



User Manual

7IMS1021B 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
- Utility software and an ActiveX Control file included
- Control with USB and RS-232
- 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
- 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/3 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.

Utility software is included to control both the monochromator and filter wheel. An ActiveX Control file

and an easy-to-understand command set are provided for those wanting to create their own programs by LabView or other programming languages.

3. Specifications

Model	7IMS1021B
Focal Length	100mm
F/#	F/3
Stray Light	5×10^{-4}
Minimum Step	0.0625nm (1200g/mm Grating)
Number of Gratings Supported	1
Grating Name	Grating S30x30x6
Grating Size	30mmx30mm
Standard Grating	OG1200-500(1200g/mm, $\lambda_p=500\text{nm}$)
Wavelength Selection Method	Motorized
Output Ports	1
Slits	Fixed Slit Holders
Slits Height	5mm
Slits Width	300 μm
Communication Interfaces	RS232 and USB
Size	221mmx169mmx176mm
Weight	4.5kg

4. Specifications of Optional Gratings

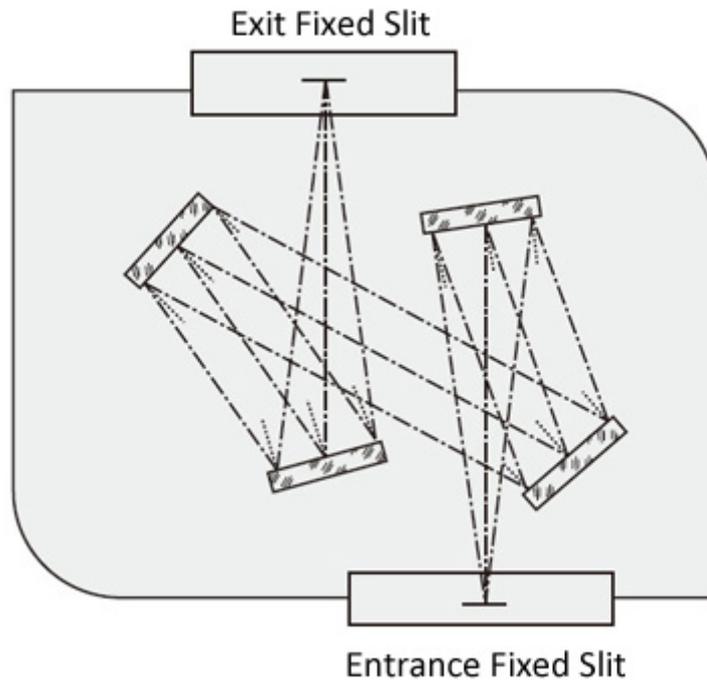
Grating Model	Linear Dispersion (nm/mm)	Accuracy (nm)	Repeatability (nm)	Resolution (nm)	Theoretical Spectral Range (nm)	Mechanical Spectral Range (nm)
OG1200-250	8	0.5	0.25	0.5	185-500	0-1100

OG1200-300					200-600	
OG1200-500					330-1000	
OG600-300	16	1.0	0.5	1.0	200-600	0-2200
OG600-400					260-800	
OG600-500					330-1000	
OG600-750					500-1500	
OG600-1000					660-2000	
OG600-1250					830-2200	
OG300-500					32	
OG300-1250	830-2500					
OG300-1800	1200-3600					
OG300-3000	2000-4400					
OG150-4000	64	4.0	2.0	4.0	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/3 monochromator is optimized to provide excellent stray light rejection while minimizing aberrations.

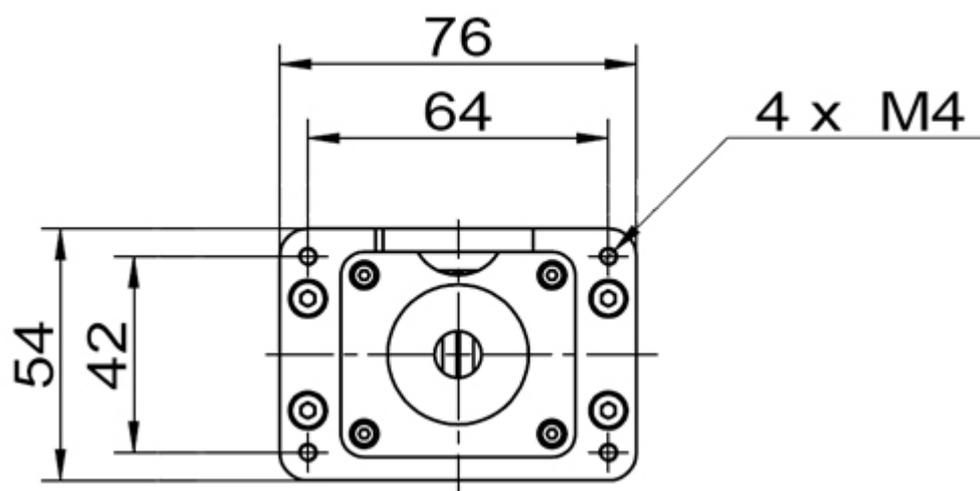


7IMS1021B Monochromator optical design

6. Fixed Slits

7IMS1021B uses a pair of semi-fixed slits with 5mm height. This pair of slits should be used together.

Do not use two slits that have different width. The slit height is 5mm and slit width is 300 μ m.



7. Usage

Cable Connection:

- Connect 9-pin connector of monochromator to the RS232 serial port of computer. Or connect the monochromator to computer by USB line.
- If you have bought our 7IFW6 filter wheel, please connect 15-pin connector of monochromator to the 9-pin connector of 7IFW6 filter wheel.
- Connect power socket.

After connecting all the cables firmly, turn on the power of the instrument. The red indicator light will be lighted up to represent normal power supply. If the red light is not lighted up, please check the fuse or power socket.

After you turn on the power, you will hear worm gear is rotating. That means the instrument is making self-checking and resetting. After finishing self-checking, the instrument will stop automatically and wait for communication with computer.

Now you can run the 7IMSES application software and select the actual RS232 port to make communication. During the self-checking, the instrument cannot communicate with computer and the software will prompt the communication was failed. Please exit the software, after self-checking is finished (the sound of rotation is stopped), rerun the software and select the actual RS232 port, the communication will be successful.

You can use software to operate the instrument to automatically change the wavelength, scan spectrum, switch gratings and change filters (if you have bought 7IFW6 filter wheel from us). Please refer to the software manual.

Note: To avoid damage of computer and instrument, please do not plug / unplug cables when the instrument is still power on.

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. Utility Software

The utility software is included at no extra cost with all models to control both the monochromator and filter wheel accessory. The utility software provided with the monochromator includes USB drivers for Windows 7 32-bit and 64-bit operating systems. The software can also control the instrument through an RS232 or USB connection. Please refer to the Software Manual provided with the monochromator for instructions on installation and use.

7IMSES Monochromator Control System V1.7.7

File Connection Language

Monochromator Control

Reconnect

Current Wavelength: **0.00** nm

Manual Mode

- +

Target Mode

0 nm Run

Increment Mode

← 0.1 nm →

Return Zero Stop Refresh

Parameters

System Parameters Filter Wheel

Instrument Type:

Instrument No.:

Grating Number(Line Density):

Blaze(nm): nm

Zero Offset:

Manufacture Year:

Initial Position: nm

Motor Speed:

Main interface Scan/Sampling

7IMSES Monochromator Control System V1.7.7

File Connection Language

7IDA1 Parameters **Sampling** LockIn SR830

Scan Measure Stability Measure

Start (nm)

End (nm)

Interval(nm)

Start

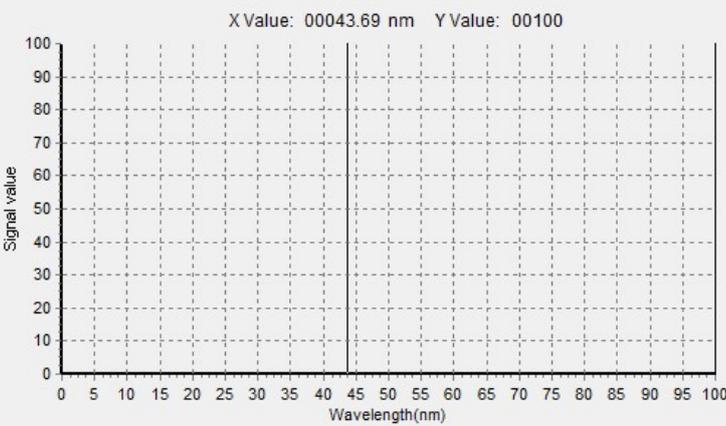
Stop

100

200

5

X Value: 00043.69 nm Y Value: 00100



Wavelength(nm)

Series0

#	Text	Y
0		

Main interface **Scan/Sampling**

Utility Software Screens

10. Accessories

1 x Power adapter (24V/5A)

1 x RS232 cable

1 X USB cable

1 x Nitrogen connector