

## TopMap Micro.View®+

TopMap Micro.View®+ is the next generation optical surface profiler. Designed for modularity, this comprehensive workstation allows for customized and application-specific configurations. The Micro.View®+ delivers the most detailed analysis of surface roughness, texture and microstructure topography. Combine 3D data with color information for amazing visualizations and extended analysis like detailed documentation of defects. The high-resolution camera delivers incredibly detailed 3D data visualization of engineered surfaces.

The encoded and motorized turret secures a seamless transition between objectives. Micro.View®+ features the latest Focus Finder plus Focus Tracker, keeping the surface in focus at all circumstances. The fully motorized sample positioning stages allow for stitching and automation.



### Highlights

- High-end white-light interferometer with nm resolution
- 100 mm z measurement range with CST Continuous Scanning Technology
- With Focus Finder and Focus Tracker ready for automation
- Motorized X, Y, Z, tip/tilt and turret save repositioning
- Color information mode for extended analysis and documentation of defects
- Modular, application-specific configurations

## TopMap Micro.View®+

Next generation optical surface profiler

Datasheet



# Technical data

The information for the model TMS-2400 TopMap Micro.View®+ comply with the initiative "Fair Data Sheet" for optical surface measurement devices. Please ask Polytec for additional information for the configuration with 5 MP camera.



## General features <sup>1</sup>

Positioning volume <sup>2</sup> 100 x 200 x 200 mm<sup>3</sup> = 0.004 m<sup>3</sup>

Max. number of points in a single measurement X: 1592, Y: 1200, X·Y: 1 908 000

Max. number of measuring points in a stitched measurement 500 million

## Objective-specific features <sup>1</sup>

	2.5X	4X LWD	5X	10X	10xLWD	20X	50X	100X
X: mm, Y: mm, X·Y: mm <sup>2</sup>	X: 3.73	X: 2.33	X: 1.87	X: 0.93	X: 0.93	X: 0.47	X: 0.19	X: 0.09
	Y: 2.81	Y: 1.76	Y: 1.41	Y: 0.70	Y: 0.70	Y: 0.35	Y: 0.14	Y: 0.07
	X·Y: 10.50	X·Y: 4.10	X·Y: 2.62	X·Y: 0.66	X·Y 0.66	X·Y: 0.16	X·Y: 0.026	X·Y: 0.007
Working distance	10.3 mm	30 mm	9.3 mm	7.4 mm	28 mm	4.7 mm	3.7 mm	2 mm
Vertical measuring range <sup>7</sup>	100 mm							
Numerical aperture	0.075	0.10	0.13	0.30	0.18	0.40	0.55	0.70
Calculated maximum angle	4.30°	5.74°	7.47°	17.46°	10.37°	23.58°	33.37°	44.43°
Measuring point spacing X, Y	2.34 μm	1.47 μm	1.17 μm	0.59 μm	0.59 μm	0.29 μm	0.12 μm	0.06 μm
Calculated lateral optical resolution	4.27 μm	3.20 μm	2.46 μm	1.07 μm	1.78 μm	0.80 μm	0.58 μm	0.46 μm

## Performance features

Measurement noise <sup>1,3,4</sup> 0.4 nm

Vertical resolution <sup>1,3</sup> 1 nm

Surface topography repeatability <sup>3,5</sup> 0.1 nm

Repeatability of RMS <sup>6</sup> 0.02 nm

## General specifications

Dimensions [L x W x H]

Controller 314 x 142 x 230 mm<sup>3</sup>

Portal-stand 980 x 548 x 372 mm<sup>3</sup>

Sensor head 270 x 440 x 182 mm<sup>3</sup>

Weight

Controller 3.6 kg

Portal-stand 60 kg

Sensor head <sup>8</sup> 12.8 kg

Power 100...240 VAC ±10 %, 50/60 Hz, 100 W system + 120 W PC

Ambient temperature range 20 ±3 °C

Operation/Storage temperatur +10 °C ... +35 °C (50 °F ... 95 °F) / -10 °C ... +65 °C (14 °F ... 149 °F)

Relative humidity max. 80 %, non-condensing

<sup>1</sup> Complies with the initiative "Fair Data Sheet" for optical surface measurement devices

<sup>2</sup> With optional XY-positioning stage

<sup>3</sup> Phase evaluation

<sup>4</sup> According to the initiative "Fair Data Sheet", 30 measurements (10x objective, 11.3 μm/sec, 92% FOV) on a parallelly aligned plane mirror (R > 93%, λ/10).

Postprocessing: alignment, 5 x 5 median filter with threshold 3 nm (phase evaluation)/40 nm (envelope evaluation), high pass filter λ<sub>c</sub> = 0.25 nm

<sup>5</sup> According to DIN EN ISO 25178-604:2013-12 30 measurements (10x objective, 11.3 μm/sec, 92% FOV with 3x3 median filter) on a parallelly aligned plane mirror (R > 93%, λ/10)

<sup>6</sup> Repeatability of the surface roughness parameter Sq under the same conditions as for <sup>5</sup>

<sup>7</sup> Depending on the sample size, spacer may be needed to use the whole range

<sup>8</sup> Without objectives

<b>Application-specific features</b>			
<b>Typical flatness measurement</b>			
Method of acquisition and evaluation	Coherence scanning on smooth surfaces <sup>2</sup>		Coherence scanning on rough surfaces <sup>3</sup>
Flatness deviation <sup>1,4</sup>	5 nm		30 nm
Repeatability <sup>5</sup>	0.5 nm		8 nm
<b>Typical step height measurement</b>			
Nominal step height	7.5 µm <sup>6</sup>	75 µm <sup>6</sup>	20 mm <sup>9</sup>
Repeatability <sup>7</sup>	0.53 %	0.05 %	0.0003 %
Maximum deviation of a step height measurement <sup>1,8</sup>	0.1 µm	0.1 µm	3 µm
<b>Other features</b>			
Measuring principle	Coherence scanning interferometry (Michelson/Mirau objectives)		
Optical setup	Microscope system; Light source: long-life LED, 525 nm		
Data formats	Topography formats: SUR, ASCII, STL, X3P Export formats: qs-STAT, PDF, BMP, PNG, TIFF, GIF		
<b>Configuration possibilities</b>			
Hardware included	Tip-tilt stage, Encoded turret, Precision Z drive with Continuous Scanning Technology		
Hardware options	Objectives, Motorized encoded turret, Positioning stages: motorized tip-tilt and motorized xy, Advanced focus finder, Joystick, Color information, 5 MP camera, Spacers for different sample heights, Barcode reader, Calibration sets, Vibration isolation tables: pneumatically and electronically controlled		
Software included	3D data acquisition with multiple operation modes, Easy wizard, Smart Scanning Technology, Pre-scan, 2D/3D data evaluation, Automation with recipes, ISO roughness analysis (ISO 25178, ISO 4287, ISO 4288), Critical dimensions		
Software options	Environmental Compensation Technology, Quality control (QC) package, Operator Interface, Pattern matching, Software customization, MountainsMap		

<sup>1</sup> Complies with the initiative "Fair Data Sheet" for optical surface measurement devices

<sup>2</sup> Evaluation of the correlogram phase

<sup>3</sup> Evaluation of the correlogram envelope

<sup>4</sup> Mean value of the flatness (according to ISO 1101) from 30 measurements (10x objective, 11.3 µm/sec, 92% FOV) on a parallelly aligned plane mirror (R>93%, λ/10). Postprocessing: Alignment, 5x5 median filter with threshold 3 nm (phase evaluation)/30 nm (envelope evaluation), low pass filter λ<sub>c</sub>=0.02mm

<sup>5</sup> Standard deviation of the measured flatness values from <sup>4</sup>

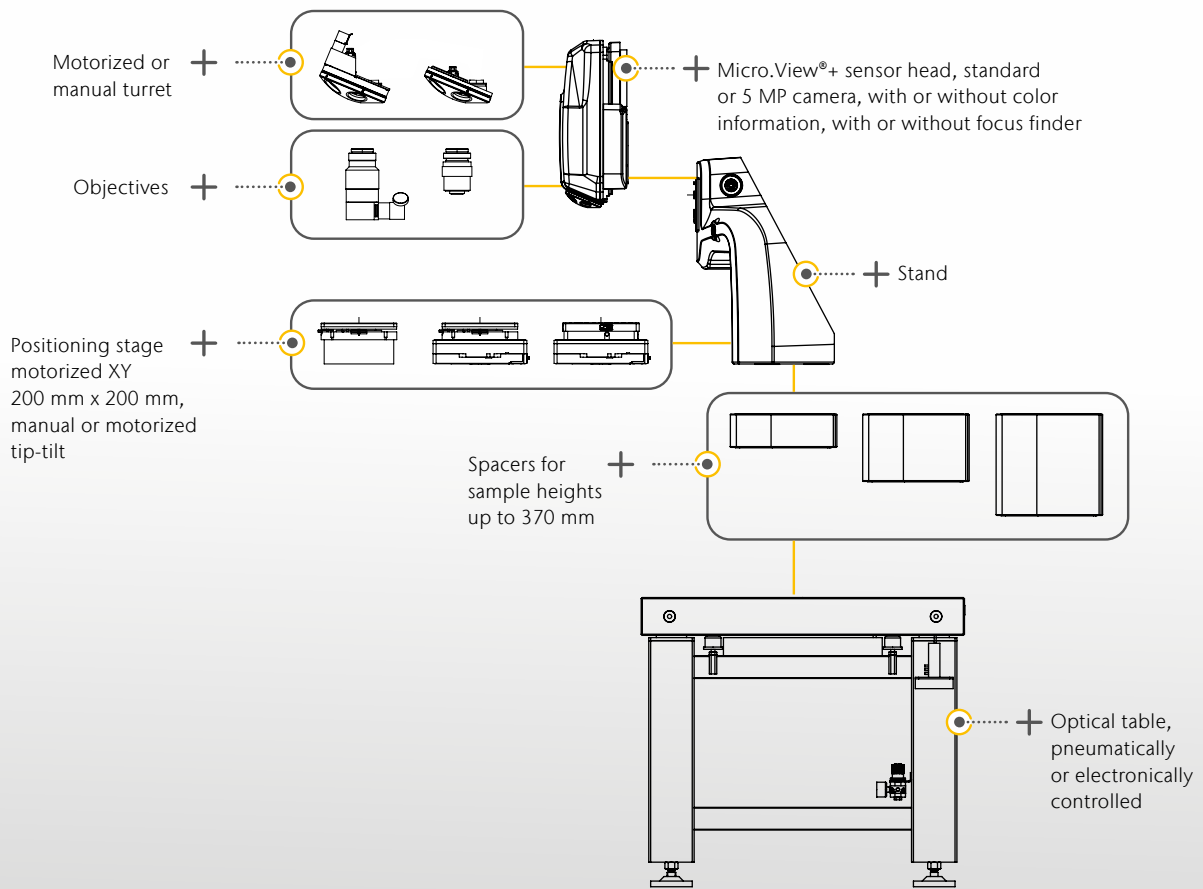
<sup>6</sup> 15 measurements (10x objective, 11.3 µm/sec) per step on a calibrated depth setting standard, type KNT 4080/03 (ISO 5436-1)

<sup>7</sup> Standard deviation of the measured step height under repeatability conditions

<sup>8</sup> Largest measured deviation relative to the calibrated step height under reproducibility conditions

<sup>9</sup> 15 measurements (4x objective, 11.3 µm/sec) on a calibrated gauge block (contact bonded on an optical flat) of precision class K (according to ISO 2768-2)

# Configuration of the optical profiler



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