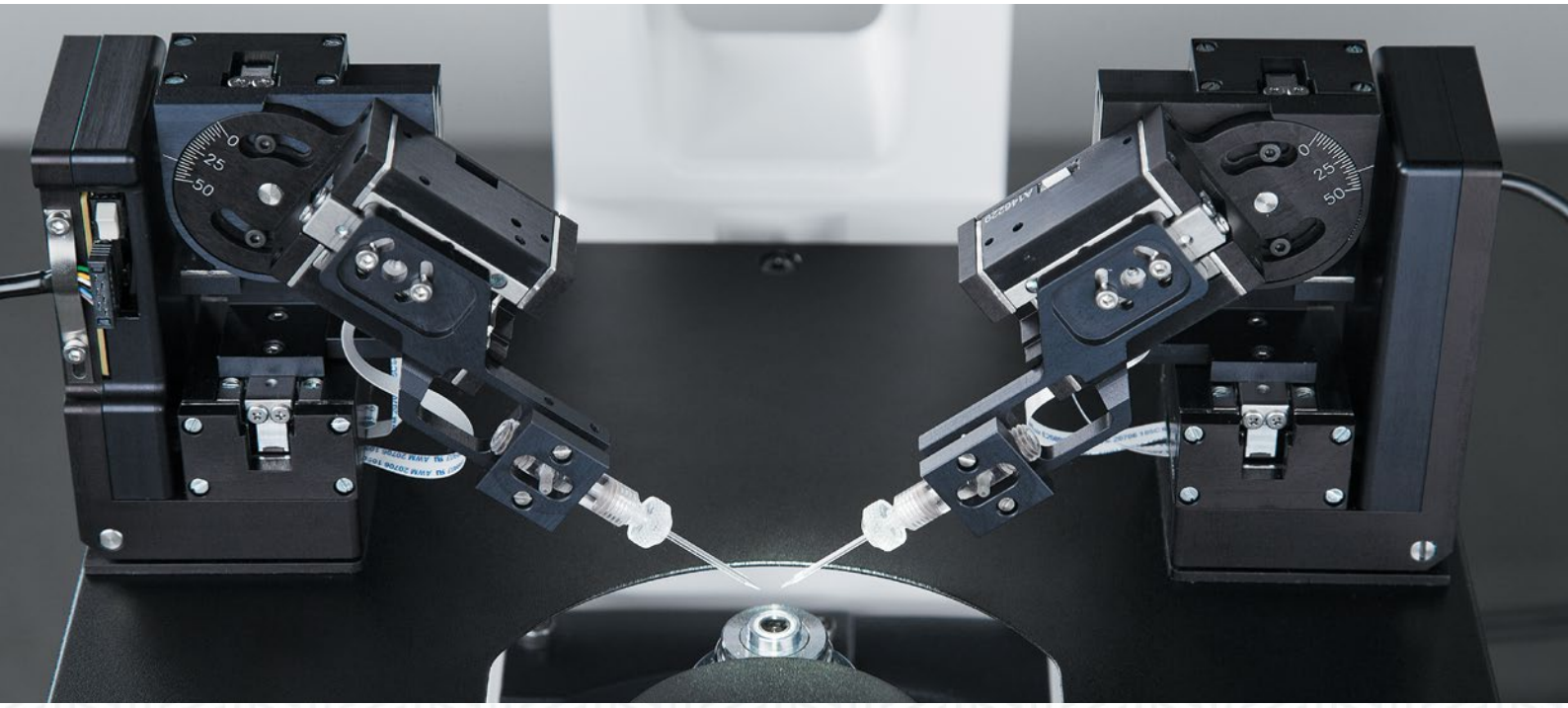
SENSAPEX

Smart instrumentation solutions for Life Science



SMALLEST FULLY FEATURED MICROMANIPULATOR PROVIDES 20 MM OF PRECISE PIEZO-MOVEMENT IN ALL AXES!

- High-precision positioning with great finger-tip feeling
- Superior stability with drift free piezo-drives
- True approach angle and virtual 4th axis
- Battery operated stand-alone controller with rotary encoders
- Power-off recording mode for zero electrical noise
- Flip | slide | rotation –mechanisms for easy electrode exchange
- Plug-and-play installation of up to 14 micromanipulators

REFERENCES

Brandeis University · California Institute of Technology · Harvard University · HHMI Janelia Farm Research Campus · UCL · mpibrain research · Georg-August-Universität Göttingen · National Institutes of Health · Stanford University · Univerza v Ljubljani · University of Copenhagen · University of Oulu · The University Of Sheffield. · Université de Reims Champagne-Ardenne · Universität Würzburg

Designed to meet your needs

High positioning resolution provides precise approach for high quality seals in patch-clamp experiments. A distinct penetration mode offers high acceleration piezo-thrusts for clean cell impalements in sharp recordings. Small size enables easy installation and use in space constrained imaging and multiple micromanipulator systems. The electrode exchange through the memory positions and quick electrode retrieve/return mechanisms is as convenient as it gets. The Sensapex micromanipulators will make your experiments easier and more successful!

Latest technology

New technologies facilitate new discoveries. We have developed our micromanipulators in co-operation with top neuroscientists to provide uncompromized performance and usability while reducing the size more than three fold from existing products. Our proprietary positioning technology is based on piezo-drives (pat. pending), which hold their current position when powered off. This makes them inherently drift and noise free during the recordings.

Smaller size equals better stability

Small size enables installation close to the target to reduce lever arms for the environmental vibrations. It also helps to minimize the thermal drifts: for example a 200 mm block of aluminum will change its length by 1 µm for 0.25 °C temperature change. Smaller size means better stability.

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”It may be the best piece of electrophysiology hardware I have laid my eyes upon since npi amplifiers”

Dr. Bart Geurten, Göpfert Lab, Georg August Universität Göttingen

Our micromanipulators provide up to 40 % more high precision movement range in 3 to 30 times smaller size in comparison to the closest competitors. One of the key themes in the design was to make the system as easy to expand as possible. No need for rack-mounted controllers – our compact stand-alone controller with rotary encoders supports plug-and-play installation of up to 14 micromanipulators! We can offer the most convenient and cost efficient way to build multiple micromanipulator setups.

Comparison

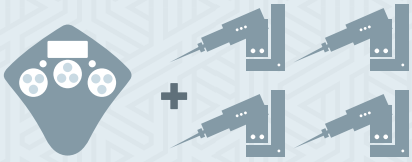
	SENSAPEX	SCIENTIFICA MICROSTAR	BURLEIGH PCS6200	SUTTER MPC-265
Operating principle	Piezo-drive	Stepper motor	Stepper motor + piezo drive	Stepper motor
Positioning range X/Y/Z [mm]	20/20/20 (piezo)	14/20/20	25/25/25 (motor) 0.15/0.15/0.15 (piezo)	12.5/25/25
Step resolution	10 nm	20 nm	1.6 µm (motor) 60 nm (piezo)	63 nm
Max. speed [mm/s]	5 mm/s	NA	3.5 mm/s	2.9 mm/s
Manipulator size [10E6 mm^3]	0.28	1.7	7.0	0.74
Dimensions [WxHxL mm]	39/93/77	68x125x200	213x188x175	42x110x160
Cell impalement	Adjustable piezo thrusts	Stepper motor	Analog piezo movement	Stepper motor
4th axis	True approach angle; virtual orthogonal positioning	Orthogonal positioning; virtual approach angle	NA	Orthogonal positioning; virtual approach angle
Electrode retrieval	Back-flip Back-slide Side-rotate	Back-slide	Back-slide Side-rotate	Side-rotate
Auxilary equipment required in a setup with eight micro-manipulators	1 controller 1 hub €	4 rack controllers 4 remotes € €	4 table top controllers 4 remotes € €	4 rack controllers 2 remotes € €

“It is a dream to use. It has run stably without any issues or hiccups, the preset speeds are great, covering the full range of what I need”

Dr. Christian Wilms, Häusser Lab, University College London

Single micromanipulator system
starting from 6950 €

Dual micromanipulator system
starting from 10400 €



Four micromanipulator system
starting from 17300 €

Prices are for Plug-and-Play systems with standard accessories

Micromanipulator

Positioning range:	20x20x20 mm3 (X/Y/Z)
Step resolution:	10 nm
Max. speed:	5 mm/s
Load:	0 - 70 g I 70 - 120 g*
True approach angle:	0 - 50 I 40-90 degrees*
Dimensions:	39x93x77 mm
Weight:	295-375 g

Controller

Rotary optical encoders and backlit display	
Six speed settings + Impalement mode	
Programmable Home and Target positions	
Batteries:	Li-ion (rechargeable), up to 1 week usage time
AC charger:	90-264 V, 50-60 Hz
Dimensions:	190 x 210 x 40 mm
Weight:	510 g

Table mounting:	magnet & bolt
Electrode retrieval:	back-flip I back-slide** I side-rotate
4th virtual axis:	orthogonal positioning in angled approach

Electrode holder and head-stage mounting kits available

Single controller can operate up to 14 micromanipulators

Powered-off recording mode

USB computer interface + software development kit

2 year warranty with free firmware updates for registered users

**70-120 g option is compatible with 0-30 degrees true approach angle*
***Back-slide is always combined with back-flip or side-rotate*

Configuration

The micromanipulators can be customized for plug-and-play installation using 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, are available on special request.

SMX-	**1R_** (single R-handed)	**F** (back-flip)	**50** (0-50 degrees angle)	**EUR** (EUR plug)
	1L_ (single L-handed)	**R** (side-rotate)	**90** (40-90 degrees angle)	**US** (US plug)
	2_ (dual manipulator system)*	**FS** (back-flip + back-slide)		**GB** (GB plug)
	X_ (X=3-14; multiple manip system)**	**RS** (side-rotate + back-slide)		**JPN** (JPN plug)

**Note that dual system includes right- and left-handed micromanipulators.*
***Please specify handidness of the micromanipulators.*

Example: SMX-1R_F_50_EUR is a single micromanipulator system with right-handed micromanipulator, back-flip electrode exchange mechanism, 0-50 degrees approach angle and EUR power plug.

We offer global sales and after-sales support. Please contact us to schedule a product demonstration in your laboratory.

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