

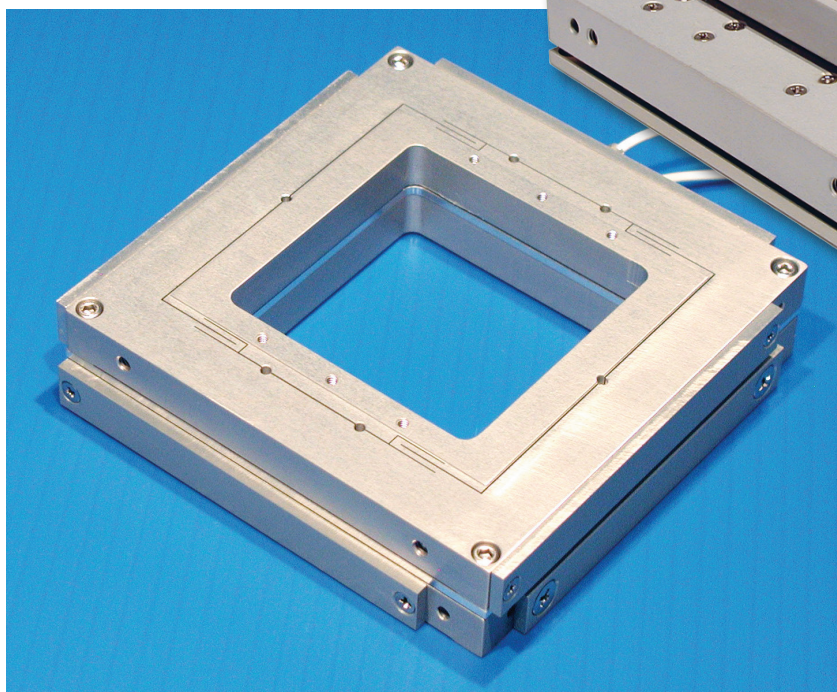
# Nano-PDQ Series

## Features

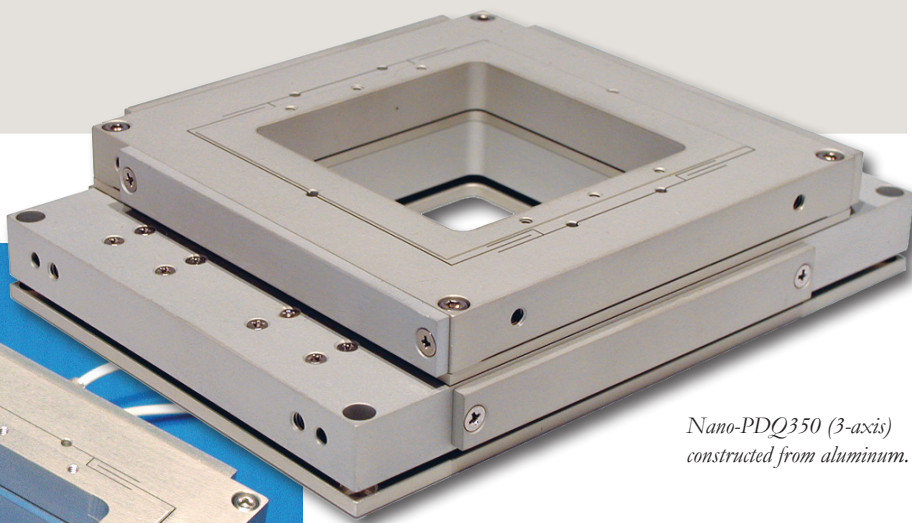
- ▶ High speed, direct drive
- ▶ Two or three axis motion
- ▶ 50  $\mu\text{m}$  or 75  $\mu\text{m}$  ranges of motion
- ▶ Large aperture
- ▶ Large load capacity
- ▶ **pico** sensor technology
- ▶ Closed loop control

## 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



LabVIEW

Examples, tutorial, and Nano-Route® 3D supplied with Nano-Drive® USB interfaces.



USB and analog motion control



MetaMorph

USB and analog motion control



THE OPEN SOURCE MICROSCOPY SOFTWARE

USB motion control



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 response and sub-nm precision. The Nano-PDQ Series are ideal for applications that demand high scan rates or large load capacities. The Nano-PDQ series may be ordered with the Nano-Drive® or Nano-Drive®85 controller to match to your application speed requirements. The Nano-PDQ Series features parallel, un-

coupled 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.

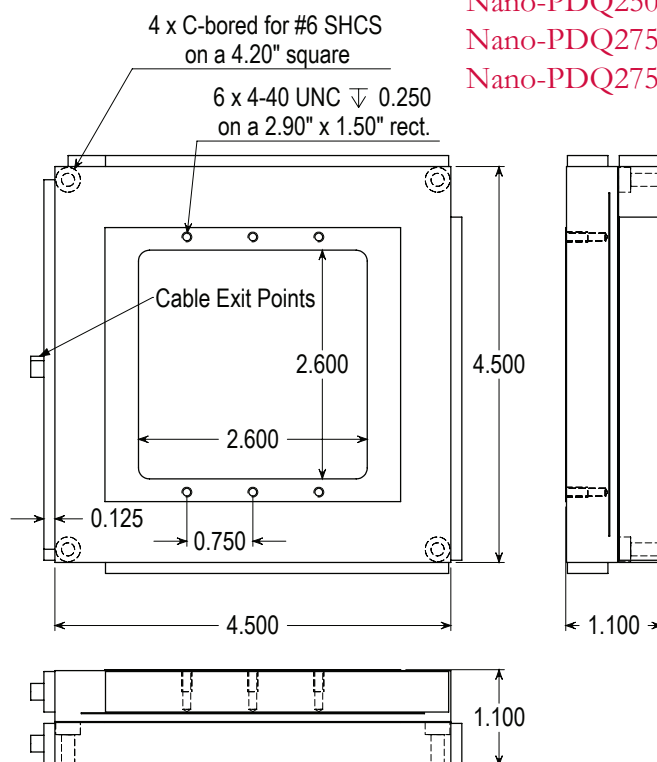
## Technical Specifications

Range of motion (X) .....	50 $\mu\text{m}$ /75 $\mu\text{m}$
Range of motion (Y) .....	50 $\mu\text{m}$ /75 $\mu\text{m}$
Range of motion (Z) .....	50 $\mu\text{m}$
Resolution (50/75 $\mu\text{m}$ ) .....	0.1/0.15 nm
Resonant Frequency (X) .....	1080 Hz $\pm 20\%$
Resonant Frequency (Y) .....	840 Hz $\pm 20\%$
Resonant Frequency (Z) .....	265 Hz $\pm 20\%$
Scanning Speed .....	up to 400 Hz
Stiffness .....	3.0 N/ $\mu\text{m}$
$\theta_{\text{roll}}$ , $\theta_{\text{pitch}}$ (typical) .....	$\leq 1$ $\mu\text{rad}$
$\theta_{\text{yaw}}$ (typical) .....	$\leq 3$ $\mu\text{rad}$
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

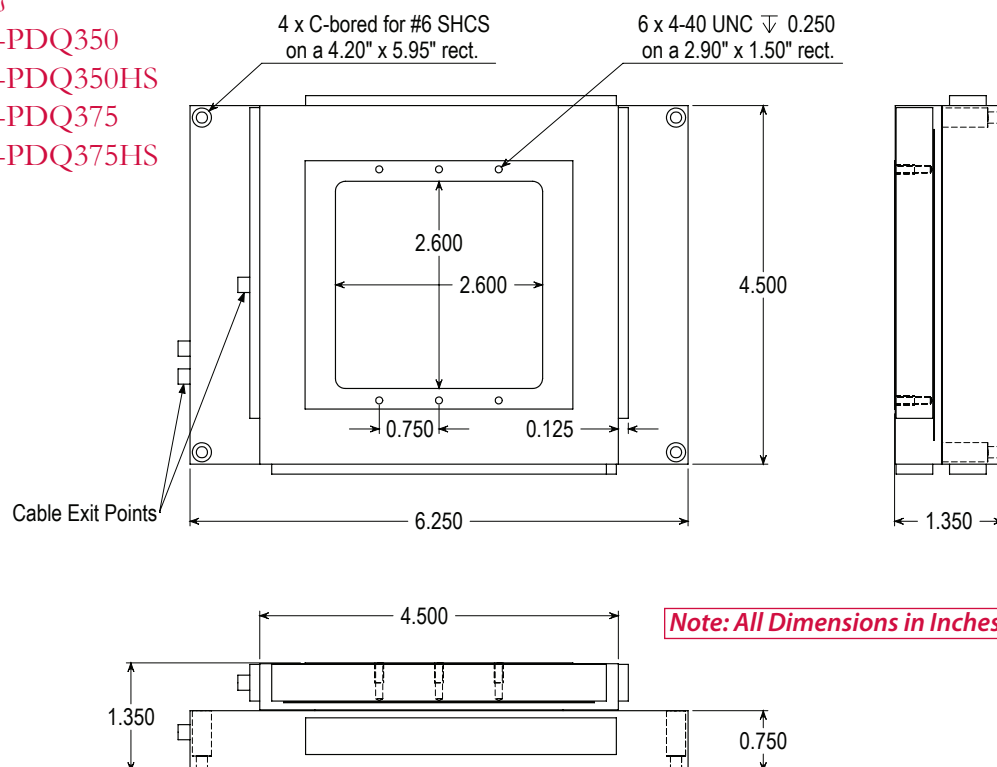
Nano-PDQ250  
Nano-PDQ250HS  
Nano-PDQ275  
Nano-PDQ275HS



**Note: All Dimensions in Inches**

### 3-Axis

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



**Note: All Dimensions in Inches**