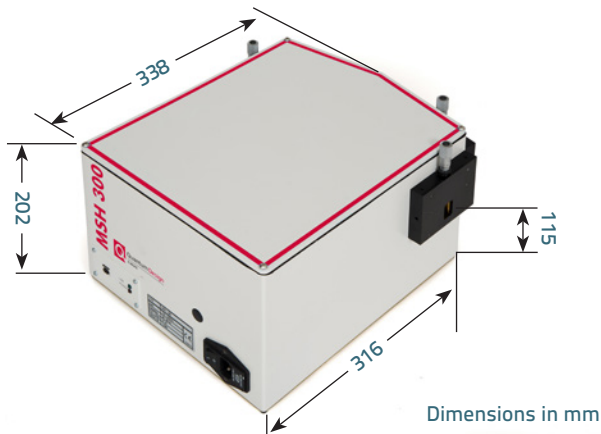


Monochromator MSH-300



Layout MSH-300

The MSH-300 monochromator system is a high performance and rugged platform designed for unparalleled wavelength accuracy at all grating angles, very fast wavelength acquisition and zero backlash. It is built in a single casting, providing the highest rigidity and robustness.

Flexible grating options make this monochromator the ideal general purpose unit that covers a wide range of application requirements from UV to IR.

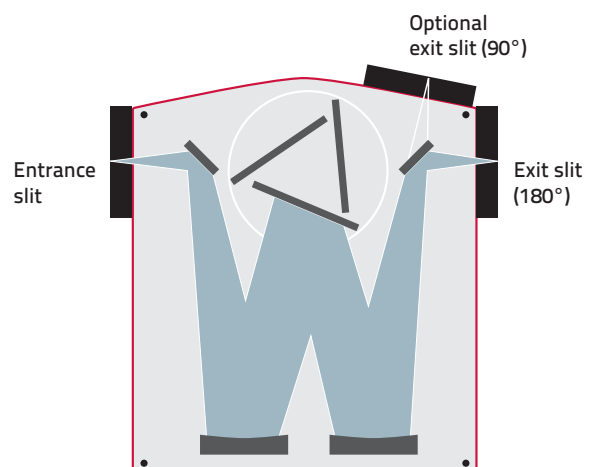
- Focal length: 300 mm
- Fully automated
- USB 2.0 interface
- 190 nm - 24 μm (grating dependent)
- Control software
- Software development kit with code examples C, C++, Delphi, VBA, LabView and Python

Optical layout

The optical Czerny-Turner layout has been developed to minimize scattered light and maximize throughput. Effective internal baffling reduces general scatter while the novel mirror arrangement avoids rediffracted light which is often a problem at shorter wavelengths.

The use of large rectangular gratings (size 68 mm x 84 mm) improves the light throughput and maintains a constant f/number of 4.1 at all grating angles.

Up to three gratings are mounted on a turret which can be rotated through 360°, allowing the software selection of grating type and position. The optional programmable detector changeover mirror and the detection electronics with software-selectable dual inputs allow spectral scans over a wide wavelength range to be accomplished without manual intervention.



Optical configuration: MSH-300 monochromator

Monochromator MSH-300

Motorized wavelength drive

The MSH-300 control grating position uses precision gears and a microprocessor-controlled microstepping drive. The software control allows automated scans with grating and filter change.

Motorized filter wheel

If a detector is sensitive to shorter wavelengths than those diffracted in the first order you'll need to block them before they hit the detector. Also, using the system as monochromatic light source with broadband light at the entrance requires the use of long pass filters. For handling convenience, the MSH-300 can be equipped with a motorized 6-position filter wheel holding standard 25 mm diameter order sorting filters. Its position inside the single casting allows full access to the external slit assemblies for mounting detectors, fibers or other accessories. Position 6 holds a blind plate for dark current measurements.

Instrument control and software

The USB interface uses Windows native drivers providing plug and play connectivity to all Windows computers with either 32 or 64 bit OS systems.

The software offers a user-friendly control of all relevant parameters like center wavelength, grating selection, calibration values, etc. as well as optional slit width, filter position and others.

For those who need to integrate the monochromator in larger setups the software development kit (SDK) features code examples for C, C++, Delphi, VBA, LabView and Python for individual programming needs.

Slit assemblies

In addition to the focal length and number of lines of the grating, the selected slit width determines the resolution of the monochromator. The MSH-300 can be equipped with fixed slits as well as with micrometrically or motor-adjustable slits. The latter two use a precision micrometer drive to adjust the slit width. They are continuously adjustable from 10 μm to 8 mm at a height of 20 mm either manually or software controlled.

Silver or gold coated optics

Depending on the required wavelength range mirrors and gratings are optional available with silver or gold coating for improved reflectivity.

Specifications	
Configuration	Czerny-Turner
Slits	Fixed, micrometer or motorized variable
Slit width and height	10 μm - 8 mm (w) x 20 mm (h)
Number of gratings	1, 2 or 3
Grating size	68 mm x 84 mm
Aperture ratio	f/4.1 (at all grating angles)
Resolution	0.1 nm at reduced slit height, 0.3 nm with full slit height of 20 mm, both measured with 1200 l/mm grating
Wavelength accuracy	± 0.2 nm over full range of 1200 l/mm grating
Wavelength reproducibility	± 0.05 nm (1200 l/mm)
Weight	14 kg

Ordering information monochromator	
Monochromator	300 mm Czerny-Turner monochromator, USB interface, 180° configuration, software and SDK
MSH-300F	Monochromator with 2 fixed slits
MSH-300	Monochromator with 2 manual variable slits
MSH-300M	Monochromator with 2 motorized slits
Additional entrance or exit ports	
(Order sorting filter wheel MSZ-FW cannot be operated at the same side.)	
MSZ-SF	Remote operated swing away mirror with 1 fixed slit holder for additional slit at 90°.
MSZ-SV	Remote operated swing away mirror with 1 manual variable slit holder for additional slit at 90°.
MSZ-SM	Remote operated swing away mirror with 1 motorized slit holder for additional slit at 90°.
MSZ-FW	Programmable 6 position filter wheel for diameter 25 mm filters, inside mounted. Position 6 holds a blind plate.