

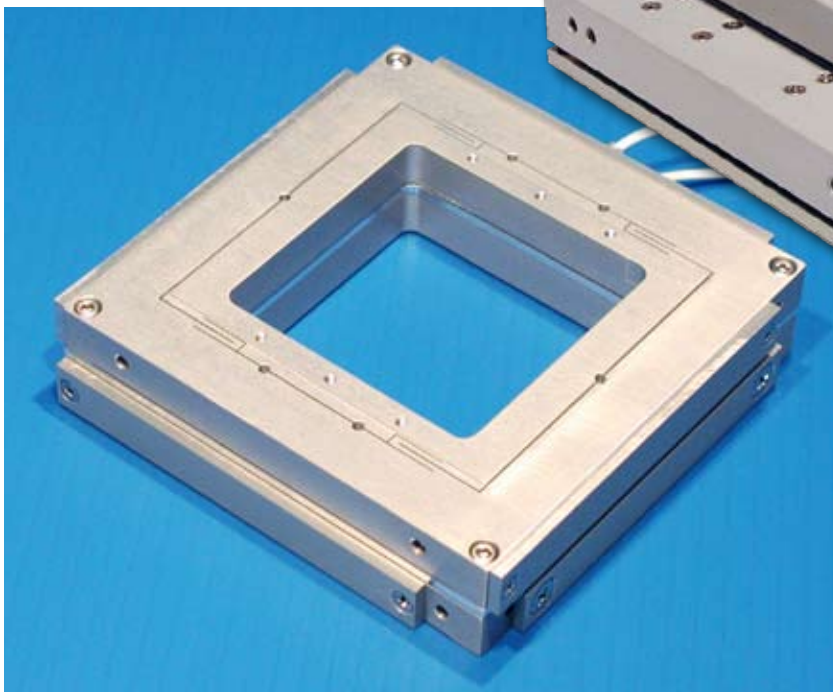
# Nano-PDQ Series

## Features

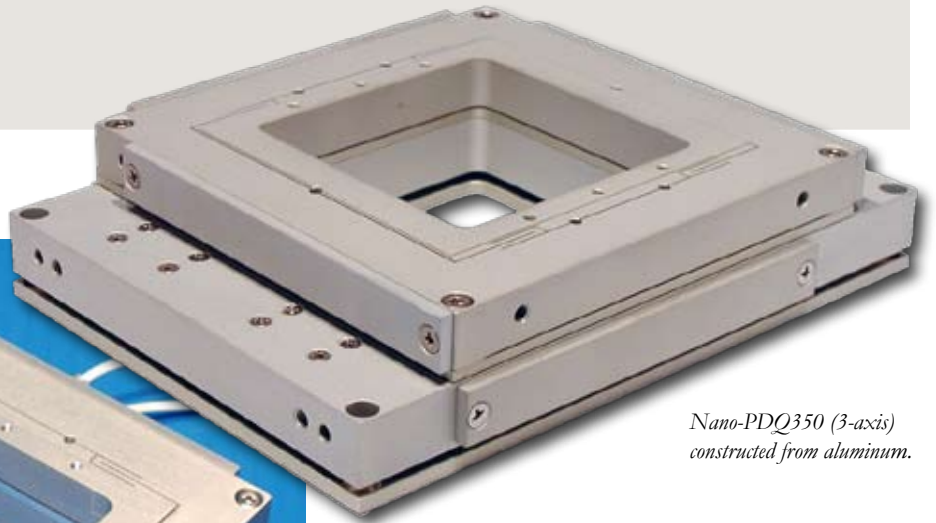
- ▶ High speed, direct drive
- ▶ Two or three axis motion
- ▶ 50  $\mu\text{m}$  or 75  $\mu\text{m}$  ranges of motion
- ▶ Large aperture
- ▶ Large load capacity
- ▶ **pico** sensor technology
- ▶ Closed loop control

## Typical Applications

- ▶ Fast multi-axis scanning
- ▶ Optical trap calibration
- ▶ Particle tracking



Nano-PDQ250 (2-axis) constructed from aluminum.



Nano-PDQ350 (3-axis) constructed from aluminum.

## Compatible Software Packages



**Image-Pro**  
AMS  
Analog motion control

**$\mu$ Manager**  
THE OPEN SOURCE  
MICROSCOPY SOFTWARE  
USB motion control

Examples, tutorial, and  
Nano-Route<sup>®</sup> 3D sup-  
plied with Nano-Drive<sup>®</sup> 85  
USB interfaces.



MetaMorph<sup>®</sup>  
USB and analog  
motion control

**SLIDEBOOK 6.0**  
Analog motion control,  
1 or 2 axes.

## Product Description

The Nano-PDQ Series are high speed multi-axis precision nanopositioning systems. The Nano-PDQ Series offers a compact footprint with a large center aperture while still offering fast performance and a resonant frequency greater than 2kHz. The Nano-PDQ Series are ideal for applications that demand high scan rates or large load capacities. When used with the Nano-Drive<sup>®</sup> 85 controller (model numbers with the HS suffix) step response times down to 2 milliseconds are achievable, nearly 10 times

the speed of comparable systems! The Nano-PDQ Series features parallel, uncoupled motion in up to three axes and fully integrated position sensors utilizing proprietary **pico** technology to provide absolute, repeatable position measurement and picometer accuracy under closed loop control.

Another system to consider: the new low profile Nano-LPQ has similar 3-axis, high speed positioning performance but is sized to be more convenient when used on inverted research microscopes.

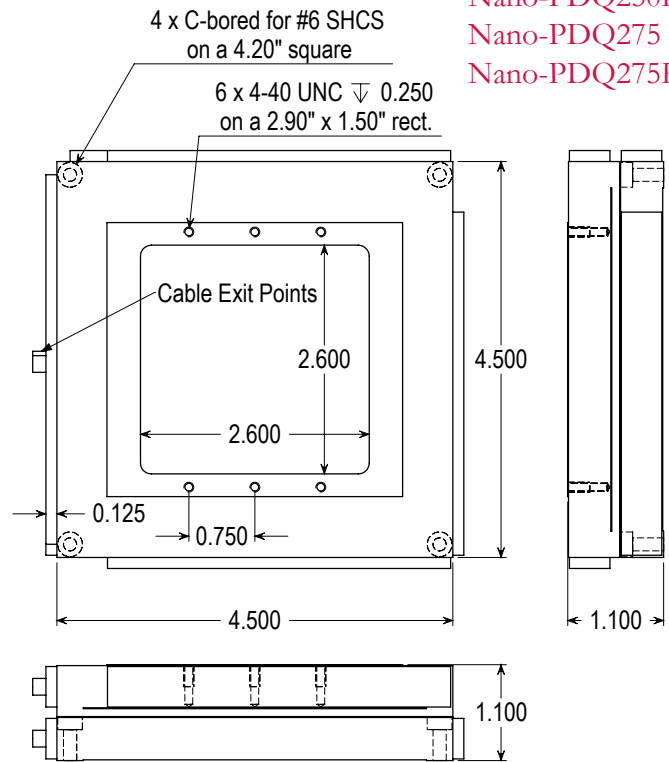
## Technical Specifications

Range of motion (X) .....	50 $\mu$ m/75 $\mu$ m
Range of motion (Y) .....	50 $\mu$ m/75 $\mu$ m
Range of motion (Z) .....	50 $\mu$ m
Resolution (50/75 $\mu$ m).....	0.1/0.15 nm
Resonant Frequency (X) .....	2.5 kHz $\pm$ 20%
Resonant Frequency (Y) .....	1.5 kHz $\pm$ 20%
Resonant Frequency (Z) .....	1.0 kHz $\pm$ 20%
Scanning Speed .....	up to 400 Hz
Stiffness.....	3.0 N/ $\mu$ m
$\theta_{roll}$ , $\theta_{pitch}$ (typical).....	$\leq$ 1 $\mu$ rad
$\theta_{yaw}$ (typical) .....	$\leq$ 3 $\mu$ rad
Recommended max. load (horizontal)* .....	0.5 kg
Recommended max. load (vertical)* .....	0.2 kg
Body Material .....	Al, Invar or Titanium
Controller .....	Nano-Drive® or Nano-Drive®85

\* Larger load requirements should be discussed with our engineering staff.

2-Axis

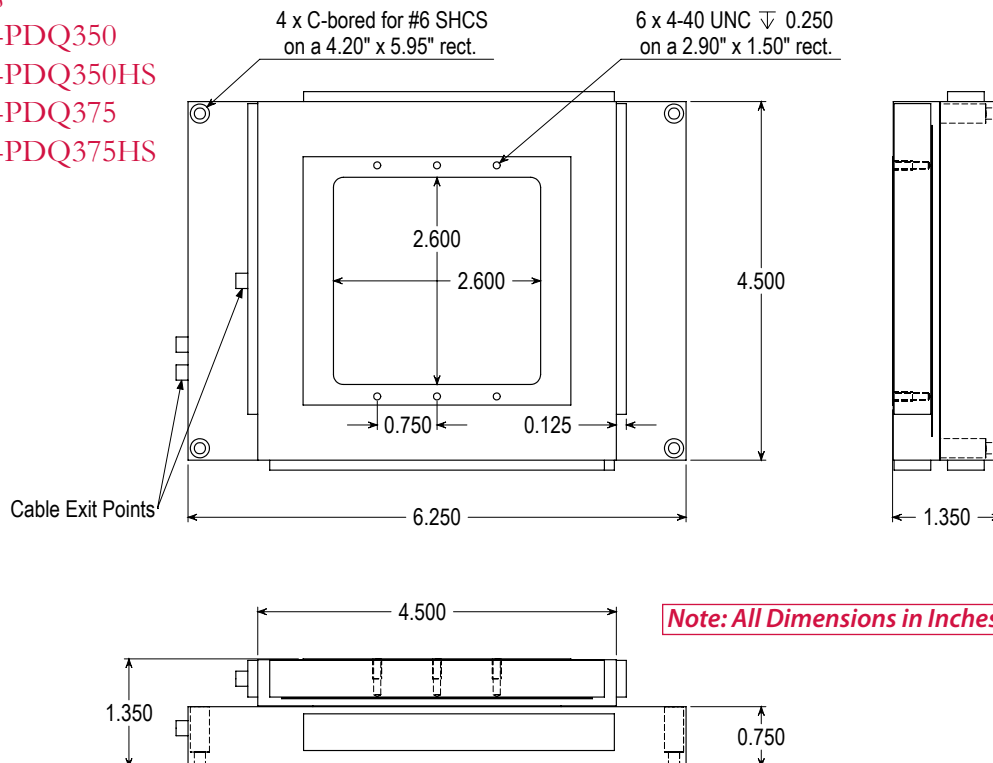
Nano-PDQ250  
 Nano-PDQ250HS  
 Nano-PDQ275  
 Nano-PDQ275HS



Note: All Dimensions in Inches

3-Axis

Nano-PDQ350  
 Nano-PDQ350HS  
 Nano-PDQ375  
 Nano-PDQ375HS



Note: All Dimensions in Inches