

# Monochromators

## Monochromator/Spectrograph Omni-λ 300



Omni-λ300 Monochromator

The Omni-λ 300 monochromator/spectrograph system is a versatile system with a precision direct drive and a triple grating turret that offers unparalleled repeatability and reproducibility in spectral position. The system is constructed using a single piece casting for superb structural rigidity and also features flexible input and output port options that allow it to be configured as either a monochromator or spectrograph system with a two-dimensional array detector. Flexible grating options make this monochromator an ideal general purpose unit that can cover a wide range of application requirements from UV to IR and from medium to high spectral resolution depending upon grating choice with excellent optical throughput and low stray light levels. The Omni-λ 300 uses a USB 2.0 interface for easy connection to your experimental control.

The rugged high performance Omni-λ 300 is an ideal choice for either single or multichannel detector use in many applications that require medium to high spectroscopic resolution with excellent stray light performance such as fluorescence, Raman, absorption, transmission or source characterisation measurements.

### Optical configuration

The Omni-λ 300 uses an asymmetrical in-plane Czerny-Turner configuration. The F-number is f/3.9. The resolution with a 1200 l/mm grating is 0.1 nm@500 nm. The Omni-λ300 can also be operated as a spectrograph. This system is also available in a dual exit port configuration. Mounting adapters for most commercial cameras are available.

- Focal length: 300 mm
- Fully automated
- USB 2.0 interface
- 180 nm – 23 μm (grating dependent)
- Lab View VI's and Linux driver

Mercury light source	435.83 nm	
FWHM	0.08 nm	
Peak wavelength	435.82 nm	
Grating	1200 l/mm	
Blaze	@300 nm	

### Motorized wavelength drive

The Omni-λ300 uses a stepping motor drive with a repeatability of 0.1 nm to change wavelength and to switch gratings. This direct driving mechanism keeps complexity and costs to a minimum. With the included software OMNICONTRON the system is able to perform automated scans with grating and filter change. The min. step size is 0.005 nm.

Specifications	
Focal length	300 mm
Aperture ratio	f/3.9
Resolution@500 nm	0.1 nm
Dispersion	2.7 nm/mm
Grating mount:	triple grating turret, interchangeable
Grating size:	68 mm x 68 mm
Accuracy (wavelength)	0.2 nm
Repeatability	0.1 nm
Drive step size:	0.005 nm
Focal plane size	25 mm (w) x 14 mm (h)
Standard slits:	0.01 - 3 mm, continuously adjustable
Slit height	14 mm
Optical axis height	134 mm
Size	360 mm (l) x 260 mm (w) x 195 mm (h)
Weight	17 kg
All specifications are obtainable with a 1200 l/mm grating and 10 μm slits at 546,1 nm.	

### By the way

If your detector is sensitive to shorter wavelength than those diffracted in the first order you'll need to block them before they hit the detector. See a list of order sorting filters under [www.lot-oriel.com/filter](http://www.lot-oriel.com/filter) or use our computer controlled, motorized filter wheel MSZ 3122.

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### Instrument control and software

The Omni-λ 300 is connected to the computer via an USB 2.0 connection. OMNICONTRON is a stand-alone program for users who only need to command the monochromator without integrating it with other instruments. For all others we supply 32 bit Lab View VI's and basic LINUX interfaces incl. source code. Furthermore a list of all device commands is in the manual for individual programming needs.

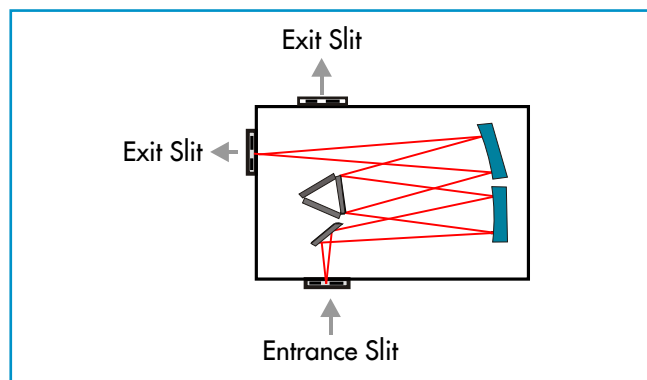
### Slit assemblies

The slit assembly uses a precision micrometer drive to adjust the width. It is continuously adjustable from 10 μm to 3 mm at a slit height of 4 – 14 mm. A motorized version is available also. All slits have a 35 mm series male flange which allows convenient interfacing to a wide range of accessories. The optional multiple fixed slit assembly has 7 fixed slit positions ranging from 0.5 to 6 mm in width. Fixed slits are the best choice for reproducible bandwidth. The table above shows typical bandwidth for a 1200 l/mm grating.

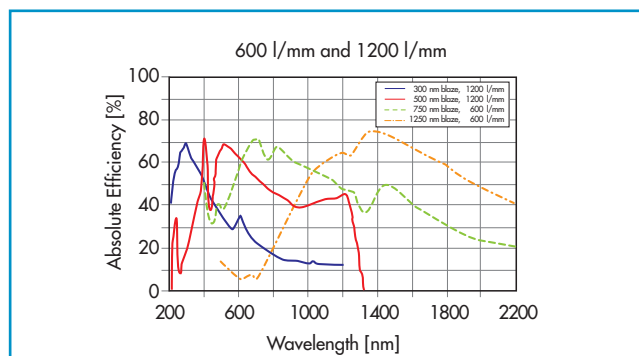
Slitwidth μm	Bandwidth nm
10	0.2
25	0.2
50	0.25
150	0.5
350	1
750	2
1000	2.5
2000	5
3000	8

### Optional motorized filter wheel

A 6 position filter wheel is offered to hold order sorting and/or neutral density filters at the input of the Omni-λ 300. The filter wheel is controlled by the OMNICONTRON software. It is equipped with 5 Schott glass filters with 50% T cut-on wavelength at 350, 550, 650, 800, 1100 nm.



Optical configuration: MSH 3203 Omni-λ 300 monochromator



Typical efficiency curves for 600 and 1200 line gratings, different blaze

### Ordering information Monochromator and Spectrograph

<b>MSH 3201</b>	Omni-λ 300 Monochromator/Spectrograph, USB 2.0 interface, 180° configuration, OMNICONTRON software packet, 32 bit Lab View VI's and Linux source code
<b>MSH 3203</b>	Omni-λ 300 Monochromator/Spectrograph, USB 2.0 interface, dual port (90° and 180° configuration), OMNICONTRON software packet, 32 bit Lab View VI's and Linux source code
<b>MSZ 3112</b>	Variable slit assembly, 10 μm – 3 mm, micrometer driven
<b>MSZ 3113</b>	Motorized slit assembly, 10 μm – 3 mm, (requires driver board MSZ 3115)
<b>MSZ 3114</b>	Fixed slit assembly, 7 fixed slits: 0.5, 1, 2, 3, 4, 5, 6 mm manually changable
<b>MSZ 3115</b>	Stepper motor driver board (1 driver for each pair of motorized slits)
<b>MSZ 3122</b>	Motorized filter wheel with 5 Schott glass filters with 50% T cut-on wavelength at 350, 550, 650, 800, 1100 nm
<b>MSZ 3123</b>	High performance shutter assembly

### Ordering information Gratings

	Line Spacing (l/mm)	Blaze Wavelength	Type
<b>MSG68-2400-H</b>	2400		Holographic
<b>MSG68-1800-H</b>	1800		Holographic
<b>MSG68-1200-300</b>	1200	300	Ruled
<b>MSG68-1200-500</b>	1200	500	Ruled
<b>MSG68-600-1000</b>	600	1000	Ruled
<b>MSG68-300-1250</b>	300	1250	Ruled
<b>MSG68-300-1800</b>	300	1800	Ruled
<b>MSG68-300-3000</b>	300	3000	Ruled

Other gratings on request