



MP-285 ROBOTIC MICROMANIPULATOR



(Shown with ROE input device)

FEATURES MP-285

- Highly stable for experiments intolerant of pipette drift
- Sub-micron resolution and integrated coarse positioning
- 1 inch of motorized travel on all three axes
- Virtual 4th axis can be set without need of external computer or software
- 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)



The flagship in our line of precision micromanipulators, the motorized 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 MP285 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, your choice of one of two manual controls: joystick or 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.



CHOOSE ONE OF TWO INPUT DEVICE OPTIONS

1) Rotary Optical Encoder (ROE). Turning one of three 2-inch knobs produces a movement along one axis proportional to the amount and speed of the turn. Buttons allow the activation of "4th axis", change of movement resolution, "Home" return function, and toggle between continuous pulse movements.

2) Joystick. Our joystick is a modified three-axis game controller. The degree of handle deflection determines the velocity of movement of each axis. In pulse mode, a button commands the manipulator to take a single step in the axis selected by joystick deflection.

SPECIFICATIONS MP-285

■ Travel	1 inch 25mm on all three axes
■ Resolution	Low: 0.2µm/step High: 0.04µm/step
■ Maximum Speed	2.9mm/sec
■ Long Term Stability	<10nm/hour at 24deg C
■ Drive Mechanism	Precision worm gear capstan drive
■ Serial Interface	RS-232, 9600 baud (1 start bit, 8 data bits, 1 stop bit)
■ Dimensions	<i>Mechanical:</i> 4.5in x 6in x 6.25in 11cm x 15cm x 16cm <i>Controller:</i> 16in x 10.75in x 3.75in 40.6cm x 27.3cm x 9.6cm
■ Weight	<i>Manipulator:</i> 3.85lb/1.7kg <i>Controller:</i> 10lb 11oz/4.5kg
■ Electrical	115/230 Volts 50/60 Hertz power line





MP-285

- **MP-285/R** Includes manipulator, rack mount controller unit, cables, rod holder, hinged headstage mount, 4 inch dovetail extension, mounting adapter plate, choice of input device, power cord, and manual
- **MP-285/T** Includes manipulator, table top controller unit, cables, rod holder, hinged headstage mount, 4 inch dovetail extension, mounting adapter plate, choice of input device, power cord, and manual

When ordering the MP-285, the following items must be specified. Please list as separate items with no cost.

Choose one input device

Rotary Optical Encoder

285ROE

Joystick

285JOY**Select the manipulator handedness**

Right handed setup

RIGHT

Left handed setup

LEFT

If you have any questions regarding the part numbering system, please contact Sutter Instrument Company directly.

ACCESSORIES MP-285

- **285204** 4 inch dovetail extension
- **285210¹** Mounting adapter plate
- **285RBI** Rotating base for MP-285
- **285300** Right angle adapter
- **285305** Z-axis vertical extension
- **285310** Z-axis horizontal extension
- **BR-AW** Rod holding clamp for XenoWorks injectors
- **MP-ROD** Rod holder
- **285HEA** Hinged headstage mount
- **M100106** Flat side panel for controller (each)

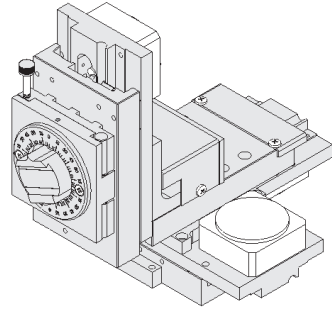
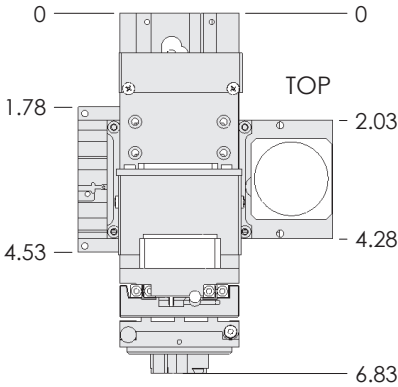
For detailed information on mounting our micromanipulators, refer to the Mounting Systems section or phone Sutter for assistance.

¹ *For use with MT and MD series stands and platforms, or any surface with 1 inch centered holes.*

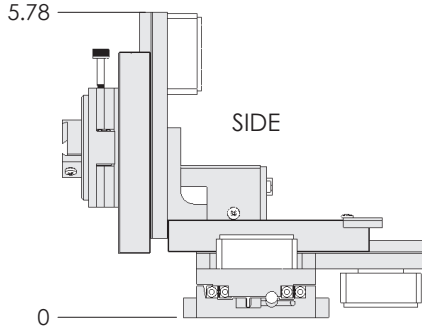
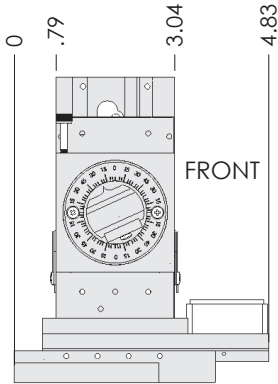


MECHANICAL DRAWINGS MP-285

MICROMANIPULATION

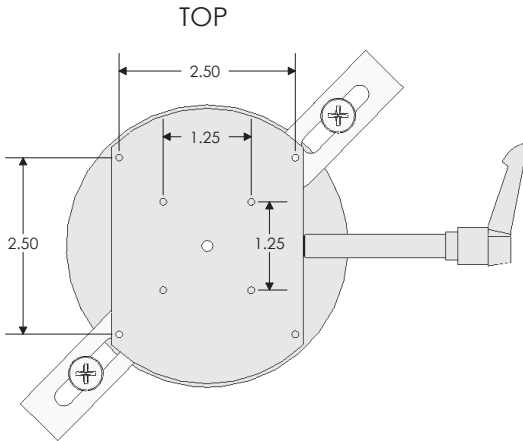


*ALL MEASUREMENTS ARE IN INCHES





MECHANICAL DRAWINGS OPTIONAL ROTATING BASE (285RBI OR 225RBI)



*ALL MEASUREMENTS ARE IN INCHES

