

NanoScan SP200, SP400 and 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

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 height; 13.7 mm, is a feature of the 200um, 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:

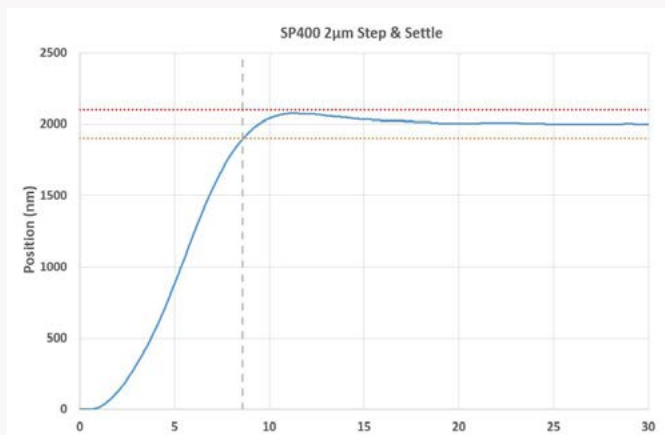
- The powerful digital controller drives the SP faster
- Motion control algorithms with acceleration/deceleration control and active damping reduce overshoot.
- Velocity control algorithm gives ultra-smooth ramps for applications such as focus stacking or focus bracketing.
- Market-leading 20 μ sec update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



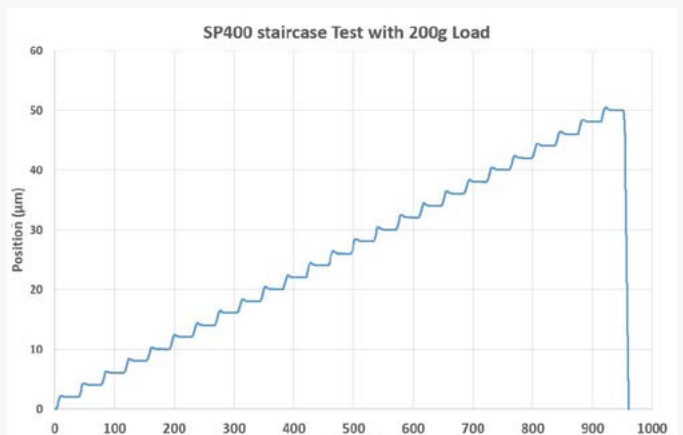
Interfacing:

- 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 |
|-------------|--|
| QGSP200-D1 | NanoScan SP200 200um closed loop Z scanner & NPC-D-6110 digital controller |
| 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 |



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Technical specification for NanoScan SP200, SP400 and SP600 (typical)

| Parameter | | | | Units |
|---|---|--|--|-------|
| Product Specifications | | | | |
| Product | SP200 | SP400 | SP600 | |
| Material | Aluminium /Stainless | Aluminium /Stainless | Aluminium /Stainless | |
| Dimensions external L,W,H | 260 x 164 x 13.7 | 260 x 164 x 13.7 | 260 x 164 x 13.7 | mm |
| Dimensions internal L, W | 179 x 110 | 179 x 110 | 179 x 110 | mm |
| Closed Loop Range | 200 | 400 | 600 | um |
| Open Loop Range | 240 | 490 | 690 | um |
| Resolution | 0.7 | 0.7 | 0.7 | nm |
| Linearity | 0.25 | 0.25 | 0.25 | % |
| Repeatability | 4 | 4 | 4 | nm |
| Loaded resonant Frequency ~ 200g = sample holder ~ 500g = incubator | 280Hz unloaded 180 Hz 200g load 130Hz 500g load | 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 | 7 | ms |
| 0.5% Settle 100µm step (200g load) | 20 | 20 | 20 | ms |
| Cable Length | 2 | 2 | 2 | m |
| Environmental Operational | | | | |
| Temperature | 21 ± 30 | 21 ± 30 | 21 ± 30 | °C |
| Relative Humidity | 0-60 | 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 |

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.