



**CONTROLS ONE OR TWO MANIPULATORS**  
**SUB-MICRON (LESS THAN 100  $\mu$ m) RESOLUTION**  
**USER SELECTABLE ANGLE FROM 0 - 90 DEGREES VIA ROE INPUT**  
**FAST MOVEMENT WITH A TOP SPEED OF 3 mm/sec (WHILE HOMING)**  
**COMPACT, FANLESS, USER-FRIENDLY, ROE CONTROLLER PRESERVES BENCH AND RACK SPACE**  
**MULTIPLE PUSH BUTTON FUNCTIONS – WORK, HOME, LOCK, PULSE, RELATIVE, SPEED & ANGLE**  
**DIP SWITCHES ON ROE SELECT DIRECTION OF MOVEMENT PRODUCED BY TURN OF ROE KNOB**  
**USB INTERFACE FOR COMPUTER CONTROL**



(Shown: TRIO MPC-145-2 with Sutter dPatch<sup>®</sup> headstage (not included))

## TRIO™ MPC-100 SYSTEMS THREE-AXIS MICROMANIPULATOR SYSTEM

Based on the original TRIO™ manipulator, the latest **TRIO MPC-100** system expands TRIO's capabilities, and now supports up to TWO manipulators from a single controller.

The compact design of the integrated Rotary Optical Encoder (ROE) controller requires minimal bench space; provides quiet, fan-free operation; and is easy to use. No rack mounted controller is required. Position coordinates, in relative or absolute values, are displayed directly on the ROE. The **TRIO MPC-100** uses a logarithmic acceleration algorithm that eliminates the need for speed selection. As the knobs on the ROE are turned faster, acceleration ramps up. This allows for smooth and intuitive motion control of electrode position without the need to stop and change speeds or lift your hand from the controller. When not moving, the motors are powered down, reducing electrical noise in the system to unmeasurable levels which keeps the motors cool to eliminate thermal drift.

Five conveniently located buttons control all the functions you will need in normal operation. Press and hold the [WORK] button to quickly store a work

position; pressing [WORK] after this will return the manipulator to the same location. [HOME] sends the manipulator to a second position, often set for a point furthest from the microscope, which is useful for rapid pipette exchange. Pressing [SPEED] allows the selection of one of 4 speed ranges. With practice, there is no need to ever change speeds, however, we have included three low speed ranges for those who work at very high magnification. Holding [SPEED] for three-seconds will lock the knobs out, to prevent accidental movement. Display coordinates can toggle between relative and absolute by pressing the [RELATIVE] button; holding the button down will zero the relative coordinates. Finally, [PULSE] activates a pulse movement mode that produces small, rapid bursts of motion that can be advantageous for cell penetration with sharp electrodes. Hold [PULSE] for three-seconds to set or modify the 4th axis angle between 0 and 90 degrees.

Designed with maximum flexibility in mind, a DIP switch on the controller changes the directional movement of the ROE knobs to accommodate the preference of the user. A Y-axis lockout function (accessible by DIP switch) is also available, allowing

X/Z-only axial movement during HOME and WORK repositioning. The TRIO comes standard with a universal mounting system suitable for the most popular headstages or pipette holders.

The new **MP-845** micromanipulator features construction based on the **TRIO-245**, but with the addition of precision cross-roller bearings for even tighter tolerances, and a 25-pin connector for future compatibility with our other controllers. The **MP-845** is a highly stable 3-axis manipulator with 25 mm of travel on each axis. The **TRIO MPC-100** controller gives the **MP-845** a synthetic 4th axis that can be set in software to any angle between 0 and 90 degrees for diagonal movement. Based on a lead-screw design with a smaller overall size and footprint than most manipulators, the **MP-845** is ideal for applications that require 2 pipettes in one setup or for setups where space is limited.

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**SUTTER INSTRUMENT**

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The **MP-845** manipulator is now also available in stainless steel! The standard version of the **MP-845** has virtually no drift in its motor and bearing assemblies. The last remaining hurdle is that of thermal drift caused by the expansion and contraction of the aluminum body of the manipulator. By utilizing a stainless steel with very low coefficient of expansion, the **MP-845S** is simply the lowest drift manipulator available on the market. The added mass of the stainless steel body has the additional benefit of dampening out vibration, giving the stainless **MP-845S** the silkiest movement of any manipulator.

Because low expansion stainless steels do have some ferric content, the stainless **MP-845S** is PVD coated in titanium nitride, giving it its distinctive gold color. This coating will ensure that the stainless trio will resist corrosion caused by exposure to salt solutions in a lab environment.



(TRIO MP-845S)

*ADDITIONAL FEATURES:*

TRIO MP-845 MECHANICAL

- Now also available in thermally stable stainless steel
- Mechanically robust construction for high stability
- Precision cross-roller bearings
- Three independent axes – 25 mm orthogonal travel in X, Y and Z
- Carries up to a kilogram
- Suited for *in vivo* and *in vitro* electrophysiological recording
- Universal mounting system for headstage or pipette holder

- MPC-145** **ALUMINUM**  
One MP-845 manipulator mechanical, one TRIO MPC-100 controller, mounting adapter plate, rod holder, hinged headstage mount, 4 inch dovetail extension, manipulator connecting cables, power cord and manual (please specify right or left handed)
- MPC-145-2**  
TRIO MPC-145 with (2) MP-845 (please specify right or left handed)
- MPC-145S** **STAINLESS STEEL**  
One MP-845S manipulator mechanical in stainless steel, one TRIO MPC-100 controller, mounting adapter plate, rod holder, hinged headstage mount, 4 inch dovetail extension, manipulator connecting cables, power cord and manual (please specify right or left handed)
- MPC-145S-2**  
TRIO MPC-145 with (2) stainless steel MP-845S mechanicals (please specify right or left handed)
- MT-78-FS** **FIXED STAGE PLATFORM**  
Fixed platform stage with imperial/standard holes, chamber insert and gantry supports
- MT-78-FS/M6**  
Same as above with M6 tapped holes
- MT-75** **MANIPULATOR COLUMNS**  
Standard gantry stand  
8.7 to 13.4in (22.1 to 33.9 cm)
- MT-75S**  
Short gantry stand  
6.7 to 9.6 in (16.9 to 24.4 cm)
- MT-75T**  
Tall gantry stand 1  
0.7 to 15.4 in (27.1 to 39.1 cm)
- MT-75XT**  
Extra tall gantry stand  
14.7 to 18.5 in (37.4 to 47 cm)