

Double Monochromator MSHD-150



Layout MSHD-150

- 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

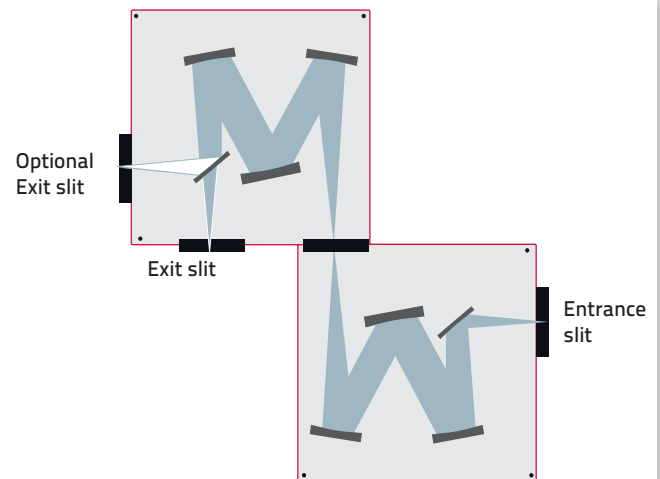
Some applications which require the scattered light rejection of a double monochromator do not demand a higher resolution than that given by one of our single monochromators. This was the reasoning which led to the development of the MSHD-150. Designed as a double monochromator from scratch, the two halves of the MSHD-150 are housed in a single casting.

The optical layout not only results in a compact unit but also minimizes the number of reflecting elements while maintaining the flexibility of the Czerny-Turner layout. In the case of the 'C' configuration, even the detector finds a space within the confines of the monochromator body.

The MSHD-150 is used extensively for UV measurement, in the measurement of high optical density, and in the determination of night vision compatibility of avionics displays.

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.



Optical configuration: MSHD-150 monochromator

Double Monochromator MSHD-150

Motorized wavelength drive

The MSHD-150 control grating position uses precision gears and a microprocessor-controlled microstepping drive.

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-150 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 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-150 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	Two symmetrical Czerny-Turner monochromators arranged for additive dispersion
Slits	Fixed, micrometer or motorized variable
Slit width and height	10 μm - 8 mm (w) x 20 mm (h)
Number of gratings	1 (interchangeable without recalibration)
Grating size	33 mm x 33 mm
Aperture ratio	f/4
Resolution	0.1 nm at reduced slit height, 0.25 nm with full slit height of 20 mm *
Wavelength accuracy	± 0.15 nm *
Wavelength reproducibility	± 0.05 nm *
Weight	12 kg
Stray light rejection 2.5 FWHM	10^{-8}
* all measured with 2400 l/mm grating	

Ordering information monochromator	
Double monochromator	2 x 150 mm Czerny-Turner monochromators, USB interface, additive configuration , software and SDK
MSHD-150F	Double monochromator with 3 fixed slits
MSHD-150	Double monochromator with 3 manual variable slits
MSHD-150M	Double monochromator with 3 motorized slits
MSZ-FW	Programmable 6 position filter wheel for diameter 25 mm filters, inside mounted. Position 6 holds a blind plate.