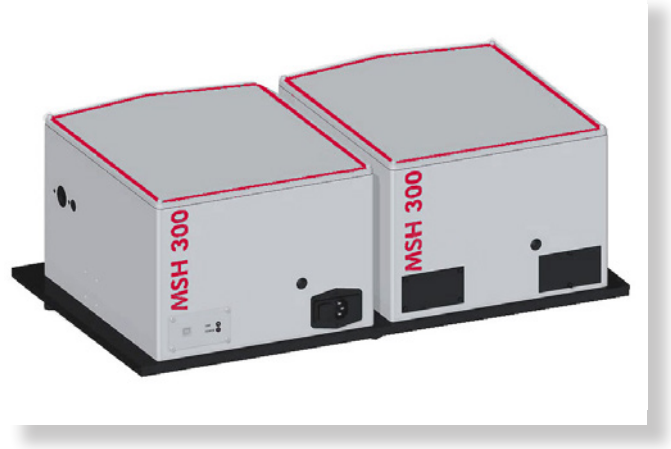
Double Monochromator MSHD-300



- Focal length: 600 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

For those applications where the scattered light performance of a single monochromator is not sufficient, the MSHD-300 double monochromators are available.

These devices are supplied with either **additive** or **subtractive** dispersion. An optional swing away mirror allows instant change from double to single operation - a useful feature in UV-VIS-NIR systems.

An order sorting filter wheel, essential for accurate measurement of continuous spectra, motorized slits and our various light sources are amongst the wide range of accessories available to complement the MSHD-300.

As with the MSH-300, these monochromators control grating position using precision gears and a microprocessor-controlled microstepping drive. Up to three gratings are mounted on a turret which can be rotated through 360° allowing software selection of grating type and position.

An optional programmable detector changeover mirror with software selectable dual inputs allow spectral scans over wide wavelength ranges without manual intervention.The advantages of this drive include constant wavelength accuracy at all grating angles, very fast wavelength acquisition and zero backlash.

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.

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 MSHD-300 can be equipped with a motorized 6-position filter wheel holding standard 25 mm diameter order sorting filters. Its position inside the 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.

Specifications		
Configuration	**MSHD-300A Double Czerny-Turner additive dispersion**	**MSHD-300S Double Czerny-Turner subtractive dispersion**
Slits	Fixed, micrometer or motorized variable	
Slit width x height	10 µm - 8 mm (w) x 20 mm (h)	
No of gratings	1,2 or 3	
Grating size	68 mm x 84 mm	
Aperture ratio	f/4.1 (at all grating angles)	
Resolution	0.05 nm at reduced slit height, 0.15 nm with full slit height of 20 mm*	0.1 nm at reduced slit height, 0.3 nm with full slit height of 20 mm*
Wavelength accuracy	±0.2 nm over full range*	
Wavelength reproducibility	±0.05 nm*	
Weight	30 kg	
*measured with a 1200 l/mm grating; 10 µm slit		

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BENTHAM

Double Monochromator MSHD-300

Motorized wavelength drive
The MSHD-300 control grating position uses precision gears and a microprocessor-controlled microstepping drive. This enables wavelength acquisition speeds up to 1000 nm/s. The software control allows automated scans with grating, mirror and filter change without manual intervention.

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.

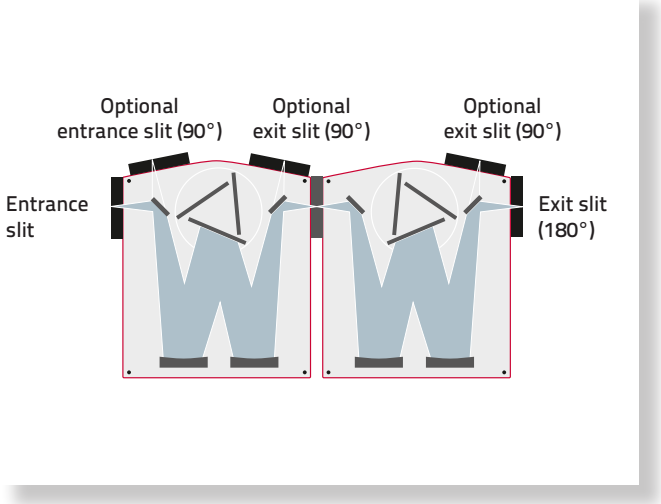
The software offers a user-friendly control of all relevant parameters like center wavelength, grating selection, calibration values, etc. as well as optional filter position and others.

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.

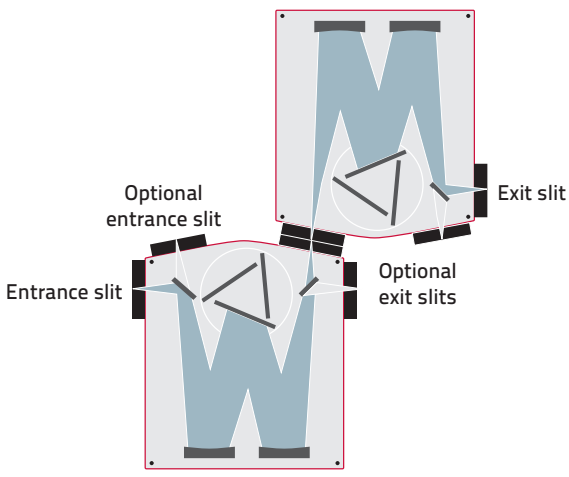
Slit assemblies
In addition to the focal length and number of lines of the grating, the selected slit width determines the resolution of the monochromator. The MSHD-300 can be equipped with fixed slits as well as with micrometrically or motor-adjustable slits. The latter two use a precision micrometer 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.

Ordering information monochromator	
Double monochromator	2x 300 mm Czerny-Turner monochromators, USB interface, software and SDK
Additive configuration	
MSHD-300AF	Double monochromator, 3 fixed slits
MSHD-300A	Double monochromator, 3 manual variable slits
MSHD-300AM	Double monochromator, 3 motorized slits
Subtractive configuration	
MSHD-300SF	Double monochromator, 3 fixed slits
MSHD-300S	Double monochromator, 3 manual variable slits
MSHD-300SM	Double monochromator, 3 motorized slits
Additiional 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.



Optical configuration: MSHD-300 double monochromator



Optical configuration example: MSHD-300 double monochromator

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