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More to PRIOR than meets the eye

Prior Scientific
Product Guide

www.prior.com

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Prior offers standard products and custom OEM solutions for the most challenging precision positioning devices, optical systems, automation solutions, and component requirements. With over 100 years of experience and engineering excellence, Prior is the global leader for many leading instrumentation companies and research institutions.

Our Capabilities and Expertise

- Precision Stages and XY Tables
- Customized Automated microscopes
- Nanopositioning Piezo Assemblies
- Laser Autofocus and Focus Drives
- Modular Upright and Inverted Microscopes
- Motorized Objective Changers and Filter Turrets
- Robotic Slide and Well Plate Loading
- Electrophysiology Platforms
- Low and High Magnification Optical Assemblies
- Illumination
- Control Electronics

ProScan - XY Linear Motor Stages

Stages for Inverted Microscopes

HLD117 Flat top stages with linear motor technology for inverted research microscopes set new standards for convenience and performance.

- Travel range: 120 x 80 mm
- XY repeatability: ± 0.15 um
- Minimum step size (resolution): 50 nm
- Maximum velocity: 300 mm/s
- Minimum velocity: 1 um/s
- Squareness: 30 arc sec
- Maximum load capacity: 6 kg
- Integrated 50 nanometer encoders standard

H117 Precise, reliable and repeatable stage ideal for a wide range of applications and compatible with a vast range of inverted microscopes.

- Travel range: 114x75 mm
- XY repeatability: ± 0.2 um
- Minimum step size (resolution): 10 nm
- Maximum velocity: 15 mm/s
- Squareness: 30 arc sec
- Maximum load capacity: 10 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

H139 Precise movement (repeatability 0.7 µm) in the X and Y axis (280 x 80 mm)

- Travel range: 280 x 82 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 10 nm
- Maximum velocity: 25 mm/s
- Squareness: 30 arc sec
- Maximum load capacity: 10 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

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ProScan - XY Linear Motor Stages

Stages for Upright Microscopes

H101A Enables the user to increase labor efficiency by automatically scanning your specimens and storing points for later recollection and inspection with unmatched repeatability.

- Travel range: 114 x 75 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 -10 nm
- Maximum velocity: 100 mm/s
- Squareness: 30 arc sec
- Maximum load capacity: 10 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

H101F Impressive versatility is further increased by its larger sample holder area (176 mm x 154 mm) allowing a wide variety of applications

- Travel range: 114 x 75 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 -20 nm
- Maximum velocity: 100 mm/s
- Squareness: 30 arc sec
- Maximum load capacity: 10 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

H138A Work more productively by having the capacity to load up to eight 75mm x 25mm microscope slides.

- Travel range: 240 x 71 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 - 20 nm
- Maximum velocity: 100 mm/s
- Squareness: 60 arc sec
- Maximum load capacity: 10 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

H105 Fitting most upright microscopes, the H105-F is part of the wide range of precisely engineered ProScan® stages.

- Travel range: 154 x 154 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 nm
- Recommended Speed: 24 mm/s
- Squareness: 70 arc sec
- Intelligent Scanning Technology (IST) increases accuracy of movement

H116 A large-stroke upright microscope electric platform for almost all brands of microscopes and related optical applications. The platform travels at 255x216 mm and is available with a variety of sample holders and customized service.

- Travel range: 255 x 216 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 nm
- Recommended Speed: 40 mm/s
- Maximum load capacity: 25 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

H112 The upright microscope motorized platform with a stroke of 302x302 mm can be used for 12-inch wafer inspection and is an ideal solution for semiconductor industry applications.

- Travel range: 302 x 302 mm
- XY repeatability: ± 0.7 um
- Minimum step size (resolution): 40 nm
- Maximum velocity: 24 mm/s
- Squareness: 70 arc sec
- Maximum load capacity: 25 kg
- Intelligent Scanning Technology (IST) increases accuracy of movement

HT1111LC The high-load, upright microscope motorized platform with a stroke of 108 x 108 mm is loaded and accurate, making it ideal for industrial and materials applications.

- Travel range: 108 x 108 mm
- XY repeatability: ± 1.5 um
- Minimum step size (resolution): 20 nm
- Maximum load capacity: 100 kg
- Stage Profile: 43.5 mm

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OptiScan XY Stages for Upright Microscopes

ES111 An economical upright microscope platform that can be used with most upright microscopes using the OptiScan controller. Applicable to applications that do not require sub-micron repeatability requirements while maintaining accuracy and repeatability.

- Travel range: 125 x 75 mm
- XY repeatability: ± 5.0 um
- Minimum step size (resolution): 1.0 um
- The unique S curve acceleration algorithm allows fast, smooth positioning without vibration

ES107 An economical inverted microscope electric displacement platform. It has excellent controllability and low price, providing users with a very cost-effective product.

- Travel range: 115 x 77 mm。
- XY repeatability:± 5.0 um。
- Minimum step size (resolution): 1.0 um
- The unique S curve acceleration algorithm allows fast, smooth positioning without vibration

Stepper Motor Focus Drive

Microscope Focus Adapter

PS3H122R The motorized Z-axis is coupled to the microscope fine-tuning knob to provide position adjustment for large strokes. It is composed of two-dimensional mobile platform, X, Y, Z three-axis system, which can provide relevant system solutions for customers.

- Maximum speed: 20 Rev / sec
- 0.002 µm Minimum step size
- Designed to present the cable from twisting around the drive
- Precise and repeatable focussing in the Z-axis

Z Axis Motorized focusing mount

The -Z- axis motorised focus mount offer a wide range of positioning solutions for a variety of applications. Many configurable options are available from a simple motorised linear axis to an X, Y and Z three axis stage system.

- Travel range: 38 mm
- Resolution: 20 nm
- Repeatability: 0.7 um
- Full stroke error: <5 um
- Adjustable limit switches
- Maximum load capacity: 14 Kg

FB203 FB204 FB205 FB206

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Laser Autofocus Systems

PF850 Laser autofocus system for life science applications

PureFocus850 combines advanced optics and intelligent in-built microprocessing to provide a real time focus system for infinity corrected optical systems.

1. 850nm diode laser
2. Can be applied to slides, petri dishes and well plates
3. Can control stepper motor Z axis or nano Z axis (output voltage 0-10V)
4. Suitable for infinity optical systems
5. A variety of flange interfaces to match various microscopes
6. Can pre-program multiple sets of objective parameters
7. Can choose desktop or OEM controller

LF 210 Laser autofocus system for industrial applications

LF210 The laser autofocus system can be used with the associated controller and Z-axis. It is also possible to output only the analog signal feedback relative position for integration of existing systems. It has perfect performance on reflective samples (such as wafers, LCD/LED) and can be easily matched to various microscopes or other infinity optical systems.

1. Can control stepper motor Z axis or nano Z axis (output voltage 0-10V)
2. Spot or Line laser modes
3. Suitable for infinity optical systems
4. A variety of flange interfaces to match various microscopes
5. Can pre-program multiple sets of objective parameters

Robotic Sample Handling Systems

PL200 Slide Loader

PL200 is an ideal for automated microscope systems; quickly loading and removing slides from most modern upright microscopes.

1. Slide capacity: 200 75mm x 50 mm slides
2. Loading Speed: 20-25 secs (typical)
3. Compatibility: ProScan H101A stage
4. Dimensions: 350 mm (W) x 500 mm (D) x 680 mm (H)
5. Communication Interface: USB

PLW20 Well Plate Loader System

PLW20 multi-well plate autochanger is compatible with the Nikon Ti/Ti2 series of inverted microscopes, making it easy to use, sturdy and simple. Paired with the HLD117 series of inverted microscope motorized platforms, it offers a customized system for up to 20 multi-well plates.

1. Capacity: 20 well plates (two racks of 10 plates)
2. Load/Unload Cycle Speed: 29 seconds
3. Compatibility: ProScan HLD117 linear inverted stages
4. Communication Interface: USB
5. Dimensions: 840 mm (W) x 550 mm (L) x 660 mm (H)

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Electrophysiology Platforms

ZDeck can play an important role in the research of electrophysiology and multiphoton technology. It can adjust the height very easily and easily. The size of the table is large and flat. Various probes and robot arms can be mounted according to requirements. Compatible with a variety of fixed stage microscopes. In electrophysiological applications, we also offer a variety of different types of rigid brackets with microscope moving bases to meet different application needs of customers.

OpenStand

OpenStand® is an open electro-optic optical platform that provides a complete microscope system for pathology, optogenetics, physiology, electrophysiology, neuroscience and industrial inspection on an existing basis and in other optical system accessories. field.

Features:

- Open module design for rigid brackets, compatible with most current optical components
- Modular light path for fluorescent, reflected and transmitted light modules for a variety of applications
- Compatible with fiber optic input including LED, HID, halogen and other light guides
- 200mm large sample space under the objective lens for convenient and placement of various test samples
- Objective lens 126mm focusing range, focusing mirror 35mm adjustment range, convenient to use a variety of objective lenses

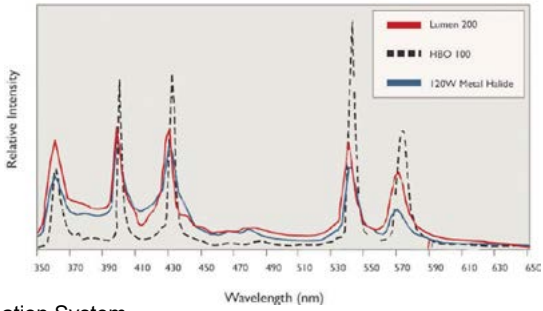
Lightsources

Lumen 200 Fluorescence Illumination Systems

2,000 hours life, 200 W Xenon metal arc lamp

- Liquid guiding fiber output
- Stable power supply ensures smooth output of optical power
- LCD display lamp life display
- Compatible with various microscope light source interfaces
- Manual adjustment button to prevent photobleaching
- Optional electric shutter

Lumen 200 Spectral Output



Brightfield LED Illumination System

LDB102/103 series LED transmission light source

- 10,000 hours of high brightness and stable illumination
- Suitable for imaging techniques such as Phase contrast/DIC
- TTL interface, external control fast and fast control switch,
- Controlled by a Proscan controller or controlled by a separate controller
- Optional Nikon or Olympus adapter, controlled by NIS Elments or Cellsens software
- Open design filter inserts for easy replacement

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Queensgate - Innovation in Nanopositioning

Queensgate Nano was founded in 1979 and span out from a ground-breaking research programme at Imperial College, London. Queensgate quite literally “wrote the book” on Nanopositioning taking the idea from the lab to a cynical world who believed it couldn’t be done with the required level of accuracy.

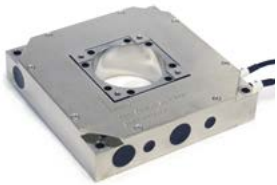
Queensgate Nanopositioning Devices & Sensors

In different environments, such as normal temperature, vacuum, high radiation and high temperature, we can flexibly provide platforms with different materials including stainless steel, titanium alloy, aluminum alloy, super invar alloy, combined with closed loop design to ensure excellent Stability and precision, and OEM design is available upon request.
Queensgate’s connector plugs have built-in chips that store product calibration parameters for plug-and-play on different controllers without recalibration.

NanoScanOP 400 Nanopositioning Piezo Objective Scanner

The NanoScanOP 400 Piezo Ceramic Objective Scanning Module provides up to 400um of travel for semiconductor inspection and measurement, confocal, and super-resolution applications.

- 400µm closed loop travel range (450µm open loop range)
- Capacitive sensor for sub-nm resolution and repeatability
- Stainless steel for higher mechanical stiffness (faster speed) and temperature stability (minimum drift)
- Flexible hinge zero-gap bending design provides high stiffness and minimizes off-axis motion for higher repeatability and faster cycle times
- Suitable for upright and inverted systems
- Plug and play



NPS-XY-100 Series Two Axis 100µm x 100µm Stages

- >100µm travel in each axis with sub-nanometer resolution
- <0.005% linearity error
- Dynamic performance: Unloaded resonant frequency typically> 350 Hz (NPS-XY-100A) >500 Hz (NPS-XY-100B) >650 Hz (NPS-XY-100D)
- High bandwidth (> 50 Hz) for fast response
- Used in conjunction with NPS-Z-15A or NPS-Z-15H to form an XYZ system
- Optional materials include Super Invar, Aluminum and Aluminum

NPS-TG-7A High Performance Tip Tilt Stage

The capacitive position sensor provides ultra-high positioning accuracy and excellent dynamic range. The Invar 36 material minimizes thermal expansion and is suitable for applications such as laser and beam deflection scanning, optics and image processing.

- 7mrad range in each axis with sub micro-radian resolutions at > 1.2KHz
- 1kHz load resonance frequency
- Settling time < 2 ms
- Sealing mechanism for high stability and reliability
- Plug and play

NPS-X-15A/NPS-X-15B Low Profile Fast 15 Micron Stage

- > 15 micrometer travel with sub-nanometer resolution
- First resonant frequency>3 kHz (4 kHz NPS-X-15D)
- Millisecond response time with a load of 50 g
- In-situ scanning and stepping response optimization
- Robust and reliable for production test
- Plug and play facilities for low down-time

NPS-X-28C 28 Micron Stage

- >28µm travel with sub-nanometer resolution
- First resonant frequency >4.5KHz
- Bandwidths up to 2KHz
- In-situ scanning and stepping response optimization
- Plug and play facilities for low down-time

NPS-Z-500B-UHV Long Range 500 Micron Stage

- 100µm closed loop displacement ay 80K in UHV
- Highly parallel motion with minimal off-axis deviation
- <1nm position noise 0.01% linearity 0.02% residual hysteresis
- Customizable packages, vacuum and low temperature versions available

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DPT-E Series Closed Loop Actuator Systems

The nanoactuator/converter travels up to 120um and holds up to 35000N and can be customized to suit your requirements.

In closed loop mode, the DPT actuators work in conjunction with the Queensgate capacitive position sensor to provide low hysteresis - high precision positioning. Works with Queensgate's digital controller for plug and play. Flexible hinges provide minimal off-axis deviation for ultra-high motion accuracy.

DPT-E series closed loop actuator system
The DPT-E series actuators use capacitive sensor feedback control for precise positioning. The system consists of a DPT-E actuator and a programmable Nanoscan NPC-D-6000 or NPC-D-5200 digital closed-loop controller for the most demanding applications. The actuator provides accurate positioning accuracy and speed, achieving low electronic noise and high linearity movement over the full stroke range with a load of 60 kg.

MTP Open Loop Actuator

The MTP is an internally preloaded piezoelectric open-loop translation device that achieves high resolution movement within 105um stroke.

The robust design of the actuator allows the MTP-15 to generate up to 1000N of holding force and drive up to 10kg of load on the Z-axis.

Nanopositioning Sensors

The nanosensor is a non-contact ultra-sensitive position measurement system based on the capacitance micro-principle. It is equivalent to a picometer with a range of 1.25 mm and two sensor plates (target and probe) form a parallel plate capacitor.
The Queenstage NX series of all-metal structure nanosensors, usually aluminum or super Invar materials, can also be supplied with alternative materials according to customer specific requirements.

NX Series Nanosensors

NanoSensor® is a non-contact position measurement system based on capacitive micrometering. Two sensor plates, one target and one probe, form a parallel plate capacitor. The spacing between the two boards can be measured by the controller. The measurement accuracy is better than 7pm, the range is up to 1.25mm, the frequency response is up to 10kHz, and the linearity is up to 0.02%. Due to the non-contact measurement characteristics of the nanosensor, it has no hysteresis and no power loss during the measurement.

Nanopositioning control electronics and software

We offer ultra-fast all-digital closed-loop controllers and economical analog signal controllers to drive Queensgate's nanopositioning products. The controller provides an interface to external devices and provides a series of control options such as analog signal control, position output, USB, RS232C, and analog stepper motor control.

NanoScan NPC-D-6000 Series Multi-channel Closed Loop Controllers

The Nanoscan NPC-D-6000 series of multi-channel nanopositioning controllers are specifically designed to control the Pemillon positioning resolution of the Queenstage actuators and stages.

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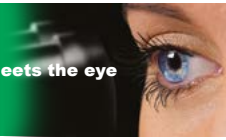

For more information on Prior Scientifics products and customized services, please visit:

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For quotes, product demonstrations or technical support please contact:

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