90 µm Travel Three-Axis PiezoBlock™ Platforms

APB301

The PiezoBlock™ 3-axis flexure platform provides a compact solution to 3-axis piezo driven nanopositioning. It measures just 2.36" (60 mm) on each side and offers 90 µm of piezoelectric controlled displacement in three orthogonal directions.

The relatively long piezoelectric controlled travel is engineered using a large displacement piezo stack that is mechanically multiplied to provide 90 µm of travel. This internal flexure-based mechanism intrinsically possesses very low friction and high stiffness, allowing the PiezoBlock™ to be positioned with low settling time and high repeatability.

The drive voltage required for the full range of travel is 75 V, while the displacement resolution is typically limited by the piezoelectric driver that is used to power the actuators. The PiezoBlock™ has been tested interferometrically with our BPC203 piezoelectric driver (see page 568) to verify the 25 nm resolution specification. We offer a number of other drive options, from simple open-loop drivers to closed-loop auto-alignment systems that allow automated control for a nanopositioning applications. All of these options are featured in the Drive Electronics section that begins on page 541.

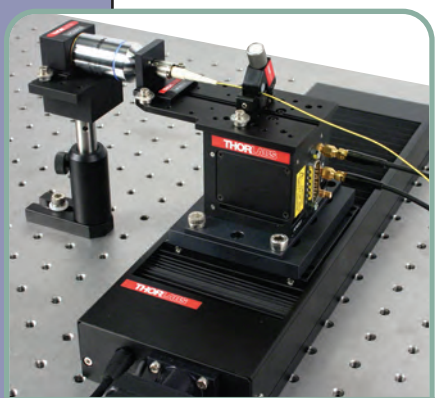
The stage is fitted with the same grooved top plate as our MicroBlock™ and NanoMax™ platforms, to allow for rapid system reconfiguration. An extensive selection of accessories for the PiezoBlock™ can be found starting on page 496.

Features

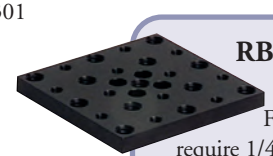
- Three Mounting Surfaces, Top Plate and Two Sides (Not Shown)
- Grooved Top Plate for Full Range of Mounting Accessories
- Small, Compact Package
- Flexure-Based Design Offers Smooth Continuous Motion and High Stiffness
- High Resonant Frequency Provides Immunity to External Vibrations
- Optional Strain Gauge Displacement Sensor

Specifications

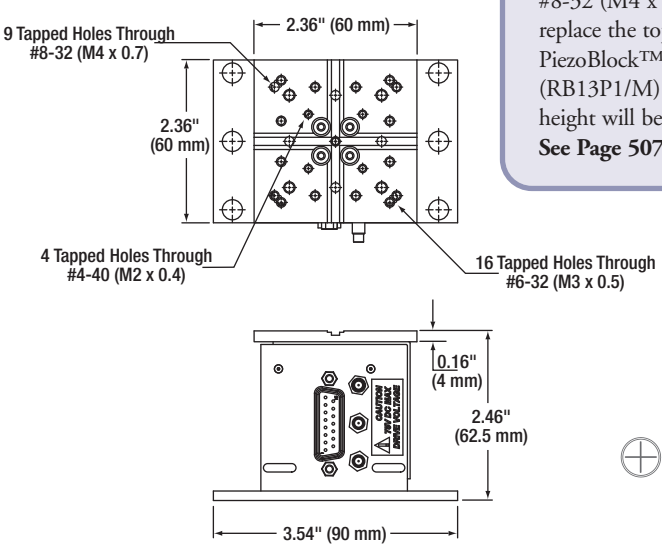
- **XYZ Travel Range:** 90 µm
- **Deck Height:** 2.46" (62.5 mm)
- **Optical Height:** 2.95" (75 mm)
- **Load Capacity:** 2.2 lbs (1 kg) Centered on Top Surface in Horizontal Orientation
- **Resolution:** 25 nm (with Displacement Sensors)
- **Resonant Frequency:** >150 Hz
- **Repeatability:** 50 nm (APB301 Closed-Loop)
- **Stiffness:** 0.3 N/µm
- **Thermal Stability:** 1 µm/°C
- **Electrical Connectors:** 3 SMC
- **Piezo Drive Voltage:** 0 - 75 V
- **Weight:** 0.7 lb (0.3 kg)
- **Dimensions:** 2.2" x 2.2" x 2.2" (55 mm x 55 mm x 55 mm) Excluding Adapter Plate
- **Transfer Function:** 1.33 µm/V

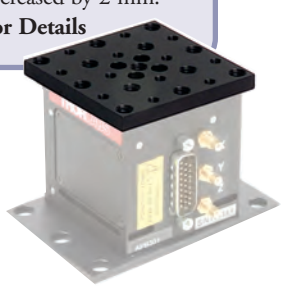


The fiber launch application photo above shows an APB301 PiezoBlock™ mounted on an NR150 150 mm travel stage (using an APBP2 adapter plate). The top plate of the PiezoBlock™ can be replaced with one of our platform extension plates (AMA005 shown, see page 497). This extended mounting surface is convenient for attaching extra components and allows easier access into smaller spaces.



RB13P1 (RB13P1/M) Adapter Plate: For applications that require 1/4"-20 (M6 x 1.0) and #8-32 (M4 x 0.7) mounting holes replace the top plate of the PiezoBlock™ with an RB13P1 (RB13P1/M) top plate. The deck height will be increased by 2 mm.
See Page 507 for Details





Mechanical Drawings Available on the WEB

Please refer to our website for complete models and drawings.

ITEM#	METRIC ITEM#	$	£	€	RMB	DESCRIPTION
APB302	APB302/M	$ 1,995.00	£ 1,383.00	€ 1.771,00	¥ 16,846.00	PiezoBlock™ 3-Axis Translator without Feedback
APB301	APB301/M	$ 3,250.00	£ 2,253.00	€ 2.885,50	¥ 27,444.00	PiezoBlock™ 3-Axis Translator with Feedback
APBP2*	APBP2*	$ 56.60	£ 39.30	€ 50,30	¥ 478.00	Adapter Plate for Mounting to NRT Linear Stages

*Compatible with Metric and Imperial