

## Introduction

The Model 4060 probe station, in either 6" or 8" form, is designed to be the workhorse of the analytical probing lab. The 4060 design is based upon the Micromanipulator Model 8060 probe station which is recognized worldwide as the premium manual 8" (200mm) analytical probe station.

The 4060 was designed to retain the stability, open design and precise mechanics that make Micromanipulator's probing stations the world standard, yet provide a more economical station for those customers not needing the low current capability, extreme precision of positioning and additional convenience features of the 8000 series. The Model 4060 prober provides a capable probe station solution for everyday analytical probing.

The Model 4060 retains Micromanipulator's commitment to full probing accessories supporting probe card holders, wide range thermal chucks with internal plumbing options, laser cutters and motorized 'hands-off' manipulators.

The 4060 also may be upgraded with a platen fast lift microscope lift delay, 8" Z range microscope drive and integrated dry environments for sub-ambient probing.

The Model 4060 is a cost effective solution to today's analytical probing application.

## Features and Benefits

- Manual control of stage, platen and microscope for quick measurements.
- 4"x4"x2" X-Y-Z microscope control allows precise manual control of microscope positioning.
- Solid four point platen support/lift mechanically isolated for stability.

- Gold plated 6- or 8-inch (150mm or 200mm) vacuum chuck with either 6- or 8-inch (150mm or 200mm) stage travel available, permanently planarized at the factory (stainless steel or triaxial optional).
- Platen fast lift lever allows all probes or probe cards to be raised up to 1.25 inches (31.75mm) for sample changes and adjustments.
- Large platen with large manipulator area. Supports vacuum based manipulators.
- Optional probe card holder designed to accommodate 4.5 inch rectangular and 8.75 inch circular probe cards. Includes precise and easy to use probe card planarity and theta adjustment controls (other configurations available upon request).
- Integral platen fixture ring accommodates tester load boards, custom probe cards and platen mounted switch matrix.
- Choice of USMCO, A-Zoom, or Mitutoyo microscopes.
- Compact design increases stability while reducing bench space required. Compatible with most light tight enclosures.
- Integrated facility for optional hot chuck additions which include internal cable/hose handling and convenient termination at the rear of the probe station.
- Upgrades available to motorized or programmable microscopes and manipulators.

## Specifications

### System Components

- Test station with anti-backlash lead screw assemblies provide for accurate stage, platen and microscope X-Y positioning.

### Platen

- Allows use of a large number of manipulators.
- Open back platen support with cable strain relief for easy wire routing for probe card electrical interface.
- Accepts up to 10 vacuum based manipulators.
- Vacuum manifolds for up to 10 manipulators standard.
- Accepts four Model 900VM programmable or motorized manipulators.
- BNC or triaxial style probe signal strain reliefs optional.

### Platen Control Features

- Both fast lift and high resolution controls are standard.
- Range of travel is 1.0" (25mm).
- Resolution is 1.0  $\mu$ m per degree.
- Fast lift via fast lift lever positioned at the left side of the probe station.



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### *X-Y Stage Movement*

- Cast stage cores for faster settling time.
- Cross roller bearing way construction for high reliability and precision.
- Resolution is 1.0 mm/degree
- Manual 64 TPI theta adjust over a full 15 degrees.

### *Microscope and Support Post*

- Massive bridge support structure with cross roller bearing construction insures excellent stability and mechanical isolation.

### *Vacuum Chuck*

- 6- and 8-inch (150mm or 200mm) chucks are available either gold plated or ground stainless steel.
- Flatness equals  $\pm 12$  microns.
- Electrical isolation exceeds  $5 \times 10^9$  Ohms at 500v DC.
- Chuck surface is electrically connected to a BNC connector at right rear of probe station.

### **Options for Model 4060**

- 8800-FPC-FRX: fixed probe card adapter.
- 8800-ISE, 7000-LTE or 8800-LTE: light tight enclosure.
- 1201-01-11GR: vibration isolation table.
- H1000 series: hot/cold chucks with temperature range from -65 to 400° C.
- Integrated dry environment (ISE) for low temperature probing.
- Hot Chuck integral plumbing option, provides services for Hot Chuck usage within the probe station.
- Laser Cutter.
- Motorized or Programmable microscope XYZ drive.
- 900VM: motorized or programmable manipulators.
- NetProbe™ navigation system/software (for programmable microscope drive only).
- Microscope Selection:  
USMCO with up to 2000X (200X objective 10X eyepieces) magnification,  
or  
Mitutoyo FS-70 with up to 4000X (200X objective, 10X eyepieces, 2X zoom) magnification,  
or  
Thales Optem's A-Zoom microscopes with up to 9000X zoom magnification  
or  
EMZ stereo microscopes with up to 270X and includes 10X and 30X eyepieces, 2X auxiliary lens.

### **Model 4060 Specifications**

#### *Stage*

- X and Y axis range\*  
6" x 6" (150mm x 150mm)  
8" x 8" (200mm x 200mm)
  - Standard Precision  
Manual control, repeatability and accuracy dependent upon operator
  - Better than 1  $\mu$ m leadscrew resolution
- \* Range based on chuck size specified; i.e., 6-inch diameter chuck or 8-inch diameter chuck.

#### *Microscope*

- 4" x 4" x 2" X, Y and Z axis range
- Standard Precision (programmable)  $\pm 3 \mu$ m Repeatability & Accuracy
- Advanced Precision (programmable)  $\pm 1.5 \mu$ m Repeatability & Accuracy
- Resolution
  - Better than 1  $\mu$ m manual
  - 0.5  $\mu$ m motorized/programmable

#### *Platen*

- 1" (25.4mm) Z axis range
- 0.1  $\mu$ m Resolution

#### *Chuck*

- $\pm 12 \mu$ m Surface flatness
- 15 degrees Theta range

#### *Facility Requirements*

- Power 100-240v AC  
1.0/0.5 ampere  
60/50 Hz
- Vacuum 20 inch Hg

#### *Test Station Dimensions*

- Footprint (Width x Depth)  
22.75" x 23.35" (57.7x59.3cm)
- Width, Depth, Height  
28.5" x 26.75" x 21.5"  
(72.3x67.9x 54.6cm)
- Weight: 246 lb. (542.3 kg)

#### *Construction*

- Material: Machined aluminum plate and magnetic stainless
- Finish: Grained black anodized and grained natural finish