



OBJECTIVE MOVES 22MM IN X, Y, AND Z

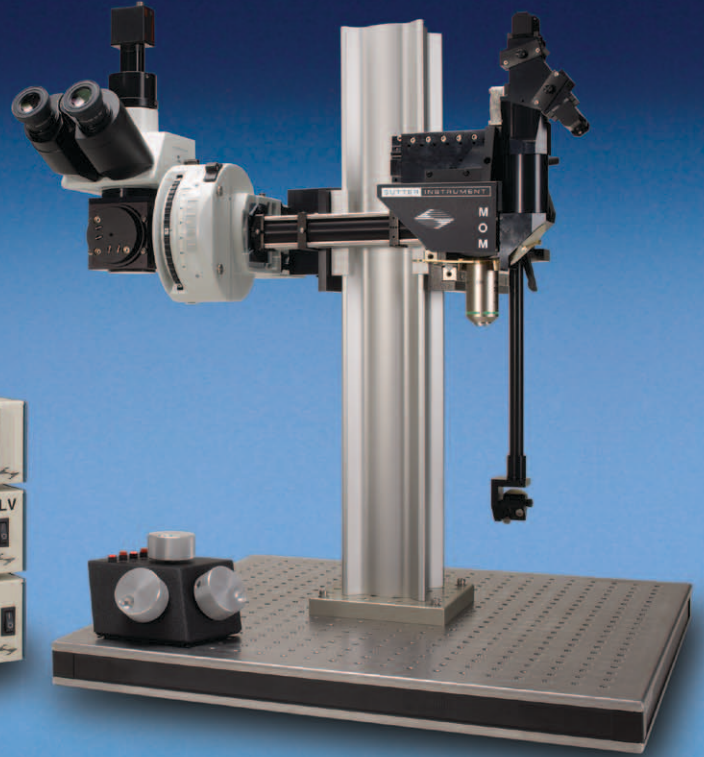
OBJECTIVE ROTATES ABOUT OPTICAL AXIS FOR IMAGING OF NON-HORIZONTAL SURFACES AND VOLUMES

CUSTOMIZABLE OPEN PLATFORM DESIGN

CAMBRIDGE TECHNOLOGY XY SCANNERS

TWO OR FOUR CHANNEL DETECTOR SYSTEM WITH HAMAMATSU PMTs AND PREAMPLIFIERS

SUTTER PS-2/PS-2 LV DUAL CHANNEL PMT POWER SUPPLY



(Shown with optional trinocular head and CCD camera. Objective not included)

MOM: MOVABLE OBJECTIVE MICROSCOPE

The Movable Objective Microscope (**MOM**) is a two-photon microscope capable of imaging deep within living specimens when combined with a Ti:Sapphire laser. The **MOM** design is unique in providing 3-dimensional objective movement and rotation allowing the specimen to remain stationary. Many highly regarded imaging laboratories around the world use **MOM** microscopes and we constantly work with our customers to adapt the design for their changing needs.

Starting in 2011, we have begun offering the **MOM** Computer System with software (MCS). The **MCS** is designed to take advantage of the **MOM**. As a result, when combined with MCS, the **MOM** becomes a powerful tool capable of combining electrophysiology with large scale imaging experiments in both two and three dimensions.

How it works:

The **MOM** consists of two independent microscopes. The widefield half of the microscope consists of an Olympus vertical illuminator, Sutter Xenon arc lamp and camera mount to provide standard epifluorescence. The two-photon side of the microscope provides the optical pathway for guiding the excitation laser light from the table up into the scanning galvanometric mirrors and then expanding the beam through the scan lens and directed into the back of the objective. Following two-photon excitation, the emitted photons are directed by a dichroic mirror immediately above the objective into the detection pathway. The main body of the microscope translates on a rail system to allow easy access to the specimen prior to imaging.

The objective translates in X, Y and Z as well as rotates around the X axis. Two moving mirrors

allow the microscope to maintain efficient delivery of the excitation light to the back aperture of the objective regardless of movement or orientation. The X,Y and Z movements used are the same as that in our MP-285 micromanipulator so you know the movements are smooth, fine in scale, drift-free and highly reproducible. These movements permit Z-stacks and mosaic images of large regions of tissue to be recorded without the need for a moving stage.

The horizontal light path allows for rotation of the objective away from the standard vertical position. As a result of this rotation, the **MOM** can easily be converted from an upright to an inverted microscope and the objective positioned from 0 to 180 degrees. This positional freedom permits the imaging of nonhorizontal surfaces and volumes.

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SUTTER INSTRUMENT

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Sutter **MOM** packages include all of the equipment (less the Ti:Sapphire laser and objective), needed for a complete imaging system.

- Cambridge Technology XY galvanometric scanners with 3 or 6 mm mirrors
- Hamamatsu photomultiplier tubes (PMTs): R6357 multialkali or H10770PA-40 (GaAsP) products. Sutter is an authorized reseller for Hamamatsu
- Power supplies for PMTs: Either a Sutter PS-2 (dual channel high-voltage power supply for R6357 PMTs) or Sutter PS-2LV (dual channel low-voltage power supply for H1070 (GaAsP) PMTs) can be ordered.
- Hamamatsu C7319 or Sigmann pre-amplifiers
- Data acquisition: National Instruments acquisition boards (NI-6110E)

APPLICATIONS

- In vivo two-photon imaging
- Patch-slice, fixed-stage microscopy
- Non-horizontal surface microscopy
- Simultaneous retinal stimulation and two photon microscopy*

*"Eyecup scope-optical recordings of light stimulus-evoked fluorescence signals in the retina", Euler et al, Pflugers Arch, 2008

MOM BASIC SYSTEM FOR 2-PHOTON MICROSCOPY

Includes Moving Objective Microscope, 2 channel detector with PMTs, preamps and PS-2 Power supply, XY scanners with servo drive, wide field fluorescence unit including vertical illuminator, Lambda LS 300 Watt Xenon Arc lamp, LLG and light guide adapter, C-mount for wide field camera, data acquisition system

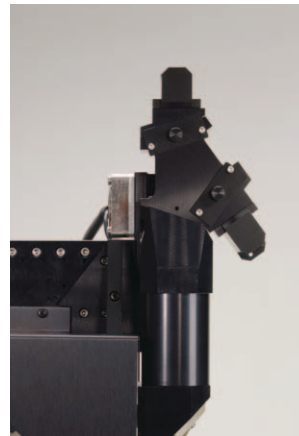
MOM-3MM¹ MOM System with 3mm XY scanners

MOM-6MM¹ MOM System with 6mm XY scanners

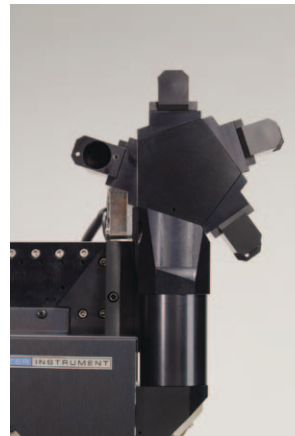
¹ Final pricing depends on detector path selected and does not include several devices necessary for a complete 2-photon microscope (i.e. Ti:Sapphire laser, objective, camera, trinocular head, table mount optics). Please phone Sutter for details.



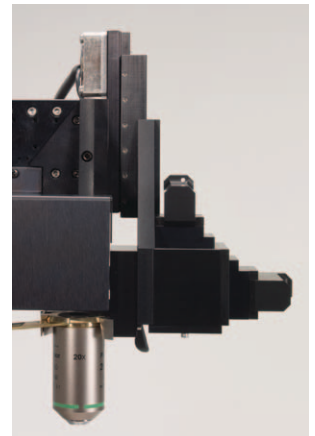
RoHS Compliant



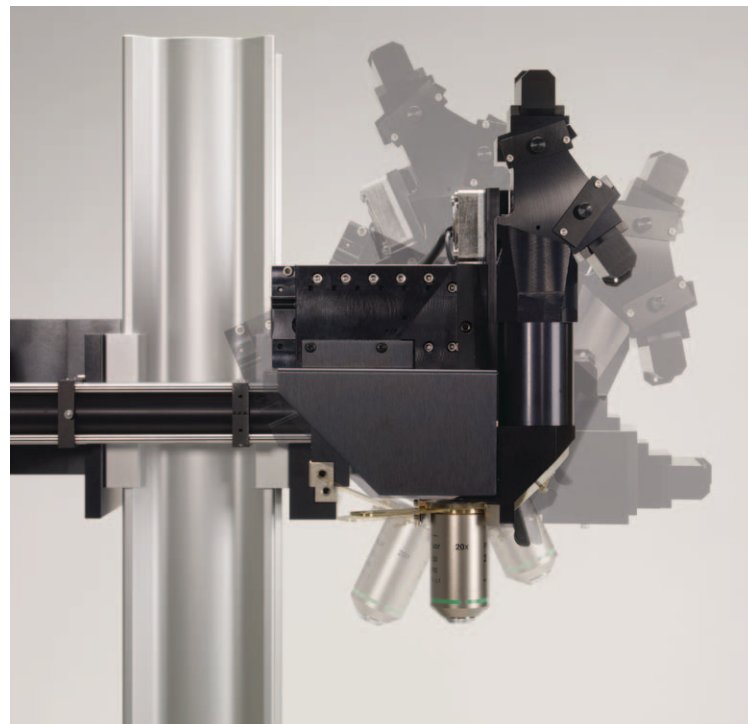
2 channel



4 channel



Short path (2 channel)



The MOM is both an inverted and upright microscope with 0 to 180° rotation