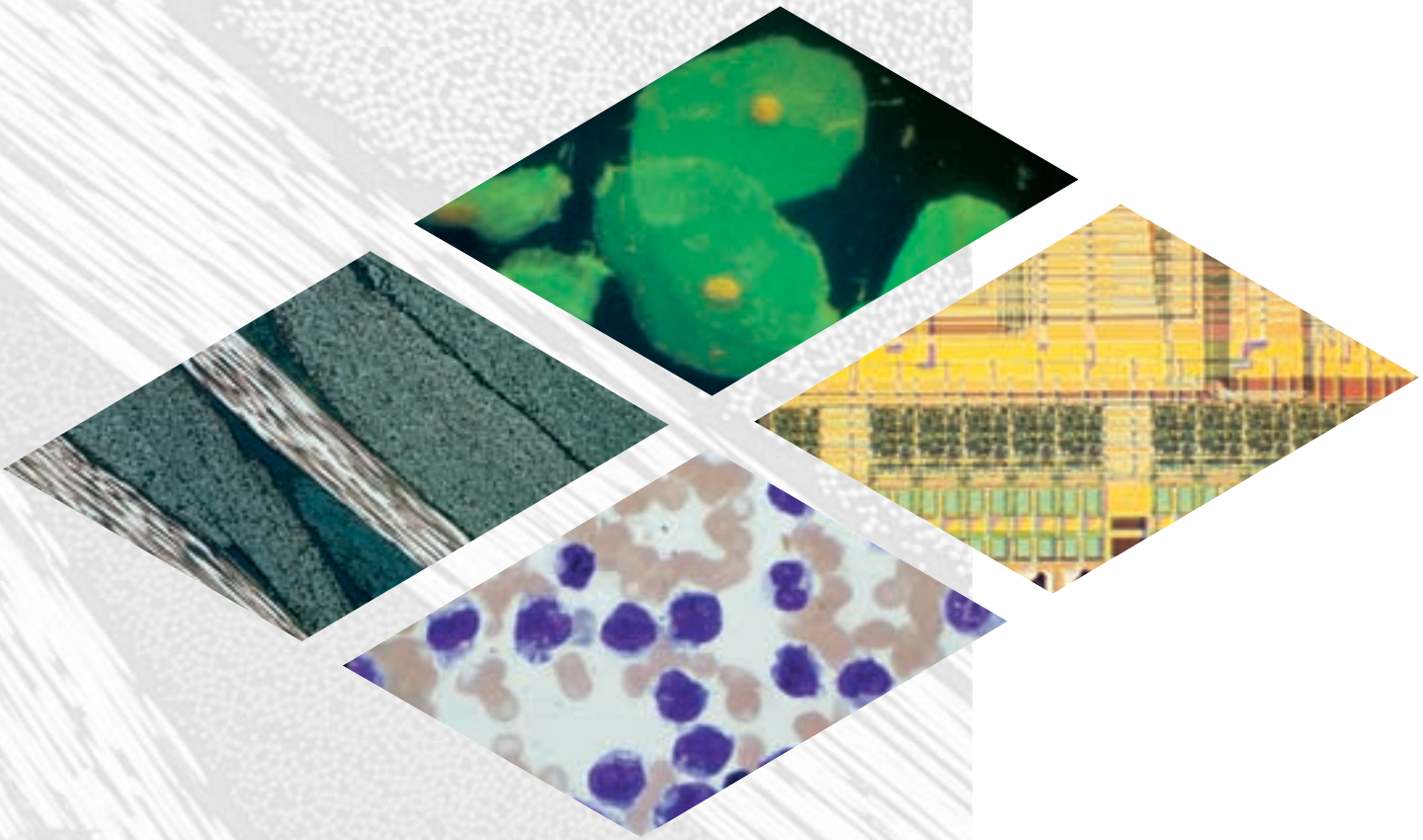
ProScan™ II

PRIOR
Scientific

High Performance
Motorized Stage Systems



ProScan™ II Advanced Microscope Automation

Prior Scientific has been designing and manufacturing precision optical systems, microscopes and related accessories since 1919. This wealth of experience is matched by a commitment to customer service that has earned Prior an enviable reputation for excellent support. These values, plus our understanding of microscopy, provide a unique foundation for the development of an advanced range of motorized stage systems for microscopy and image analysis applications.

Prior proudly introduces the ProScan™II system which sets new standards in automated microscopy. Modular by design, a wide range of stages is available for most modern upright and inverted microscopes. Stages may also be adapted to fit other optical inspection systems. The ProScan™II controller represents the latest in motor control technology and provides a wide range of advanced features designed for the most demanding applications; not least of which is the capability to control a stage, focussing motor, up to three filter wheels and three shutters all from a single controller. Add to this USB and serial communications, four TTL inputs and outputs, encoder feedback for closed loop operation, an optional 4th axis, an advanced autofocus routine and a comprehensive high level software command set including dll's and you can see, the standard is very high indeed. Filter wheels, shutters plus a variety of control accessories such as joysticks and digipots complete the ProScan™II product range.

ProScan II is ideally suited to the most demanding imaging applications. A modular design means that systems are easily configured for any combination of stage, focus, filter wheel and shutter options. System performance and reliability are second to none. Furthermore, Prior's flexible, problem solving approach is why the world's leading microscope companies and imaging software manufacturers choose ProScan™II.

H101

Stage for upright microscopes providing a travel range of up to 112 x 73mm. Available with a choice of specimen holders, ideally suited to single and four slide applications.

H107

Stage for inverted microscopes providing a travel range of up to 112 x 73mm. Suitable for slides, multiwell plates, petri dishes, flasks and mounted metallurgical specimens.

H105

Ideal for larger specimens, this stage provides up to 153 x 153mm of travel. Ideal for 150mm semiconductor wafers, photo masks and printed circuit boards.

ProScan™II Advanced Controller

Like the ProScan™II range of motorized stages, this advanced controller is designed and manufactured by Prior Scientific. The compact unit enables control of a motorized stage, motorized focus, three filter wheels and three shutters with the speed, accuracy and precision demanded by advanced imaging applications. A fourth axis is also available to enable sample rotation or other custom applications. For triggering camera shutters, relays, linescan cameras or other peripheral devices the unit offers four TTL inputs and outputs. The controller is designed with simplicity in mind. System control using high-level software commands is possible via one of two RS232 ports or the new high speed USB interface. The ProScan™II controller has been specifically designed for control by third party software products and the new DLL ensures simple integration. For stand-alone use, without software, the system can be fully programmed and controlled via the Touch Screen Keypad.

Digipot Focus Only Control

The digipot is ideal for focus only systems. It provides a tactile feel for fine focus adjustments while separate buttons offer immediate control of focus speed and fast movements up and down, for coarse focussing.

Motorized Focus Control

ProScan™II is ideal for applications where motorized focus control is needed. Step sizes as small as 0.002µm give excellent resolution for precise focus and repeatable positioning in the Z-axis. For large movements when speed is required, the ProScan™II focus motor can be driven at speeds of up to 20 revs/s. An optional probe style encoder feedback system provides the highest accuracy and repeatability available.

Ergonomic Joysticks

Two or three axis joysticks are available with all stage systems to provide fast, responsive control of the stage. Two programmable Hot Keys are provided which can be used to put a variety of system controls at your fingertips.

H116

Provides a travel range of up to 255 x 215mm. The H116 is suitable for large specimens such as 200mm semiconductor wafers and flat panel displays. As with all Prior stages, a range of specimen holders is available.

H112

One of Prior's larger stages, the H112 provides up to 302 x 302mm of travel, ideal for 300mm semiconductor wafers.

HT5050

One of a range of solid frame stages with X and Y travel of up to 250mm x 150mm respectively, the HT5050 provides 50 x 50mm of travel. Designed for hardness testing machines, the HT stages can withstand loads of up to 100Kg.

with easy to use, menu driven functionality. All system components feature "plug and play" compatibility, allowing the system to automatically detect and configure the attached accessories on start up. For the most demanding applications ProScan™II is compatible with encoders and linear scales to offer the highest repeatability available. These can be fitted to most stages and motorized focus units, after which their output provides a closed-loop capability. This enables use of the system for direct measurement applications where the Touch Screen Keypad becomes a digital read out display.

Other options include autofocus, which uses a unique software algorithm for fast and accurate focussing of specimens. This option is available in both PAL and NTSC formats with six autofocus settings to perfectly match the algorithm with the specific objective lens in use. For specimens that are not uniform the area that the system uses for focus adjustment can be selected from pre-defined quadrants or a user specified focus zone. To ensure that the ProScan™II controller is as "future proof" as it possibly can be, the system uses Flash Technology to facilitate software and firmware upgrades.

Touch Screen Programmable Keypad

The Programmable Keypad features touch screen technology and a comprehensive yet intuitive software package which provides complete programmability and control of the whole ProScan™I system. A range of menus allow for programming of raster, snake and user-defined patterns which can be input, stored and recalled. Information on the current stage position is always available and points of interest can be saved for later review. Patterns and saved points can be downloaded to a PC for further analysis.

High Speed Filter Wheels and Shutters

The Filter Wheel system delivers smooth, high speed operation and changes filters in as little as 55ms. Two wheels are available to accept ten 25mm or eight 32mm diameter filters. The filter wheel can be fitted to the excitation and emission ports of your microscope and up to three filter wheels and three shutters can be operated from one controller under PC control or an optional filter wheel keypad. The unique design of this filter wheel allows filters to be changed with ease. A stand to support the illuminator and reduce vibration effects is standard. An optional sliding filter holder can be fitted for neutral density or infrared filters.

Precision Motorized Stages

Features

Adjustable Limit Switches

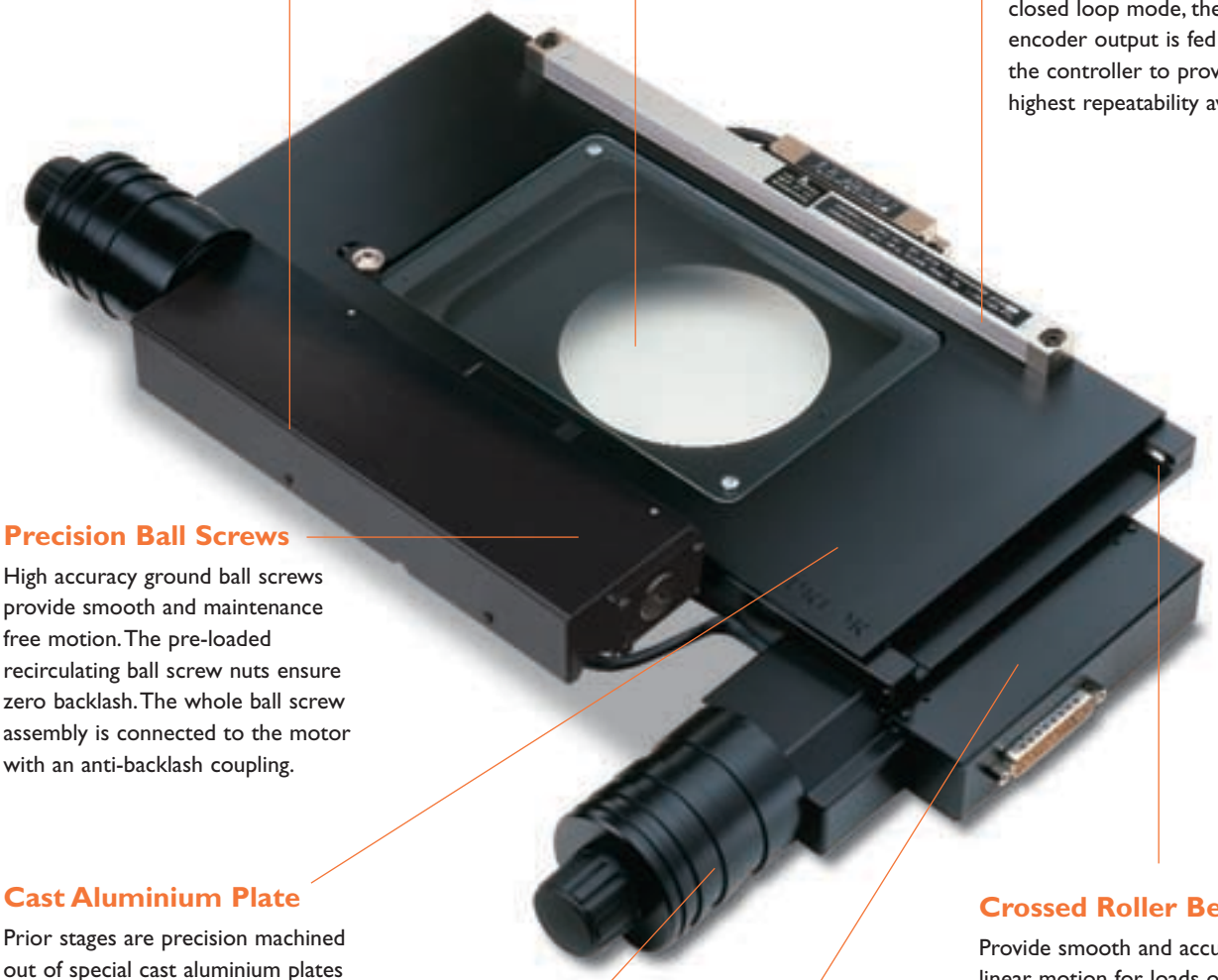
Provide the flexibility to reduce the travel range of the stage to match your application and to avoid damaging collisions with your microscope. The limits also provide a precision reference point.

Wide Range of Specimen Holders

ProScan™II stages are available for a variety of applications involving specimens such as slides, multiwell plates, petri dishes, metallurgical samples and semiconductor wafers. Specimen holders are black anodized to provide excellent wear resistance. Custom designs are always considered.

Linear Encoders

ProScan™II stages can be fitted with optional linear encoders for applications requiring greater precision. Encoder output can be fed to a digital read out for measurement applications. In closed loop mode, the encoder output is fed back to the controller to provide the highest repeatability available.



Precision Ball Screws

High accuracy ground ball screws provide smooth and maintenance free motion. The pre-loaded recirculating ball screw nuts ensure zero backlash. The whole ball screw assembly is connected to the motor with an anti-backlash coupling.

Cast Aluminium Plate

Prior stages are precision machined out of special cast aluminium plates which are lightweight and provide excellent dimensional stability.

Crossed Roller Bearings

Provide smooth and accurate linear motion for loads of up to 2Kg on open frame stages and 100Kg on solid stages.

Precision Stepper Motors

Quiet and precise stepper motors ensure precise positioning of the stage while the use of micro-stepping provides very smooth motion even at low speeds. Motor characteristics offer high acceleration and speeds up to 30 mm/s with 2mm pitch screws.

Intelligent Scanning Technology (IST)

This new and unique facility allows the controller to electronically interrogate the stage for a range of key performance characteristics and subsequently modify its control output to get the very best stage performance available. The stage model and serial number are also made available to assist with GLP compliance.

Specifications

Power	Universal mains input 115/230 VAC, 50-60Hz 200VA	Step Size	As small as 0.01µm in X and Y and 0.002µm in Z
Computer Interface	RS-232C and USB	Repeatability	Typically +/- 1µm depending on stage
RS232 Protocol	8 bit word, 1 stop bit, no parity, no handshake, baud rate of 9600, 19200 or 38400	Linear Slides	Crossed roller bearings
Controller Dimensions	Width 320mm; Height 80mm; Depth 260mm;	Drive Screws	Zero backlash, ground recirculating ball screws, 1, 2 or 5mm pitch
Controller Weight	2.2Kg (5 lbs)	Limit Switches	Adjustable in x and y axes (optional in z)
Stage Speed	up to 150mm/s (dependant on specifications of stage)	Accuracy	As good as 8µm depending on stage
		Flatness	5µm

Specials and OEM Systems

At Prior Scientific we control the design and manufacturing process for all our automated microscopy products. This way, we can be sure of offering the most flexible service. This approach along with our commitment to customer service means that Prior Scientific is uniquely positioned to provide complete systems to match your exact specifications.

The Design Engineering Department employs the latest in Computer Aided 3D modelling along with many years experience in the design and manufacture of scientific instruments. It is here that quality and reliability are designed into our products.

Advanced CNC machines and Computer Aided Manufacture systems are used to produce high quality components.

In assembly, experienced instrument makers build complete stage and controller assemblies with care and attention to detail.

It is this blend of skills, experience and flexibility that have established Prior as one of the world's leading manufacturers of automated microscopy products. Whether you need a standard product or a custom design, a single unit or OEM quantities Prior Scientific is the right choice!

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