

Small, Fast Tip/Tilt Platforms

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## PI PRESS RELEASE

### Miniaturized Fast Steering Mirror Platforms (FSM) for Laser Beam Control are Piezo-based

*PI's new small steering stages find use in microscopy, semiconductor manufacture, optics, and photonics.*

September 2017, Auburn, MA – PI (Physik Instrumente), leader in the field of piezo technology and precision motion systems and solutions, broadens its portfolio of piezo steering mirrors. With milli-second response and settling time and high dynamic linearity, the new S-335 fast steering mirror (FSM) platforms are ideal for precision image processing and image stabilization, laser beam steering, materials processing, and lithography.

#### **2-Axis, Frictionless Guiding, No Polarization Rotation**

S-335 steering mirror platforms provide precise angular tip/tilt motion of the top platform around two orthogonal axes. These flexure-guided, electro-ceramic driven systems can provide higher accelerations than other actuators, enabling step response times in the sub-millisecond range, with frictionless backlash-free motion. The single pivot-point design also prevents the drawback of polarization rotation, which is common with conventional 2-axis stacked systems, e.g. galvo scanners.

#### **Long Ranges with Integrated Motion Amplifier**

Integrated EDM flexure based motion amplifiers provide an industry-leading tip/tilt angle up to 35mrad, equal to an optical deflection angle of 70mrad (4°). ID chip support allows for fast start-up and a simple data exchange between tip/tilt platforms and controllers.

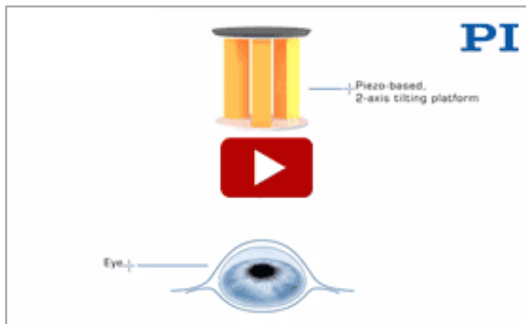
#### **Parallel-Kinematics: Smaller with Improved Stability, Linearity & Dynamics**

PI piezo steering mirrors are based on a parallel-kinematics design with coplanar rotational axes and a single moving platform driven by two pairs of differential actuators. The advantage is jitter-free, multi-axis motion with excellent

temperature stability. Compared to stacked (two-stage) mirror scanners, the parallel-kinematics design provides symmetrical dynamic performance in both axes with faster response and better linearity in a smaller package.

### Read Tech Article, *Advances in Piezo Mechanics Aid Eye Surgery*

<http://www.pi-usa.us/blog/advances-in-piezo-mechanics-aid-eye-surgery/>



### Watch the Refractive Eye Surgery Animation >

<https://www.youtube.com/embed/FVneEQZVjm8?rel=0>

### Specifications, Datasheet, More Information >

[http://www.pi-usa.us/products/Microscopy\\_Imaging/Precision\\_Microscope\\_Stage.php#S335](http://www.pi-usa.us/products/Microscopy_Imaging/Precision_Microscope_Stage.php#S335)

### Standard and Custom

PI has over 4 decades of experience providing in-house engineered precision motion control solutions, and can quickly modify existing product designs or provide a fully customized OEM part to fit the exact requirements of the customer's application.

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### About PI

PI is a leading manufacturer of air bearing stages, piezoelectric solutions, precision motion control equipment, and hexapod parallel-kinematics for semiconductor applications, photonics, bio-nano-technology and medical engineering. PI has been developing and manufacturing standard & custom precision products with piezoceramic and electromagnetic drives for 4 decades. The company has been ISO 9001 certified since 1994 and provides innovative, high-quality solutions for OEM and research. The PI group employs more than 1,000 people worldwide in 15 subsidiaries and R&D / engineering centers on 3 continents.

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