SEMIPROBE®
Test • Inspect • Innovate

M-8 (200MM) MANUAL PROBE STATION

Example configuration pictured above: M-8 manual probe station with a vibration isolation table incorporating a rapid advance wafer stage, 200 mm tilting chuck, platen with linear lift, DC manipulators, compound optics and CCTV system.

PS4L systems are modular and configured to suit customers specific requirements, see below for more example applications and configurations.

MAJOR APPLICATIONS/MARKETS SERVED:

Device Characterization, MEMS, Optoelectronics, HF/Microwave, High Power, Photovoltaic, Failure Analysis, Research, Material Science and more.

The SemiProbe M-8 is the most modular and flexible 200 mm manual probe system available today. It is built using our patented Probe System for Life (PS4L) architecture, which provides unsurpassed flexibility and significant capital equipment savings. With the PS4L, customers can purchase a manual 200 mm system that meets their precise specifications and requirements.

The Probe System for Life (PS4L) family of wafer probing systems is designed based on SemiProbe's patented adaptive architecture. Unlike traditional probe systems, all foundation modules – bases, stages, chucks, microscope mounts, microscope movements, optics, manipulators and more - are interchangeable, making the PS4L the consummate solution for many different applications and budgets.

This unique modular design enables customers to acquire test capabilities that precisely match their requirements. More important, as the environment or test conditions change, the PS4L can easily be field-upgraded to meet these new demands. With this design philosophy, PS4L customers realize substantial time and cost savings over traditional probe systems because they do not need to invest in a new platform when wafer size, levels of automation or test requirements change.

A complete line of accessories is available for all systems including probe card holders, manipulators, probe arms & bases, probe tips, thermal chucks, environmental chambers, lasers, optics, CCTV systems, vibration isolation tables, dark boxes and more.

FEATURES & BENEFITS

- 200 mm manual system with upgrade path to a 200 mm semiautomatic system
- All key components are interchangeable which enables the system to easily be configured to meet applications and budgets – present and future
- Software and hardware modules provide a perpetual field upgrade path

INTERCHANGEABLE • UPGRADEABLE • CONFIGURABLE

PROBE SYSTEM FOR LIFE (PS4L): Manual, Semiautomatic & Automatic Configurations

SemiProbe's PS4L-M manual range of wafer probe equipment is ideal for customers that require advanced wafer probing equipment without motorized device alignment. A rapid advance manual X-Y stage enables quick stage movements across the wafer, with fine micrometer controls for precise probe tip alignment.

As the user's environment or test requirements change, the PS4L manual systems can be field upgraded with enhanced features or levels of automation, turning a manual prober into a semiautomatic or even fully automatic system.

SemiProbe's PS4L-M

SemiProbe's PS4L-SA

SemiProbe's PS4L-FA

PROBE SYSTEM FOR LIFE – MANUAL (PS4L-M): Example Customer Configurations

PS4L-M8 Configured for High Frequency Test

The customer required a general-purpose 200 mm manual high frequency (HF) wafer probe station designed to perform measurements on whole wafers and on individual diced parts mounted on tape, over a variety of higher frequency ranges.

The configuration included individual manual manipulators with standard west/east HF probe arms for GS, SG, GSG, differential, and multi-contact wedges operating from DC to 40 GHz. In addition, the customer needed the ability to add manual manipulators for DC bias and a probe card holder for probe cards.

PS4L-M8 Configured for Double Sided Test

The customer required a manual double-sided probe station (DSP) system to test silicon photonic chips and wafers using probe cards and manipulators.

The top side of the device would be biased, and the backside of the device had a light output that was captured by a detector. The detector was mounted on a manual X, Y, Z and theta stage.

The devices tested had a variety of dimensions, so a universal mechanically clamping chip carrier was designed to hold the devices. Carriers for different size wafers were also required.

PS4L-M6 Configured for Magnetic Stimulation

The customer required a magnetic stimulation manual probe station to test 150 mm MRAM wafers using a magnet placed underneath the device that could be moved in X, Y, Z and theta.

The device would be contacted from the top with up to five manual three-axis manipulators with coaxial probe arms and DC probes while being stimulated by the magnet located beneath the device. The customer also needed the ability to test the devices from the top at temperature ranging from ambient to 225 °C.

PS4L-M6 Configured for High Power Testing

The customer required a flexible probing solution that would allow them to test wafers with voltage up to 3kV. Volume was low, therefore a manual probe system with manual manipulators and a variety of probe arms were desired.

The probe system would get interfaced to a Keysight B1505 and due to lethal voltage levels required to test the devices, a safety enclosure was required. The system also had to pass a Canadian Standards Association (CSA Group) inspection.

PS4L-M8 Configured for MEMS Devices

The customer required a 200 mm capable manual probe station to test silicon MEMS wafers, integrated with a Polytec Motion Analyzer.

The motion analyzer would measure a variety of MEMS devices while in-plane and out-of-plane. The wafer chuck would need to be tilted in a variety of directions.

The devices would be contacted with a probe card as well as individual manipulators with coaxial probe arms and DC probe needles.

PS4L-M12 Configured for Device Characterization

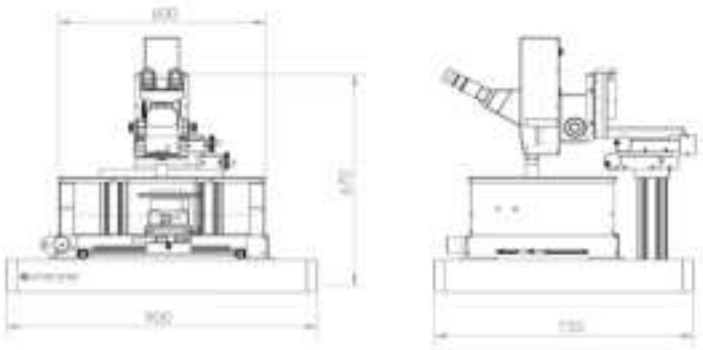
The customer required a 300mm manual wafer probe station for device characterization. Due to initial demand, a manual system was purchased that would later be automated as volumes and requirements increased.

Configured on an antivibration table, the system included a compound microscope with four turrets capable of up to 4000x magnification. Four coaxial DC probe arms and individual manipulators were used to connect the devices under test.

SPECIFICATIONS	
Dimensions	900 mm x 650 mm x 750 mm (35.5” x 25.4” x 29.5”) (W,H,L) - with optics
Weight	75 Kg (165 lbs.)
Chuck Stage XY Movement	Rapid align with coarse and fine stage movements - coarse >200 mm, fine is 25 mm (X, Y)
	Travel: Fine X, Y stage movement of 25 mm via precision micrometers
	Planarity: +/- 7.5 µm over travel range
	Resolution: 5 µm
	Stage Types: Rapid Align (standard), coaxial and programmable (optional)
Chuck Stage Z Movement	Z Travel: >20 mm with precision micrometer
Theta Movement	Travel: Coarse (360 degrees) and fine (>10 degrees) with theta locking knob
Chucks	Vacuum or mechanical clamping, round or square, triaxial, HF, HV/HC, ambient, thermal & custom
	Handle die, waffle packs, sawn wafers on frame, broken wafers and full wafers up to 200 mm
	Nickel plated steel with concentric vacuum rings (standard), other plating materials available
	Planarity: 5 µm
Platen	Aluminum with stainless steel top with removable front wedge 360-degree manipulator placement
	Manipulator fixation – magnetic (standard), vacuum (optional with vacuum manifold kit)
Platen Movement	Platen Lift: Choice of fixed or adjustable (linear)
	Adjustable: Coarse - 40 mm, Fine – 200 um contact/separation stroke via lever – lockable
Microscope Mounting/Movement	Mounting – Boom, Post or Bridge
	Movement – Manual or Programmable – 50 x 50 mm, 50 x 75 mm, 100 x 100 mm and 200 x 200 mm
Microscope (Optics)	Stereo Zoom, Zoom Tube, A-Zoom or Compound Microscope
Utilities	Power: AC 110/220V AC 50-60 Hz 20A
	Vacuum: 23 Hg or -0.8 bar

Note: Data and specifications vary depending on probe system configurations and accessories

PHYSICAL DIMENSIONS



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