

PL0160 - November 27, 2017

Item # PL0160 was discontinued on November 27, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

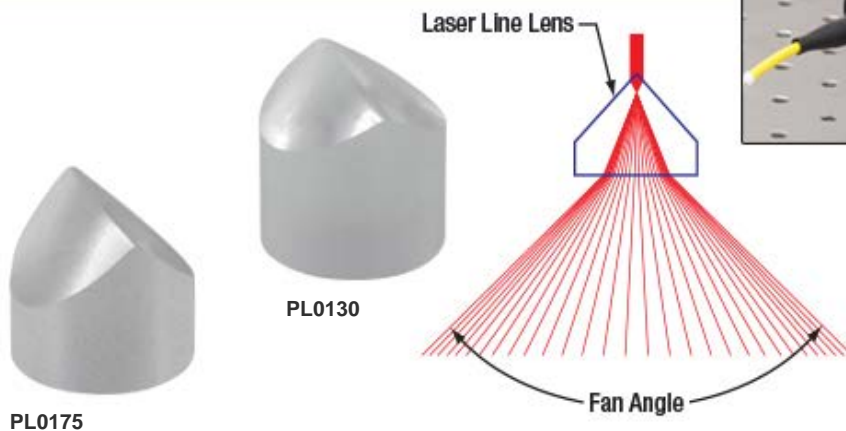
LASER LINE GENERATOR LENSES

- ▶ Uniform Laser Line with Nearly Flat Top Profile
- ▶ Output Fan Angles of 30°, 60°, and 75°
- ▶ Designed for a Ø0.8 mm Beam at 633 nm



Application Idea

PL0160 Laser Line Lens Used to Produce a Uniform Line from an S1FC635 Laser Source that is Collimated Using an F230FC-B Fiber Collimator



OVERVIEW

Features

- Produce a Uniform, Diverging Laser Line
- Divergence Fan Angles of 30°, 60°, and 75°
- Designed for a Ø0.8 mm Beam at 633 nm
- Uniform Line Intensity Within 30%

These Laser Line Generator Lenses, also known as Powell lenses, generate a straight, uniform laser line by fanning out a collimated beam in one dimension, as shown in the diagram above. The apex of each lens features an aspheric curve that evenly distributes the optical power, resulting in an intensity variation of less than 30% over the center portion of the line. This can be contrasted with standard cylindrical lenses, which can be used to produce diverging laser lines with Gaussian intensity profiles. The relative shape of laser lines with uniform and Gaussian intensity profiles can be seen in the image to the right.

The lenses are available with output fan angles of 30°, 60°, or 75°. They are designed for use at 633 nm with an input beam diameter of 0.8 mm ($1/e^2$). To achieve this beam diameter using a fiber-coupled light source, we recommend using our F230FC-B Fixed Focus Fiber Collimation Package. A plot of the typical laser line intensity profile can be found in the *Specs* tab. These laser line generator lenses are produced from N-BK7 or N-SF6 glass substrates.

These lenses can be mounted by using our LMRA9 adapter for Ø9 mm optics, which would then be mounted into a Ø1/2" mount; this solution requires the lens to be epoxied into the adapter. Alternatively, the lenses can be secured in the SM1-threaded AD9.5F adapter without the need for epoxy. Please note that these lenses are very sensitive to misalignment, and that great care should be taken when aligning the incoming beam over the apex of the lens. Therefore,






Click to Enlarge
Uniform Laser Line Produced
by a Laser Line Lens (Top)
and Gaussian Laser Line
Produced by a Cylindrical
Lens (Bottom)



Click to Enlarge
PL0160 Line
Generator Lens in
an AD9.5F
Adapter Mounted
in an
LM1XY Translation
Mount

we recommend securing these mounting adapter in a translation mount, such as the post-mountable LM1XY or LM1XY/M.

SPECS

Item #	PL0130	PL0160	PL0175
Design Wavelength	633 nm		
Input Beam Diameter (1/e ²)	0.8 mm		
Fan Angle	30°	60°	75°
Fan Angle Tolerance	±3%		
Line Intensity Variation ^a	<30%		
Typical Line Intensity Data (Click for Graph)			
Line Straightness	<0.1% ^b		
Contained Power	80% ± 5% ^b		
Lens Diameter	Ø8.89 mm		
Lens Diameter Tolerance	+0.00/-0.13 mm		
Clear Aperture	>Ø4.0 mm	>Ø5.2 mm	>Ø5.8 mm
Centration	<15 arcmin		
Surface Quality	40-20 Scratch-Dig		
Suggested Mounting Adapters	LMRA9, AD9.5F		

- Defined as the peak-to-valley difference in intensity over the center portion of the line containing 80% of the optical power.
- Defined over the central 80% of the line's width.

Part Number	Description	Price	Availability
PL0130	Customer Inspired!Laser Line Generating Lens, 30° Fan Angle, N-BK7	\$143.00	Lead Time
PL0160	Customer Inspired!Laser Line Generating Lens, 60° Fan Angle, N-SF6	\$143.00	Lead Time
PL0175	Customer Inspired!Laser Line Generating Lens, 75° Fan Angle, N-SF6	\$143.00	Today

PL0160 Laser Line Intensity Profile

