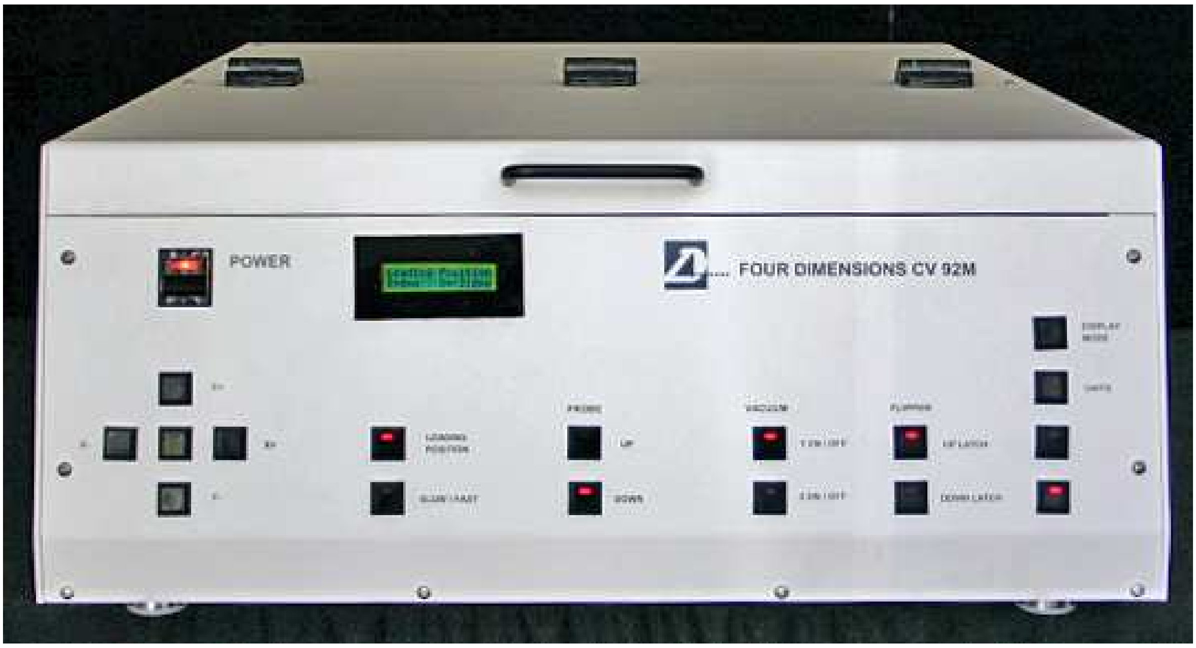
FOUR DIMENSIONS

Mercury Probe Systems



CV92M

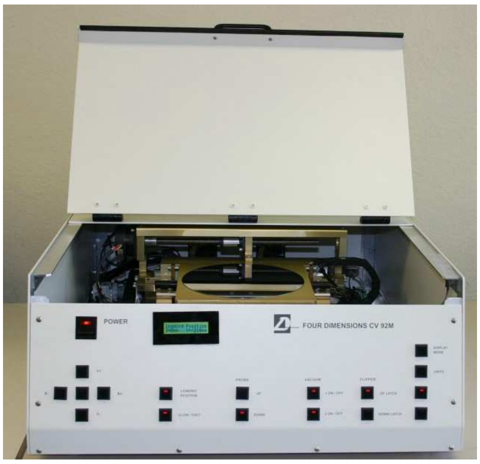
Basic System CV92M

OVERVIEW

Four Dimensions' Mercury Probe Systems use the liquid metal mercury to form temporary non damaging well-defined area contacts on numerous materials. The instantaneous electrical contact formed on semiconducting materials can be of MOS, MIS, or Schottky barrier type. This permits various electrical characterizations of for example silicon and compound semiconductors without the need of a metal deposition process. Typical applications are

- Oxide integrity monitoring
- Doping density profiling
- Resistivity measurements of semi-insulating materials
- Pseudo MOST characterization of SOI structures
- Ferroelectric sample investigations

Four Dimensions‘ unique Mercury probe design features outstanding safety and contact area repeatability. It provides the widest range of contact areas and probe head configurations on the market. The mercury contacts can be a dot, with an area of 2E-5 cm^2 to 0.5 cm^2, or a dot and one or more rings, as well as a linear array of four probes. Therefore, a wide variety of substrates including insulators, as well as SOI structures, can be probed.



The new basic model in the Four Dimensions‘ series of Mercury probe systems, CV92M, is a push-button operated station. The wafer-under-test is positioned above the probe by pressing push buttons and reading the position on an LCD screen. Pressing another push-button moves the probe towards the wafer and forms one or more Mercury contacts. The mercury contacts as well as the contact on the chuck are linked to rear panel BNC connectors allowing for electrical measurements using external meters, such as I-V or C-V meters. A software for controlling the external meters, analyzing the measurement data and mapping the wafer is optional.

CV92M is the premier choice of start-up companies and universities that seek a highly reliable Mercury contact, safety, flexibility, and ease of operation for their probing needs. It serves those that need to form contacts on only a limited number of sites on the wafer or on small pieces.

Basic Features

Safety first design principle

Unique Mercury probe
Dot area 2E-5 to 0.8 cm2
Contact area repeatability better then 2%
Contact configurations: Dot, Dot / Ring, Dot / 2 Rings, four Dots
Refreshed mercury before each contact insures clean and non-sticking contact
Probe head and spill proof Mercury reservoirs are easy to change
Mercury exchange needed less than twice a year
Integrated light source for illumination of measured sample (probe head dependent)
Minimal probe head to wafer contact area
Non scratching plastic probe head material

Measurement specifications
BNC connections for External C-V meters
(Bandwidth:1MHz standard, up to 10MHz optional)
Allowable test voltage +/- 100 V standard (+/- 1000V optional)
Trigger signal available
Light cover
Large brass wafer holder for low backside contact resistance

Sample size and positioning
Minimum: 15mm x 15mm (standard), smaller sizes are probe head dependent
Up to 8" diameter wafers
Easy loading and Alignment marks for wafers
Specimens held by vacuum
Edge exclusion as small as 2mm available
Push-button operated motorized X-Y chuck movement
LCD display with position information

Facilities
Power: 100 / 115 / 230 VAC, 50/60 Hz, 200W
Vacuum: 28 in. Hg
Compressed air: 60 psi min. (4.2 bar)
Table Footprint: (depth, width, height): 31" x 24" x 10.5" (80 cm, 61 cm, 27 cm)
Weight: 110 lb (50 kg)