

## MP-285 ROBOTIC MICROMANIPULATOR

## MP-285 电动显微操作器



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.

马普科学仪器有限公司

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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.

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.

## 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

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)

## 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: 0.2 $\mu$ m/step

High: 0.04 $\mu$ m/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

*Mechanical:* 4.5in x 6in x 6.25in  
11cm x 15cm x 16cm

*Controller:* 4in x 16in x 12.25in  
10cm x 40.5cm x 31cm

#### Weight

*Manipulator:* 3.85lb/1.7kg  
*Controller:* 10lb 11oz/4.5kg

#### Electrical

115/230 Volts  
50/60 Hertz power line



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**US PRICES**  
**> MP-285**

*International prices are 5% higher.  
 Prices subject to change without notice.*

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

**MP-285/3Z** Includes 3 independant Z axes with extra load carrying capacity. 22mm travel in each axis. Paired with standard MP-285 controller and ROE. Designed to provide 3 axes of movement in a moveable objective microscope. Not intended to be used as a micromanipulator!

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

**Choice of one input device**

Rotary Optical Encoder  
 Joystick

**285ROE**  
**285JOY**

**The handedness of the manipulator**

Right handed setup  
 Left handed setup

**RIGHT**  
**LEFT**

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

**ACCESSORIES**

<b>X285204</b>	4 inch dovetail extension
<b>X285210*</b>	Mounting adapter plate
<b>285RBI</b>	Rotating base for MP-285
<b>X285300</b>	Right angle adapter
<b>X285305</b>	Z-axis vertical extension
<b>X285310</b>	Z-axis horizontal extension

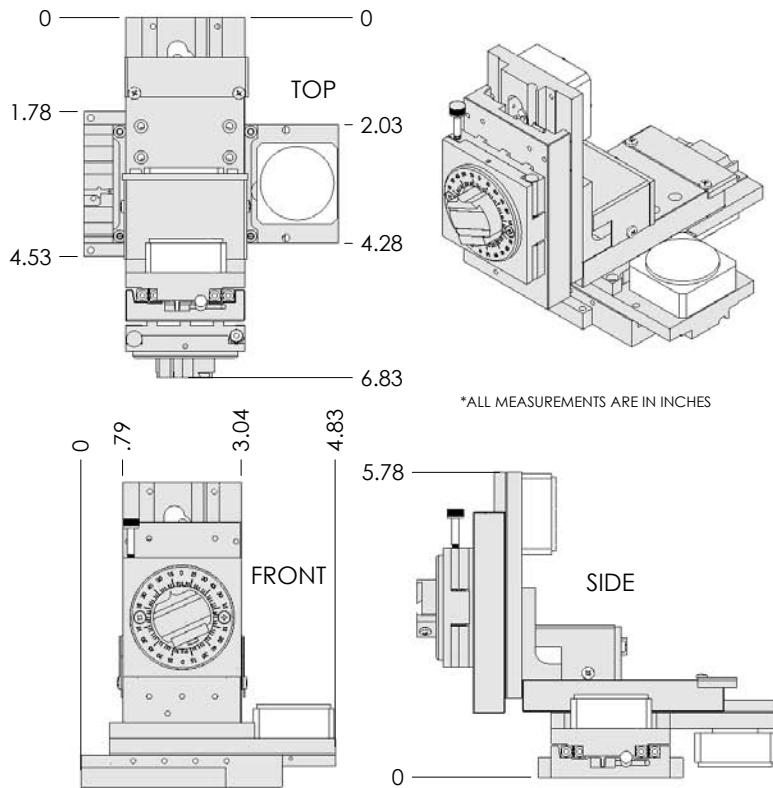
*For detailed information on mounting our micromanipulators, refer to the Mounting Systems section or phone for assistance.*

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

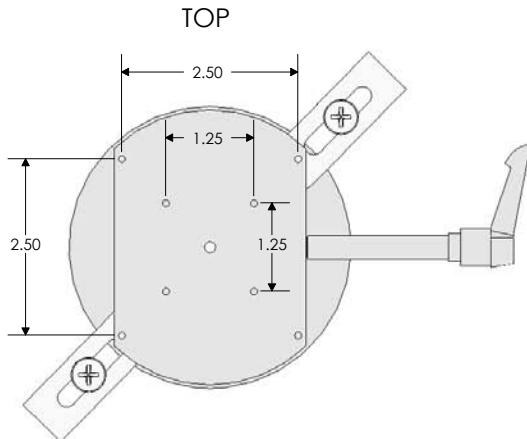
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## MECHANICAL DRAWINGS MP-285



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



\*ALL MEASUREMENTS ARE IN INCHES

