Lateral and axial ports of MS257

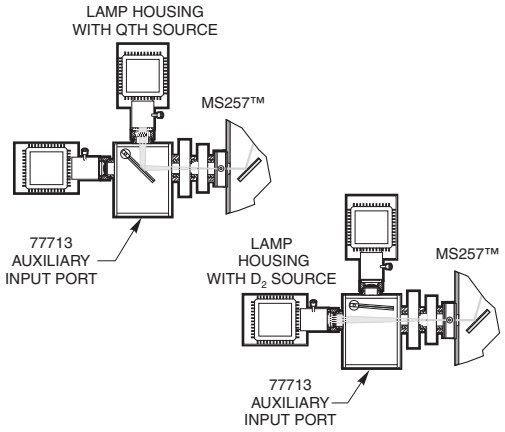


Fig. 3 Use the 77713 Motorized Beam Steerer to automatically switch between two sources

alternately switched into the input port, for example a deuterium lamp and quartz halogen lamp (See Fig. 3). The mirror can be controlled through the MS257 command language; the Hand Controller does not control the 77713/77765. The optical path length of this Beam Steerer is 6.5 inches (165 mm); see page 1361 for complete details.

Corrected Optics for Spectral Imaging

We offer a choice of optics for the MS257. The high quality spherical optics ensure excellent resolution over the full spectral range; choose these when MS257 is used for non-imaging applications. For imaging, we offer the 77702 MS257, which uses computer optimized toroidal mirrors. These produce accurate images of the input slit in the flat output plane.

Filter Wheel for MS257

MS257 automatically controls up to two optional filter wheels, model 77737. Each filter wheel holds up to five 1 inch (25.4 mm) diameter filters, with a clear aperture of 22 mm. Even when both wheels are attached to MS257, the system F/# is still F/3.9.

Automatic Filter Changes

Wavelength changeover points can be loaded into MS257 so the appropriate filter is automatically selected for any wavelength. This is of particular importance during a broad spectral scan so that multiple orders and residual stray light are eliminated. Order sorting filters are listed on page 661.

External Mounting for Best Optical Performance

The filter wheels are mounted externally in front of the input slit. While it may seem logical, and easier, to place the filter wheels inside the housing there are good optical reasons not to do so. The refractive index and thickness of the filters would significantly affect the focal distance to the collimating mirror. This would be different for every wavelength and every filter, and would therefore adversely affect resolution and imaging. When multi-track fibers are used for point to point imaging, the practical focal distance must remain constant in order to maintain good resolution at the edges of the field. MS257 is designed and manufactured to have errors of only a fraction of a millimeter in the focal distance. Mounting the filters before the input slit only slightly affects the light throughput. Since the slit acts as a secondary source the focal distance is not affected.

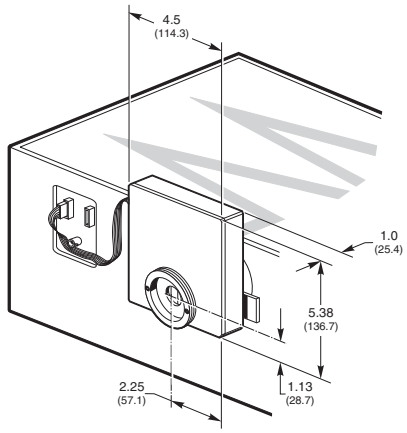


Fig. 4 Dimensional diagram of 77737 MS257 Filter Wheel

Shutters for MS257

We offer two internal shutters for MS257. Choose the one most suited to your application.

Background Shutter

The 77755 is a solenoid driven shutter which can be closed for dark scans and dark current measurements. You can also automatically close the shutter during grating, filter, and optical port changes to protect the detector from exposure to abnormally high intensity levels. When using MS257 as an Imaging Spectrograph, trigger the 77755 Shutter to open in order to expose the CCD detector. The 77755 is controlled through the MS257 command language, the 77709 Hand Controller, directly via an externally applied TTL signal, or through the optional TRACQ or InstaSpec Pro software.

Specifications for 77755

Light Leakage	< 0,001 %
Minimum Exposure Time	0.2 s
Maximum Frequency	0.5 Hz
Transition Rise Time	~2 ms
Response Delay	~20 ms
Blade Coating	Black Anodized
External Trigger	TTL

Fast Shutter

For high rep rate, short exposure applications, choose the 77717 Fast Shutter. This shutter may be run in short bursts at repetition rates as high as 40 Hz. The exposure may be set and triggered from within the MS257 command language. A TTL output signal is also provided for precise synchronizing of external events. This shutter is ideal for the 77702 Imaging MS257 when using our InstaSpec™ CCD detectors at high rep rates in either the fully binned mode or with only a few channels.

Specifications for 77717

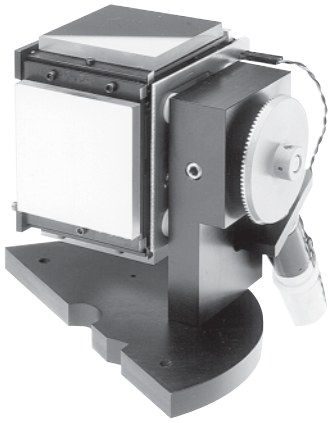
Light Leakage	<0,01 %
Minimum Exposure Time	5 m s
Maximum Frequency	40 Hz (burst)
Transition Rise Time	1.5 ms
Response Delay	2.5 ms
Blade Coating	$AlMgF_2$
Output Synch Timing Signal	TTL, >90% open
External Trigger	TTL

Fine Focus Adjustment

In order to obtain the best optical performance, a fine focus adjustment is included. This knob is set at the factory for best focus on an exit slit; if you are using MS257 as a spectrograph, with a CCD other than our InstaSpec, you may use this adjustment in the field to translate the exit mirror of the MS257. This can optimize the location of the image onto a focal plane detector such as a diode array or CCD.

Mounting

MS257 weighs ~40 lbs, and can therefore support optical accessories mounted to its ports. However, if you wish to fix it to an optical table use the 77775 Mounting Kit. The 77775 attaches the MS257 to an inch (1/4-20) or metric (M6) optical table and allows ±0.38 inch (±9.6 mm) horizontal adjustment. It nominally raises the optical axis of the MS257 by 0.38 inches (9.6 mm), to 5.38 inches (136.7 mm) total height.



77708 Multiple Grating Turret (patented)

Gratings

We offer a single grating mount and a multiple grating turret which holds 1, 2, 3 or 4 gratings. The turret lets you switch between gratings at the touch of a button on the Hand Controller, or automatically, during a scan. The 77708 Multiple Grating Turret offers an unequaled degree of automation with no compromise in optical performance. This high precision turret scans about the face of the selected grating, as do traditional single grating monochromators, thus offering the best resolution and light throughput over the grating scan range. The grating selection mechanism uses a second drive perpendicular to the scan axis, so it does not interfere with the accurate wavelength positioning of the grating. Grating changes take only about ~0.5 s, and the grating is locked into place with arc second accuracy.

Table 1 Grating Specifications (The array bandpass assumes a 25 mm wide spectrographic field.)

Model	Line Density (l/mm)	Blaze Wavelength	Type	Peak Efficiency (%)	Reciprocal Dispersion (nm/mm)*	Multichannel Array Bandpass (nm)**	Primary Wavelength Region (nm)***	Instrument's Upper Wavelength Mechanical Limit (For specified grating)
77740	2400	250	Holographic	65	1.6	41	200 - 700	700 nm
77753	1800	500	Holographic	65	2.1	53	300 - 1050	925 nm
77741	1200	250	Holographic	80	3.2	81	180 - 650	1400 nm
77742	1200	350	Ruled	80	3.2	81	200 - 1400	1400 nm
77752	1200	750	Ruled	80	3.1	79	450 - 1400	1400 nm
77743	600	200	Ruled	70	6.4	163	180 - 500	2800 nm
77744	600	400	Ruled	85	6.5	165	250 - 1300	2800 nm
77745	600	1000	Ruled	80	6.4	163	600 - 2500	2800 nm
77767	600	1250	Ruled	85	6.4	163	750 - 3000	2800 nm
77768	600	1600	Ruled	90	6.2	155	900 - 3000	2800 nm
77746	400	1200	Ruled	90	9.7	246	700 - 2500	4.2 µm
77769	400	1600	Ruled	85	9.6	244	900 - 2900	4.2 µm
77747	300	500	Ruled	80	12.8	325	250 - 1150	5.6 µm
77770	300	1000	Ruled	85	12.9	328	575 - 2500	5.6 µm
77748	300	2000	Ruled	90	12.9	328	1100 - 3400	5.6 µm
77771	246.16	226	Ruled	60	15.5	396	190-450	6.8 µm
77749	200	1000	Ruled	85	19.3	490	600 - 2200	8.4 µm
77772	150	300	Ruled	70	25.5	648	190 - 800	11.2 µm
77773	150	800	Ruled	85	25.6	650	425 - 1600	11.2 µm
77774	150	1250	Ruled	85	25.7	655	725 - 2800	11.2 µm
77750	150	4000	Ruled	95	25.8	655	2500 - 9000	11.2 µm
77754	121.6	413	Ruled	60	31.3	798	250 - 1000	13.8 µm
77751	75	7000	Ruled	80	51.7	1313	4500 - 20000	22.4 µm

*At blaze wavelength.
**Across a 1 inch array, with grating centered at blaze wavelength.
***The primary wavelength region is where the grating efficiency is 20%.

Slit Assemblies for MS257

We offer a variety of precision fixed slits and micrometer or motor driven variable slit assemblies. All have our standard Oriel 1.5 Inch Series male flange so you can directly couple optical accessories such as fiber optics, diffusers and focusing lens assemblies.

Fixed Slits

- Most economical for single slit size
- Highest accuracy and precision

Fixed slits are a good choice when only one or two widths, or superior accuracy, are required. The narrow fixed slits are also the best choice for high resolution applications. Each of the fixed slits is mounted in a precision machined slide which is inserted into the 77721 Fixed Slit Housing.

Micrometer Driven Variable Slit Assembly

- Continuously variable from 4 µm to 3.0 mm
- ±10 µm repeatability
- ±10 µm accuracy from 4 µm to 250 µm; ±5% from 250 µm to 3 mm

The 74002 uses a precision micrometer to continuously vary the slit width from 4 µm to 3.0 mm; slit height is also variable from 2 mm to 15 mm.

Motor Driven Variable Slit Assembly

- 2 µm steps from 4 µm to 2.0 mm
- ±5 µm repeatability
- ±10 µm accuracy

The 77722 Motor Driven Slit Assembly uses a microstepper motor. Slit widths range from 4 µm to 2.0 mm; slit height is 15 mm. The slit width can be set using the hand controller, by computer, or automatically by MS257 in order to have a predetermined and constant bandpass. Entire scans can be taken with the slit widths automatically adjusted by MS257 at each data point.

The 77722 Motor Driven Slit Assembly requires the 77712 Slit Controller Board. One controller board controls up to three motorized slits (one for each port). A special motor driven, high throughput, curved slit assembly (model 77738) is also available. This assembly has 20 mm high slits which are slightly curved to compensate for the inherent bending of the entrance slit image. Slit widths range from 4 µm to 2.0 mm, as with the 77722 Assembly (repeatability and accuracy are also the same as the 77722). The 77738 gives better throughput and better resolution, despite the larger, 20 mm height.

Communicating with the MS257

A utility program provides the fundamentals for control of the MS257; you only need to setup your experiment and start the process. The simple utility program allows instrumental configurations to be saved to and loaded from computer files. These files can be loaded when a variety of experiments need to be conducted over time.

There are three ways to communicate with MS257:

1. Via the TTL level Input/Output BNCs on the back panel.

2. Via the 77709 Hand Controller.

3. Via an external computer using either USB, RS-232 or IEEE-488 protocols.

The 77700 or 77702 MS257 models comes configured for TTL, the hand controller, and RS-232. The optional external 77793 IEEE-488 Interface is required for GPIB communications. The 77778 and 77780 USB models MS257 come configured for TTL, hand controller, or USB control.

The MS257 TTL Interface

MS257 has binary Input/Output communication facilities. These enable the scanning process to be closely integrated with data acquisition by providing the following synchronizing signals (assuming optional accessories are installed):

- A gate TTL signal is output during the time that the drive is scanning, from the start wavelength to the end wavelength, [SCAN]
- A gate TTL signal is output when the drive is stationary at each data point, [WAIT]
- A TTL signal is output when the optional fast shutter is >90% open, [SHUTTER OUT]
- A TTL signal is output when the motorized output mirror is set to Port B, [PORT]
- Scans can be started and moved from one data point to the next by an external TTL signal, [GO]
- The shutter can be triggered by an external TTL signal, [SHUTTER IN]

Hand Controller

For easy access to the most frequently used MS257 features, there is no substitute for the hand controller. This small device packs a lot of power into its 40 keys and 4 line, backlit, LCD display. Unlike other hand-held controllers, the 77709 was designed specifically for controlling MS257. Therefore, the command keys are clearly labeled with intuitive titles. The hand controller allows immediate access to most of the system functions.

Software Options for MS257

The software options for MS257 are:

- MS257 Command Set (included with instrument)
- Configuration Program (included with instrument)
- LabView™ VIs (optional at no charge)
- TRACQ Basic or InstaSpec Pro Data Acquisition Software (optional)

MS257 Basic

The many features and accessories for the MS257 can be controlled through a series of easily recognizable commands. Every instrument leaves Oriel with the MS257 Programming Manual which contains detailed descriptions of each of the instrument's features and the associated commands. MS257 Basic commands may be sent through the USB, RS-232, or optional external IEEE-488 (GPIB) interface.

Utility Program

Included with every MS257 is a simple program that lets you check the communication between your computer and MS257. Moreover, this program can be used to easily view all the MS257 systems parameters, backup those parameters to a disk, and restore a previous system configuration.

VIs for Labview

For those who wish to integrate MS257 with other LabView controlled instruments, we offer VIs. This library enables you to create your own interface and application for the MS257, in LabView. Contact a Sales Engineer for information.

TRACQ Basic™ Software

TRACQ Basic™ is an integrated radiometric data acquisition and control package for the MS257 and select Oriel Detection Systems. Through TRACQ Basic you command the MS257 and detector, and acquire, process and display the data in real time.

MS257 Double Monochromator

Table 2 Comparison of Additive and Subtractive Double MS257 and Single MS257

Configuration	Stray Light	Theoretical Dispersion	Coma	Slit Curvature	Resolution Limit (typical)
Single MS257™	3 x 10^{-4} at 250 nm (Deut. + Glass filter) 1.5 x 10^{-5} 20 nm from 633 nm laser line	0.31 mm / nm	Residual	Minor	0.10 nm
Additive Double MS257™	1 x 10^{-7}	0.62 mm / nm	Additive	Subtractive	0.07 nm
Subtractive Double MS257™	1 x 10^{-7}	0.31 mm / nm	Subtractive	Subtractive	0.12 nm

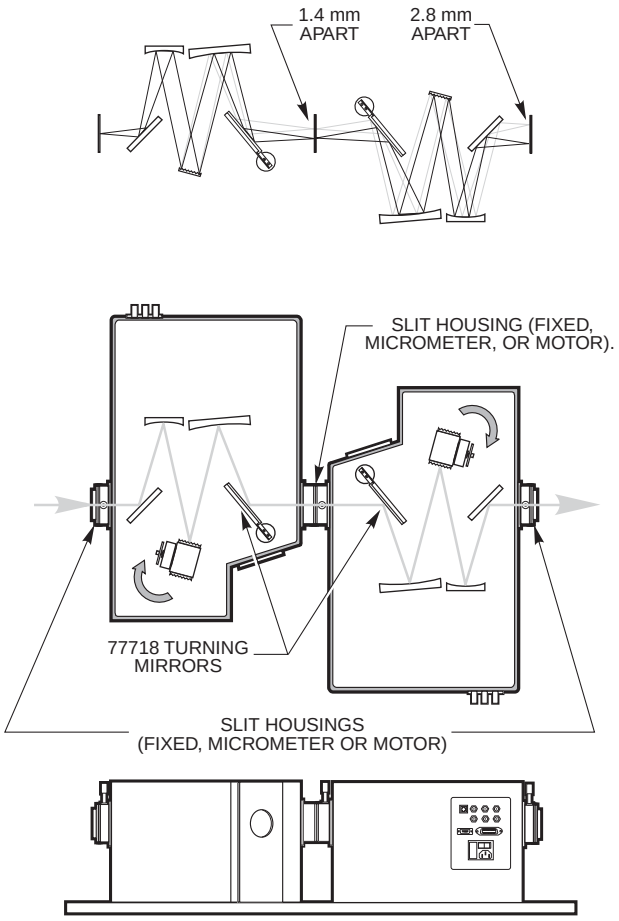


Fig. 5 Simulated ray trace and schematic diagram for Double MS257 in additive configuration, model 77719.

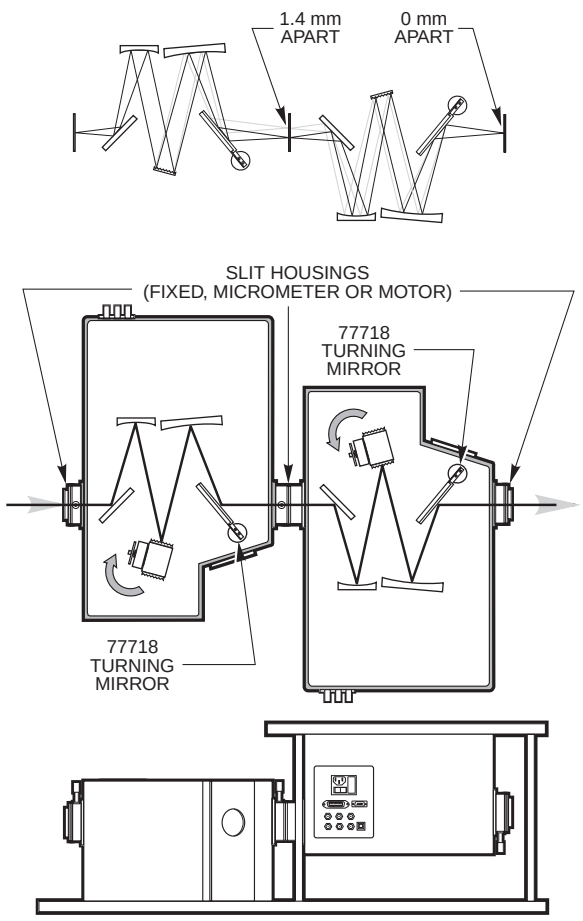


Fig. 6 Simulated ray trace and schematic diagram for Double MS257 in subtractive configuration, model 77715.

Additive Configuration

The resolution limit of an additive double monochromator is slightly better than a single monochromator. In this case, the output spectral band from the first monochromator is dispersed again by the second monochromator. Ignoring all aberrations, an additive double monochromator should provide twice the dispersion of each single monochromator. That is to say, a double 1/4 m monochromator should have dispersion equivalent to a 1/2 m monochromator using the same grating. In practice this is never quite possible because system aberrations, alignment, and synchronization slightly deteriorate the resolution of a double monochromator.

Subtractive Configuration

Subtractive dispersion refers to the homogenizing of the spectrum which occurs within the second monochromator. Usually, the output band of a monochromator is a narrow slice of spectrum, changing slightly in wavelength from one side of the band to the other. In a subtractive dispersion configuration the spectrum passed through the central slit by the first monochromator is mixed at the exit slit of the double system. Theoretically, double monochromator instruments in subtractive configuration have only the dispersion of the first single monochromator. Again, there is some deterioration from this theoretical limit due to system aberrations, alignment, and synchronization. The resolution limit of a subtractive double monochromator is slightly worse than a single monochromator.

Stray Light With Double MS257

The most significant advantage of using a double monochromator system (in either additive or subtractive configuration) is low stray light. Stray light is any radiation, other than the wavelengths of primary interest, which passes through the monochromator to the detection system. Although the MS257 has very low stray light compared to other 1/4 m monochromators, some applications may require even tighter specifications. The second monochromator in a double MS257 system accepts the output of the first monochromator, both the signal and any stray light, then acts as a very narrow variable filter, further rejecting whatever stray light was present. Since any radiation which enters the second monochromator may be scattered again and contribute to stray light, the center slit should be as narrow as possible. A theoretical performance limit is reached when the center slit matches the input and output slits of the system; beyond this point stray light may decrease but throughput suffers dramatically. To avoid these problems we suggest using a center slit that is at least 2X wider than the entrance and exit slits for an additive system and an exit slit that is at least 2X wider than the entrance and center slits, for a subtractive system.

Double Monochromator Synchronization and Control

The MS257 is an intelligent monochromator; the internal microprocessor controls scanning and accessories such as filter wheels and grating turrets. In a double monochromator system the two units independently control their own operation according to the commands you send. There is no need for mechanical or electrical fixturing because the two units are identically configured. Instead, you simply place the monochromators in handshaking mode and send the same command to both units. This can only be accomplished using two RS232 configured MS257 units and a splitter cable. Please note that the TRACQ Software does not control a double MS257 system. Please contact an Oriel Sales Engineer for details on the available options for controlling a Double-MS257 system.

What Do I Need to Build a Double MS257?

Only the RS-232 version of the MS-257 can be configured and operated as a double monochromator. The double monochromator kits, either additive or subtractive, hold two MS257 monochromators in tandem. A mechanical assembly provides light-tight connection of the two optical ports while a 27 x 27 inch (686 x 686 mm) baseplate holds the two units in stable alignment. To build a complete MS257 Double Monochromator System you need:

- Two MS257 Monochromators (RS-232 only)
- One 77719 Additive or 77715 Subtractive Dispersion Double Monochromator Kit
- At least one 77718 Side Exit Mirror for the 77715, two for 77719 set-up
- Three Slit Assemblies: one input, one center, and one output
- Two Grating Turrets with identical gratings

Specifications

All specifications are determined with a 77700, 1200 l/mm grating and 10 µm x 2 mm slit, at 546 nm.

System

Design	Asymmetrical Czerny-Turner
Configuration	In line using turning mirrors, plus axial port
Ports	1 input, 2 output (2 input with Auxillary Input Port accessory)
Usable Wavelength Range	170 nm to 24 µm (grating dependant)
F/Number (input)	3.9
Input Focal Length	220.0 mm
Exit Focal Length	257.4 mm
Included Angle at Grating	23.66°
Main Mirrors (77700)	Spherical
Main Mirrors (77702)	Toroidal
Optical Height	127 mm
Stray Light	3×10^{-4} at 250 nm (Deut. + Glass filter) 1.5×10^{-5} 20nm from 633 nm laser line
Weight	40 to 45 lbs. (18 to 20.5 kg)

Optical Field

Full Field	28 mm x 28 mm
Flat Field (77702)	28 mm x 10 mm
Field Tilt Relative to Mounting Face (77700)	3.1°
Field Tilt Relative to Mounting Face (77702)	6.7°
Focal Plane Clearance (All Ports)	30.0 mm

Imaging

Horizontal Magnification (both models)	1,1
Vertical Magnification (77702)	1.6
Imaging Spatial Resolution (77702)	~40 µm
Image Vertical Stability	±125 µm
Image Horizontal Stability	±5 µm

*We suggest that 200 µm input channels should be separated by less than 150 µm edge to edge for practical systems.

Ports

Port Selection Repeatability (Motorized Mirror)	±0.05 nm
Port Changeover Time	5 s

Gratings

Grating Rotation	Optical center @ grating face
Grating Size	50 x 50 mm
Kinematic Repeatability	±0.1 nm
Grating Change Time	~1 s per grating
Grating Selection Repeatability (Wavelength)	±0.06 nm
Grating Selection Repeatability (Image Vertical Position)	±125 µm

Wavelengths

Reciprocal Dispersion	3.22 nm/mm
Wavelength Resolution	0.1 nm typical, <0.15 nm max.
Wavelength Accuracy	±0.1 nm typical, <0.15 nm max.
Wavelength Repeatability	±0.028 nm typical, <0.06 nm max.
Wavelength Step Size	0.028 nm
Wavelength Drive Speed	Maximal 280 nm/s
Temperature Stability	c. 0.01 nm/ °C
Wavelength Drift	c. 0.001 nm/hr

Calibration

- Interferometrically mapped drive
- Factory default referenced to internal optomechanical home
- Individual grating calibration factors

System Control

- Central control by on board CPU
- External control by hand controller
- Programmed control by external computer

Handheld Controller

- 40 key hand held keypad
- 4 line, 20 character, backlit supertwist LCD
- 5 status lights
- Remote/local switching
- 14 ft (4.26 m) long cable

Background Shutter (Model 77755)

Light Leakage	<0,001 %
Transition Rise Time	~2 ms
Response Delay	~20 ms
Maximum Frequency	0.5 Hz
Blade Coating	Black Anodized
External Trigger	TTL

Fast Shutter (Model 77717)

Light Leakage	<0,01 %
Configuration	Normally Closed
Transition Rise Time	1.5 ms
Response Delay	2.5 ms
Cycle Time	25 ms (rafale)
Minimum window	5.0 ms
Blade Coating	$AlMgF_2$
Output Synch Timing Signal	TTL, >90% open
External Trigger	TTL

Filter Wheel

Filter Wheels Supported	2
Optical Length Per Wheel	38 mm
Number of Filters Per Wheel	5
Filter Size	1 inch (25 mm)
Maximum Thickness	0.4 inch (10mm)
Clear Aperture	22 mm
Transition Time	~1 s per filter

Auxiliary Input Port (Models 77713 & 77765)

F/#	4.9
Changeover Time	5 s
Dimensions	7.5 x 6.5 x 6 inch (190 x 165 x 150 mm)
Input	110 V / 60 Hz or 220 V / 50 Hz (model dependent), 1 A

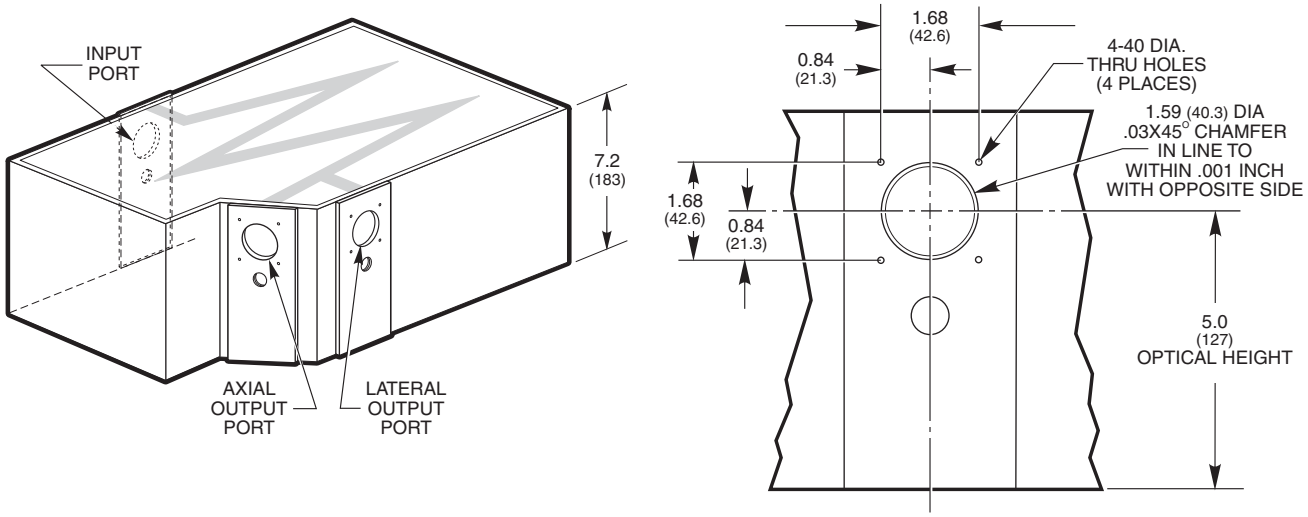


Fig. 7 Dimensional drawing of the input and output ports of MS257 showing the mounting screw pattern.

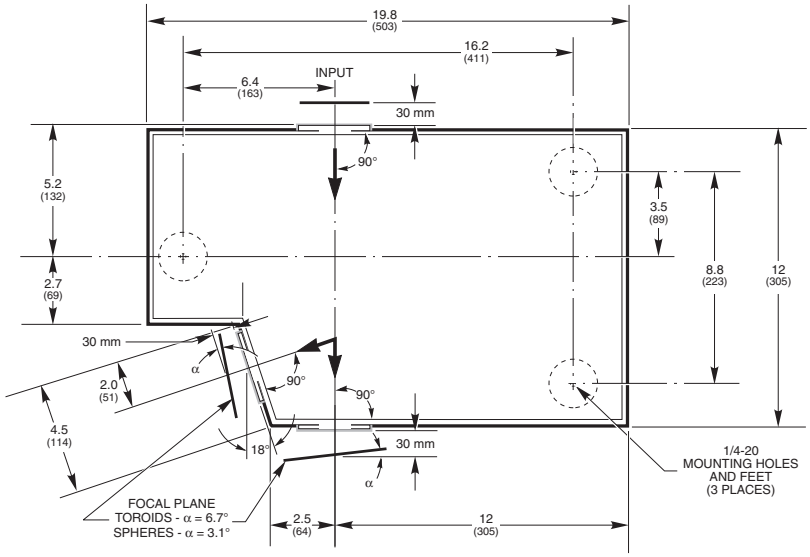


Fig. 8 Dimensional diagram of MS257

Ordering Information

MS257 Instruments

Model	Description
77700	MS257™ 1/4 m Monochromator, RS-232
77702	MS257™ 1/4 m Imaging Spectrograph RS-232
77778	MS257™ 1/4 m Monochromator USB
77780	MS257™ 1/4 m Imaging Spectrograph USB

Grating Mounts (Order Gratings Separately)

Model	Description
77706	Single Grating Mount, MS257
77708	Multiple Grating Turret, Holds up to 4 Gratings, MS257

Gratings

Model	Line Density (l/mm)	Blaze Wavelength	Grating Type	Primary Wavelength Region (nm)	Instrument's Upper Mechanical Wavelength Limit (for specified grating)
77740	2400	250	Holographic	200 - 700	700 nm
77753	1800	500	Holographic	300 - 1050	925 nm
77741	1200	250	Holographic	180 - 650	1400 nm
77742	1200	350	Ruled	200 - 1400	1400 nm
77752	1200	750	Ruled	450 - 1400	1400 nm
77743	600	200	Ruled	180 - 500	2800 nm
77744	600	400	Ruled	250 - 1300	2800 nm
77745	600	1000	Ruled	600 - 2500	2800 nm
77767	600	1250	Ruled	750 - 3000	2800 nm
77768	600	1600	Ruled	900 - 3000	2800 nm
77746	400	1200	Ruled	700 - 2500	4.2 µm
77769	400	1600	Ruled	900 - 2900	4.2 µm
77747	300	500	Ruled	250 - 1150	5.6 µm
77770	300	1000	Ruled	575 - 2500	5.6 µm
77748	300	2000	Ruled	1100 - 3400	5.6 µm
77749	200	1000	Ruled	600 - 2200	8.4 µm
77772	150	300	Ruled	190 - 800	11.2 µm
77773	150	800	Ruled	425 - 1600	11.2 µm
77774	150	1250	Ruled	725 - 2800	11.2 µm
77750	150	4000	Ruled	2500 - 9000	11.2 µm
77754	121.6	413	Ruled	250 - 1000	13.8 µm
77751	75	7000	Ruled	4500 - 20000	22.4 µm

Be certain to order grating(s) separately as no gratings are included with the system

Slit Assemblies

Model	Description
74002	Micrometer Driven Slit Assembly
77722	Motor Driven Slit Assembly, Requires 77712
77738	Motor Driven Curved Slit Assembly, Requires 77712
77712	Motorized Slit Control Board (controls up to three motorized slits)
77721	Fixed Slit Holder, MS257

Fixed Slits

Model	Description	Resolution (nm)
77222	Fixed Slit, 10 µm Width, 2 mm Height	0.10
77220	Fixed Slit, 25 µm Width, 3 mm Height	0.15
77725	Fixed Slit, 25 µm Width, 6 mm Height	0.15
77221	Fixed Slit, 50 µm Width, 3 mm Height	0.25
77219	Fixed Slit, 50 µm Width, 6 mm Height	0.25
77728	Fixed Slit, 100 µm Width, 3 mm Height	0.45
77729	Fixed Slit, 100 µm Width, 10 mm Height	0.45
77730	Fixed Slit, 200 µm Width, 3 mm Height	0.8
77731	Fixed Slit, 200 µm Width, 10 mm Height	0.8
77732	Fixed Slit, 500 µm Width, 15 mm Height	2
77733	Fixed Slit, 1000 µm Width, 15 mm Height	4
77734	Fixed Slit, 2000 µm Width, 20 mm Height	6
77736	Fixed Slit, 1500 µm Width, 15 mm Height	8
77735	Fixed Slit, 5000 µm Width, 20 mm Height	20

Accessories

Model	Description
77709	Hand Controller
77793	RS-232 to IEEE-488 External Interface (GPIB)
77713	Motorized Flip Mirror, 110 V
77765	Motorized Flip Mirror, 220 V
77716	Motorized Flip Mirror, MS257
77718	Side Exit Mirror, Fixed, MS257
77737	Motorized Filter Wheel, MS257
77775	Mounting Kit, MS257
77715	Double MS257 Monochromator Kit, Subtractive Dispersion Configuration
77719	Double MS257 Monochromator Kit, Additive Dispersion Configuration
77717	Fast Shutter, MS257
77755	Background Slow Shutter, MS257

WEB *See our website for more info*

ORIEL INSTRUMENTS
A Newport Corporation Brand

Mini Monochromator



78024 Mini Monochromator

- **Low cost, very compact instruments for general spectroscopy applications**
- **74 mm focal length, moderate resolution**
- **Manual and stepping motor driven models**
- **VIS - NIR (190 nm to 1.2 μm) models**
- **Optional VIS-NIR light source**

The Oriel Mini-monochromators are low cost, compact and simple-to-use instruments for moderate resolution applications and are ideal for general laboratory experiments and educational studies covering fixed wavelength ranges and not requiring sub-nanometer resolutions. The focal length of these instruments is 74 mm; the F/# is 3.9.

For demanding spectroscopy applications, please refer to our long focal length, <REF=145071>high resolution bench-top instruments.<hrefend/>

Manual and Motorized Versions

Oriel offers two families of Mini Monochromators:

Manual Monochromators

These models have a knurled knob, which causes a precision lead screw/sine bar mechanism to rotate the grating. A digital counter displays the wavelength in nanometers, to 0.2 nm.

Motorized Monochromators

For scanning applications, we recommend that you choose a motorized monochromator. These instruments use a stepping motor driven by an external motor controller with a USB interface. Included with the controller is an application program with over 25 commands to control a variety of operations of the grating drive. These motorized models also include a manual drive and a digital counter that displays the wavelength to 0.2 nm.

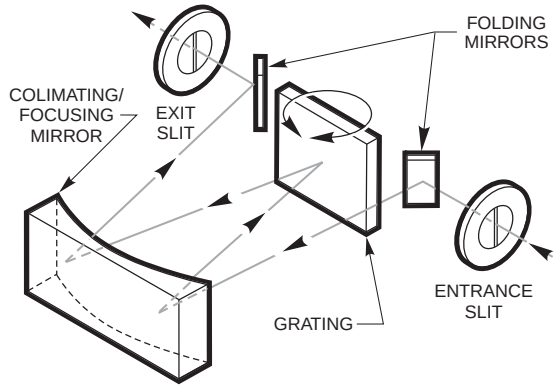


Fig. 1 Optical configuration of Mini Monochromator

Optical Configuration

Fig. 1 shows the Ebert-Fastie design of these monochromators. Full spectrum radiation is focused at the entrance slit and reflected by a folding mirror onto a spherical collimating/focusing mirror. This mirror collimates the radiation and directs it onto the grating, where it is diffracted.

Once diffracted, the radiation is directed back to the collimating/focusing mirror, and a segment of the dispersed radiation is focused at the exit slit via a second folding mirror.

Resolution

The resolution of the instrument is a function of its focal length, the dispersion of the grating, the width of the entrance and exit slits, and to a lesser degree, wavelength. As standard models, these instruments include two 300 μm x 4 mm slits. You can increase the resolution by using narrower slits. Request different slits at the time of purchase, or purchase extra sets so you can vary the throughput and resolution. The slits are easily interchangeable. Table 1 shows the resolutions possible with the standard and optional slits.

Table 1 Resolution of Mini Monochromators

Instrument's Usable Wavelength Range	Linear Dispersion (nm/mm)	Resolution with These Slits (nm)*					
		50 μm	100 μm	150 μm	300 μm	600 μm	1000 μm
190 - 650 nm	5.54	0.28	0.55	0.83	1.66	3.32	5.54
200 - 800 nm	7.41	0.37	0.74	1.11	2.22	4.44	7.41
300 - 800 nm	7.21	0.36	0.72	1.08	2.16	4.32	7.21
500 nm - 1.2 μm	11.29	0.56	1.13	1.69	3.39	6.77	11.29

*Instruments include 300 μm x 4 mm slits; other slit sizes are available as options.
Resolution = (slit width) X (linear dispersion)

Optional Accessories

Oriel offer various accessories specifically for these Mini Monochromators (note: these accessories cannot be used with our fully featured instruments.)

Order Sorting Filters

Block the unwanted higher order artifacts with an order sorting filter. Because of the unique input slit assembly of these monochromators, you cannot use our traditional flanged filter assemblies with these instruments. The assemblies for these monochromators have an integral slit; simply replace the entrance or exit slit assembly of the instrument, with a filter assembly. The filter assemblies come standard with 300 µm slits (as do the instruments).

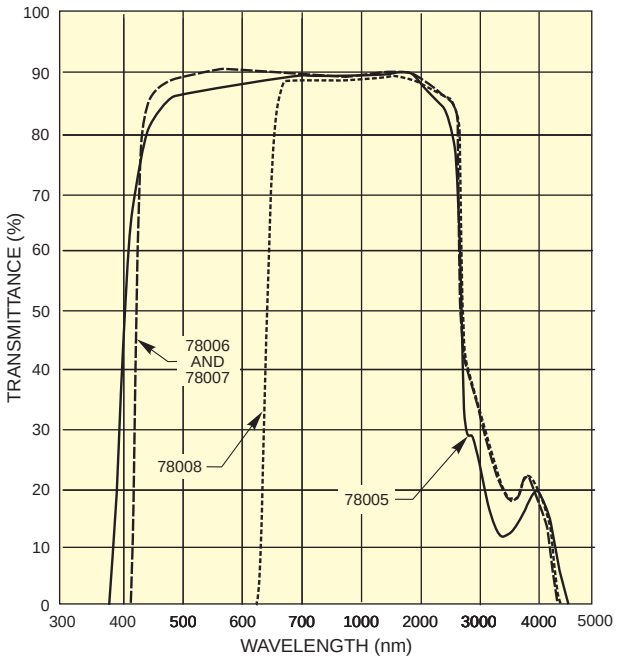


Fig. 2 Transmittance of Order Sorting Filters

Fiber Optic Assemblies

As with the filter assemblies, dedicated fiber assemblies are needed for these monochromators. Our flanged fiber adapters will not mount to the slit assemblies of these Mini Monochromators.

We offer two glass fiber bundles for these instruments. One end of the bundle has an integrated 600 µm x 4 mm slit, which replaces the slit assembly on the instrument. The other end of the 78040 Fiber Assembly has a 4.8 mm OD ferrule. The other end of the 78041 Fiber Assembly has an SMA termination. Both fiber bundles are 5 ft (1.5 m) long.

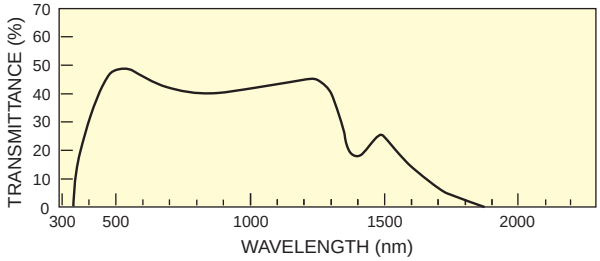


Fig. 3 Transmittance of 78040 and 78041 Glass Fiber Bundles

Tunable Source

Build a tunable source with one of our Mini Monochromators and the 78042/3 Tungsten Halogen Light Source. The 78042/3 Source includes:

- 20 W Tungsten Halogen Lamp
- 12 V DC power supply
- Variable aperture assembly
- Mounting baseplate

The spectral output of the source is 340 nm to 3 µm, and is matched to the entrance slit of the monochromator.

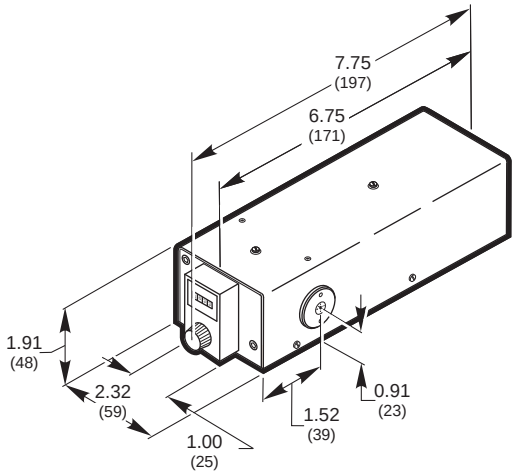
Specifications

Focal Length	74
Effective Aperture	F/3.9
Wavelength Readout	4 digit counter in nm with index marks every 0.2 nm
Wavelength Accuracy	± 0.2% (as a % of wavelength)
Weight (Manual Models)	0.7 kg (1.5 lbs)
Weight (Motorized Models)	0.9 kg (1.9 lbs)

78085/6 Stepping Motor Controller

Motor Type	Bi-polar stepping motor
Number of Phases	2
Step Modes	Full and Half Step
Step Rate	16 - 23,000 / s
Max Step Range	±8.388.607 Schritte
Max Current	1.2 A / phase Max.
Voltage	24 V DC
Motor Leads	4, 6, or 8
Computer Interface	USB
I/O	Limit A Limit B Moving Go Soft Stop LogiCom
Memory	Non-volatile, 2048 bytes

MOTORIZED MONOCHROMATORS



MANUAL MONOCHROMATORS

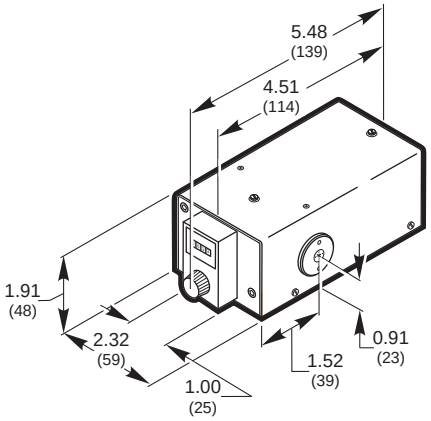


Fig. 4 Dimensional diagram of Mini Monochromators

Ordering Information

Mini Monochromators

These monochromators include two 300 μm x 4 mm slits. To replace these slits with a set listed in the second table, contact a Sales Engineer at the time of purchase.

Model	Description
78020	Manual Mini Monochromator, 190-650nm, 74mm Focal Length
78021	Manual Mini Monochromator, 200-800nm, 74mm Focal Length
78022	Manual Mini Monochromator, 300-800nm, 74mm Focal Length
78023	Manual Mini Monochromator, 500-1200nm, 74mm Focal Length
78024	Motorized Mini Monochromator, 190-650nm, 74mm Focal Length
78025	Motorized Mini Monochromator, 200-800nm, 74mm Focal Length
78026	Motorized Mini Monochromator, 300-800nm, 74mm Focal Length
78027	Motorized Mini Monochromator, 500-1200nm, 74mm Focal Length

Optional Slit Assemblies (Set of Two Slits)

These assemblies mount to any of the monochromators listed above.

Model	Description
78091	50 μm x 4 mm
78092	100 μm x 4 mm
78093	150 μm x 4 mm
78094	300 μm x 4 mm
78095	600 μm x 4 mm
78096	1000 μm x 4 mm

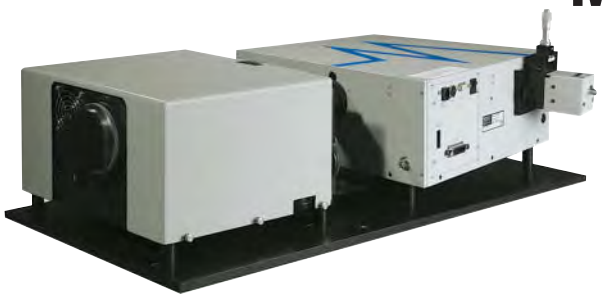
Optional Accessories

Model	Description
78085	Stepping Motor Controller, 110 VAC, 60 Hz
78086	Stepping Motor Controller, 220 VAC, 50 Hz
78005	Ordering Sorting Filter Assembly, 190-650nm, Inc. 300μm x 4mm Slit
78006	Ordering Sorting Filter Assembly, 200-800nm, Inc. 300μm x 4mm Slit
78007	Ordering Sorting Filter Assembly, 300-800nm, Inc. 300μm x 4mm Slit
78008	Ordering Sorting Filter Assembly, 500-1200nm, Inc. 300μm x 4mm Slit
78040	Glass Fiber Optic Assembly, 4.8mm OD Ferrule, Inc. 600μm x 4mm Slit
78041	Glass Fiber Optic Assembly, SMA Termination, Inc. 600μm x 4mm Slit
78042	Tungsten Halogen Light Source, 105-126 VAC
78043	Tungsten Halogen Light Source, 210-252 VAC
78044	Replacement 20 W Tungsten Halogen Lamp, Quantity 2

WEB *See our website for more info*

ORIEL INSTRUMENTS
A Newport Corporation Brand

Light Sources-Monochromator Mounting Kits



Apex Illuminator coupled to Cornerstone™ 260 ¼ m Monochromator, using 70632 Mounting Kit

- **Facilitate alignment of light source to monochromator**
- **Create light enclosed optical paths**
- **Easy coupling; minimal hardware required**

Monochromator throughput is dependent upon various factors. One of these is coupling efficiency. To maximize monochromator throughput, your illuminator must be focused precisely on the monochromator slit. One simple way to do this is to use fiber optics, but you loose some throughput and you are limited by the usable wavelength range of the fiber. The other method is to align the optical axes of the light source and the monochromator, and ensure that the input slit is at the image of the source. This can be extremely time consuming. We offer mounting kits that mount the most popular Oriel Light Sources and Monochromators and Spectrographs to a common baseplate. The optical axes heights are fixed, and the light source-monochromator distance is fixed. We offer kits for the following Oriel Illuminators:

Apex Monochromator Illuminator Mounting Kits

Apex Monochromator Illuminators have outputs matched to the input of Oriel Monochromators (no additional focusing optics are necessary). Combined with an 1/8 or ¼ m Oriel Monochromator, these systems make ideal tunable sources. All mounting kits include a common baseplate to hold the Apex Illuminator and monochromator, a light shield to enclose the beam path, and all the necessary mounting hardware.

- Apex Monochromator Illuminators
- 7340 Dual Source Illuminators
- 1000 W Research Illuminators

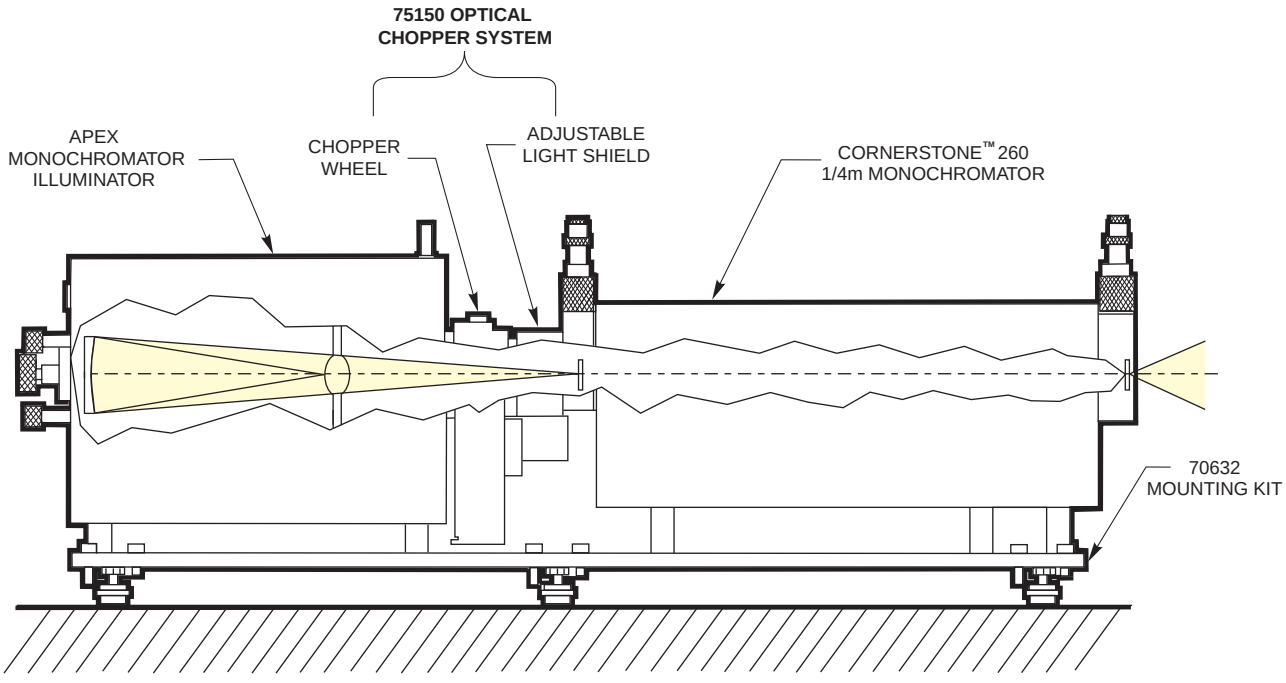


Fig. 1 Diagram of Apex Monochromator Illuminator, 75150 Optical Chopper System, and Cornerstone™ 260 ¼ m Monochromator, mounted together using 70632 Mounting Kit.

Dual Source Monochromator Illuminator Mounting Kits

Use the 7340 or 7341 Illuminator (page 244) if you need wavelength scanning over a wide range. These illuminators hold two sources simultaneously, so you can scan from the UV (with a deuterium or arc lamp) through the NIR (with a QTH lamp or IR element) without breaking down the system and inserting a new lamp. They are a good match to the Cornerstone™ automated Monochromators. These mounting kits include a common baseplate for both instruments and all the necessary mounting hardware. To enclose the beam, order the 71310 Light Shield.

1000 W Illuminator Mounting Kits

Use this source-monochromator combination for very high throughput. (You will need to use a large slitwidth because of the large arc and filament dimensions of the lamps.) These sources run 450 to 1000 W arc lamps and 600 and 1000 W QTH lamps. The 77395 Kit comes with the baseplate and necessary mounting hardware to fix a 2 Inch Series kW Research Housing (from page 193), 77200 1/4 m Monochromator together, as well as a liquid filter to remove the NIR, a 200 mm focal length lens to focus the collimated source onto the monochromator slit, and a light shield to enclose the beam.

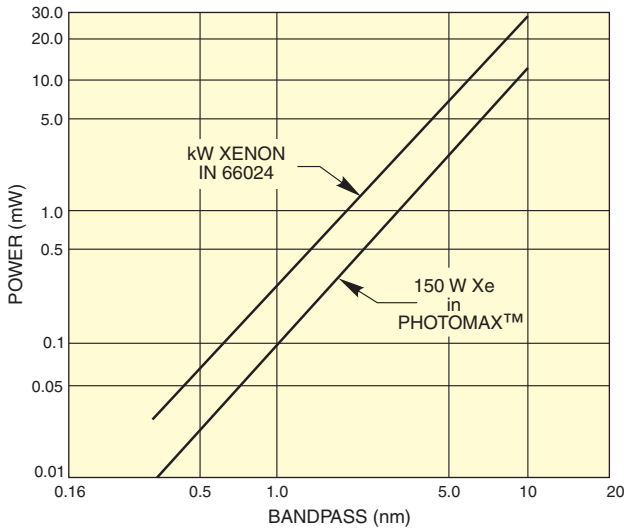


Fig. 2 Monochromatic power at 500 nm from the 6269 kW Xe Lamp operated in a Research Housing, compared with the power from a 150 W Xe Lamp operated in PhotoMax™. In both cases, the monochromator was the 77200 1/4 m with a 500 nm blaze grating.

Ordering Information

Model	Description
70630	Mounting Kit, Apex Illuminator to 77250 Monochromator, Inch or Metric Holes
70631	Mounting Kit, Apex Illuminator to Cornerstone™ 130 Monochromator, Universal
70632	Mounting Kit, Apex Illuminator to Cornerstone™ 260 Monochromator, Universal
74015	Mounting Kit, 7340 Dual Light Source to Cornerstone 130 Monochrometer, Universal
74102	Mounting Kit, 7340 Dual Light Source to Cornerstone 260, Universal
77395	Mounting Kit, 2in 1000W Research Illuminator to 77200 Monochrometer, Inch Holes

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