



DualScope™ Scanner DS 45-40 with tools and probes.

**Introduction.**

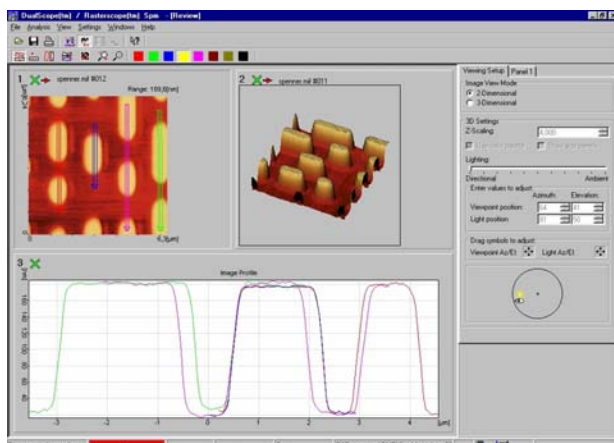
Today Scanning Probe Microscopes (SPMs) are found in many variations; some for the universal needs of the universities and some for the needs rising within the industrial companies and related institutes.

Today the optical microscope makes a natural starting point for nearly all surface characterization tasks, and DME has developed the DualScope™ concept with base in the optical microscope; this is the reason for the name - optical image and AFM image simultaneously.

**Main data for the scanner.**

DualScope™ scanner DS 45-40 fits on all optical microscopes with infinite corrected optics and standard 45 mm objective length.

The DS 45-40 scanner has an AFM measuring volume of 40×40×2.7 micron with the 2.7 micron in the Z-direction i.e. the center line of the optical microscope.



DS 45-40 contains a complete probe scanner, since it contains the scanner itself, the optics of a bright field objective, the coarse approach mechanism, and the probe detector system (AC-mode). The connection from the scanner to the rest of the SPM system consists of a multi-cable made in medical PVC which can be used in a clean room. Several SPM probes intended for AC-mode are available with different probe data for tip geometry, tip length, resonance frequency, material, etc.

**Applications for the DS 45-40.**

The main applications for DS 45-40 are surface characterizations where the magnification obtainable with the optical microscope is insufficient, and especial if very small details are to be studied on rather flat surfaces.

DS 45-40 can be used in many different configurations in optical microscopes - both ordinary and inverted - in specially designed stages, in DME's DualScope™ Microscope M45, and DualScope™ Probehead AFM DS PA.

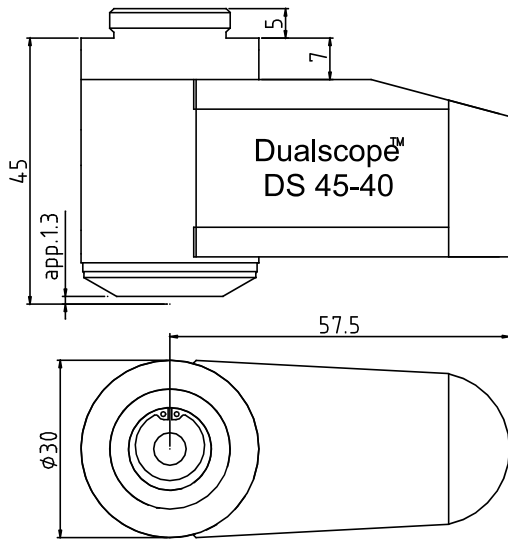
In some applications, DS 45-40 is used together with equipment where the optical axis is horizontal, e.g. on optical tables.

DS 45-40 is a building block with many possibilities for combination with other equipment, covering applications close to those of optical microscopes or where optical microscopes no longer provide the sufficient information.

# DualScope™ Scanner DS 45-40

Product specification

DME 2392



DS 45-40, dimensions in mm

## Technical specifications for DS 45-40:

### Scanner

X,Y scan size: 40 × 40 micron  
 X,Y resolution: < 1 nm  
 Z range: 2.7 micron  
 Z resolution: < 1 nm (depending on stage).

### Non-linearity

X direction: 0.7 %  
 Y direction: 2.7 %  
 Z direction: 10 %

*These values can be significantly improved by calibration with relevant calibration standards for the measuring volume it is wished to use. If the scanning speed is kept at a constant value, the stated values can be improved by a factor 2 - 5.*

### Approach

Type: Automatic  
 Length: > 1.5 mm

### Operation

Mode: AC  
 Imaging: Topography, Phase.

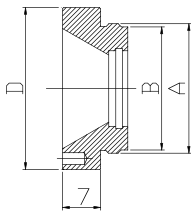
### Objective

Type: Bright Field.  
 Focal length: 45 mm.  
 Magnification: 15X.

### Physical properties

Weight (excl. cable): 140 g.  
 Cable length: 2 m.  
 Cable jacket: Medical PVC

## Specifications of DS 45-40 Adapters for Optical Microscopes :



Adapter dimensions in mm

DME No.	Name	A [mm]	B [mm]	Thread [mm]	D [mm]
3680	ISO 8038-1985	Ø20.27 (0.80")	Ø19.1	0.705 (36 per inch)	Ø30
3681	M20×0.75	Ø19.9	Ø18.8	0.75	Ø30
3682	M22×0.75	Ø21.9	Ø20.8	0.75	Ø30
3683	M25×0.75	Ø24.9	Ø23.8	0.75	Ø30
3684	M25.5×0.78	Ø25.4	Ø24.3	0.78	Ø30
3685	M26×0.705	Ø25.9	Ø24.8	0.705 (36 per inch)	Ø30
3686	M26×0.75	Ø25.9	Ø24.8	0.75	Ø30
3639	M27×0.75	Ø26.9	Ø25.8	0.75	Ø30
3687	M28×0.75	Ø27.9	Ø26.8	0.75	Ø30
3688	M30×0.75	Ø29.9	Ø28.8	0.75	Ø32
3689	M32×0.75	Ø31.9	Ø30.8	0.75	Ø34

### Accessories:

DME 2592 10 pcs SenseMode™ probes  
 DME 2453 Probe assembly kit for DS 45-40 probes  
 DME 2086 25 pcs probe holders

DME 2055 Test sample, 3 micron, 3D  
 DME 2356 Calibration grids for SPM (set)

Local representative

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