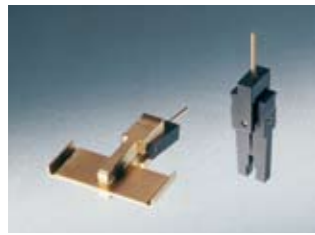


DCAT 21

Dynamic contact angle measuring device and tensiometer





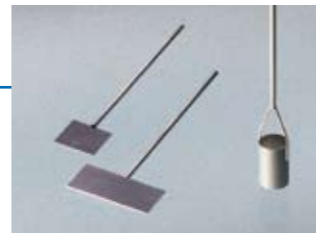
FO 11 — PSH 11



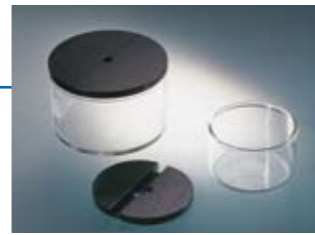
DIS 11 — RG11 — RG 10



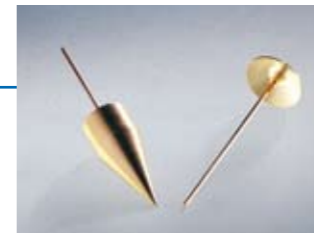
FH 11 — PUR 11



PT 9 — PT 11 — PT 9



GS 70/CP 70 — CP 50 — GS 50



PP 11 — SC 11



TEC 250/DCAT – electrical temperature control unit with accessories

The dynamic contact angle measuring device and tensiometer **DCAT 21** is the all-purpose instrument for the weight-based measurement of contact angle, surface and interfacial tension, critical micelle formation concentration, density, sedimentation and penetration rate, plus penetration resistance.

Standard components

- high-precision electrodynamic compensation weighing system with automatic calibration
- software controlled, motor-driven height positioning of the sample receptacles with variable speed
- automatic electronic coupling lock for the balance
- integrated measurement and control electronics with connections for two Pt 100 temperature sensors
- display for weighing data, temperature and other information
- illuminated sample chamber with inert gas or vapor inlet



DCAT 21 with Accessories kit for measurements of powder samples PUR 11



TV 70NM – non-magnetic thermal chamber with removable micro-electronic stirrer

Accessories and measuring bodies

- thermal chambers with integrated magnetic stirrer and Pt100 probe; optional available as a non-magnetic version with a removable microelectronic stirrer
- electrical temperature control unit with manual or software controlled temperature setting for measurements up to 250 °C and under protective atmosphere
- automatic dosing and refill system
- sample vessels made of glass and PTFE as well as cover plates
- wide range of measuring bodies like Du-Nouÿ rings, Wilhelmy and cylindrical plates, density determination set, sedimentation cone, and penetration probe
- sample holders for single fibers, fiber bundles, plates, films, pigments and powders

Software for control, measurement, analysis and presentation

The **SCAT** software, developed for Windows® XP®/Vista® (32-bit and 64-bit), is available in various discrete usable modules. Every software module includes the control of the DCAT and its accessories, the measurement, the analysis, and the presentation of the results.

SCAT 31

- measurement of the static, time- and temperature-dependent surface and interfacial tensions according to the Du Nouÿ-ring method, the Wilhelmy plate and the wire hoop method
- lamella breakpoint test to determine the surface elasticity

- automatic ring corrections according to Zuidema & Waters, Mason & Huh and Harkins & Jordan
- gas-, liquids- and solids data base

SCAT 32

- force-based measurement of the dynamic contact angle of prismatic and cylindrical solids (e.g. plates, films, rods and single fibers) as well as the wetted length according to the Wilhelmy method
- adsorption measurement on powders and fiber bundles with the determination of the average contact angle according to the modified and the extended Washburn method

- analysis of the surface free energy of solids as well as their components (e.g. dispersive, polar and hydrogen bond parts, acid and base portions, respectively) according to nine different theories
- calculation of work of adhesion

SCAT 33

- fully automatic determination of the critical micelle formation concentration (CMC) of surfactants in forward, reversed and extended mode
- calculation of the minimum surface tension in case of synergistic effects of surfactant mixtures
- calculation of the head space required by molecules on the surface
- calculation of the free adsorption energy after Gibbs
- calculation of the surface excess
- automatic control of the dosing devices LDU x/x for additive and subtractive dosing

SCAT 34

- determination of the density of liquids

SCAT 35

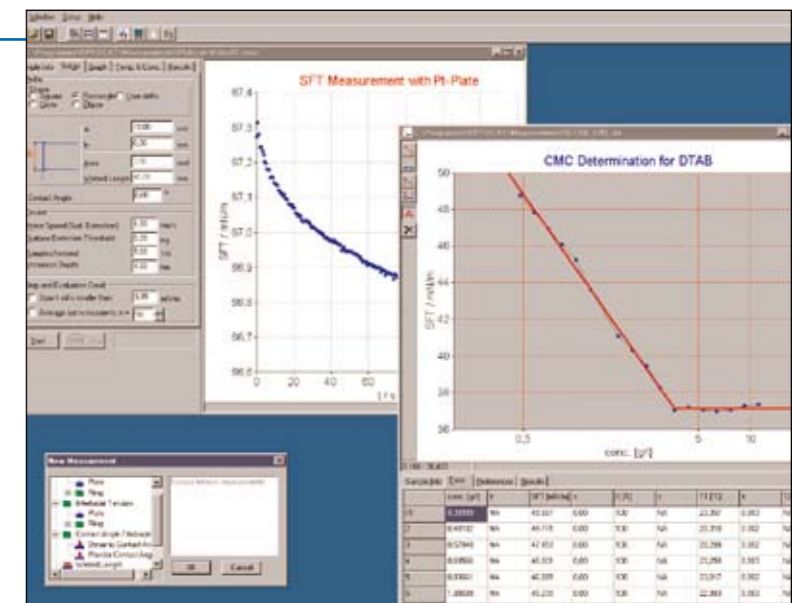
- determination of the sedimentation rate

- measuring of the yield forces on soft gels, pastes etc.
- measuring of the penetration resistance and penetration rate

Standards

The high degree of accuracy of the DCAT 11 complies with all related international standards, for example:

- **ISO 6295** Determination of interfacial tension of oil against water
- **ISO 6889** Surface active agents - determination of interfacial tension by drawing up liquid films
- **ASTM D971-99a** Standard test method for interfacial tension of oil against water by the ring method
- **ASTM D1417-03a** Standard method of testing rubber latices - synthetic
- **DIN EN 14210** Surface active substances (Determination of interfacial tension of surface active solutions by frame and ring method)



SCAT 31 – fully automatic determination of the critical micelle formation concentration (CMC) of surfactants

Technical data

Measuring range for contact angles:	• 0 ... 180°; ± 0.01° resolution
Measuring range for surface and interfacial tensions:	• 1 ... 1000 mN/m; ± 0.001 mN/m resolution
Measuring range for densities:	• 0.50 ... 2.50 g/cm ³ ; ± 0.002 g/cm ³ resolution
Weighing range:	• 10 µg ... 210 g
Measuring value range:	• up to 50 weighing values per second
Travel speed of sample table:	• 0.7 µm/s ... 500 mm/min
Programmable travel for sample table:	• 105 mm
Travel resolution:	• 0.1 µm
Receiver for sample receptacles:	• optional 50 mm, 70 mm, or 100 mm diameter (TV 50 / 70 / 100)
Display for status, weight, and temperature:	• integrated
Self-check and system diagnostics:	• integrated
Automatic stirrer for CMC measurements:	• magnetic stirrer integrated in TV 50 / 70 / 100; (optional non-magnetic version TV 70-NM with a removable microelectronic stirrer system)
Temperature range:	• -10...130 °C with optional refrigerated and heating circulator • integrated temperature measurement and digital display
Temperature measurement and range:	• 2 x Pt 100 inputs for -60...+450 °C (Pt 100 as option); 0.01 K resolution; precision 1/3 DIN IEC 751 (±0.03%), Class B
Software:	<ul style="list-style-type: none"> • SCAT 31: software module for surface and interfacial tension, lamella break point test • SCAT 32: software module for contact angles and surface free energies, wetted lengths • SCAT 33: software module for the determination of the critical micelle formation concentration of surfactants (CMC) • SCAT 34: software module for liquid densities with optional density determination set DIS 11 • SCAT 35: software module for sedimentation / penetration
Dimensions (L x W x H):	• 340 x 230 x 565 mm
Weight:	• 25 kg
Power supply:	• 100 ... 240 VAC; 50 ... 60 Hz; 55 W

Accessories

• thermal chamber for sample vessels with diameters of 50 mm (**TV 50**), 70 mm (**TV 70**), and 100 mm (**TV 100**) with integrated magnetic stirrer and Pt100 probe; available as a non-magnetic version **TV 70NM** with a removable microelectronic stirrer • electrical temperature control unit **TEC 250/DCAT** • automatic dosing and refill system **LDU xx** • sample vessels made of glass **GS xx** and PTFE **GS xxP** as well as cover plates **CP xx** • sample vessel with inert gas connector **GTR 70** • Du Noüy-ring **RG 11** and **RG 10** • Aligning tool **R-AT** • Wilhelmy plate **PT 11** and **PT 9** • cylindrical plate **PT 10** • density determination set **DIS 11** • sedimentation cone **SC 11** • penetration probe **PP 11** • kit for measurement of powder samples **PUR 11** • single fibre holder **FH 12** and **FH 13** • holder for powders, pigments, fibers and fiber bundles **FH 11** • plate holder **PSH 11** • film holder **FO 11** • glue for FH 12 and FH 13 **Glue FH 12** • filter papers for PUR 11 **FP 11** and FH 11 **FP 12**

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