



NEW mini XY high speed positioning stage shown in optics scan and alignment application

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PI PRESS RELEASE

Mini XY Stage for Precision Scanning and Positioning Applications in Optics and Photonics combines 10nm Resolution with 200mm/sec Speed

Lightweight, fast and stable, the unique new ultrasonic motor stages from PI are easy to control and integrate into industry and research applications.

August 2017, Auburn, MA – Nanopositioning design and engineering global leader PI (Physik Instrumente) delivers a new ultra-compact XY scanner and positioner powered by small integrated direct-drive ultrasonic piezoceramic motors (a single axis version is also available). The patented drives provide smooth motion with high resolution and the self-locking motor principle is a significant advantage over magnetic drive technologies: once the motor reaches a target position, it acts like a ceramic brake and locks the platform into place, providing extreme long term stability at zero driving current and heat generation.

Long Travel, Compact, Fast and Quiet, Wide Dynamic Range

The U-723 joins PI's existing portfolio of compact linear stages. It provides more than 0.8" travel per axis (22x22mm), with a footprint of only 42x42mm (1.6x1.6"). Its low profile of 21mm (~0.8") and miniaturized design allows for easy integration into existing systems, especially when space is limited. In addition to high speed motion up to 200 mm/sec, the low inertia (direct drive, no rotating parts) allows for a very dynamic start-stop behavior with settling times in the millisecond range. Based on the ultrasonic principle with drive frequencies >100kHz - way beyond the human hearing range -, the motors are very quiet. Displacement is generated in continuous sub-nanometric increments, leading to extremely smooth motion with a wide dynamic range from 1µm/sec to 200mm/sec.

10nm Sensor Resolution, Closed-Loop Operation, 2 Axis Precision Motion Controller

Incorporated optical linear encoders provide position feedback with 10 nanometers resolution. Higher resolution stages are also available from PI. Due to the low power requirement of the ultrasonic motor, the U-723 can be integrated into mobile measuring and medical devices. Vacuum compatible versions are also available.

Watch the U-723 in Action – scanning an array of optical diodes!

https://www.youtube.com/embed/xSeCFyLF3_A?rel=0



High-End Motion Controllers, Software Package

To take advantage of the operating principle, providing superior dynamic performance with settling times in the millisecond range while maintaining high resolution and smooth operation, ultrasonic motors benefit from advanced control strategies, such as automatic switchover between several static and dynamic PID parameter sets and adaptive frequency tracking. PI offers a number of ultrasonic motion controllers (C-867 and C-877 product families) available in desktop, rack-mount, and OEM configurations. An ASIC chip containing the motion control algorithms is also available for OEM customers. A comprehensive software package is included: drivers and example programs for LabVIEW, dynamic libraries for Windows and Linux, MATLAB are available. Interfaces include TCP/IP, USB, RS-232 and analog.

Specifications, Datasheets, More

XY Compact Stage, U-723

http://www.pi-usa.us/products/Compact_Positioning_Stages/index.php#U723

Read Tech Article about Ultrasonic Motors

<http://www.pi-usa.us/blog/positioning-capabilities-of-ultrasonic-motors/>

Closed-Loop Controller, U-867

http://www.pi-usa.us/products/Motor_Controllers/Motor_Controller_Precision_Positioner.php#C867

Compact, Low Cost Controllers for Ultrasonic Motors, C-877, also comes in OEM version

http://www.pi-usa.us/products/Motor_Controllers/Motor_Controller_Precision_Positioner.php#PMCS

Standard and Custom

PI has in-house engineered solutions with over 4 decades of experience working with customers to provide products that meet application demands, and can quickly modify existing product designs or provide a fully customized OEM part to fit the exact requirements of the 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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