

PLV50

100 mm Manual Vacuum Probe System



DATA SHEET

The PLV50 is the most cost-effective and simple, yet highly-precise probing solution for wafers and substrates up to 100 mm in a vacuum environment. Specially designed for laboratory requirements, it provides a wide range of measurements, including I-V, C-V and RF, and can be used for probing under high vacuum up to 10^{-5} mbar. Application flexibility is ensured for DC and RF measurements, MEMS and opto-engineering tests. RF tests are supported by a wide range of probes, calibration substrates and other accessories as well as WinCal XE™ calibration software. The unique LRRM, LRM+, NIST-style TRL and hybrid calibration methods are available with the WinCal XE calibration software.

The PLV50 is equipped with a stable vibration isolating frame. The high-vacuum chamber with a hinged topside lid and an optical window made of quartz glass contains flanges for vacuum-tight mechanical feedthrough drives. Thus the chuck and up to six vacuum-type positioners can be easily operated from outside via cardan shaft. The high-vacuum pumping system consists of a wide-range Turbo-Molecular drag Pump (TMP), a diaphragm forepump, and a full-range vacuum gauge. Optional pressure regulation is available.

The chuck stage and chuck are located inside the vacuum chamber. The probe platen is designed to mount up to six vacuum-type positioners on magnetic feet. Both DC and RF positioners can be used. A high-resolution video microscope is mounted above the view-port.

The PLV50 can be customized with a number of instruments, including various video microscopes, laser cutters and optical motion analysis tools, such as Polytec's MSA systems. Specially designed thermal chucks with electrical and coolant bulk feedthrough are available for the use under vacuum conditions. The PLV50 supports a wide temperature range from -60°C to 300°C .

FEATURES / BENEFITS

Flexibility	<ul style="list-style-type: none">Ideal for opto-engineering and MEMS testsAccessories available, such as laser cutters and optical motion analysis toolsRF VNA calibration and test supported by WinCal XE calibration softwareOptional upgrade with thermal chuckOptional upstream pressure regulation
Stability	<ul style="list-style-type: none">High accuracy, ideal for small structuresHighly stable mechanics, massive welded frame with vibration dampers
Ease of use	<ul style="list-style-type: none">Simple, straightforward design for easy and ergonomic operationQuick and ergonomic change of DUT through hinged topside lid

SPECIFICATIONS*

Chuck Stage

X-Y travel	50 mm x 50 mm, optionally 80 mm or 100 mm square
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Probe Platen

Type	Two segments for three vacuum type positioners each, magnetic
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Positioners

Type	Up to six vacuum type positioners with cardan shafts, DC (triax or AP&T), RF
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View Port

Diameter	60 mm
Material	Quartz glass (others on request)
Viewing distance	80 mm (standard), optionally 30 mm

Chuck Types

Wafer carriers	50 mm, 100 mm, 150 mm
Universal carrier	Small dies, wafer fragments, 1 inch/2 inch/3 inch wafers
Thermal chuck (on request)	-60°C to +300°C
Customer carrier	On request

High-Vacuum Pumping System

Maximum vacuum	10 ⁻⁵ mbar
Pump types	Wide-range turbo drag and diaphragm (others available upon request)
Vacuum gauge	Full range (standard), (others available upon request)
Pressure control system	Up-stream controlled

Manual Microscope Support

Travel range	20 mm x 30 mm
Z travel	~ 50 mm
Swivel mechanism	90°

Video Zoom Microscope

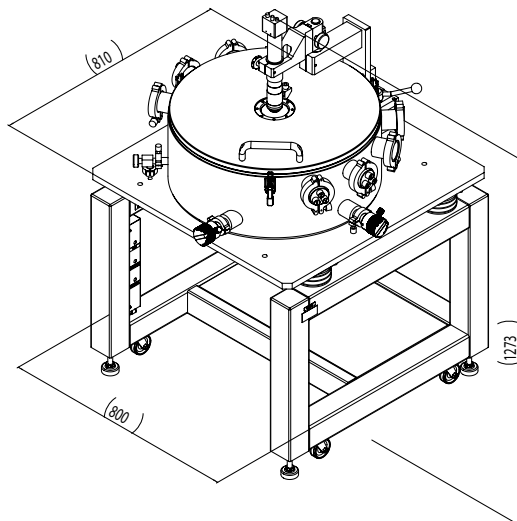
Zoom range	12x
Magnification	1.16x - 14x
Resolution	9 μm - 2 μm
Illumination	Coaxial, cold light source

*Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

PHYSICAL DIMENSIONS

Weight	Maximum 250 kg
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Dimensions (in mm)



APPLICATIONS

MEMS / MOEMS

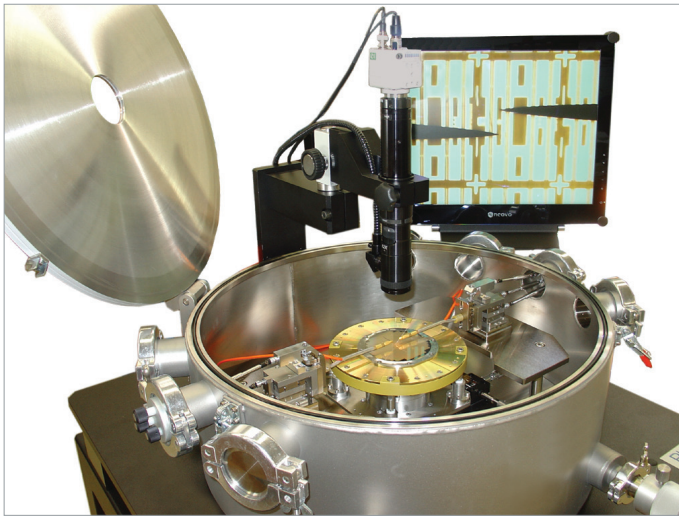
Acceleration sensors
Yaw rate sensors / gyro sensors
RF-MEMS switches, resonators
Gas sensors
Microbolometers
Micromirrors / optical switches

Next Generation Technologies

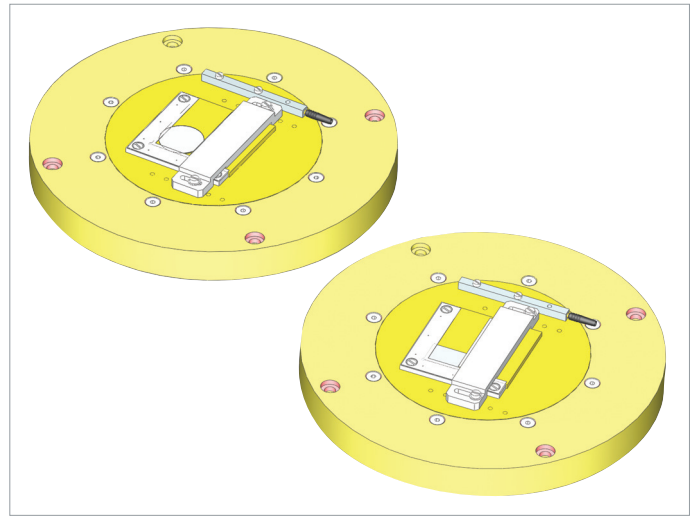
OLEDs
Nanotechnology

HANDLING

All knobs located outside of the chamber ensure easy and precision control of the chuck stage and positioners. The hinged topside lid enables quick and ergonomic loading and unloading of your DUT, as well as easy probe configuration and probe tip exchange. A swivel mechanism, which is part of the microscope station, allows convenient access to the topside lid.



A swivel mechanism, which is part of the microscope station, allows convenient access to the vacuum chamber.



Small dies and wafer fragments can be tested on the universal chuck.

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