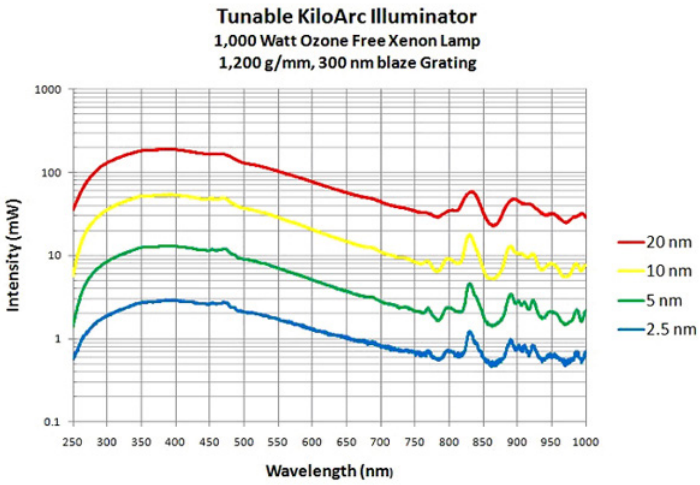
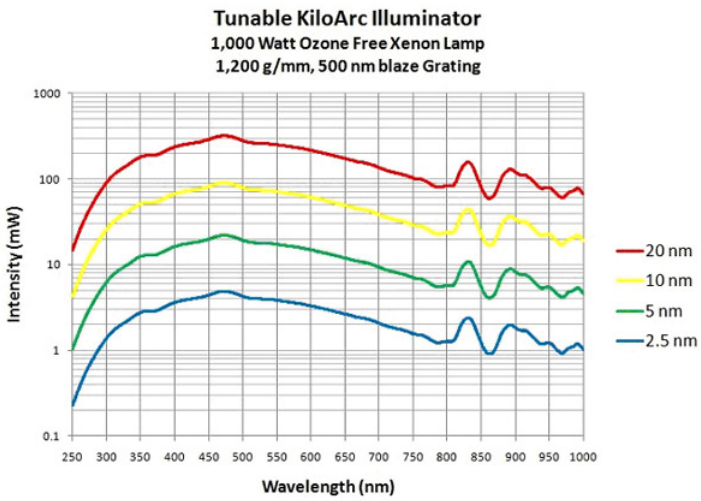
HORIBA Scientific

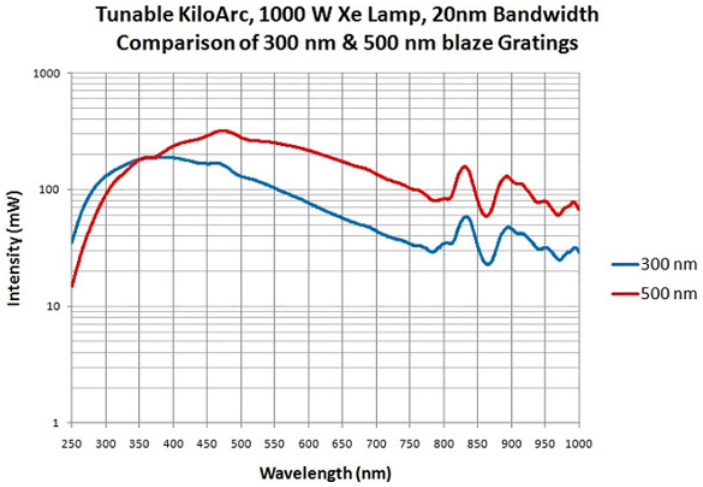
Tunable KiloArc™ Output Curves

You can customize a Tunable KiloArc™ Illuminator to suit your specific needs. The lamp and grating selected primarily determine the performance of the illuminator. However for any given lamp and grating the slit adjustment (or bandwidth) selected will also affect the intensity output of the unit.

Below are a series of intensity output curves for different configurations of the Tunable KiloArc™ Illuminators. There are far too many variables to provide output curves for all possible combinations for these illuminators. If you are interested in an illuminator with a different grating than those shown below, then you can compare the grating curves of that grating with one listed below to get a pretty good idea of how your particular illuminator will perform.







Optical Performance Specifications

Optical Power	> 300 m W (grating, bandpass & wavelength dependent)
Spot Size at Slit Exit	10 mm (slit dependent)
Diverging Beam angle (full)	14.4 degrees
Numerical Aperture (N.A.)	0.12
Short Term Optical Noise*	from 0.15 to 0.2% RMS

* 1,000 points/s, 1 s duration, 1.5 KHz detector bandwidth

KiloArc™ Other Specifications

Input	210–240 V AC 50/60 Hz
Starting	45 kV starting pulse
Power Rating	800–1200 watts (adjustable) — recommended 800–1000 watts
Lamp Module Type	1000 W Xenon, 1000 W Mercury/Xenon (proprietary to OBB)
Lamp Life	Typically 1,500 hrs
Focusing Optics	High efficiency f/4 ellipsoid reflector
Power Precision	0.04% (0.4 watts)
Output Volts Compliance	17–23 VDC
Output Current Limit	70 A rms
Height	329 mm (12.9 inches)
Width	375 mm (14.8 inches)
Length	489 mm (19.3 inches)
Weight	31 kg (68 pounds)
Window Diameter (D)	127 mm (5.0 inches)
Center Beam Line Height (without feet)	128 mm (5.0 inches)

Monochromator Dimensions

Length	241 mm long (9.5 inches)
Width	272 mm wide (10.7 inches)
Height	115 mm high (4.5 inches)
Weight	7.3 kg (16 lbs)

Monochromator Digital Slit Assembly Dimensions

Length	10 mm thick
Width	85 mm wide
Height	180 mm high of which 113 mm (4.4 inches) is above the lid of the monochromator

Optional Motor Controller Specifications

Power Supply	Universal power supply included
TTL Output	Synchronization TTL output each time motor stops
Stepper Motor	Two phase motor 1 A per phase, 200 steps per revolution, 1.8 degree per step
Maximum Motor Speed	1200 RPM with zero torque
Maximum Speed with Mono	15,000 nm per minute
Stepping Motor Voltage	5–12 V
Stepping Modes	Full, Half and Micro steps: 1/8, 1/16, 1/32, 1/64 computer selectable
Slew Rate	1 to 62,500 micro steps per second
Calibration	Auto calibration of wavelength
Ramping	Linear ramping rate for heavy duty, fast, precision operation

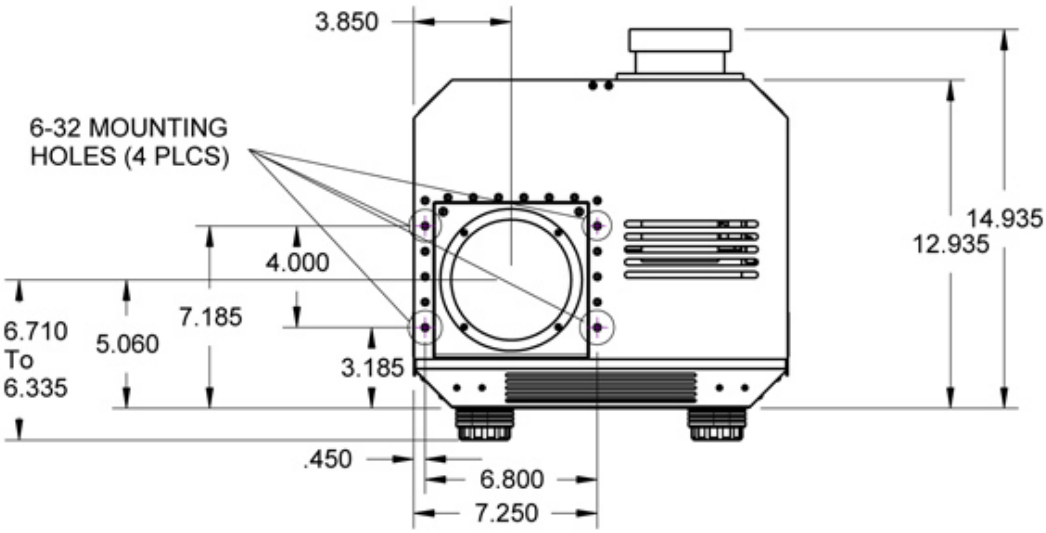
Higher Resolution Gratings Can Provide Higher Intensities

The data curves above are all from illuminators that had a 1,200 g/mm grating. You will note from these curves that doubling the bandpass, or slit size, typically results in a factor of four increase in intensity. This is true as long as the slit size is the same or equal to the optical spot size. Therefore if you used a 2,400 g/mm grating you would be doubling the slit size from a 1,200 g/mm grating to maintain an equivalent bandpass. Thus a Tunable KiloArc™ Illuminator equipped with a xenon lamp and a 2,400 g/mm grating blazed at 500 nm will give you up to 1 watt of optical power in a 20 nm bandpass. However the 2,400 g/mm grating will only mechanically scan up to 600 nm, see monochromator for more details.

Mounting Information

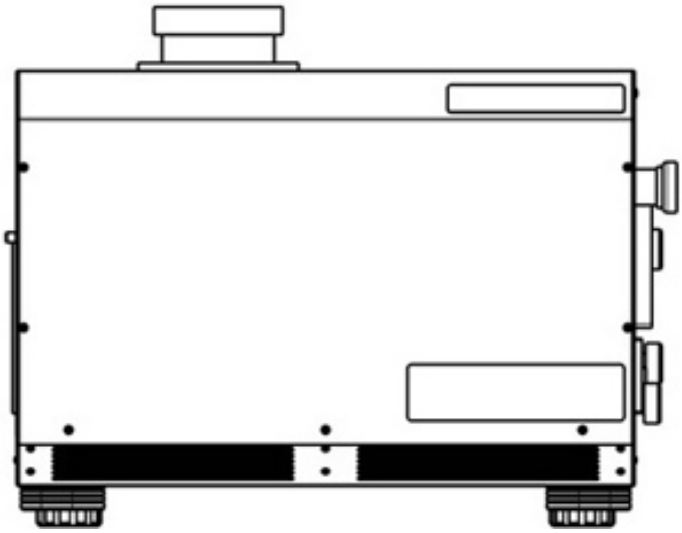
The KiloArc™ can be mounted rigidly by removing the adjustable feet that come with the illuminator and exposing the four tap holes (6-32) shown on the bottom view below. There are also four mounting holes (6-32) on the front face of the KiloArc™, as shown on the front view below. These front holes are for attaching OBB's adapter tube but they can be used for any other mechanical assembly.

Front View

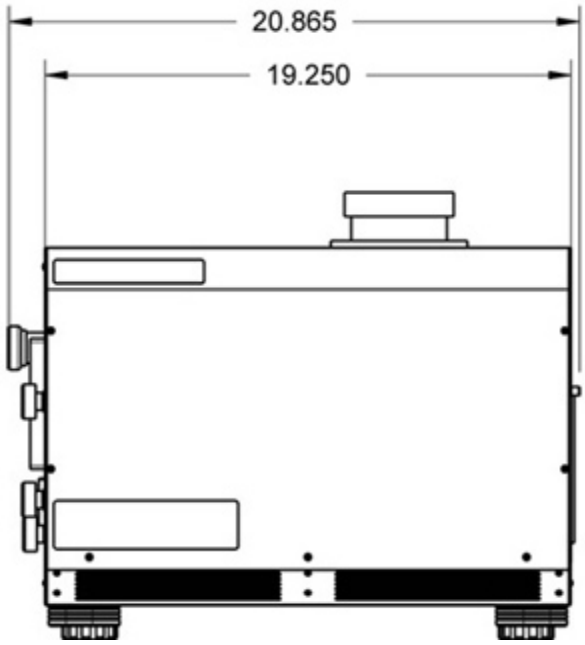


Mounting Information Continued

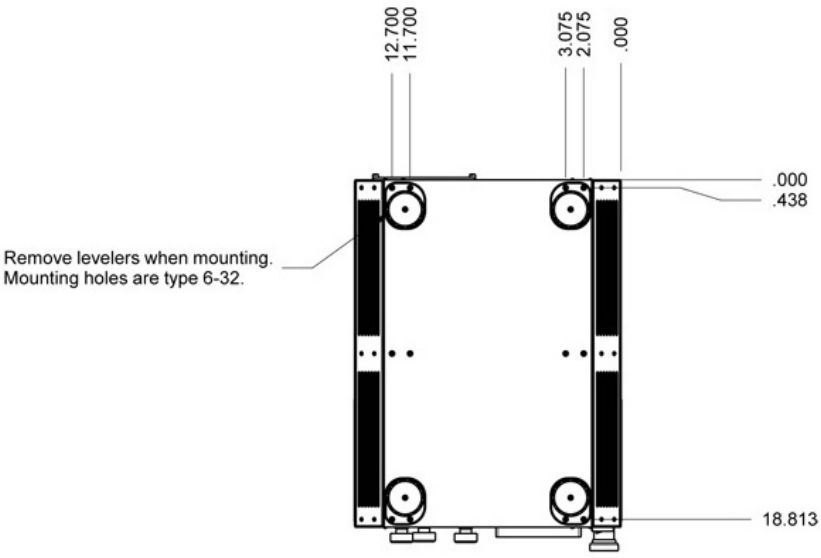
Left View



Right View



Bottom View



Top View