Ø1/2" Polaris Glue-In Fixed Mount, Optimized for Beamsplitters



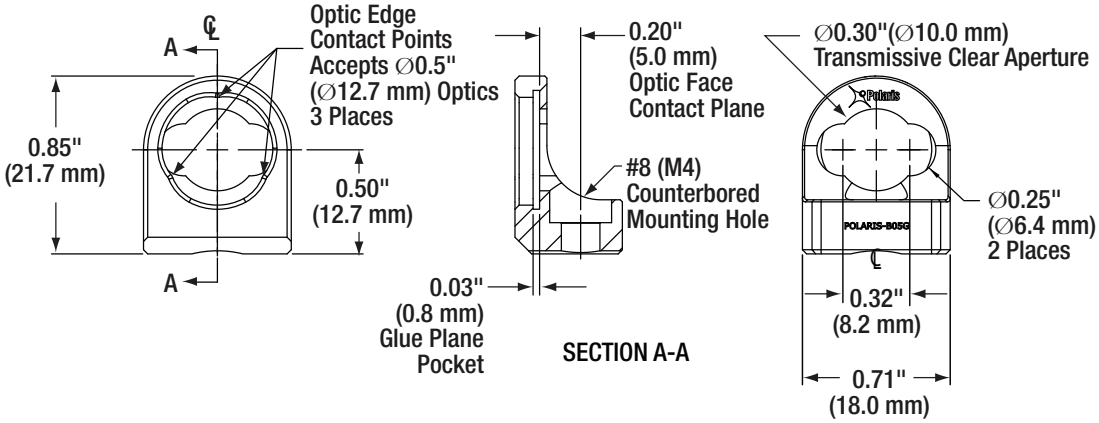
POLARIS-B05G

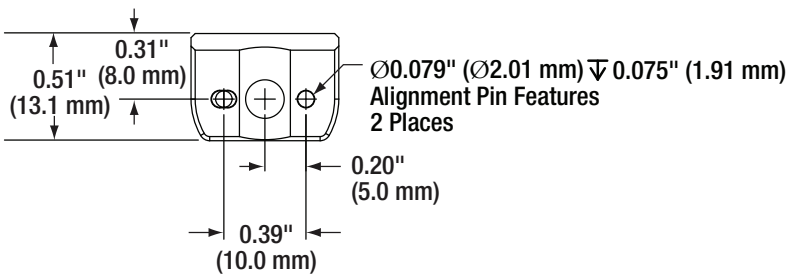
Specifications

POLARIS-B05G	
Optic Size Accommodated	Ø1/2"
Optic Thickness (Min)[a]	No Minimum Thickness
Beam Deviation[b]	<1 µrad
Recommended Optic Mounting Adhesive	Norland Optical Adhesive 61 (Thorlabs' Item # NOA61) or EPO-TEK 301-2FL Low Stress Optical Epoxy
Vacuum Compatibility[c]	10^{-9} Torr at 25 °C with Proper Bake Out; 10^{-5} Torr at 25 °C without Bake Out
Cleaning[d]	Passivized per ASTM-967
Operating Temperature Range	-30 to 200 °C
Mounting	One #8 (M4) Counterbored Hole Two Ø2 mm Alignment Pin Holes Around Mounting Hole

a. For optics <1 mm thick, the optic will need to be manually adjusted to be centered on the mount.
b. After 12.5 °C temperature cycle, the beam typically returns to within 0.5 µrad of its original position for a Polaris mounted on a Ø1" post with a 2" beam height
c. All POLARIS-B05G mounts are vacuum compatible, assembled in a clean environment, chemically cleaned using the Carpenter AAA passivation method to remove sulfur, iron, and contaminants from the surface, and double vacuum bagged. Contact Techsupport@thorlabs.com for details.
d. Chemically cleaned using the AAA passivation method and ultrasonically cleaned in isopropyl alcohol.

Drawings





The mount includes two Ø2 mm alignment pin features for setting a precise mounting location and angle. A standard DIN 7-m6 Ground Dowel Pin (Ø2.002 mm to Ø2.008 mm x 0.050" ± 0.005" deep) is recommended.

POLARIS-B05G Usage Tips

When mounting this, or any other high performance optomechanical device, it is important to follow a few principles:

1) **Match Materials:** Due to its relatively low coefficient of thermal expansion, stainless steel was chosen as the material from which to fabricate the Polaris mount. When mounting the POLARIS-B05G, we recommend using components fabricated from the same material.

2) **Use a Wide Post:** The Polaris' performance is optimized for use with a Ø1" stainless steel post. These posts provide two locations of contact with the mount along the same plane, which help confine the bottom of the mount during variations in the surrounding temperature, thereby minimizing potential alignment issues.

3) **Mount an Optic only when the Mount is out of a Setup:** Since an optic is prone to movement within its mounting bore, all optics should be mounted with the Polaris out of the setup to ensure accurate mounting that will minimize misalignment effects.

4) **Mount as Close to the Table's Surface as Possible:** To minimize the impact of vibrations and temperature changes, it is recommended that your setup have as low of a profile as possible. Using short posts will reduce the y-axis translation caused by temperature variations and will minimize any movements caused by vibrations. For even better performance, the POLARIS-B05G can be mounted directly onto a flat surface such as a breadboard. Before mounting, ensure that the mounting surface is highly flat, polished, and free of debris and scratches. When securing the mount to a post or breadboard, we recommend applying 14 – 16 lb-in (1.6 – 1.8 N-m) of torque using our TD75 torque wrench.

5) **Polish and Clean the Points of Contact:** We highly recommend that the points of contact between the mount and the post as well as the post and the table are clean and free of scratches or defects. For best results, we recommend polishing the table's surface with a polishing stone and then polishing the bottom and top of the post as well as the bottom of the mount using a polishing pad (Item # LFG1P). For best results, we recommend resting the post and mount on a flat surface.

6) **Allow the System to Settle:** Whenever a new system is built, the forces from the mounting hardware will create new stresses that will settle in over time, causing micro creep in the system. If possible, allow 24 hours for settling.

Optic Installation

If the mount has just been removed from the double vacuum bags the mount will be clean and ready to accept adhesive so no additional cleaning should be necessary.

If the mount has been handled ensure that there is no grease, dirt, or dust in the optic bore or on the optic itself. Remove any particulates with clean compressed air, which can be purchased from our website, and/or clean with acetone or methanol. The optic can then be glued into the optic bore of the mount. Using a clean stainless steel applicator or a syringe, apply a thin layer of adhesive to the optic glue plane in the area where the back surface of the optic will make contact. Do not allow any adhesive to get on the edge contact points or the edge of the optic as this will create a mutable plane bond and the low optical distortion performance and the beam pointing stability will be significantly compromised.

We recommend the use of Norland Optical Adhesive 61 (Thorlabs' Item # NOA61) or EPO-TEK 301-2FL low stress optical epoxy for this process, but there are also many other optical adhesives that will work as well or even better depending on your specific requirements (contact your adhesive manufacturer for specific environmental requirements and application recommendations). Then, slide the optic down the three optic rim contact points until the back surface of the optic makes contact with the glue. UV-curing adhesive can then be cured with a UV curing gun (Item # CS2010), a UV curing oven, or an open array of UV lights. It is highly recommended that the temperature of the optic and mount be regulated during curing to prevent optical distortion and stress in the glue bond. Prior to installing the mount in the assembly, ensure that the adhesive is fully cured; we recommend allowing the mount to sit for 24 hours prior to installation to ensure the best beam pointing stability.