

Cascade

PAC200

200 mm Automated Cryogenic Probe System

000111100010

➤ Overview

The FormFactor PAC200 is the ideal solution for automatic testing of wafers and substrates up to 200 mm (with a 300 mm option) in a cryogenic environment down to 77 K with liquid nitrogen or down to 10 K with liquid helium. A dry-cooling option is also available.

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.

The standard is a high resolution video microscope mounted on a microscope movement with travel range of 50 mm x 50 mm in xy- and 130 mm in z-direction. The whole unit can be mounted either on a microscope swivel or for vibration-sensitive test applications, on a microscope bridge. Additional test instruments can also be mounted on this bridge.

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 probe station can also be equipped with probe cards.

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 (300 mm option)
- 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 down to 10 K (liquid helium)
- High accuracy, ideal for small structures
- Highly stable mechanics on 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. high electron mobility transistors (HEMT)

Superconductors

Cryo CMOS

➤ Cryogenic Probecard

Specially designed for use in high vacuum and cryogenic conditions

Customer electronics on board possible

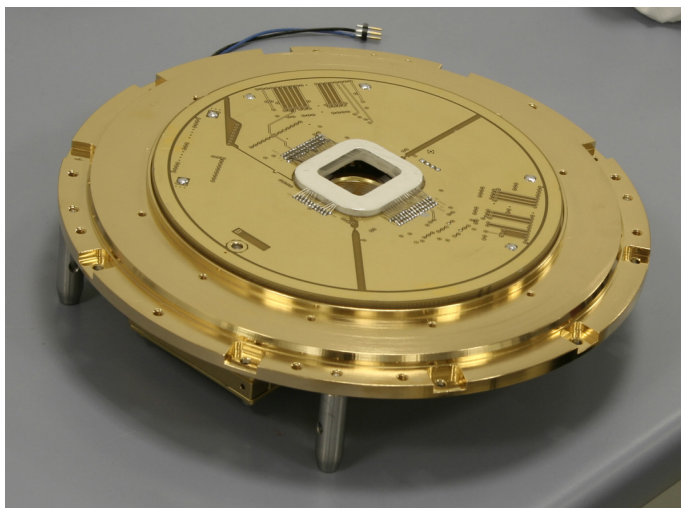
Easy-to-use probe card holder for fast change of probecard

Integrated in radiation shield for cooling probe needles

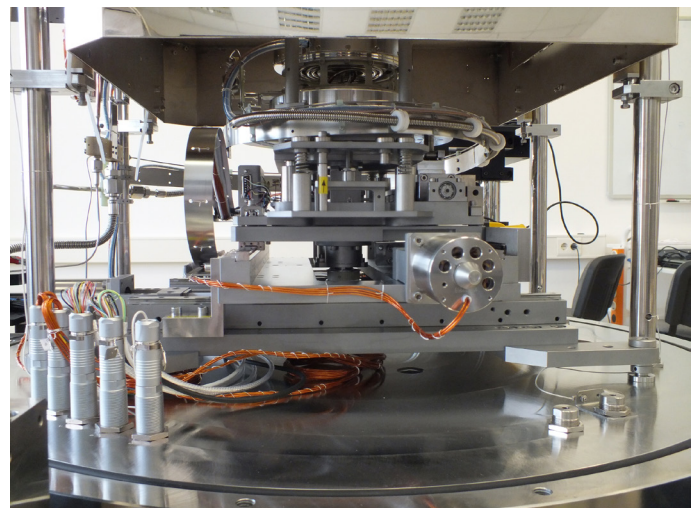
Needle ring for up to 120 needles

Design depends on the required electrical measurement

Coax and / or twisted-pair cabling



Probe card on probe card mounting 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

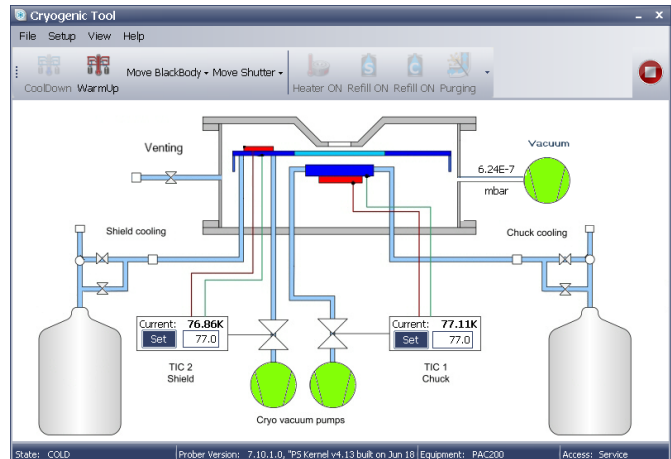
Dry-cooling with automatic control (option)

Fully-automated cryogenic prober via autoloader (option)

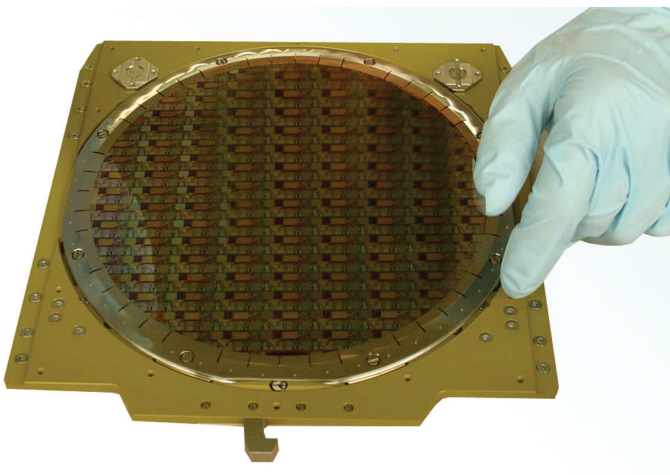
> Applications (continued)



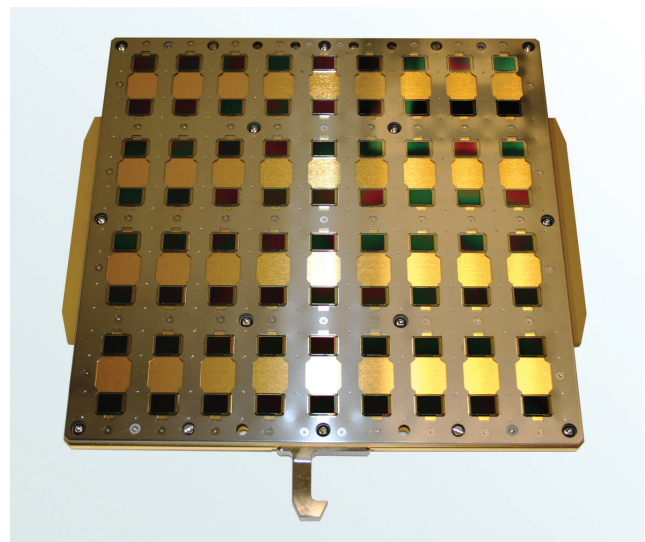
Loading of wafer / die carrier into the vacuum chamber.



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



Wafer carrier.

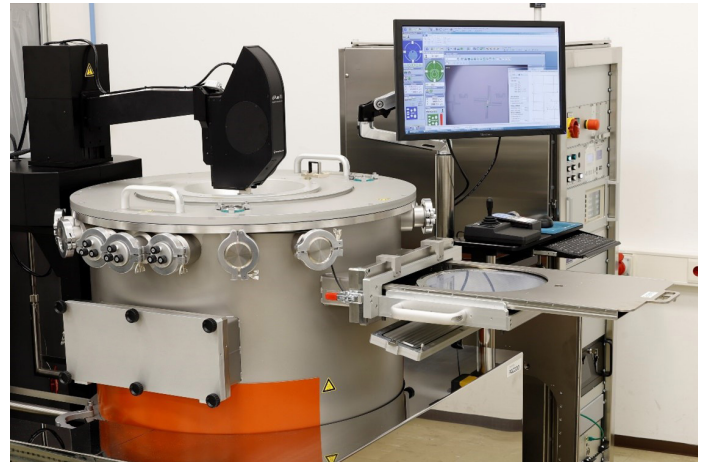


Diced chips fixed on special carrier.

➤ Applications (continued)



Fully-automated PAC200 via autoloader



PAC200, able to use 300 mm wafer

© Copyright 2023 FormFactor, Inc. All rights reserved.
FormFactor and the FormFactor logo are trademarks of
FormFactor, Inc. All other trademarks are the property of
their respective owners.

All information is subject to change without notice.

PAC200-DS-0423

Corporate Headquarters
7005 Southfront Road
Livermore, CA 94551
Phone: 925-290-4000
www.formfactor.com