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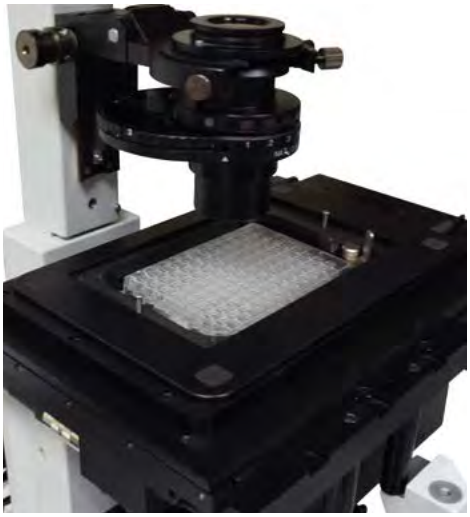
More to PRIOR than meets the eye

NanoScan SP400/SP600

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
- OEM custom solutions

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

The super slim 13.7mm height is a feature of the 400µm and 600µm closed loop versions, providing 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 loads (use with an incubator) and performance needs. The user simply selects the best setting for their application.
- Tested to function for greater than 10 million full range cycles.

NanoScan SP400 and SP600

Nanopositioning Piezo Sample Scanner

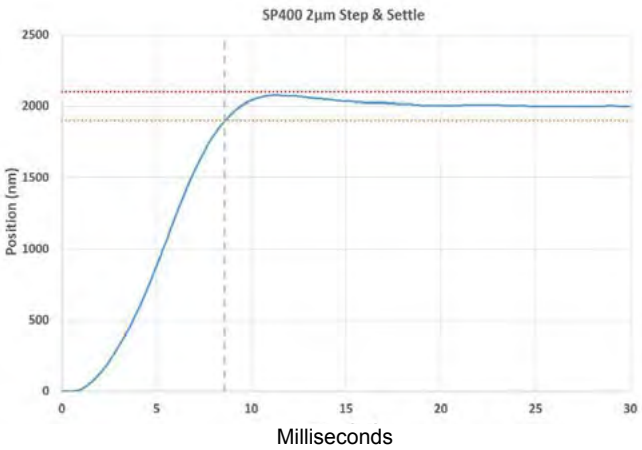
NPC-D-6110 Controller:

- The powerful digital controller drives the SP400/600 at the fastest speeds possible.
- 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 optimize for step settle or sample mass (for example incubator).

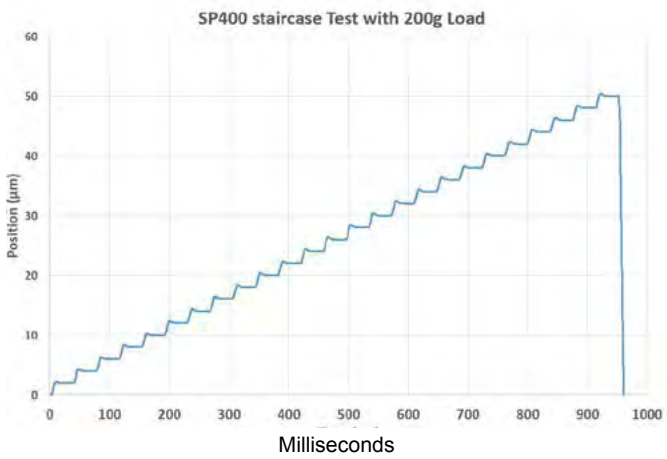
Interfacing:

- 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, Metamorph, Elements via RS232C, also with other customer software using DLL interface provided.
- Can be connected to Prior ProScan III 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 Number	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
QGSP301XR	Extra recessed microtitre plate holder
QGSP302XR	Extra recessed universal specimen holder
QGSP303XR	Extra recessed single slide holder for 25x75mm slides (1x3 inch) or 50x75mm slides (2x3 inch)
QGSPADP1	Adapter plate Nikon T12
QGSPADP2	Adapter plate HLD117NN
QGSPADP3	Adapter plate Olympus SSU stage

NanoScan SP400/SP600

Nanopositioning Piezo Sample Scanner

Technical Specification for NanoScan SP400/SP600 (typical)

Parameter	Value	Value	Units
Product Specifications			
Product	SP400	SP600	
Material	Aluminum/Stainless	Aluminum/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 nm	0.7	0.7	nm
Linearity	0.2	0.2	%
Repeatability	4	4	nm
Resonant Frequency - Unloaded 200g Loaded 500g Loaded	260 Hz 165 Hz 123Hz	230 Hz 140Hz 115 Hz	
5% Settle 0.5um Step	7	7	ms
0.5% Settle 100µm Step	20	20	ms
Cable Length	2	2	m
Environmental Operational			
Temperature	21 ± 3 degrees	21 ± 3 degrees	Celcius
Relative Humidity	0-60	0-60	%

Alternative closed loop ranges, 200um, 450um are available on application.

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 -10	V	Front panel
Analogue Position Monitor Output	BNC - 0 -10	V	Front panel
“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	ºC	
Relative Humidity	5 to 80	%RH	Non-condensing

Incubator – various incubators can be used with the NanoScan-SP range of Z scanners. We reserve the right to introduce improvements and modify specifications without prior notice.

NanoScan SP400/SP600

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Technical Drawing for NanoScan SP400/SP600 (typical)