Ø1" Polaris™ Flexure-Clamp Fixed Mount Optimized for Beamsplitters

POLARIS-B1S



Specifications

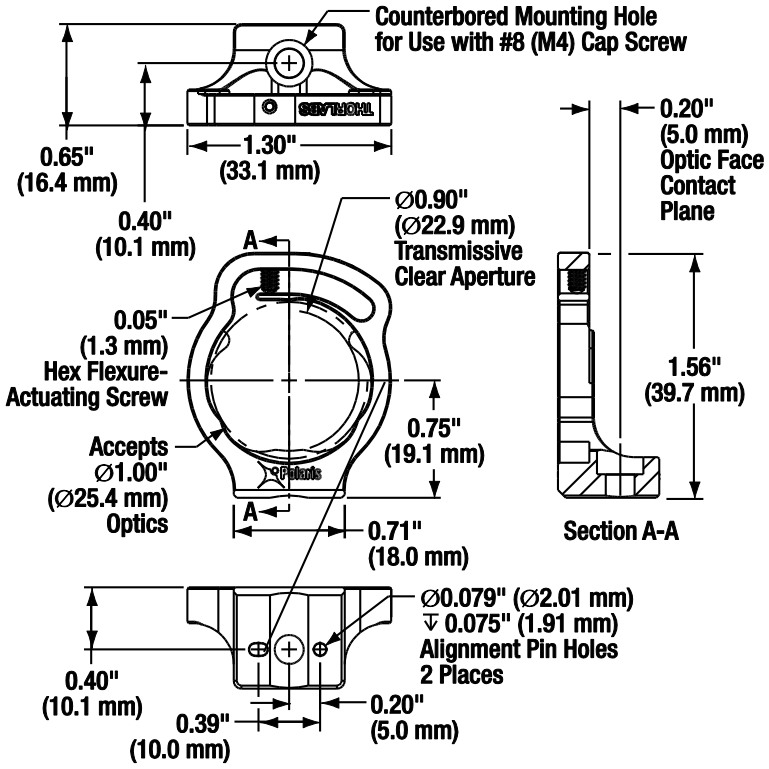
POLARIS-B1S	
Optic Sizes Accommodated	Ø1"
Optic Thickness (Min)	3.0 mm (0.12")
Beam Deviation[a]	<1 µrad
Recommended Optic Mounting Torque	2 to 4 oz-in for a 6 mm Thick UVFS Optic
Vacuum Compatibility[b]	10^{-9} Torr at 25 °C with Proper Bake Out; 10^{-5} Torr at 25°C without Bake Out
Cleaning[c]	Passivated 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 (See Drawing Below)

a. After 12.5 °C temperature cycle, the beam typically returns to within 0.5 µrad of its original position for a Polaris mounted using a stainless steel Ø1" PLS post for Polaris mounts and a POLARIS-CA1 clamping fork.

b. All POLARIS-B1S mounts are vacuum-compatible, assembled in a clean environment, and double vacuum bagged. Contact techsupport@thorlabs.com for details.

c. 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. Standard DIN 7-m6 Ground Dowel Pins (Ø2.002 mm to Ø2.008 mm with an exposed height of 0.050" ± 0.005") are recommended.

POLARIS-B1S Usage Tips

When mounting the POLARIS-B1S, or any other high performance opto-mechanical 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-B1S, we recommend using components fabricated from the same material.
2) **Use a Wide Post:** The performance of the Polaris mount 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:** 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 vertical translation caused by temperature variations and will minimize any movements caused by vibrations. For even better performance, the POLARIS-B1S 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

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 is installed from the front of the mount though the use of the flexure arm and setscrew combination. A torque of 2 to 4 oz-in is ideal for holding the optic while minimizing distortion on the mirror surface. Use a torque driver (Item # TD24) to dial in the exact required torque.