



## Micromanipulators

### High Precision Micromanipulators from Sensapex



Prior Scientific is partnering with Sensapex to distribute their range of high precision, quality micromanipulators - ideal for electrophysiological work. Developed to provide the user with an easy to use and practical, yet technologically advanced system, these micromanipulators are suitable for the most demanding applications, and integrate perfectly with the Z-Deck, a stage for electrophysiological work manufactured by Prior Scientific.

- Excellent XYZ resolution (7 nm) and range (20 mm) gives this device both reach and accuracy
- Zero drift solid state technology helps achieve the most accurate results possible.
- Zero electrical noise is produced in recording mode, reducing interference with the experiment
- 14 micromanipulators can be assigned to one controller, reducing both space used and system cost
- Tunable high acceleration piezo thrusts allow clean cell membrane penetrations
- Easy to use pipette exchange mechanisms
- Both the micromanipulators and control units are as compact as possible, allowing multiple manipulators to an imaging system and saving valuable laboratory space
- Design results in reduced mechanical vibrations and thermal effects
- System can be operated via battery

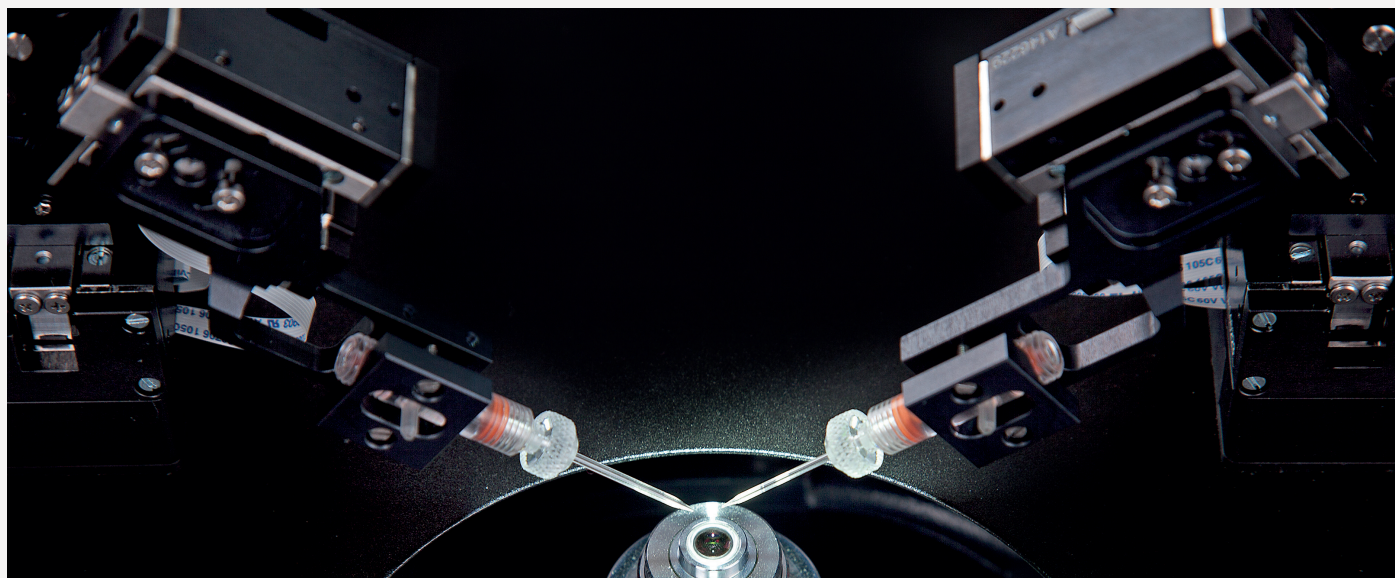
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### Comparisons with other micromanipulators

	Sensapex	Scientifica Microstar	Burleigh PCS6200	Sutter MPC-26
Operating Principle	Linear piezo drive	Stepper motor	Stepper motor and piezo	Stepper motor
Positioning Range (XYZ)	20/20/20	14/20/20	25/25/25 (motor) 0.15/0.15/0.15 (piezo)	12.5/25/25
Step Resolution	7 nm	20 nm	1.6 µm / 60 nm (piezo)	63nm
Max. speed (mm/s)	5 mm	NA	3.5 mm/s	2.9 mm/s
Size (W x H x L mm)	39 x 87 x 77	68 x 125 x 200	213 x 188 x 175	42 x 110 x 160
Cell impalement	Adjustable piezo thrust	NA	NA	NA
Controller (max. manipulators controlled)	Compact Stand alone Battery operated (14)	Rack controller Remote mains AC 50/60 Hz (2)	Controller Box + remote AC 50/60 Hz (2)	Rack controller + remote mains A50/60Hz, (2)
Pipette Exchange	Back flip + slide Side rotate + slide	Back Slide	Back slide Side rotate	Side rotate
PC Control	USB Free open source software	USB Free Software	USB Free Software	USB Free Software
8 manipulator system control equipment	1 controller Connector hub	4 rack controllers 4 remotes	4 table top controllers 4 remotes	4 table top controllers 2 remotes

Sensapex manufactures its products on Oulu, Finland.



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### Micromanipulator Specifications

Size (mm)	39 x 87 x 77 mm
Step resolution (nm)	7 nm
Positioning range (mm)	20 x 20 x 20 mm
Max Speed (mm/s)	5 mm/s
Load	0-70* g/ 70-120** g
Approach angle	0-50* degrees / 40 - 90 degrees**
Weight	295 - 375
Table mounting	magnet and bolt
Electrode exchange	back flip/ side rotate with slide option
4th virtual axis	orthogonal positioning in angled approach

\* = standard load, \*\* = heavy load.

### System Configuration

The micromanipulators can be customised for plug and play installation using a selection of standard options. The configuration is reflected in the product code as illustrated below. Please note that custom options and accessories such as special stands and tool holders may be available on request.

Manipulator	Handed	Rotation	Degree angle	Heavy load version?*
SMX	R (Right)	F (back flip)	50 (0-50 degree angle)	HL - Heavy load
	L (Left)	R (Side rotate)	90 (40-90 degree angle)	
		FS (Back flip + slide)		
		RS (Side rotate + slide)		

\* Leave blank for 0-70 g standard load range. Heavy load option is 7- - 120 g and is limited to 0-30 approach angle.

E.g. SMX-R-RS-50 gives a Standard Right Handed Micromanipulator with side rotate and slide with a 50 degree approach angle

### Z-Deck

These micromanipulators are ideal for incorporating into an electrophysiological system based around the Z-Deck Quick Adjust Platform System. This lowers quickly and easily, and provides easy access for loading and unloading of samples. The standard version of the Z-Deck has a precise motorised stage, controllable via the ProScan<sup>®</sup> system. Other versions have a manually adjustable or fixed stage for experiments that require electronic noise to be absolutely eliminated. The large surface area provides plenty of space for adding micromanipulators and other needed instruments, and Köhler illumination is available at a range of focus heights. For more information, please visit [www.prior.com](http://www.prior.com).



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