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Oriel 77200 1/4 m Monochromator



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 1191). 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.

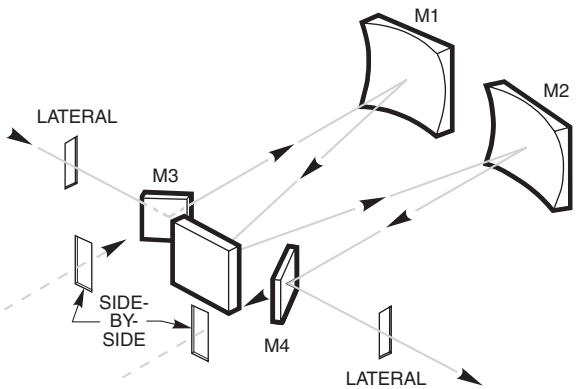


Fig. 1 Optical configuration of 77200 1/4 m Monochromator.

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

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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	250 nm	Holographic	0.5	1.4	65	200 - 600 nm	600 nm	77230
1800	500 nm	Holographic	0.66	1.7	80	300 - 900 nm	792 nm	77253
1200	250 nm	Holographic	1.0	3.1	80	180 - 650 nm	1200 nm	77231
1200	350 nm	Ruled	1.0	3	80	200 - 1200 nm	1200 nm	77233
1200	750 nm	Ruled	1.0	2.5	80	450 - 1200 nm	1200 nm	77229
600	200 nm	Ruled	2.0	6.4	70	180 - 500 nm	2400 nm	77239
600	300 nm	Ruled	2.0	6.3	85	250 - 850 nm	2400 nm	77266
600	750 nm	Ruled	2.0	6	75	450 - 2000 nm	2400 nm	77243
600	1 µm	Ruled	2.0	5.7	80	600 - 2400 nm	2400 nm	77234
600	1.25 µm	Ruled	2.0	5.4	85	750 - 3000 nm	2400 nm	77279
600	1.6 µm	Ruled	2.0	4.9	90	900 - 3000 nm	2400 nm	77280
400	500 nm	Ruled	3.0	9.4	80	300 - 1200 nm	3600 nm	77240
400	1.6 µm	Ruled	3.0	8.5	85	900 - 2900 nm	3600 nm	77281
300	1 µm	Ruled	4.0	12.4	85	575 - 2500 nm	4800 nm	77282
300	2 µm	Ruled	4.0	11.4	90	1.1 - 4.8 µm	4800 nm	77235
246.16	226 nm	Ruled	4.87	15.7	60	190 - 450 nm	5.8 µm	77283
200	1 µm	Ruled	6.0	18.9	85	0.6 - 2.2 µm	7.2 µm	77244
150	300 nm	Ruled	8.0	25.8	70	190 - 800 nm	9.6 µm	77284
150	800 nm	Ruled	8.0	25.6	85	425 - 1600 nm	9.6 µm	77286
150	1.25 µm	Ruled	8.0	25.3	85	725 - 2800 nm	9.6 µm	77287
150	4 µm	Ruled	8.0	23	75	2.5 - 9.6 µm	9.6 µm	77236
50	12 µm	Ruled	24.0	68.6	80	0.7 - 23 µm	28.8 µm	77238

Specifications

Focal Length	250 mm
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	0.2 nm
Weight	12 lbs (5.5 kg)

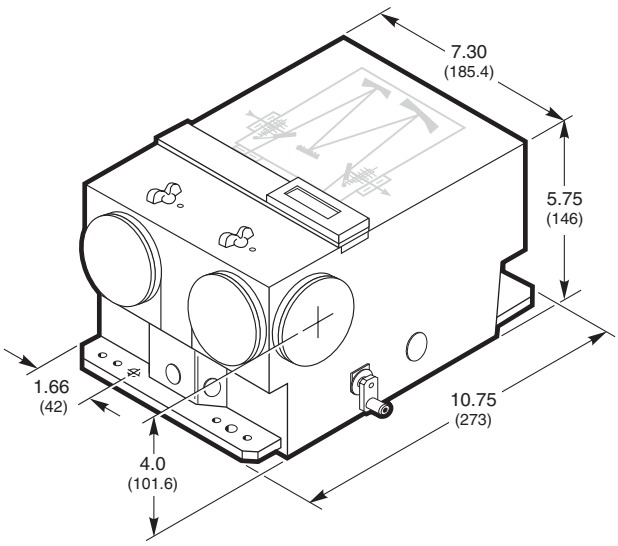


Fig. 2 Dimensional diagram of 77200 1/4 m Monochromator.

Ordering Information

Monochromator and Accessories

To order a complete 77200 Monochromator, order 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
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	77200 to 1000 W Oriel Light Source Mounting Kit

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	250 nm	Holographic	200 - 600 nm	600 nm
77253	1800	500 nm	Holographic	300 - 900 nm	792 nm
77231	1200	250 nm	Holographic	180 - 650 nm	1200 nm
77233	1200	350 nm	Ruled	200 - 1200 nm	1200 nm
77229	1200	750 nm	Ruled	450 - 1200 nm	1200 nm
77239	600	200 nm	Ruled	180 - 500 nm	2400 nm
77266	600	300 nm	Ruled	250 - 850 nm	2400 nm
77243	600	750 nm	Ruled	450 - 2000 nm	2400 nm
77234	600	1 µm	Ruled	600 - 2400 nm	2400 nm
77279	600	1.25 µm	Ruled	750 - 3000 nm	2400 nm
77280	600	1.6 µm	Ruled	900 - 3000 nm	2400 nm
77240	400	500 nm	Ruled	300 - 1200 nm	3600 nm
77281	400	1.6 µm	Ruled	900 - 2900 nm	3600 nm
77282	300	1 µm	Ruled	575 - 2500 nm	4800 nm
77235	300	2 µm	Ruled	1.1 - 4.8 µm	4800 nm
77283	246.16	226 nm	Ruled	190 - 450 nm	5.8 µm
77244	200	1 µm	Ruled	0.6 - 2.2 µm	7.2 µm
77284	150	300 nm	Ruled	190 - 800 nm	9.6 µm
77286	150	800 nm	Ruled	425 - 1600 nm	9.6 µm
77287	150	1.25 µm	Ruled	725 - 2800 nm	9.6 µm
77236	150	4 µm	Ruled	2.5 - 9.6 µm	9.6 µm
77238	50	12 µm	Ruled	0.7 - 23 µm	28.8 µm

Fixed Slits

Model	Slit Width (µm)	Slit Height (mm)	Monochromator Resolution* at 500 nm (nm)
77222	10	2	0.1**
77220	25	3	0.15**
77219	50	6	0.25**
77218	120	18	0.4
77217	280	18	1
77216	600	18	2
77215	760	18	2.5
77214	1240	18	4
77213	1560	18	5
77212	3160	18	10
77211	6320	18	20

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

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