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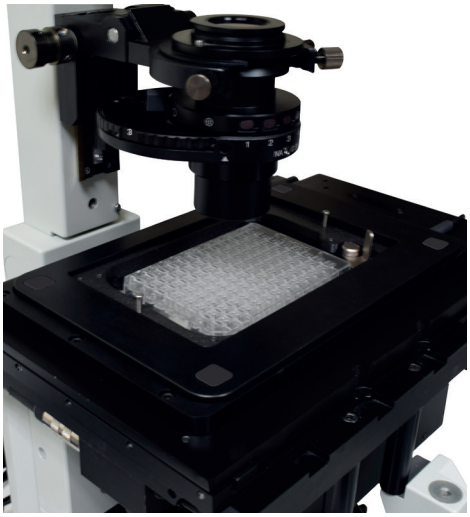
More to PRIOR than meets the eye

NanoScan SP Series

Nanopositioning Piezo Sample Scanner



Applications

- Optical sectioning producing 3D images
- Live cell imaging
- Autofocus systems for time lapse imaging
- High content screening
- Surface analysis
- Wafer inspection

Delivering the best positioning performance and fastest recovery between Z stacks, the NanoScan-SP range of Piezo driven stages are compatible with many Prior motorized stages as well as many common microscopes when using appropriate adapter plates.

The super slim height; 13.7 mm, is a feature of the 400um and 600um closed loop versions giving better access for illumination of the sample area. Accessory insert plates are available for a wide variety of samples, including well plates, Microtitre plates, slides and petri dishes.

Key Features

- Capacitive positioning sensors giving market leading resolution.
- Step settle times of < 10ms
- Loads of up to 500g. (higher loads on request)
- Connectors with built in stage calibration provide plug and play electronics which can be interchanged, minimizing system down times.
- User configurable settings optimized for different sample masses sizes and performance needs. The user simply selects the best setting for their application.
- Tested to function for greater than 10 million full range cycles

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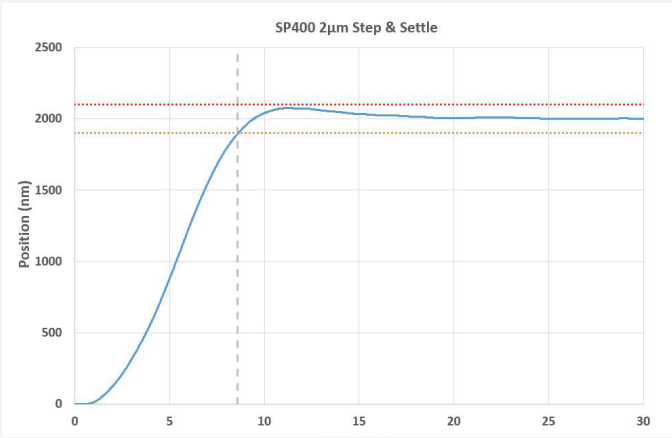
NPC-D-6110 Controller:

- The powerful digital controller drives the SP faster
- Motion control algorithms with acceleration/deceleration control and active damping reduce overshoot.
- Velocity control algorithm gives ultra-smooth ramps for applications such as focus stacking or focus bracketing.
- Market-leading 20µsec update rate
- Fastest recovery time between Z stacks providing enhanced time resolution
- Selectable tuning presets which optimise for step settle, objective mass and resolution.

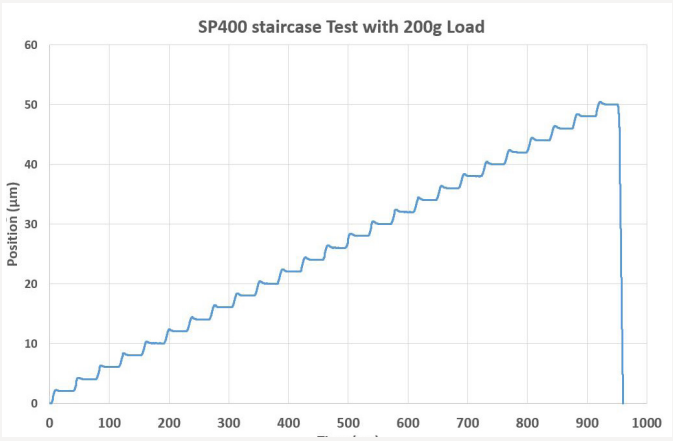
Interfacing:

- Analog command input and position output (0-10V) for compatibility with existing systems.
- Digital commands over USB for maximum accuracy with a DLL interface for customer software. In-position digital outputs can be used to control camera imaging providing rapid Z stacking.
- Digital quadrature/step-and-direction commands allowing high-speed control with a standard 2-wire motion controller interface, without the need for expensive high-precision ADCs/DACs.
- Playback of custom-programmed waveforms such as constant-velocity profiles. Separate digital trigger outputs can be activated at custom-defined points to control external equipment such as camera imaging.
- Compatible with Queensgate Nanobench, Micro-Manager or customer software using DLL interface provided.
- Can be connected to Prior ProScanTMIII for integrated fine-Z control.

Step and Settle Time:



Settling time of the NanoScan SP400 stage with NPC-D-6110 controller including sample holder.



The NanoScan SP400's unsurpassed speed and settle time minimizes rejected images, reduces drift and allows for higher throughput.

Ordering information

Product Ref	Description
QGSP400-D1	NanoScan SP400 400um closed loop Z scanner & NPC-D-6110 digital controller
QGSP600-D1	NanoScan SP600 600um closed loop Z scanner & NPC-D-6110 digital controller
QGSP301R	Recessed microtitre plate holder
QGSP301XR	Extra recessed microtitre plate holder
QGSP302R	Recessed universal specimen holder
QGSP302XR	Extra recessed universal specimen holder
QGSPH101F	Mounting adapter SP to H101F

Incubator – various incubators can be used with the NanoScan-SP range of Z scanners. Tokai Hit and OKO Lab fit incubators available please as for details.

NanoScan SP Series
Nanopositioning Piezo Sample Scanner

Technical specification for NanoScan SP400 and SP600 (typical)

Parameter			Units
Product Specifications			
Product	SP400	SP600	
Material	Aluminium /Stainless	Aluminium /Stainless	
Dimensions external L,W,H	260 x 164 x 13.7	260 x 164 x 13.7	mm
Dimensions internal L, W	179 x 110	179 x 110	mm
Closed Loop Range	400	600	um
Open Loop Range	490	690	um
Resolution	0.7	0.7	nm
Linearity	0.25	0.25	%
Repeatability	4	4	nm
Loaded resonant Frequency ~ 200g = sample holder ~ 500g = incubator	260 Hz unloaded 165 Hz 200g load 123Hz 500g load	230 Hz unloaded 140Hz 200g load 115 Hz 500g load	
5% Settle 0.5um step (200g load)	7	7	ms
0.5% Settle 100µm step (200g load)	20	20	ms
Cable Length	2	2	m
Environmental Operational			
Temperature	21 ± 30	21 ± 30	°c
Relative Humidity	0-60	0-60	%

Technical specification for NPC-D-6110 Controller

Parameter	Value	Units	Comments
Mechanical			
NPC-D-6110	318 x 240 x 90	mm	Space required for rear connectors and cables.
Weight	3.0	kg	
Cooling	Convection + temp controlled FAN		Vents on rear and base
Electrical			
Power input	100 to 240 nominal 47 to 63	Vrms Hz	Only use approved power supply
Connectivity			
USB type B Connector	2.0 compliant		Note: power not taken from USB port.
Analogue input command	BNC - 0 to +10V		Per channel - front panel +/- on request
Analogue Position Monitor output	BNC - 0 to +10V		Per channel - front panel +/- on request
“TRIG” input, “TRIG” output, “IN-POS” output and Quadrature Interface	25 pin D-type socket - 5V TTL		
Controller Synchronizing signals	9 pin D-type socket		Rear panel
Environmental - Operational			
Temperature	10 to 40	°C	
Relative Humidity	5 to 80	%RH	Non-condensing

We reserve the right to introduce improvements and modify specifications without prior notice.

NanoScan SP400/SP600

Nanopositioning Piezo Sample Scanner

Technical Drawing for NanoScan SP400/SP600 (typical)