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SCIENCETECH
Making Light Work Better

9040 Double Additive

Features

- Highly Customizable Modular Design
- Two Configurable Input and Output Ports
- Configurable Turret and Grating Options
- A Full Line of Input and Output Accessories
- Fully Integrated Software and Development Libraries Available
- Optional Double Additive or Subtractive Models
- Optional Dual Pass for Higher Resolution Models

High Resolution Series Monochromators

MADE IN CANADA
FABRIQUÉ AU CANADA

v2.3 2026-05-28

High Resolution Series Monochromators

SPECIFICATIONS

Model #	9040	9490	9150
Input Focal Length (mm)	500	914	1500
Output Focal Length (mm)	550	1000	1500
Wavelength Selection	Motorized		
Communication	USB 2.0		
Readout Mechanics	Sine Drive		
Spectral Range*	Varies with Grating Selection		
Aperture and Grating Size	F/4.0, 102 x 102 mm F/5.2, 84 x 84 mm F/6.9, 64 x 64 mm	F/7.4, 102 x 102 mm F/9.7, 84 x 84 mm F/13.0, 64 x 64 mm	F/12, 102 x 102 mm
Maximum Grating Size (mm)	102 x 102		
Number of Gratings	Single with user replaceable kinematic mount or tumbler with up to 3 gratings		
Optical Resolution*,**	0.03 nm	0.017 nm (0.009 nm for DP)	0.013 nm (0.0065 nm for DP)
Stray Light	4 E-4	4 E-4	4 E-4
Dual Pass Option	NO	YES	YES
Dispersion* (nm/mm)	1.53 (0.75 DA)	0.83 (0.42 DP)	0.5 (0.25 DP)
Wavelength Accuracy* (±nm)	0.05	0.03	0.02
Wavelength Reproducibility* (±nm)	0.025	0.02	0.02
Flat Field Size (W x H) (mm)	30 x 12	27 x 12	27 x 12
Flat Field Angle (deg)	-0.735	0.3	0.3
Optical Axis Height (mm)	139.7	190.5	190.5
Dimensions (mm)	See dimensions page.		
Weight (kg)	35	115	150
Power Requirements***	100 –240VAC, 60W	100 –240VAC, 60W	100 –240VAC, 60W

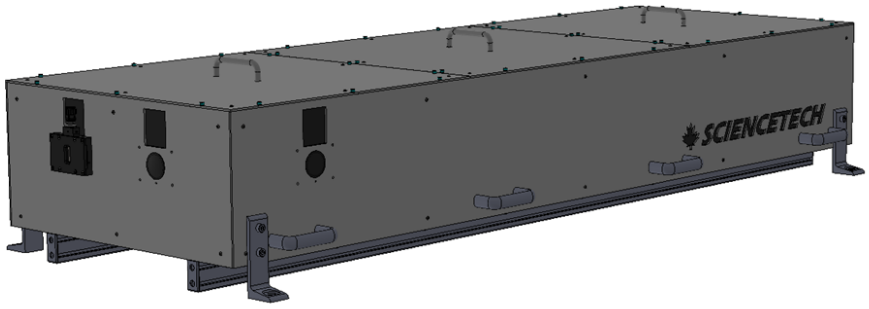
* Specifications given for 1200l/mm gratings with 25um wide input slit

** Resolution for F/6.9 and F/13 on 9040 and 9490 Models

*** Note that the addition of powered accessories will increase the power consumption

DA—Double Additive

DP—Dual Pass



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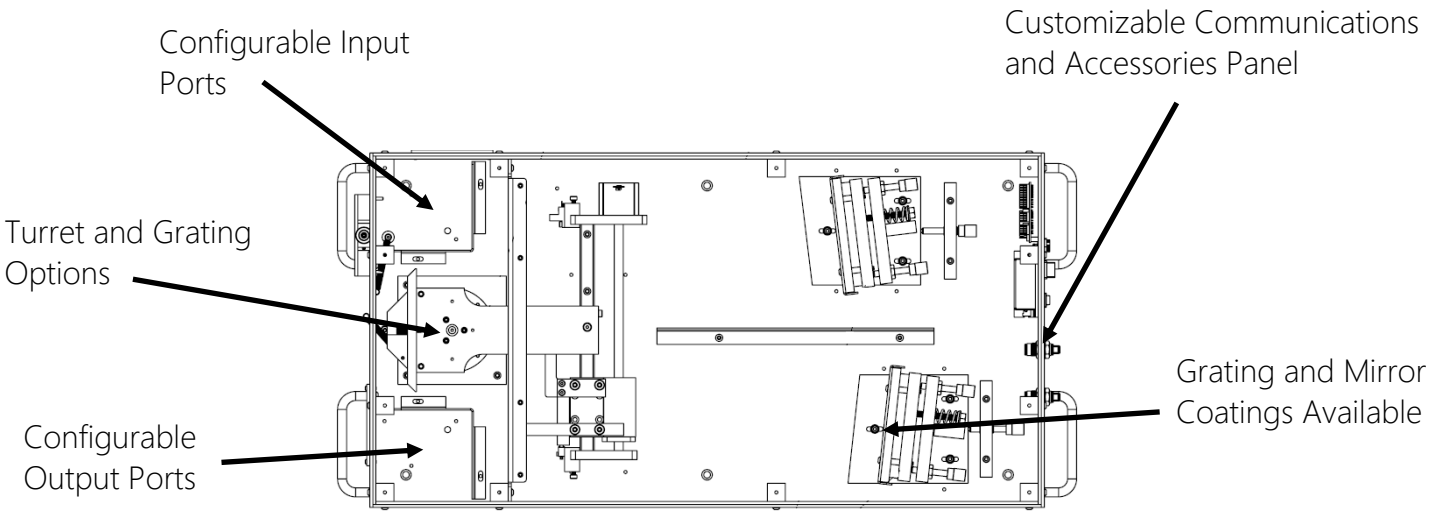
CONFIGURATION



The size of mirror and gratings used in the monochromator determine its F/#. With decreasing F/# the monochromator will collect more light. It is possible to use different-sized gratings and mirrors in the same monochromator; however, system throughput will be dictated by the smallest optic in the monochromator.

Step 1: Grating and F/# Configurations			
Model	F/#	Grating Selection Size (mm x mm)	Available Turret Configurations
9040	F/6.9	64 x 64	1G, 3G
9040	F/5.2	84 x 84	1G, 3G
9040	F/4.0	102 x 102	1G, 3G
9490	F/13	64 x 64	1G, 3G
9490	F/9.7	84 x 84	1G, 3G
9490	F/7.4	102 x 102	1G, 3G
9150	F/12	102 x 102	1G, 3G

Step 2: Input Port		
Part No.	Model	Description
120-8044	9000-HI-IN	Fixed Side Input Port
120-8032	DPIN-HI-MAN	Manual Dual Input Port
120-8075	DPIN-HI-MOT	Motorized Dual Input Port

Step 3: Output Port		
Part No.	Model	Description
120-8045	9000-HI-OUT	Fixed Side Output Port
120-8033	DPOUT-HI-MAN	Manual Dual Output Port
120-8076	DPOUT-HI-MOT	Motorized Dual Output Port

High Resolution Series Monochromators

CONFIGURATION

Step 4: Grating Selection

There are three basic parameters to consider when choosing a grating for your standard series monochromator

1. Required Wavelength Range

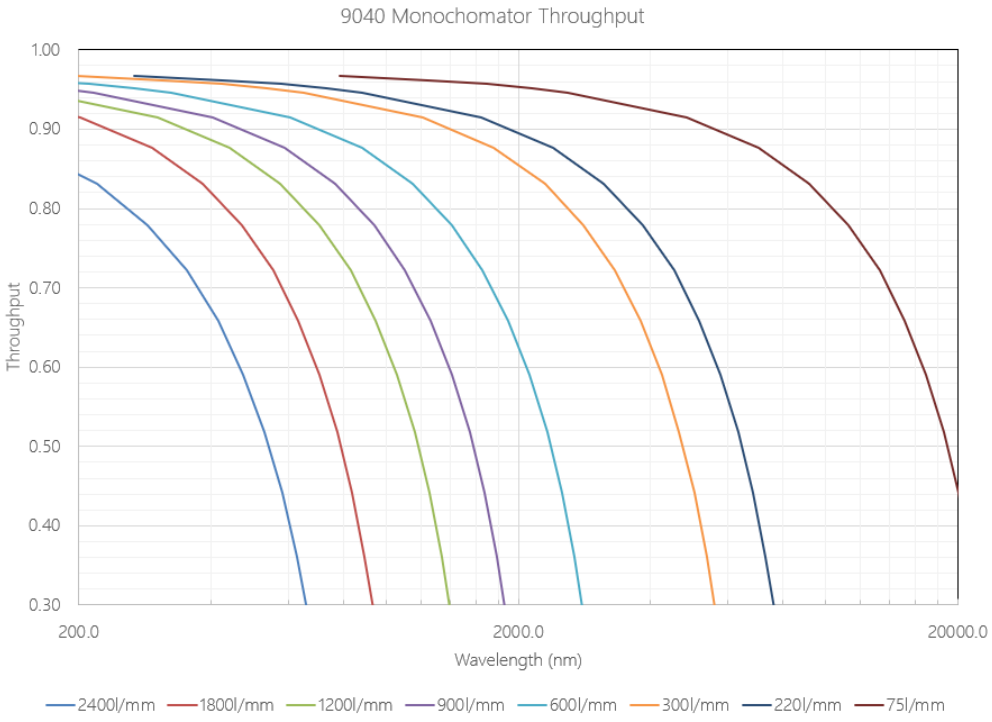
The wavelength range available to you is determined by the grating groove density chosen and the angular mechanical limitation of the monochromator.

2. Grating Efficiency

Ruled gratings may be blazed to increase their efficiency over a specific wavelength band. Holographic gratings can be modulated such that they are more efficient at some wavelengths then at others. Grating efficiency curves are the best tool for determining the most efficient grating available for your application. It is important to note that grating efficiency curves do not represent the exact efficiency that should be expected when the grating is used in a monochromator as grating efficiency curves are taken at Littrow angle.

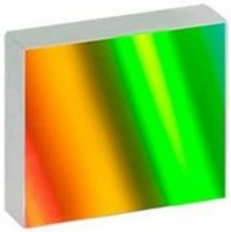
3. Required Resolution and Bandwidth

Resolution is a measure of an instrument's ability to separate adjacent spectral lines. Resolution is generally given in nm. The bandwidth (or bandpass) is the wavelength range that falls on the output port at any one time and is also given in nm. This is an important parameter when integrating a camera such as a linear array or CCD on the output port of the monochromator.



Application Note:

For Raman and when a laser is present, ensure you choose a holographic grating.



Browse Gratings on the Sciencetech Website

High Resolution Series Monochromators

CONFIGURATION

Step 5: Mirror and Grating Coatings

Mirror or Grating Coating	Useful Range
UV enhanced Aluminum	200nm +
Gold	600nm – Far IR, best option for NIR

Step 6: Imaging Option

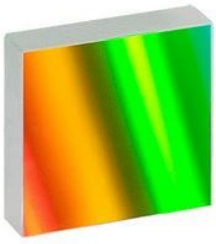
Standard Czerney-Turner type monochromators suffer from astigmatism in the output beam due to the use of off-axis spherical mirrors. Often the astigmatism is not an issue. For imaging applications a toroidal mirror is used to compensate for the inherent astigmatism in the optical system produce a direct image of the input slit at the output port. This is an important option for studying phenomena such as fast kinetics.

Call or email a technical support representative for more information about this option.

Need something that you don't see here?

Sciencetech has built our reputation on custom solutions. Whether you need a small modification to an existing system or a completely novel design built from the ground up to meet your technical specifications, Sciencetech's optical design team is ready to help.

Browse Gratings on the Sciencetech Website



High Resolution Series Monochromators

CONFIGURATION

Dual Pass Option

With the Dual Pass option, the reciprocal linear dispersion of the monochromator can be effectively reduced by a factor of two. By reducing the dispersion the ultimate resolution achievable by the monochromator can also be reduced by a factor of two.

The Dual Pass system functions by introducing pick off mirrors near the entrance and exit ports of the monochromator. The pick off mirrors collect the light that has made a single pass through the monochromator system (collimating mirror, grating and camera mirror) and redirecting the light to make a second pass.

Monochromators with the Dual Pass option included can also be used in single pass. To utilize the single pass option the Dual Pass mirrors are lowered out of the way. Both motorized and manual options are available to move the Dual Pass mirrors into and out of position. In single pass mode the light being redirected into the monochromator is usually sent in along the optical axis. When using the Dual Pass option, the entrance light must be sent in parallel to the optical axis and vertically translated by ~6mm. The vertical translation allows the Dual Pass optics to effectively collect and re-direct the single pass light. The Dual Pass beam will exit the monochromator vertically translated from the optical axis by the same amount that the light is sent into the monochromator.

The Dual Pass option is only available when using the monochromator front entrance and exit ports. The Dual Pass option may be used with a camera, however the camera should be mounted such that it is vertically translated from the optical axis such that the Dual Pass light will fall on the center of the camera's active area.

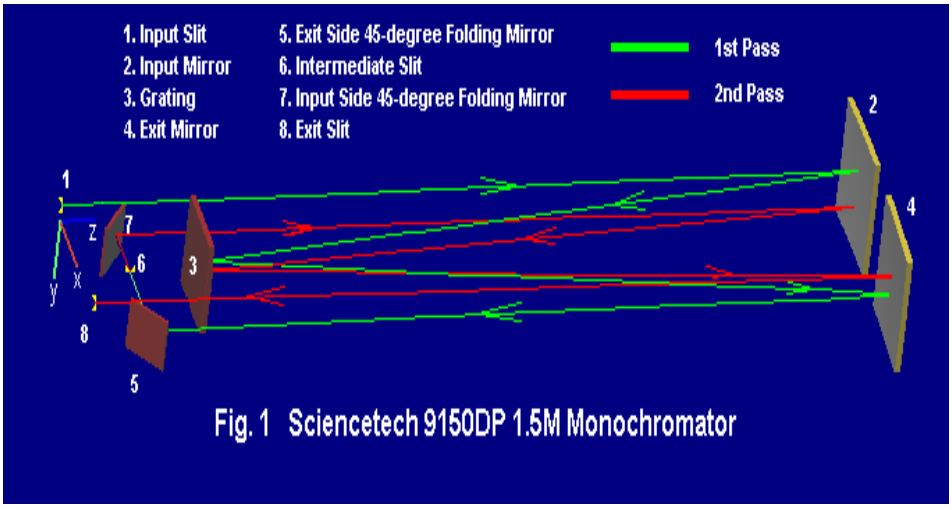
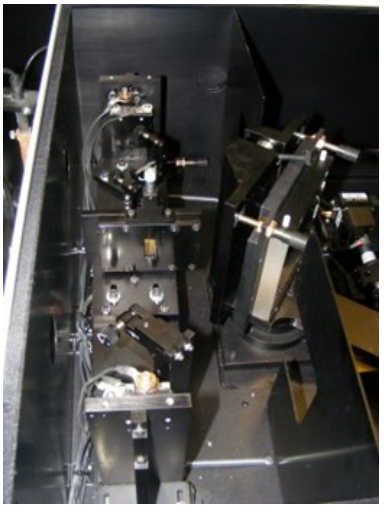


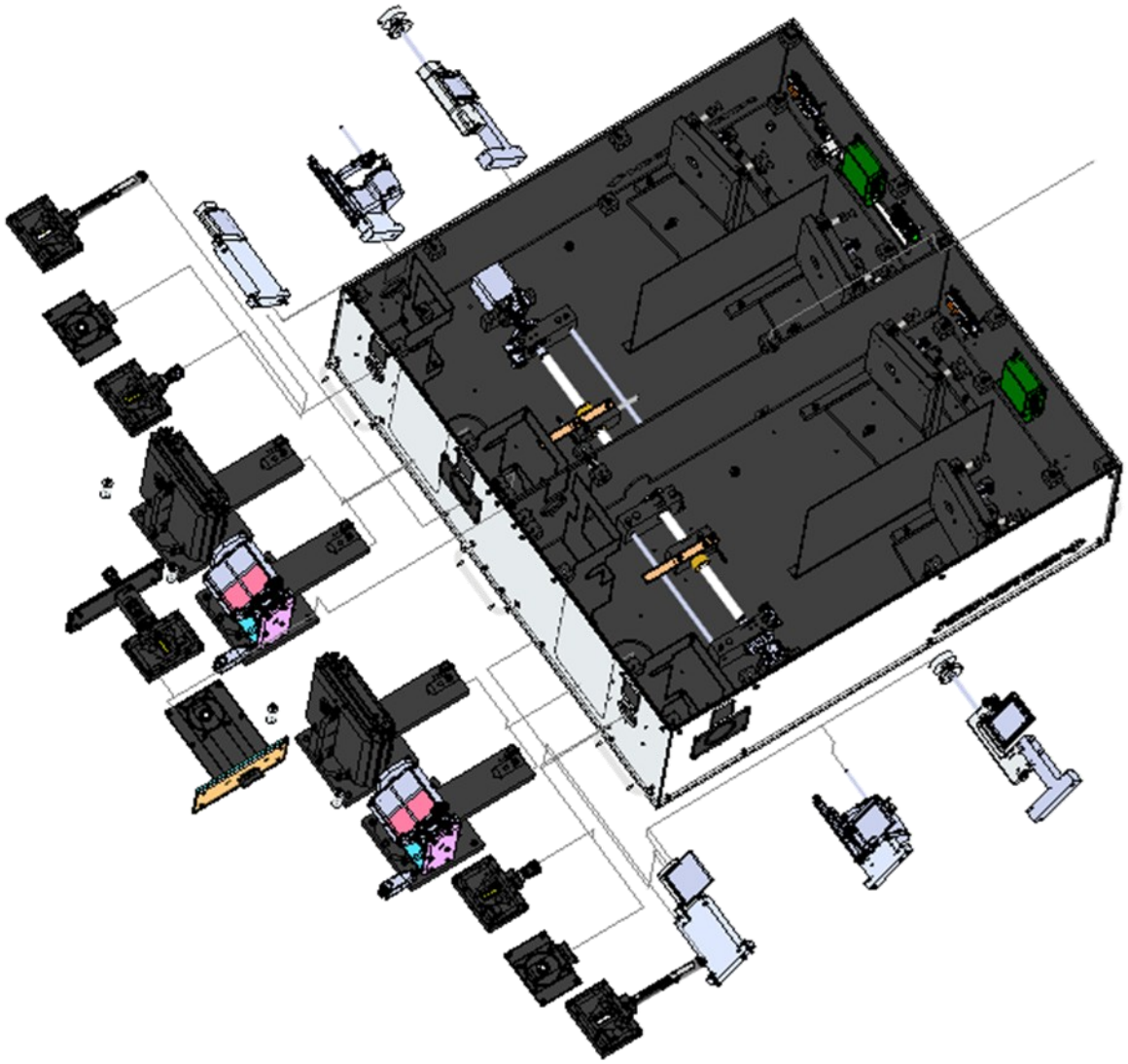
Fig. 1 Sciencetech 9150DP 1.5M Monochromator



High Resolution Series Monochromators

ACCESSORIES

Sciencetech manufactures and integrates a full line of input and output couplings as well as a selection of beam line connections.

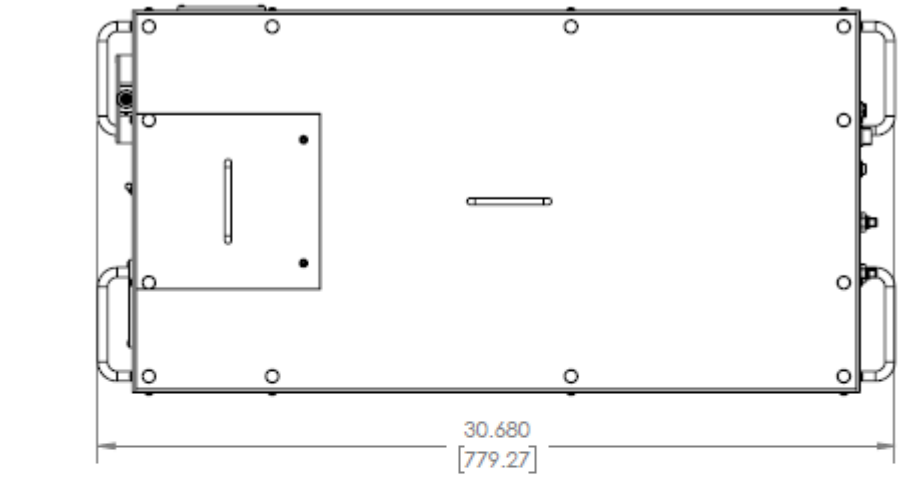


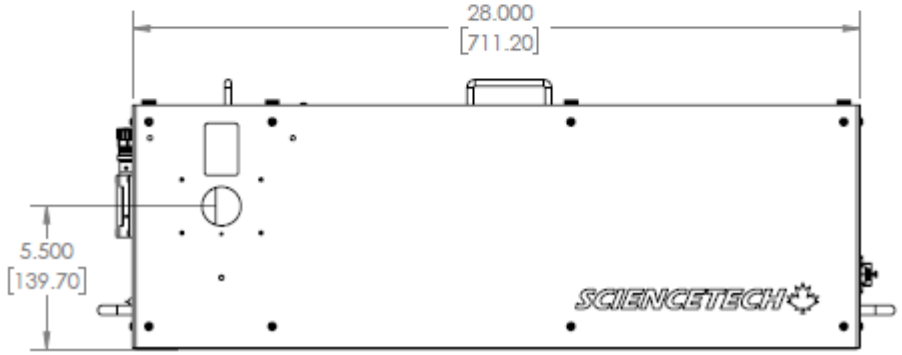
- Slit Assemblies
- Adapters and Connectors
- Optical Choppers
- Sample Chambers
- Manual and Motorized Filter Wheels
- Single Channel Detectors
- Line and Area Detectors
- Data Acquisition Equipment
- Software

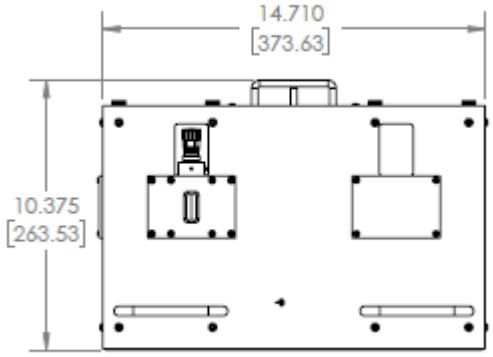
High Resolution Series Monochromators

9040 DIMENSIONS

Dimensions for 9040 are in inches [mm].



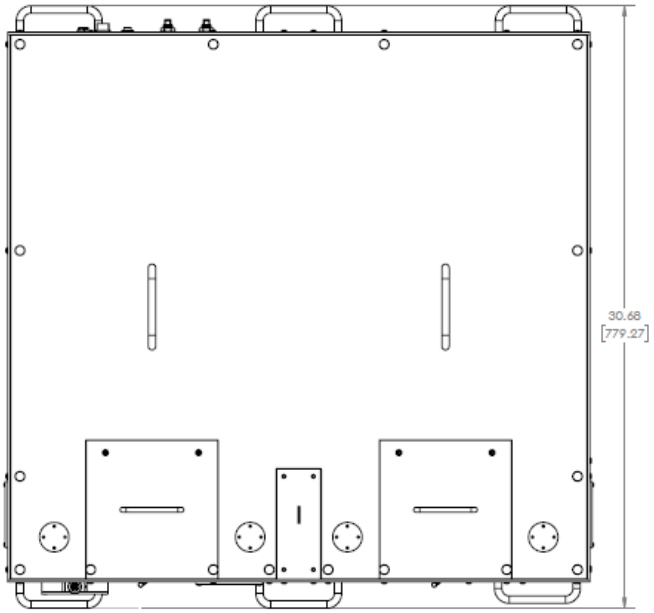


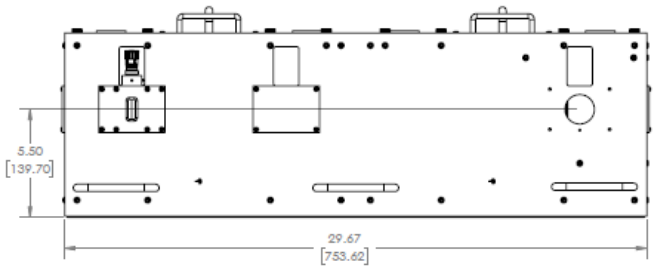


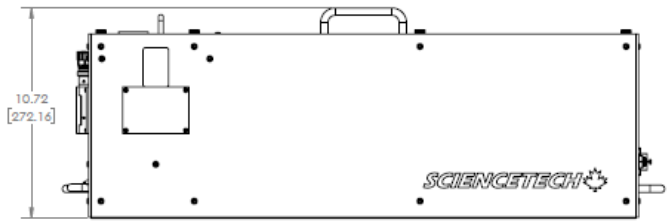
High Resolution Series Monochromators

9040DX DIMENSIONS

Dimensions for 9040DX are in inches [mm].



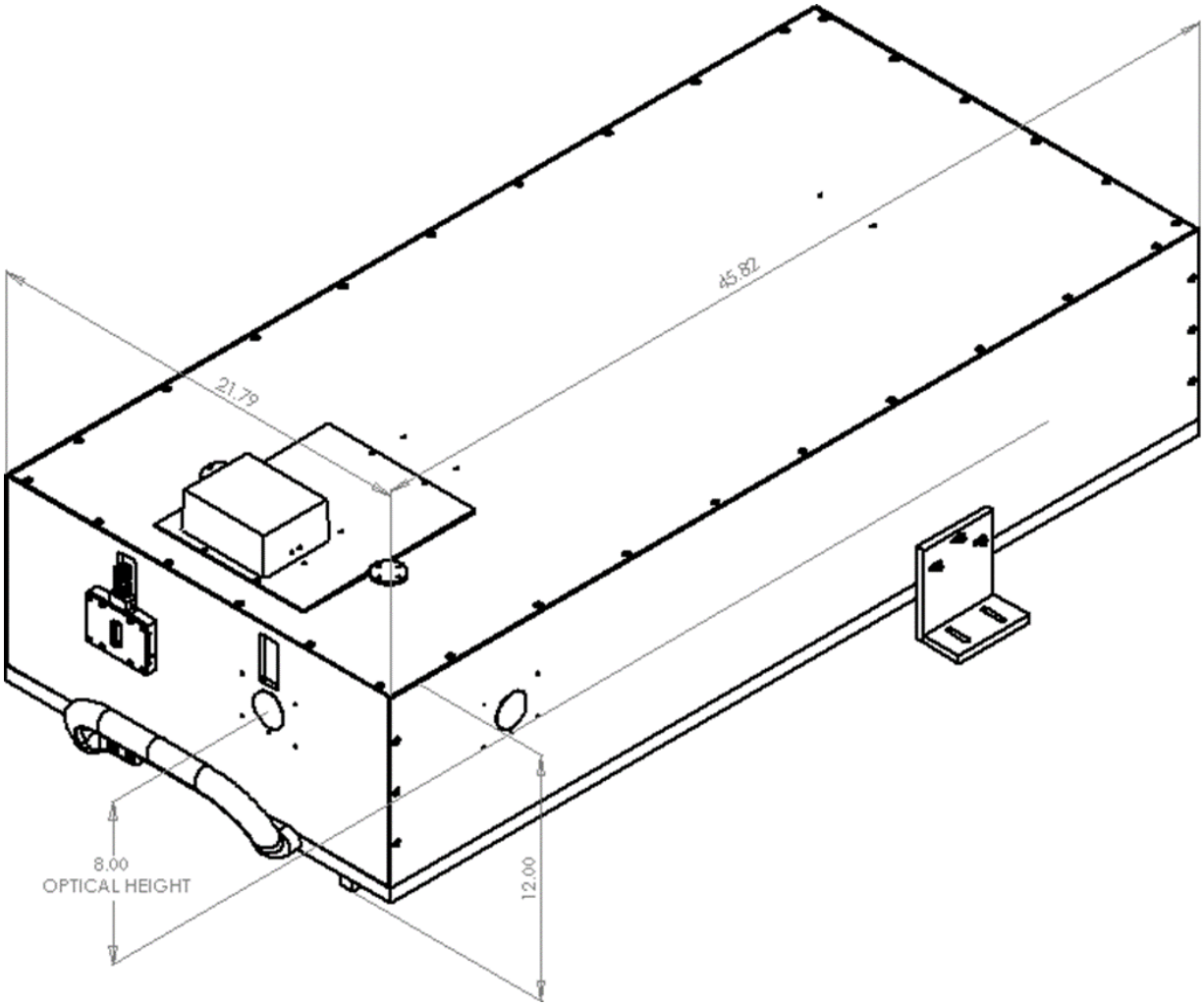




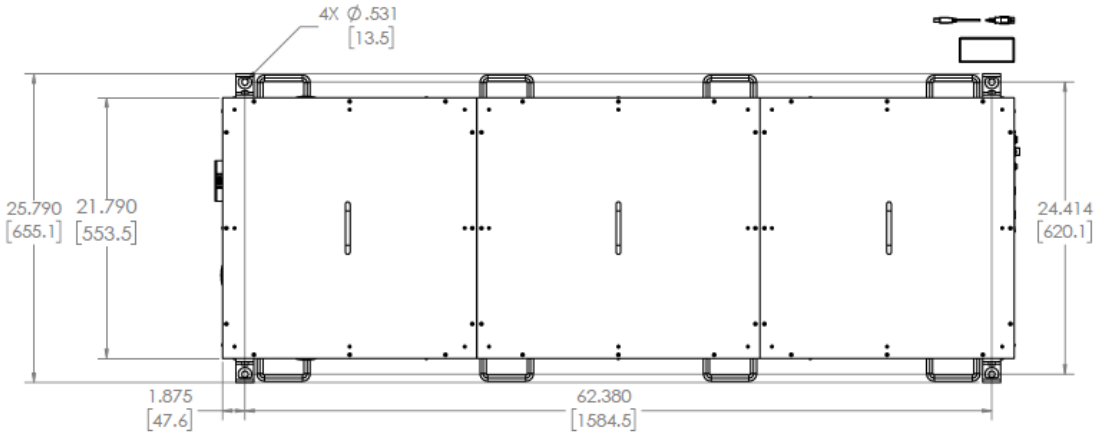
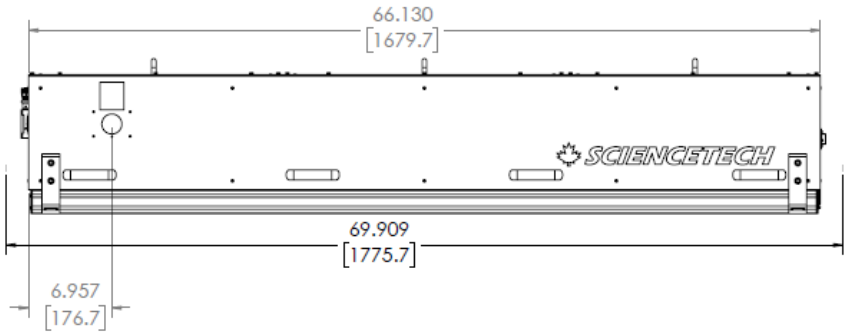
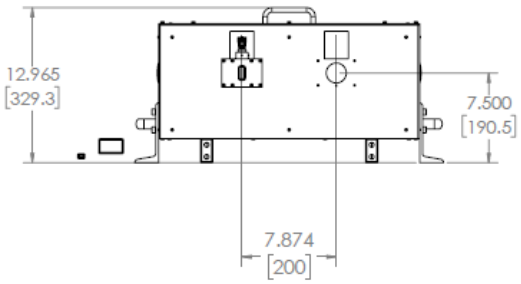
High Resolution Series Monochromators

9490 DIMENSIONS

Dimensions for 9490 are in inches.



High Resolution Series Monochromators

9150 DIMENSIONS

Dimensions for 9150 are in inches [mm].