

# Nano-SP30

## Features

- ▶ *Single axis Micro and Nanopositioning*
- ▶ *25mm coarse motion with hi-res encoder*
- ▶ *30 micron nanopositioning*
- ▶ *Alternate external sensor feedback*
- ▶ **pico**™ position sensor technology
- ▶ *Closed loop control*

## Typical Applications

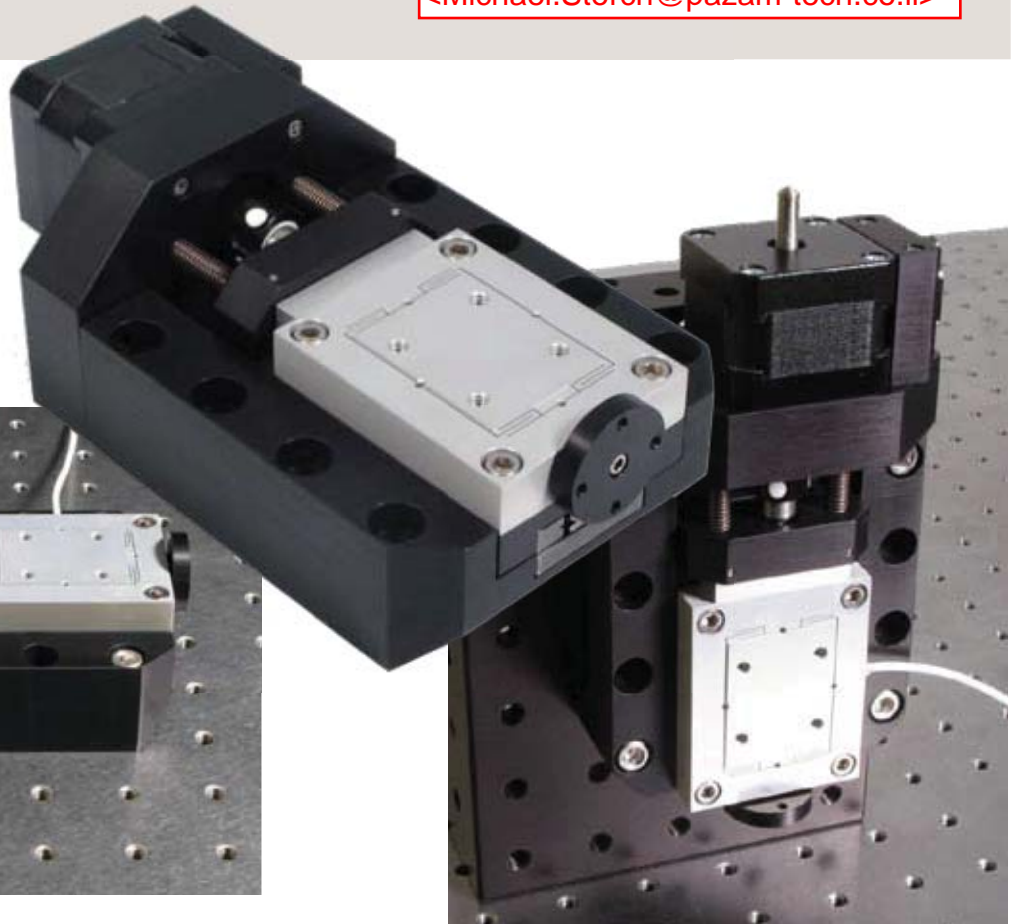
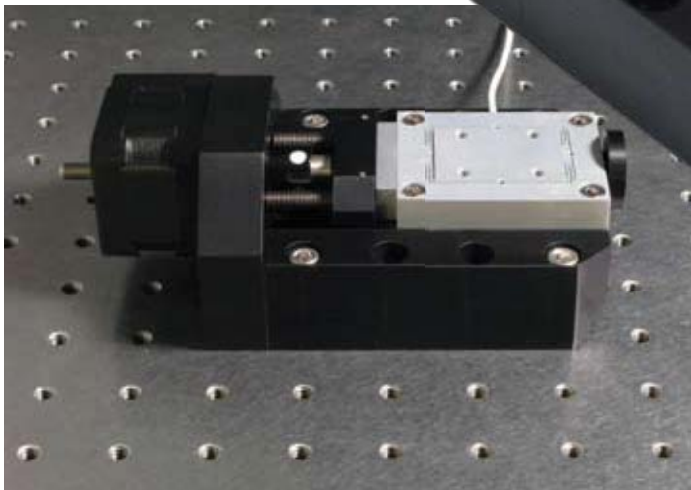
- ▶ *Nanoindenting*
- ▶ *Nano-ergometer*
- ▶ *Nanomanipulation*

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### LabVIEW Compatible USB Interfaces



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



*Nano-SP30 constructed from aluminum.*

## Product Description

The Nano-SP30 integrates single axis micropositioning and high resolution nanopositioning into a compact unit which is compatible with optical tables and standard mounting accessories. Stepper motor driven coarse positioning over 25mm can produce a minimum step size of 95nm. A high resolution linear encoder incorporated into the coarse positioning stage continuously monitors positions down to 20nm. Nanopositioning over 30 microns provides the ultimate positioning resolution of 60 picometers with the stability of the proprietary **pico**™ position feedback sensors. Samples and probes can be mounted

on the end of the nanopositioner (see the round disk in photo) or on the top face. A special Nano-Drive™ SP30 closed loop controller accepts feedback from external sensors (such as force sensors) as well as standard feedback from the nanopositioner's internal position sensors. Seamlessly switching between feedback signals gives an unusual versatility to this unique system. The USB digital interface provides direct PC control of the micropositioner and nanopositioner as well as access to the linear encoder, position sensor, and external sensor readings.

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# Technical Specifications

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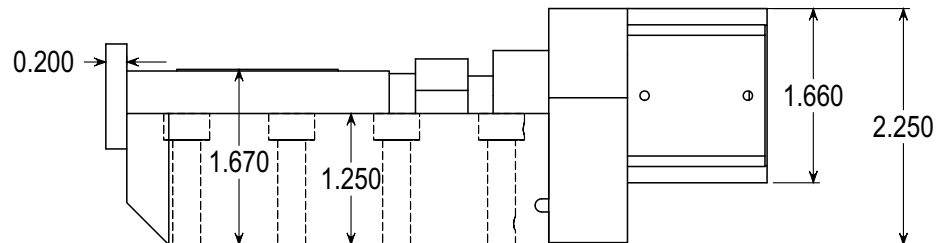
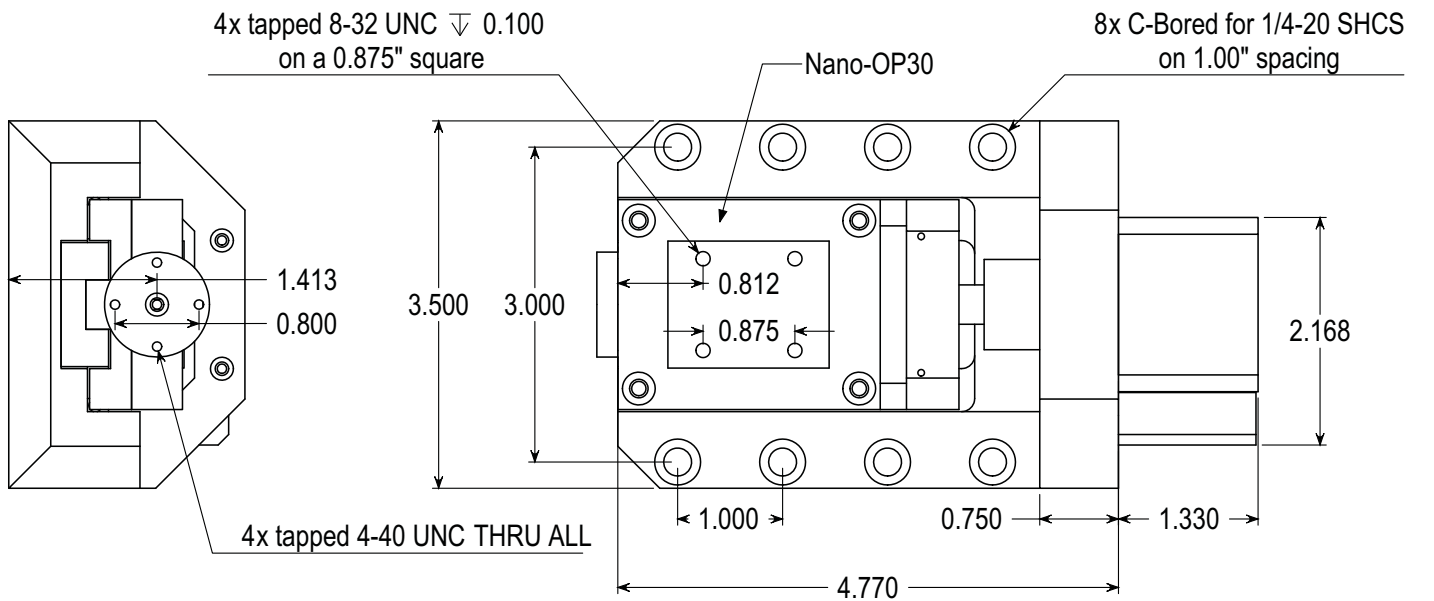
## Micropositioner

Range of motion (micropositioner) ..... 25 mm  
 Micropositioning step size ..... 95 nm  
 Maximum speed ..... 4 mm/sec  
 Motion Profile  
 Motion >500 steps ..... Automatic accel/decel control  
 Motion ≤500 steps ..... Constant 1 step/ms  
 Linear encoder resolution ..... 20 nm  
 Body Material ..... Aluminum  
 Controller ..... Nano-Drive™ SP30  
 Computer interface ..... Bidirectional USB

## Nanopositioner

Range of motion (nanopositioner) ..... 30 μm  
 Maximum resolution (nanopositioner) ..... 0.06 nm  
 Resonant frequency (nanopositioner) ..... 4kHz ±20%  
 Resonant Frequency (100g load) ..... 2 kHz ±20%  
 Stiffness ..... 3.0 N/μm ±20%  
 Recommended max. load (horizontal)\* ..... 1.0 kg  
 Recommended max. load (vertical)\* ..... 0.5 kg  
 Body Material ..... Aluminum  
 Controller ..... Nano-Drive™ SP30  
 Computer interface ..... USB with 16-bit ADC/DAC

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



**Note: All Dimensions in Inches**

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