

# Cascade Microtech, Inc.

## SPECIFICATION SHEET



Cost-effective  
ice- and condensation-free  
manual wafer probing down to 4 K

# PLC50

## 100 mm Manual Cryogenic Probing System

The PLC50 is the most cost-effective and simple, yet highly-precise probing solution for wafers and substrates up to 100 mm at cryogenic temperatures. Specially designed for laboratory requirements, it provides a wide range of measurements, including I-V, C-V and HF, and can be used for probing down to 77 K with liquid nitrogen or 4 K with liquid helium. Application flexibility is ensured for DC and HF measurements of latest silicon, compound semiconductor and superconductor devices.

The PLC50 is equipped with a stable vibration isolating frame. The high vacuum chamber with 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 PH110 vacuum type ProbeHeads™ can easily be operated from outside via cardan shaft. The high-vacuum pumping system consists of a wide-range Turbo-Molecular Pump (TMP), a diaphragm forepump, and a full-range vacuum gauge. This ensures ice- and condensation-free probing.

The chuck stage and chuck are located inside the vacuum chamber. The probe platen, which is divided into two parts, is prepared for mounting up to six PH110 vacuum type ProbeHeads on magnetic feet. Both, DC and HF ProbeHeads can be used. For step-and-repeat contacting the probe platen can be lifted up and down from outside the chamber by a unique mechanical drive. A high-resolution video microscope is mounted above the view-port.

The PLC50 is customized to your requirements. It can be outfitted with a number of instruments. These include, among others, various video microscopes, laser cutters and optical topology measurement tools, or black bodies for exposure of the DUT with controlled IR radiation.

### FEATURES AND BENEFITS

<b>Flexibility</b>	System is customized to user's requirements
	Different substrate carriers for wafers up to 100 mm or single dies
	Cooling sequence of chuck and shield controlled by cold valves
	Use of both, LN2 and LHe
	Wide range of measurements (I-V, C-V, HF)
<b>Stability</b>	High accuracy
	Ideal for small structures
	Highly stable mechanics
	Massive welded frame with vibration dampers
<b>Ease of use</b>	Comfortable and ergonomic operation, straightforward layout of controls
	Quick and ergonomic change of DUT through hinged topside lid
<b>High measurement throughput</b>	Independent control of chuck and positioners for fast step-and-repeat testing of the whole wafer
	Platen lift (up and down) for simultaneous separation of all probes

## SPECIFICATIONS\*

### Chuck Stage

X-Y travel	50 mm x 50 mm
Extension	80 mm x 80 mm

### ProbeHeads

Type	Up to six PH110HV with cardan shafts and probe cooling
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### View Port

Diameter	60 mm
Material	Quartz glass (others on request)
Working distance	80 mm, optional 30 mm

### Chuck

Wafer chuck	50 mm, 75 mm or 100 mm
Universal chuck	Small dies, wafer fragments
Temperature range LN2	75 K to 400 K
Temperature range LHe	4 K to 400 K
Temperature extensions	Up to 675 K

### High-Vacuum Pumping System

Maximum vacuum	$10^{-5}$ mbar
Pump types	Diaphragm and turbo-molecular drag pumps
Vacuum gauge	Full range Pirani / cold-cathode

### Manual Microscope Support

Travel range	50 mm x 50 mm
Z travel	Large motorized Z stroke or 50 mm manual focus drive and pneumatic lift-off

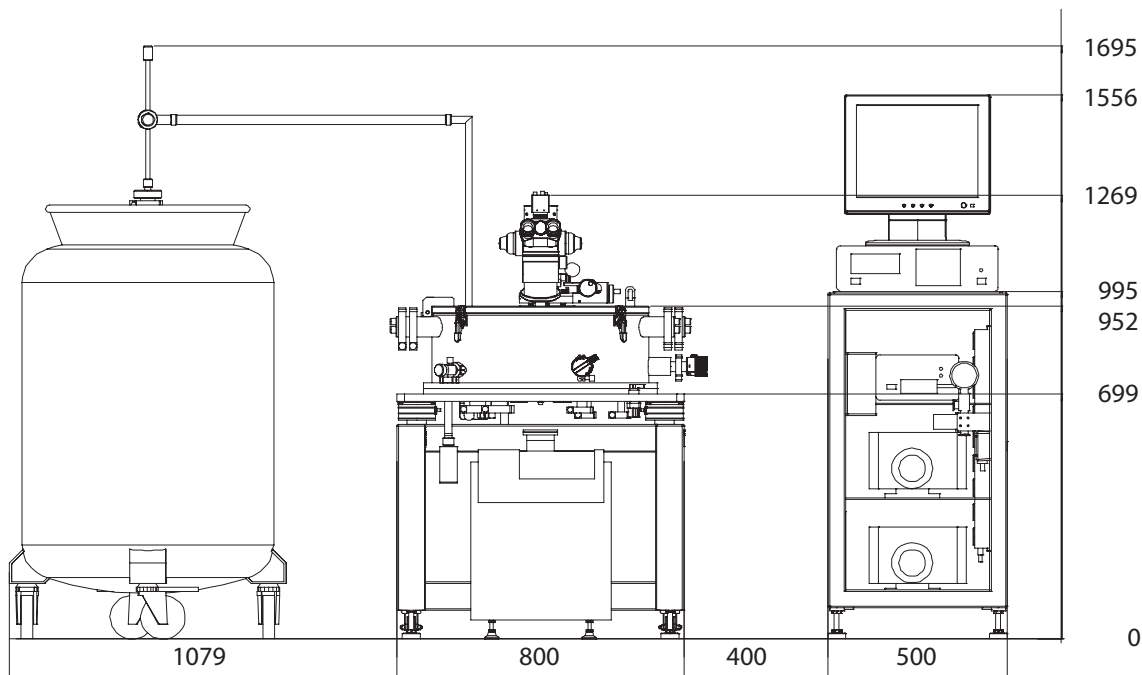
### Video zoom Microscope

Zoom range	12x, optional 16x
Magnification	1.16x - 14x
Resolution	$9 \mu\text{m}$ - $2 \mu\text{m}$

\*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	250 kg
Dimensions (in mm)	

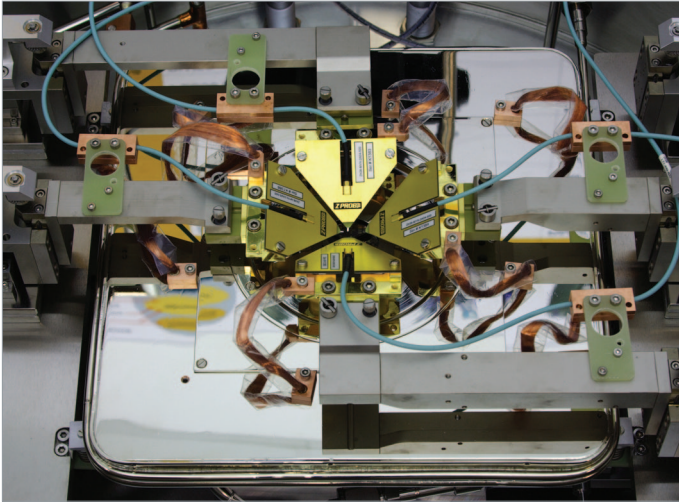


## APPLICATIONS

Advanced silicon technology

Compound semiconductor devices

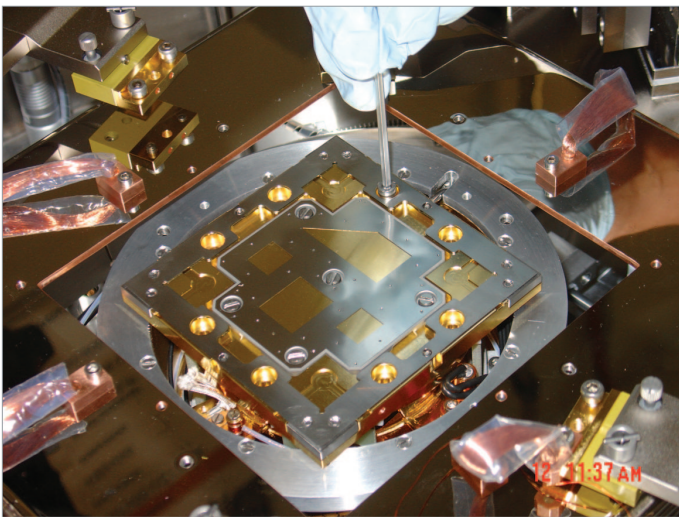
Superconductors



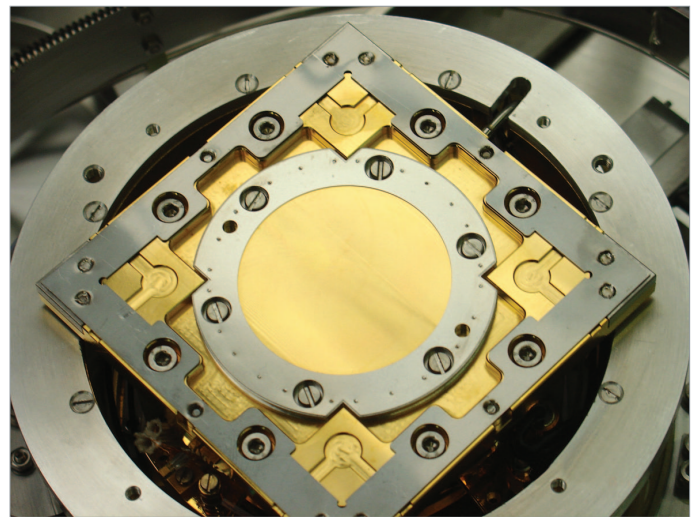
Test of wafer with four Multi |Z| Probes®.

## HANDLING

Ergonomically, the PLC50 has been designed with the operator in mind. All knobs are located to allow easy and precise movement of the chuck stage and ProbeHeads. The hinged topside lid permits quick and ergonomic loading and unloading of your DUT as well as easy probe configuration and probe tip change. A swivel mechanism which is part of the microscope station allows convenient access to the topside lid.



Fixing universal carrier



2 inch wafer carrier

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Data subject to change without notice

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