

Cascade PAC200

200 mm Semi-automated Cryogenic Probe System

► Overview

The Cascade PAC200 from FormFactor is the ideal solution for automatic testing of wafers and substrates up to 200 mm in a cryogenic environment down to 77 K with liquid nitrogen or below 20 K with liquid helium.

It supports a wide range of applications, including DC and RF measurements of the latest silicon, compound semiconductor and superconductor devices. The probe platen is designed to mount probe cards or up to eight vacuum-type positioners on magnetic feet. To reduce heat entrance, probes or probe cards are thermally anchored to the cryogenic shield. A high-resolution video microscope with 50 mm x 50 mm travel range is mounted either on a microscope mount with swivel or on a microscope bridge for vibration-sensitive test applications and additional test instruments.

The PAC200 is equipped with a stable vibration isolating frame. The chuck and the motorized chuck stage with 200 mm x 200 mm X-Y travel, theta and Z-axis are located inside the high-vacuum chamber. Up to eight vacuum-type positioners can be easily operated from outside of the chamber via vacuum-tight mechanical feedthrough drives and cardan shafts.

The PAC200 can be customized with a number of instruments, including various video microscopes, optical topology measurement tools and black bodies for exposure of the DUT with controlled IR radiation.



► Features / Benefits

Flexibility

- System is customized to user's requirements
- Different substrate carriers for wafers up to 200 mm or single dies
- Velox™ probe station control software
- Wide range of measurements (I-V, C-V, two-port, multi-port and differential RF)
- RF tests supported by a wide range of probes and calibration tools, such as calibration substrates and WinCal XE™ calibration software
- Other test equipment can be implemented (e.g. infrared sources)

Stability

- Ice- and condensation-free probing down to 77K (liquid nitrogen) or below 20 K (liquid helium)
- High accuracy, ideal for small structures
- Highly stable mechanics with a stable vibration isolation table

Ease of use

- Simple, straightforward design for easy and ergonomic operation
- Easy to use probe card holder for fast change of probe card

> Applications

IR-imaging: detectors Focal-Plane-Arrays (IRFPA)

RF devices, e.g. HEMT electron mobility transistors

Submicron technology

Superconductors

> Cryogenic Probecard

Specially designed for use in high vacuum and cryogenic conditions

Customer electronics on board possible

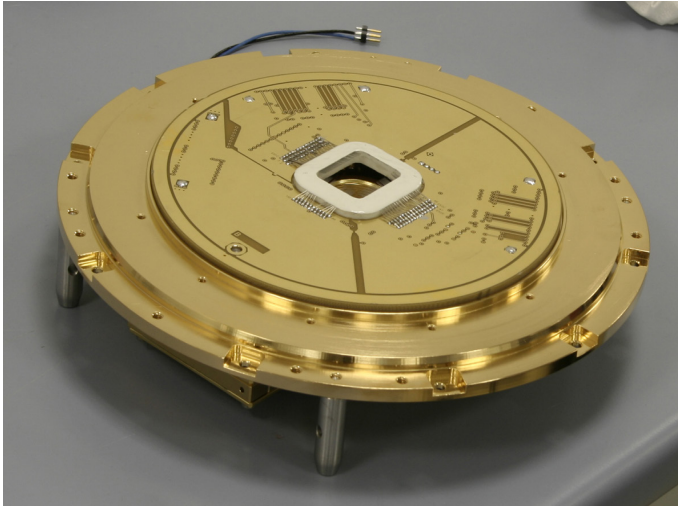
Easy-to-use probecard holder for fast change of probecard

Integrated in radiation shield for cooling probe needles

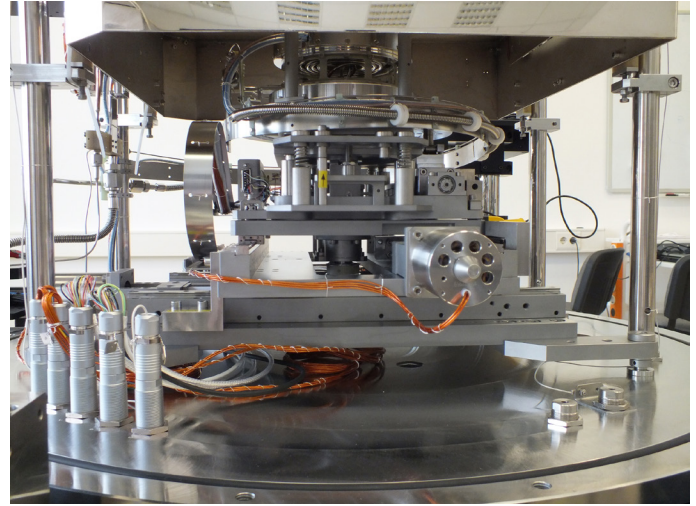
Needle ring for up to 120 needles

Design depends on the required electrical measurement

Coax and / or twisted-pair cabling



Probe card shutter unit.



A look inside the chamber.

> Automation

Two-line configuration with independent cooling of cold shield and chuck for short cool-down time

LN2 dewar with level detection and automatic refill

Automatic warm-up after testing is completed

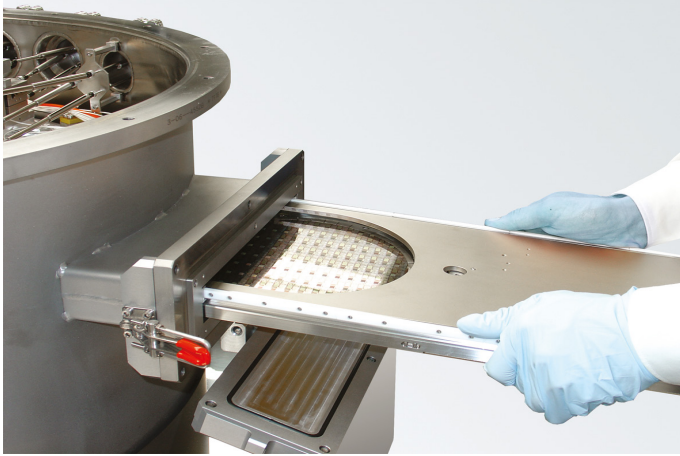
Automatic alignment with Velox probe station control software

Interface to customer's main program

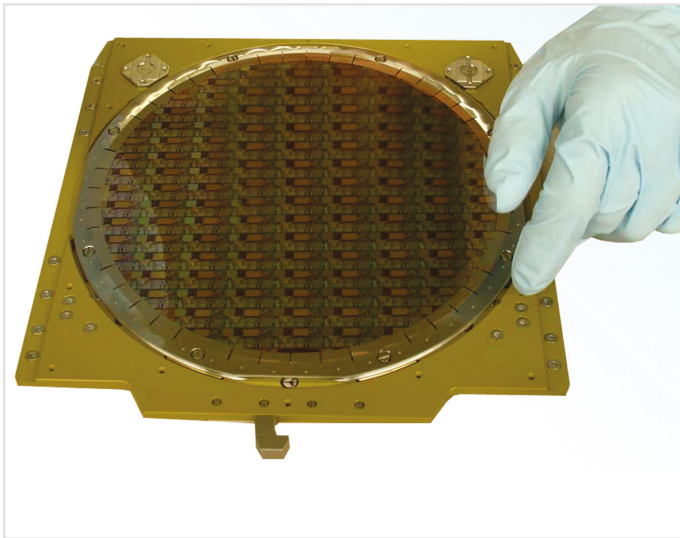
Display and control of the whole system with FormFactor's Cryogenic Tool

Bridge with rails for programmable movement of mounted instruments

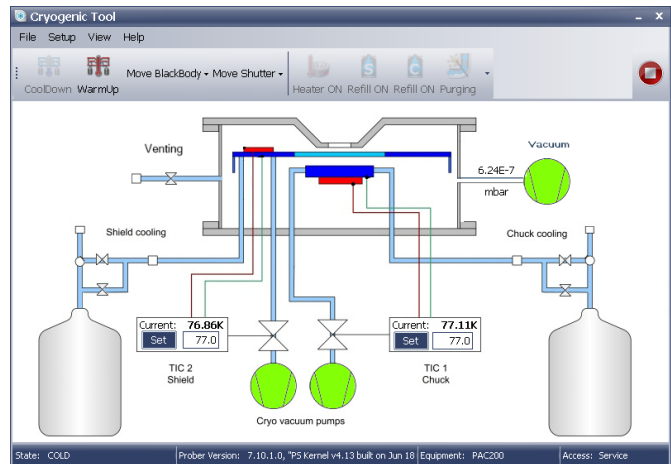
> Applications (continued)



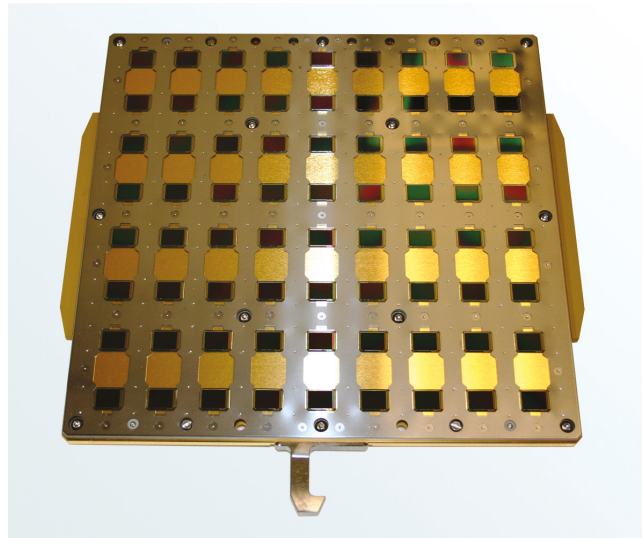
Loading of wafer / die carrier into the vacuum chamber.



Wafer carrier.



Display and control of the whole system with Form Factor's Cryogenic Tool.



Diced chips fixed on special carrier.

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