Cornerstone 260B

1/4 m Monochromator

The Oriel Cornerstone 260B is a high performance, economical, and user-friendly monochromator - an ideal instrument for research applications and production environments, where speed and reliability are essential. Oriel has made it easy to select the right monochromator, based on the application, with a wide selection of diffraction gratings covering a broad spectral range, as well as several input and output port configurations for test setup flexibility.

The Oriel CS260B is based on the same Czerny-Turner optical design as its predecessor to ensure high resolution while minimizing stray light and optical aberrations. This is the replacement model with updated looks and functionality. The cast aluminum base is forged from a single block for maximum rigidity and reproducibility.

Industry-leading wavelength accuracy and scan speed, as well as easy integration with our advanced light source systems. Optical height has been maintained from the previous design to facilitate replacement in test setups. Optional TracQ BASIC software is available to control the monochromator remotely, while measuring and analyzing a complete light source system.

Product Features

- Faster scan speeds, greater accuracy and precision, and improved communications over its predecessor
- Micrometer-adjustable slit option
- Included with utility software for ease of control
- Broad spectral range covered by dual or quad grating options
- Maximize experimental design flexibility with single or dual output port options

1/4 m Monochromator

Slits

To operate any monochromator, slits are required at the input and output ports. The slits offered with the Cornerstone 260B all have 1.5 inch male flanges, allowing them to be easily connected to the wide variety of Oriel accessories and instruments.

The resolution of the monochromator is related to the grating dispersion - a function of the grating design - and the slit width. Resolution at the blaze wavelength of the grating is calculated to be the reciprocal dispersion multiplied by the slit width.

Available pre-configurations of the CS260B include micrometer adjustable slits installed on each port.

A micrometer adjustable slit assembly is continuously variable from fully closed to 3 mm width. The narrowest achievable width is 4 μm. A height adjustment slide allows variation in the height from 2 to 12 mm. Benefits of the micrometer adjustable slits are flexibility and high throughput. Please note that the optimum spectral resolution for any monochromator is obtained with short, narrow slits. This type of slit is designed primarily for versatility and convenience in changing resolution and throughput.

Single or Dual Output Ports

The Cornerstone 260B is available in either a single or dual output port configuration. A single output port is the most economical choice, and the simplest arrangement when using a single experimental set up.

If more than one setup is required for the application, such as measuring the output power of the monochromator with a monitor detector, the dual output port may be a better choice. Two output ports allow continuous scanning over a broad wavelength range without needing to break down the setup. A flip mirror inside the monochromator is used to select the output port. This mirror is controlled through the monochromator software, low level commands, or the optional hand controller. Please note that with dual output port instruments, an unused port left uncoupled can become a source of stray light entering in the monochromator.

1/4 m Monochromator

By using Oriel's Model 77765 Motorized Beam Steerer, the Cornerstone 260B can be transformed into a dual input monochromator. With the Motorized Beam Steerer installed before the monochromator's input port, there is no need to break down the setup to install, align and warm up a second light source. One of two different light sources may be selected with the flip of a switch.
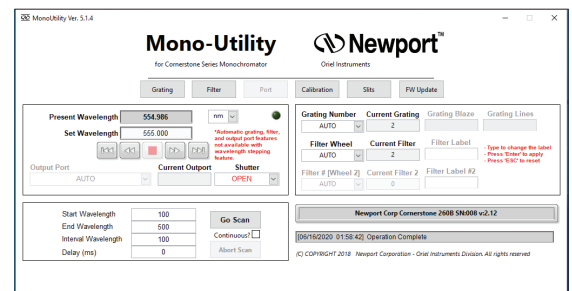
Software Interfaces

A LabVIEW™-based utility application is included at no extra cost with all Cornerstone models to control both the monochromator and filter wheel accessory. The utility software provided with the monochromator includes drivers for Windows® 10 and Mac OS operating systems. The software can control the instrument through a USB 2.0 or RS232 connection.

Oriel's optional TracQ BASIC data acquisition and radiometry software is a complete instrument control and measurement package that includes data acquisition and processing. TracQ BASIC allows users to acquire spectroscopic measurement data quickly and easily, without requiring any programming knowledge. TracQ BASIC is true radiometry software, which enables users to acquire basic voltage measurement or use the built-in algorithms for spectroscopic measurements.

TracQ BASIC integrated Oriel monochromators with various detection instruments, such as Newport Optical Power Meters or the Lock-In Digital Amplifier LIDA-SRS-KITs. Software prompts guide users through the measurement process. Instruments are controlled and scan parameters are set up through simple, intuitive dialog boxes. Data acquisition and processing occurs in real time.

An intuitive command set is provided for those who wish to create their own programming. A list of commands is provided in the user's manual included with the monochromator. Commands are simple to use. The Oriel MonoTERM utility is also provided for sending

Communication Methods

All CS260B models are configured with both RS232 and USB 2.0 computer interfaces. All USB 2.0 A/B cable (Model 70044) and RS232 cable (Model 70040) are included with each unit. For those who desire the simplicity of GPIB or RS232 communication but only have USB ports available, a number of GPIB / USB and RS232 / USB converter cables are commercially available.

All models include a connector to utilize the optional Model 74009 Monochromator Hand Controller. With this accessory, there is no need to install software or use a computer. This dedicated interface is designed specifically for use with Oriel's Cornerstone series monochromators. There is no need to memorize commands or key sequences because the keys are clearly labeled with functions like "Shutter", "Go Wave" and "Filter". The display provides information on the grating selection, line density, active filter position, current wavelength and shutter status. Using the Hand Controller is intuitive and provides access to nearly all the functionality of the instrument.

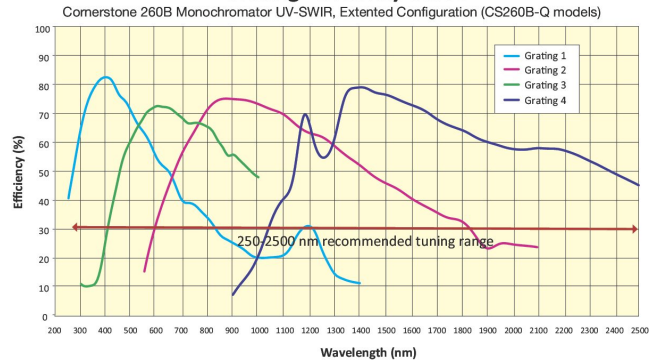## 1/4 m Monochromator

	CS260B
Focal Length	≥260 mm
F / #	F / 3.9
Wavelength Selection Method	Precision motorized rotation stage
Spectral Range	250 to 2500 nm, grating dependent
Spectral Bandwidth	Grating and slit width dependent
Wavelength Accuracy	±0.50 nm[1]
Wavelength Step Resolution	±0.0754 nm[1]
Stray Light	0.01%[2]
Input Ports	1
Output Ports	Axial (all models) and Lateral (dual port models with motorized flip mirror)
Shutter Control	Software, Hand Controller, low-level commands
External Shutter Control	BNC connector; normally closed shutter opens when BNC is shorted
Shutter Minimum Exposure Time	0.3 s[3]
Shutter Maximum Repetition Rate	2.0 Hz[4]
Motorized Filter Wheel	USFW - 100
Utility Software Requirements	Windows 10 and MAC OS-x compatible
TracQ BASIC Software Compatible	Yes
74009 Hand Controller Compatible	Yes
Power Requirements	100 - 240 VAC, 47 - 63 Hz
Weight	21 lbs.; 9.5 kg
Scan Speed	24 nm / s at 10 nm step rate[1]; 180 nm / s for a single step[1]
Computer Interface	USB (Type B), RS232 (DB9)
Grating Size	50 mm
Optical Axis Height	3.52"; 89.4 mm
Operating Temperature	25.0 +/- 3.0°C
Storage Temperature	-40 to +70°C, non-condensing
Humidity	<85% relative humidity, non-condensing

1. Using a 1200 Groove / mm grating measured near blaze wavelength of 400 nm.
2. Measured by comparing the peak throughput of a HeNe laser source at 632.8nm to ±2nm off peak at 0.5nm spectral bandwidth using 1200 lines/mm grating blazed at 500nm.
3. Exposure time measured from closed to open to closed shutter.
4. Using the mechanical shutter as a beam chopper will reduce the lifetime of the shutter and it is not commonly used for this purpose.
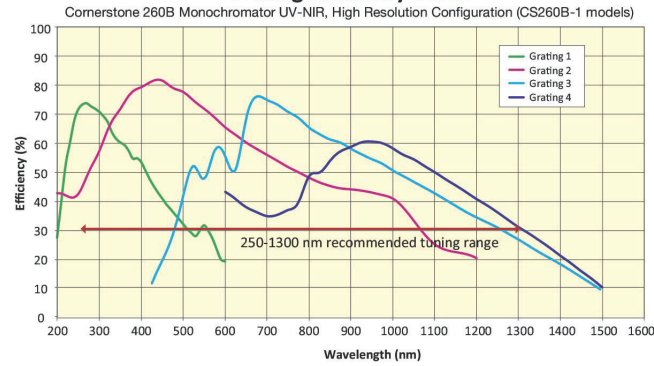
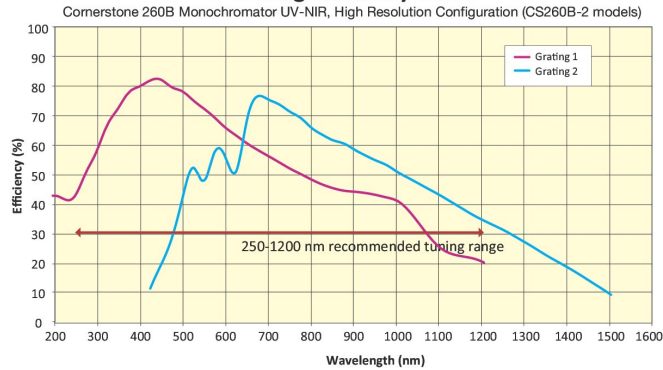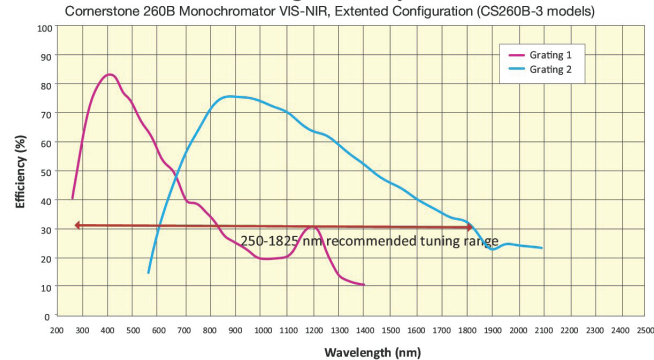|	CS260B-1-MC-D	CS260B-2-MC-A	CS260B-3-MC-D	CS260B-Q-MC-D
Product Description	UV-NIR High Resolution, Quad Grating, Dual Output Mics	UV-NIR High Resolution, Dual Grating, Axial Output Mics	VIS-NIR Extended Range, Dual Grating, Dual Output Mics	UV-SWIR Extended Range, Quad Grating, Dual Output Mics
Blaze Wavelength (nm)	250, 500, 750, 1000	500, 750	400, 1000	400, 650, 1000, 1850
Grating Line Density	1200 L / mm	1200 L / mm	600 L / mm	600 L / mm
Number of Ports	3	2	3	3
Wavelength Range (nm)	250 - 1300	250 - 1200	250 - 1825	250 - 2500
Wavelength Accuracy	±0.50 nm	±0.50 nm	±1.0 nm	±1.0 nm
Wavelength Precision (Step Resolution)	±0.075 nm	±0.075 nm	±0.15 nm	±0.15 nm
Number of Gratings Supported	4	2	2	4
Reciprocal Dispersions (nm / mm)	3.56 3.43 3.22 2.98	3.43 3.22	7.16 6.86	7.16 7.07 6.86 6.10

1/4 m Monochromator

Grating Efficiency Curve
Cornerstone 260B Monochromator UV-SWIR, Extented Configuration (CS260B-Q models)

Legend:
- Grating 1
- Grating 2
- Grating 3
- Grating 4

250-2500 nm recommended tuning range

X-axis: Wavelength (nm)
Y-axis: Efficiency (%)

Grating Efficiency Curve
Cornerstone 260B Monochromator UV-NIR, High Resolution Configuration (CS260B-1 models)

Legend:
- Grating 1
- Grating 2
- Grating 3
- Grating 4

250-1300 nm recommended tuning range

X-axis: Wavelength (nm)
Y-axis: Efficiency (%)

Grating Efficiency Curve
Cornerstone 260B Monochromator UV-NIR, High Resolution Configuration (CS260B-2 models)

Legend:
- Grating 1
- Grating 2

250-1200 nm recommended tuning range

X-axis: Wavelength (nm)
Y-axis: Efficiency (%)

Grating Efficiency Curve
Cornerstone 260B Monochromator VIS-NIR, Extented Configuration (CS260B-3 models)

Legend:
- Grating 1
- Grating 2

250-1825 nm recommended tuning range

X-axis: Wavelength (nm)
Y-axis: Efficiency (%)

All grating efficiency curves are relative (not absolute) calculations and should only be used as a guide to approximate actual instrument performance.

CS260B-1-MC-D
1/4 m Monochromator, UV-NIR High Resolution Quad Grating, Micrometer Slits, Dual Output

CS260B-2-MC-A
1/4 m Monochromator, UV-NIR High Resolution Dual Grating, Micrometer Slits, Dual Output

CS260B-3-MC-D
1/4 m Monochromator, VIS-NIR Extended Range Dual Grating, Micrometer Slits, Dual Output

CS260B-Q-MC-D
1/4 m Monochromator, UV-SWIR Extended Range Quad Grating, Micrometer Slits, Dual Output

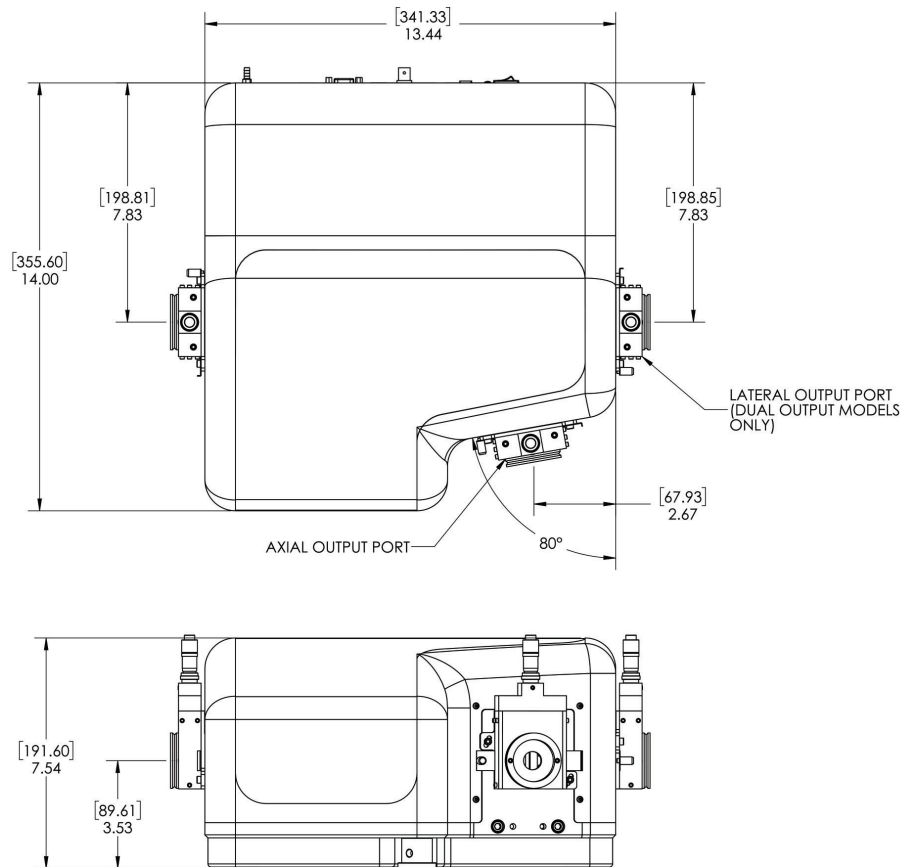|	
74009	Monochromator Hand Controller
USFW-100	Universal Filter Wheel
CBL-CSMS-FW	Filter Wheel Cable
TRACQ-BASIC	TracQ Basic Data Acquisition Software
74104B	CS260B Mounting Kit
74105B	CS260B Mounting Plate

Cornerstone 260B
Dimensions