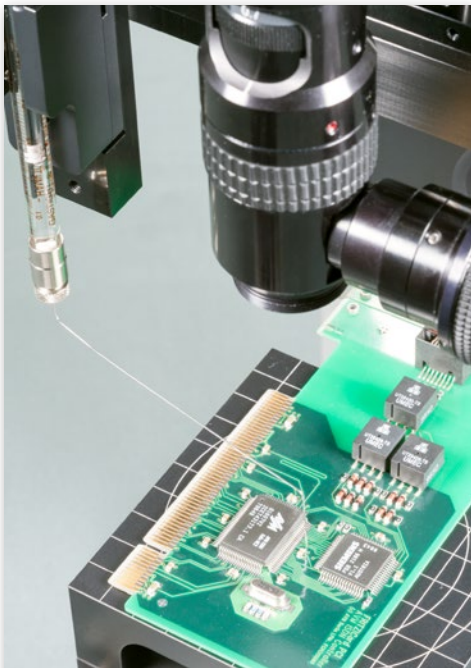


Topview Video System TVS

Contact angle measurement in topview

dataphysics
Understanding Interfaces



Topview measurement with the TVS-C on a printed circuit board

For the majority of non to low reflective surfaces a **LED ring light** can be used which is comprised in the **TVS-R** variant of the Topview Video System. It provides a homogeneous diffuse illumination of the sample.

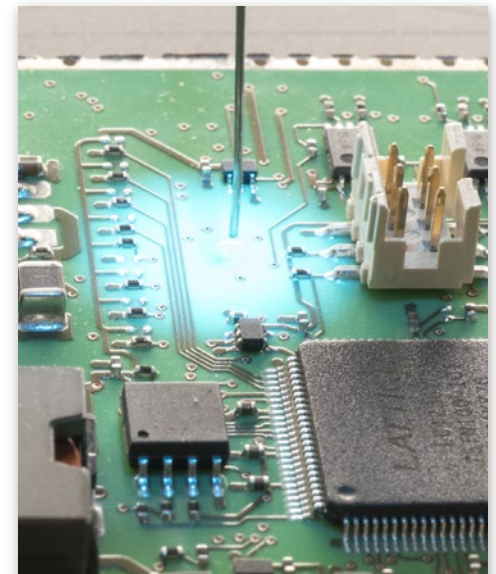
Yet on highly reflective surfaces, like metals, one does not achieve a sufficient contrast between drop and surface with the diffuse ring light. In this case the **TVS-C** variant of the Topview Video System with a **collimated coaxial illumination** is the best choice.

In the TVS-C the sample is illuminated parallel to the axis of observation by directly coupling the light into the optics. Hence surfaces like metals which directly reflect the light back along the same axis appear bright, while curved drop surfaces reflect large parts of the light in other directions and hence appear darker.

Subsequent image processing of such contrast optimised pictures with the SCA 27 software is of course easily feasible.



Drop of water on black plastic with the LED ring light of the TVS-R

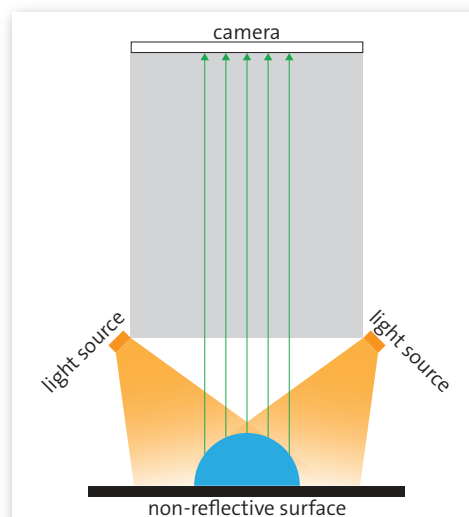


Drop of water on printed circuit board with the collimated coaxial illumination of the TVS-C

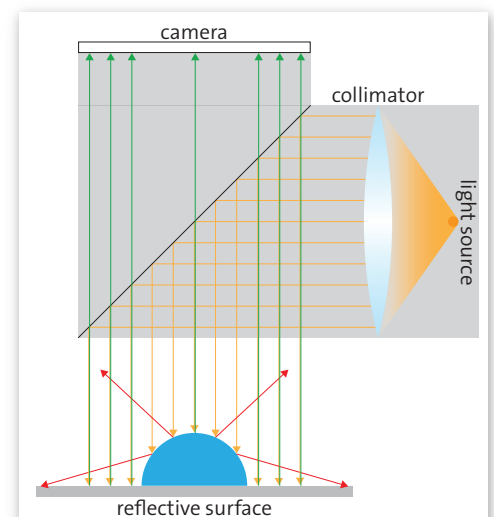
Contact angle measurement of drops on solid surfaces allows to determine different surface parameters like surface energy or work of adhesion. For this purpose one typically analyses the shape of the drop profile in an image that is captured from the side. However, in case of structured samples this is often not possible. Contact angle measurements in indents of ready-made components, on assembled printed circuit boards or on the well bottoms of microwell plates, are only possible using a **topview measurement** method.

DataPhysics Instruments offers the ideal solution for contact angle measurements in topview with the **Topview Video System TVS**, that is designed as a module for the optical contact angle measuring and contour analysis systems of the OCA series. Besides contact angle measurements at places previously inaccessible, the TVS also enables the determination of surface homogeneity and isotropy by evaluating the radial symmetry of the drop.

The Topview Video System TVS comprises an **electronic syringe module** which is used to dose a liquid drop with a well-defined volume via a bent needle. The drop is observed from the top by a **camera with high resolution optics**. – If desired the already existing optics and camera of the OCA model can be mounted on the TVS holding system. – For **sample illumination** two different systems are available which ensure an optimal contrast of the drop image depending on the reflectivity of the surface.



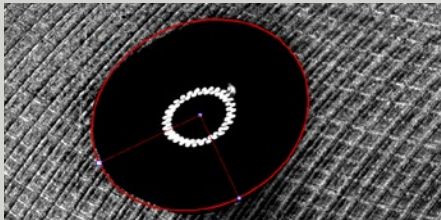
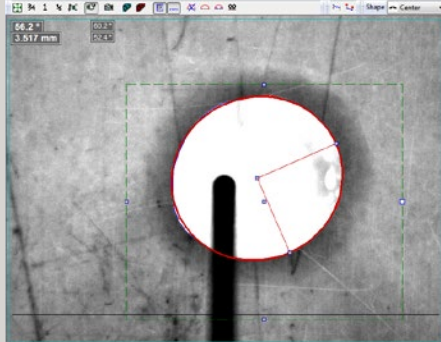
Schematic illustration of the LED ring light of the TVS-R



Schematic illustration of the collimated coaxial illumination of the TVS-C

SCA 27 — Contact angle measurement in topview

The SCA 27 software module determines the contact angle based on the drop radius and the drop volume. The radius and the volume are automatically determined from the camera picture and the data provided by the dosing system. For the determination of the radius an ellipse is fitted to the drop contour. In addition to the automatic evaluation an ellipse can also be fitted manually.



Topview Video System with collimated coaxial illumination TVS-C on an OCA 100

Technical data

Max. sample depth:	• 20 mm
Measuring range for contact angles:	• >0° ... 90°
Optics and image processing system:	• USB 3.0 camera, max. resolution 2048 x 1088 Pixel, max. frame rate 2450 frames/s • 6-fold zoom lens with integrated fine focus (± 6 mm) • field of view: (2.50 x 1.32) mm ² ... (16.09 x 8.54) mm ² • optical distortion: < 0,05 % • alternatively existing optics and image processing system of the OCA (only TVS-R)
Illumination:	• LED ring light with manually controlled intensity (TVS-R) • collimated coaxial LED illumination with manually controlled intensity (TVS-C)
Dimensions (L x W x H):	• 230 mm x 230 mm x 340 mm
Weight:	• 5 kg
Power supply:	• by OCA system

**For more information please contact us.
We will find a tailor-made solution to your
surface chemistry requirements and
will be pleased to provide a quotation,
obligation-free, for your instrument system.**

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