

OCA 15 plus

Video based optical contact angle measuring device

The OCA 15 plus is an instrument for the budget-priced starting into the contact angle measuring technique and drop shape analysis.

For the software-controlled measurement and analysis of

- the static and dynamic contact angle according to the Sessile and Captive Drop method as well as the analysis of the drop shape according to the Pendant Drop method
- the wetting behavior on solid surfaces
- the surface free energy of solids and their components
- the surface and interfacial tension out of the analysis of the drop shape



The OCA 15 plus consists of the basic instrument with the following technical features:

- Dosing bay for installation of manual syringe units and the single or multiple (max. 4) needle support with a vertical and horizontal fine adjustment, alternative a direct dosing unit with a manual or electronic syringe unit
- Measuring stage, adjustable in three axis for accurate sample positioning
- Lens mount with adjustable tilt
- High-performance six-fold power zoom lens with an integrated continuous fine focus
- Video system with adapter and CCD-camera
- High-performance video digitizing board (frame grabber) for the PC
- Halogen lighting with continuously adjustable intensity without hysteresis for a homogeneous back lighting
- Power supply with automatic voltage adjustment
- The OCA 15 plus can easily be upgraded to an OCA 20 or OCA 30

The software SCA 20 developed for Windows XP®/2000® offers by various expansion steps:

- Static and dynamic contact angle measurement according to the Sessile and Captive Drop method
- Calculation of the surface and interfacial tension from the contours of pendant and sessile drops as well as of liquid lamellas on plates, rods and threads
- Calculation of the surface free energy of solids and their components (e.g. dispersion, polar and hydrogen bond force contribution, acid and base portions respectively) according to the theories of Wu, Zisman, Owens-Wendt, Extended Fowkes, Schultz 1 + 2, Fowkes and van Oss & Good
- Statistics and measurement error analysis
- Calculation of the work of adhesion and graphical plotting of security areas therefor
- Calculation on wetting behavior by wetting envelope-function

Technical data

Maximum sample size (L x W x H)	220 x ∞ x 70 mm; 8"-wafer on WT 200 M/E 330 x ∞ x 70 mm; 12"-wafer on WT 300 M/E with OCA 15 L plus
Size of sample stage	100 x 100 mm
Range of contact angle measurement	0 ... 180° ; ± 0.1° measuring accuracy of the video system
Range of surface and interfacial tension	1·10 ⁻² ... 2·10 ³ mN/m; resolution: min. ± 0.05 mN/m
Optics	Six-fold zoom lens (0.7 ... 4.5-fold magnification) with integrated fine focus (± 6 mm) and high light transmitting capacity CCD-camera with a resolution of max. 752 x 582 pixels Field of view (FOV): 1.31 x 1.05 ... 8.77 x 6.75 mm Optical distortion: < 0.05 %
Video system	High-performance image processing system with 132 MBytes/s data transfer rate (compatible to European standard CCIR and US standard RS-170) Up to 50 images/s digitizing speed
Measuring methods	Sessile and Captive Drop method Pendant Drop method Lamella method
Size of device (L x W x H)	590 x 220 x 550 mm
Weight	16 kg
Power supply	100 ... 240 VAC; 50 ... 60 Hz; 55 VA
Alternative/Supplementary units and accessories	Single dosing unit; multiple dosing unit; manual wafer stages and tilting base assemblies; liquid, peltier and electrical temperature control units (-10... 400°C); suction plate; film sample holder; optical contact angle and surface tension standards; dosing needles; syringes; PTFE-tubes; temperature inert glasscells; complete PC systems ;

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