



User Manual

7IMS3012, 7IMS3022 Monochromator

Optics Focus Instruments Co., Ltd.

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1. Features

- Czerny-Turner optical design for high resolution & maximum throughput while minimizing stray light & aberrations
- Single ruled grating used for high efficiency ultraviolet to visible wavelength scanning
- Single output port version
- Fixed slits
- Wavelength range covers silicon detector's range
- Nitrogen connector is available for UV and NIR testing
- Entrance is compatible with our light sources and fiber interface
- Exit is compatible with our single-point detector and other accessories
- Precise ground lead screw provides the high accuracy and repeatability
- Ultra wear-resisting linear slide guides provide steady movement, long life and low noise
- The wavelength is controlled manually by the wavelength counter
- Optics chamber and mechanical drive chamber are separated to reduce stray light and pollution to optical components

2. Description

This series of Monochromators is a high performance, economical and user-friendly monochromator – an ideal instrument for research and OEM applications.

This series of Monochromators uses an asymmetrical in-plane Czerny-Turner optical configuration. The optical configuration is designed to ensure high resolution and maximum throughput. The F/4.8 monochromator is optimized to provide excellent stray light rejection while minimizing aberrations. Its wavelength drive is designed to increase speed as much as possible without sacrificing accuracy or precision.

3. Specifications

Model	7IMS3012	7IMS3022
Focal Length	300mm	
F/#	F/4.8	
Stray Light	5×10^{-4}	
Minimum Step	0.0625nm (1200g/mm Grating)	
Number of Gratings Supported	1	
Grating Name	Grating S55x55x6	
Grating Size	55mmx55mm	
Standard Grating	OG1200-500(1200g/mm, $\lambda_p=500\text{nm}$)	
Wavelength Selection Method	Manual	Manual
Output Ports	1 Axial Exit	1 Lateral Exit
Slits	Micrometer Slits	
Slits Height	14mm	
Slits Width	10 μm -3mm	
Communication Interfaces	N/A	
Size	390mmx278mmx204mm	
Weight	16kg	

4. Specifications of Optional Gratings

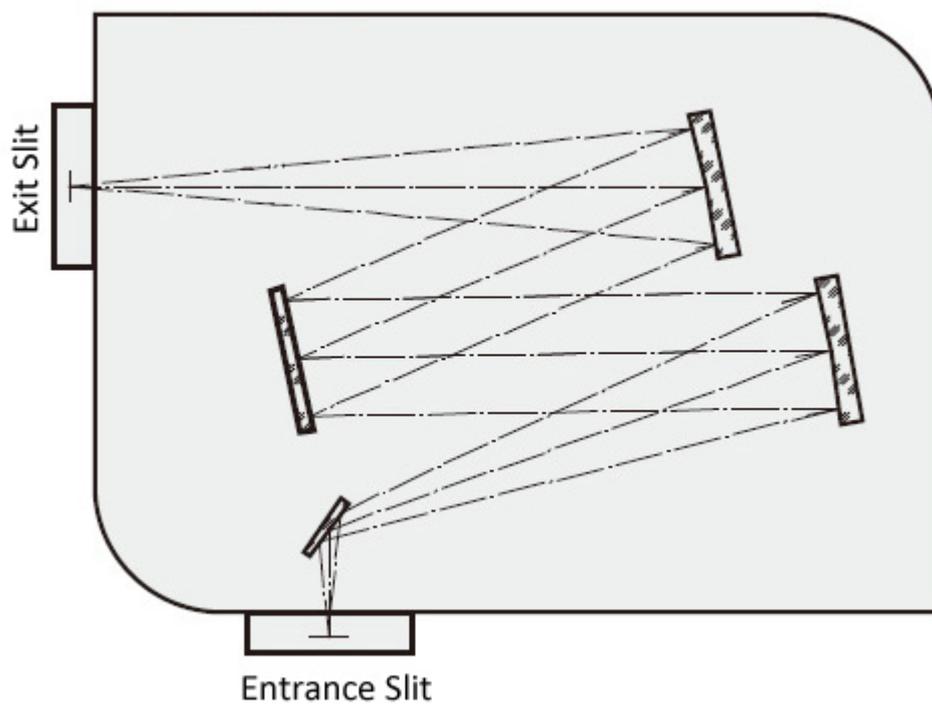
Grating Model	Linear Dispersion (nm/mm)	Accuracy (nm)	Repeatability (nm)	Resolution (nm)	Theoretical Spectral Range (nm)	Mechanical Spectral Range (nm)
OG1200-250	2.7	0.2	0.1	0.1	185-500	0-1100
OG1200-300					200-600	
OG1200-500					330-1000	
OG600-500	5.4	0.4	0.2	0.2	330-1000	0-2200

OG600-750					500-1500	
OG600-1000					660-2000	
OG600-1250					830-2200	
OG300-500	10.8	0.8	0.4	0.4	330-1000	0-4400
OG300-1250					830-2500	
OG300-1800					1200-3600	
OG300-3000					2000-4400	
OG150-4000	21.6	1.6	0.8	0.8	2600-8000	0-8800

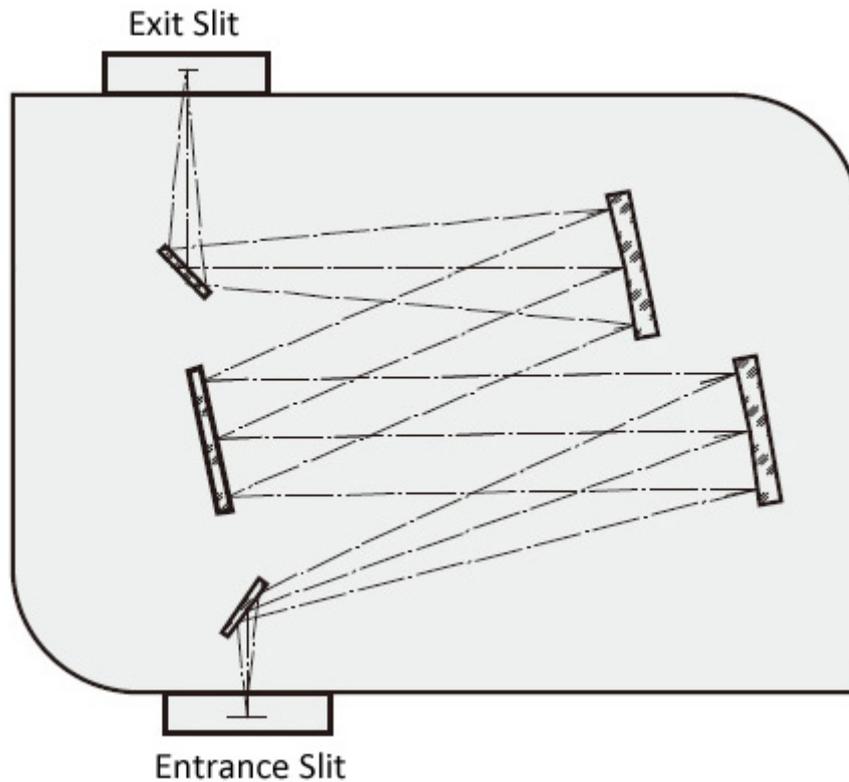
5. Optical Design

This series of monochromators uses unsymmetrical horizontal light paths and changes the off-axis angle to correct coma, improves symmetry of spectral lines and improves resolution.

Eliminating secondary dispersion is designed to restrain stray light. The F/4.8 monochromator is optimized to provide excellent stray light rejection while minimizing aberrations.



7IMS3012 Monochromator optical design

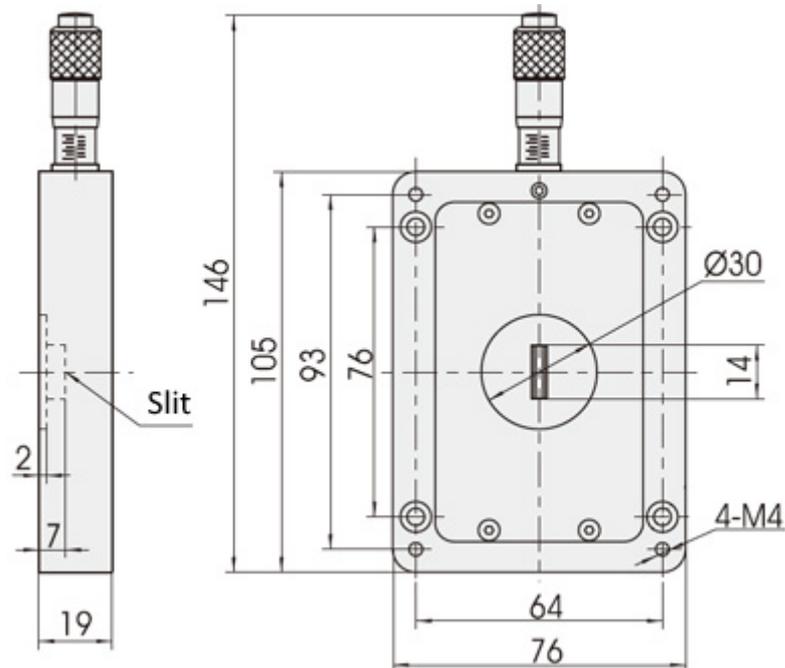


7IMS3022 Monochromator optical design

6. Slits Adjustment

This series of monochromators uses micrometer adjustable slits with sharp stainless-steel blades. The narrowest practically achievable width is 10 μm . The slit is 14 mm high and its width can be adjusted from 10 μm to 3 mm.

The slit uses micrometer head with 10 μm graduations to drive the width of slits. The displacement is 0.25mm per revolution.



7. Manual Wavelength Drive and Readout

This series of monochromators uses a hand wheel to position the grating. A calibrated wheel lets you position and read the wavelength to 1 nm. For gratings with different line densities, the wavelength shown on the hand wheel is multiplied by the appropriate scaling factor.

Actual wavelength= reading of hand wheel x 1 (nm) (1200g/mm grating)

Actual wavelength= reading of hand wheel x 2 (nm) (600g/mm grating)

Actual wavelength= reading of hand wheel x 4 (nm) (300g/mm grating)

Actual wavelength= reading of hand wheel x 8 (nm) (150g/mm grating)

8. Others

Fiber adapter

If you have bought the adapter for SMA905 fiber from us, please replace the cover of the slits with the fiber adapter and connect the fiber directly.

Nitrogen connector

To avoid the absorption of air, you can fill the monochromator with nitrogen in ultraviolet and near infrared band to improve the efficiency. There is a specific nitrogen connector with the

monochromator.

When you need to use it, remove the cover and install the nitrogen connector, then connect the nitrogen pipe. Note: The nitrogen connector can't be used for other gases.

The nitrogen is a kind of non-toxic, pollution-free, non-irritating and non-corrosive gas, so you can keep filling it during the whole experiment to keep the nitrogen concentration and positive pressure in the instrument. The excess gas will leak off through gaps.

9. Accessories

1 x Power adapter (24V/5A)

1 x Nitrogen connector