



MP-285
Motorized Micromanipulator

One of the first in our line of precision motorized micromanipulators, the MP-285 is affordable yet offers advanced features found in manipulators costing thousands more. Custom engineered stepping motors, precision cross-roller bearing slides and proprietary worm gear capstan drives form the basis of the watch-like mechanical system. The controller provides power to the stage motors with a quiet linear power supply to minimize electrical noise radiation in your setup. Pipette holders and headstages are securely mounted to the MP-285 with one of our several unique and rigid mounting systems.

The MP-285 was designed to meet a wide variety of positioning needs for the scientific community, and is suitable for patch clamp experiments, extracellular recording, microinjection, intra-cellular recording and precision robotic positioning applications. An outstanding feature of this system is the unique definable 4th axis for diagonal advancement of the pipette. You select the angle, then activate the 4th axis. As with the other three axes, you may move with adjustable coarse or ultrafine resolution, select the movement speed, and move continuously or in single step increments. To quickly reposition the pipette, simply select the Home function. Axes positions are continuously shown in relative and absolute scales, and are easily readable on the vacuum fluorescent display.

The extremely low backlash of the MP-285 removes traditional drawbacks of "open loop" technology and eliminates drift. This allows submicron resolution down to 0.2 microns in the coarse range and down to 40 nanometers in the fine range. With over 1 inch of motorized travel on all three axes, and a user designated 4th axis, the MP-285 allows tremendous range of motion while maximizing resolution.

In all our manipulators, the 4th axis can be set up and changed without the need to connect an external computer and download and configure software. Unlike other designs, the virtual 4th axis in the MP-285 can comprise any two axes—conventional X-Z to approach along the pipette axis, Y-Z used when the manipulator is rotated 90 degrees, and you can even set up a virtual diagonal in the X-Y plane: useful when the manipulator is set up as a 3DMS (3D movable stage) and one wants to quickly move along the diagonal between two points on a horizontal specimen.

Available with a table-top or rack mounted controller, our manipulator fits in seamlessly with your other components while the compact design and assignable axes of the MP-285 allows you to easily integrate it into your setup at any orientation. To add to its practicality, the rotary optical encoder (ROE) assures a comfortable experimentation environment customized to the scientist.

For users who require repeatable motion sequences, the MP-285 features easily programmed robotic control from the keypad, or via a remote computer. The system can store up to 500 position instructions, including pauses, and will execute the instruction set once, continuously, or in reverse.

As always, our technical support team is available to address your concerns and answer all questions before, and after your purchase.

FEATURES

- Quietest electronics in the industry optimized for single channel recording
- Highly stable for experiments intolerant of pipette drift
- Submicron resolution and integrated coarse positioning
- 1 inch of motorized travel on all three axes
- virtual 4th axis with user-selected angle for axial drive
- Adjustable speed and resolution allows optimization for your experimental setup
- Programmable robotics for complex motion sequences
- Continuous display (in microns) of axes positions
- Switch between continuous or single step movement
- Absolute and relative origins
- Convenient Home function allows pipettes to be quickly repositioned
- Assignable axes permit any orientation of the manipulator
- Easy-to-read vacuum fluorescent display
- Remote computer control via serial interface
- Compact design easily adaptable to your setup
- Universal mounting system for headstage or pipette holder
- Optional mounting adapters (see price list)

TECHNICAL SPECIFICATIONS

Travel

1 inch | 25 mm on all three axes

Resolution

Low: 0.2 $\mu\text{m}/\text{step}$

High: 0.04 $\mu\text{m}/\text{step}$

Maximum Speed

2.9 mm/sec

Long Term Stability

<10 nm/hour at 24 deg C.

Drive Mechanism

Precision worm gear

Capstan drive

Serial Interface

RS-232, 9600 baud

(1 start bit, 8 data bits, 1 stop bit)

Dimensions

Mechanical

4.5 in x 6 in x 6.25 in | 11 cm x 15 cm x 16 cm

Controller

16 in x 10.75 in x 3.75 in | 40.6 cm x 27.3 cm x 9.6 cm