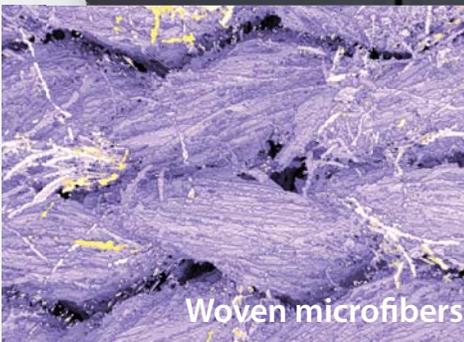
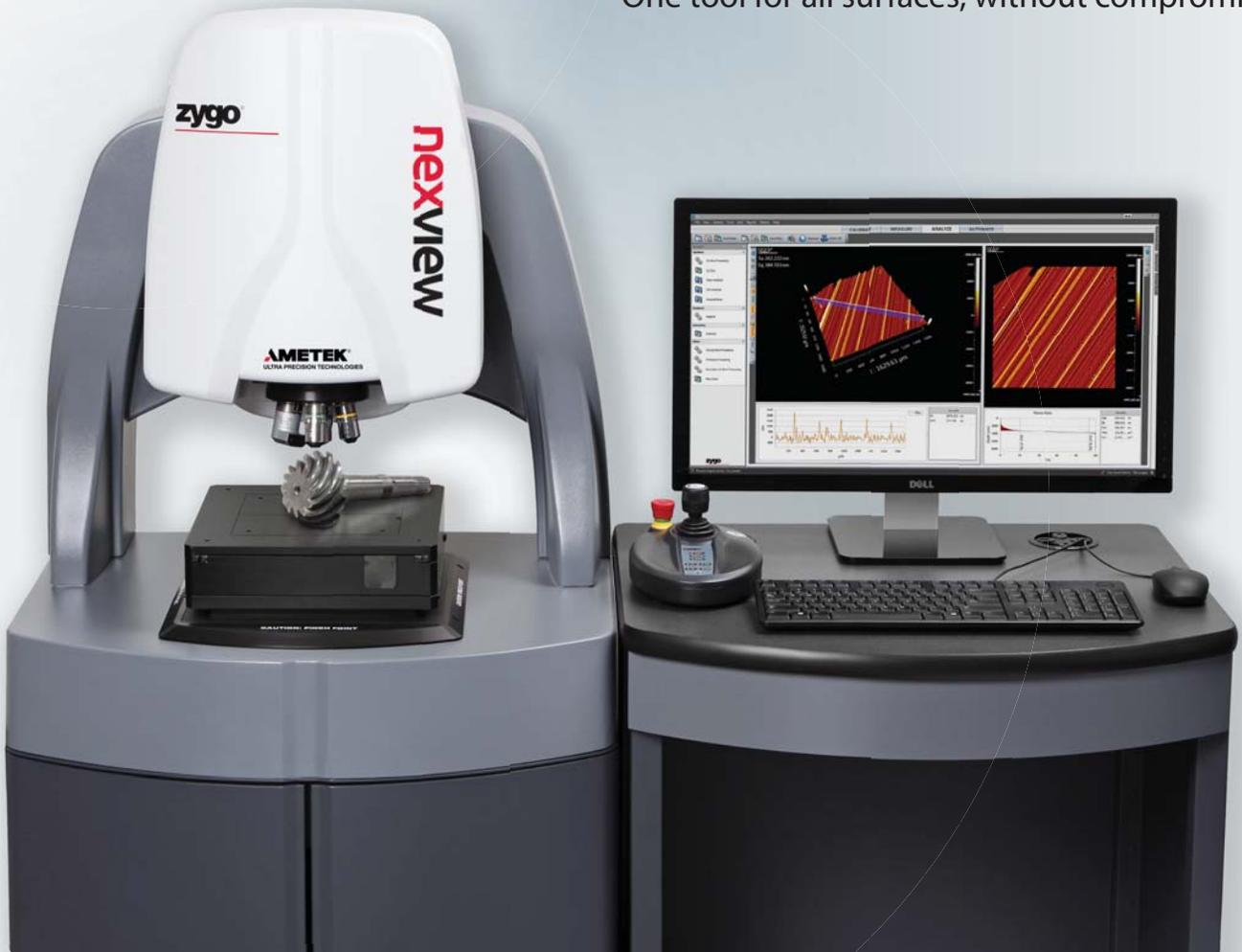


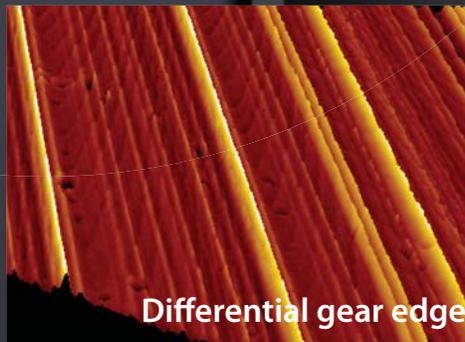
**zygo**<sup>®</sup>

# nexview<sup>™</sup>

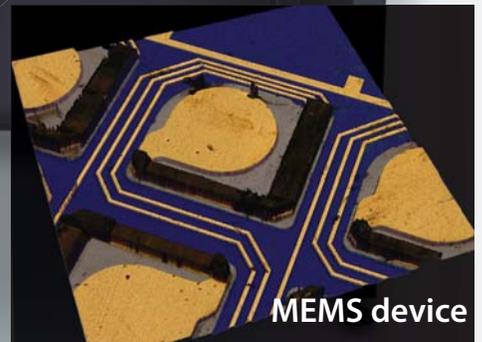
One tool for all surfaces, without compromise<sup>™</sup>



Woven microfibers



Differential gear edge



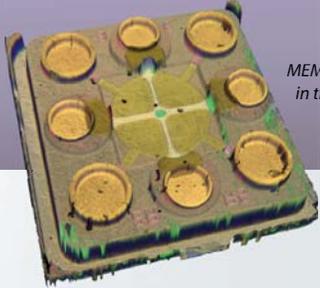
MEMS device

*ZYGO's most flexible, powerful, and robust non-contact surface*

**AMETEK**<sup>®</sup>  
ULTRA PRECISION TECHNOLOGIES

# Nexview profiler product highlights

An all-new advanced non-contact 3D imaging and metrology tool—with high fidelity surface mapping and visualization—for surface applications demanding precise quantitative, topographic, volumetric, and texture characterization.



MEMS device  
in true color



## Generation next: the state of the art in 3D surface profiling

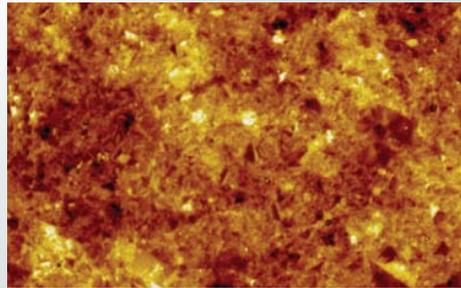
**Full 3D visualization** of virtually any surface: Topography and photorealistic texture on rough, polished and highly sloped surfaces—even transparent films

**Robust measurements**—new technology reveals topography data nearly everywhere there is a feature, even on rough and angled surfaces

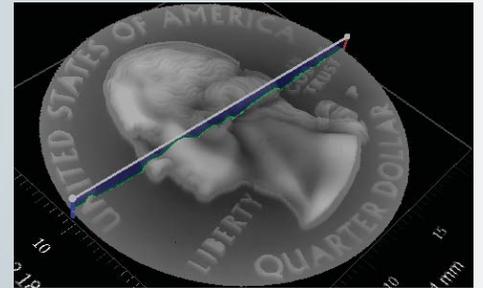
**Fast**—sub-nanometer vertical resolution at high speeds, independent of magnification

Proprietary ZYGO technology enables the optical system to push beyond the traditional limits of interferometric profilers—to provide meaningful height data virtually everywhere there is a sample, even on extremely rough, low reflectivity, and highly sloped surfaces.

When combined with advanced techniques like SureScan™ technology, for robust performance in the presence of vibration, this improved visualization and metrology capability provides an exceptionally powerful platform for surface characterization.

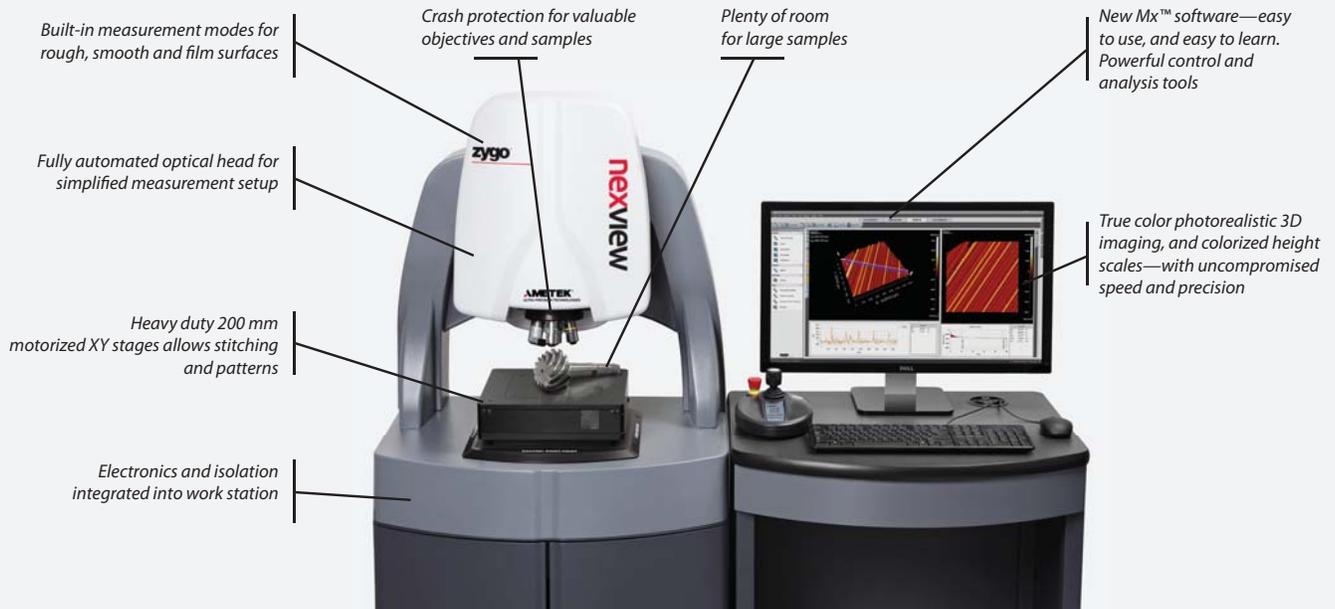


Nexview profiler can analyze process fingerprints such as the post-polish crystal structure of this silicon mirror.



Measure larger objects and highly sloped surfaces, like this US quarter (with over 25 million data points).

### ADVANCED DESIGN



# The ideal metrology choice

## Superior measurement visualization, capabilities, and performance

Nexview™ profiler represents a significant advantage over other metrology methods. A fully automated optical head makes configuration of advanced metrology applications easy, robust and repeatable. Interactive user-configurable data plots reveal surface characteristics through traditional 2D and 3D plots, as well as more advanced slope analysis, PSD, and true color imaging.

Whether for measurement precision, speed, robust performance, or visualization, the Nexview profiler is the ideal choice.

## Surface metrology with true color imaging



True color 3D plot of copper, showing darker blue corrosion areas

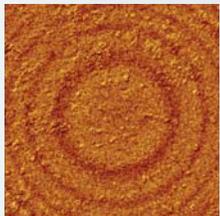
Nexview imaging provides live color viewing and topography overlay on surface data, at full resolution, to complete characterization of a surface.

Using the same imaging camera as the measurement means there is no secondary imaging channel to consider, and no mismatch of resolutions between imaging and topography measurements.

The Nexview profiler uses only the highest quality and performance scientific-grade cameras to construct the color data through the metrology channel. This unique optical design avoids the inherent tradeoffs in speed and measurement noise that a secondary camera can entail.

## Robust performance

Two measurements at the same location



Traditional CSI with vibration artifacts



SureScan™ technology minimizes vibration effects

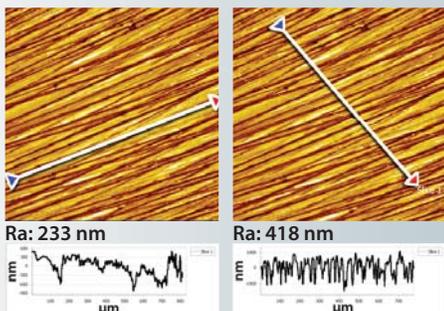
ZYGO's advanced SureScan™ technology provides an advanced level of vibration rejection. This technology allows for sub-nanometer surface metrology performance in turbulent environments, as are often found on the manufacturing floor.

Advancements in measurement technology allow the Nexview profiler to measure lower

reflectivity surfaces with slopes up to, and even beyond, 86 degrees.

Additionally, an integrated z-axis soft stop and objective crash protection system help to prevent and detect accidental contact with the objective – reducing the risk of system or part damage.

## Area based metrology with uniform vertical resolution



Based on optical interferometry, the Nexview profiler's measurements gather data at more than 1 million data points in every measurement field. The non-contact technique never changes the surface of the part under test, and area sensing helps to ensure that you get a more complete picture of your process.

The Nexview profiler reveals important details regarding the surface lay. Features, which may be missed with a single line scan or which have a directional nature to their structure, are simple to find and measure.

For example, at left a surface measured by Nexview measurements show an

area roughness (Sa) of 418 nm. A single line trace perpendicular to lay reads 418 nm Ra, while a single line trace along the lay reads 233 nm Ra.

Whether measuring a 20 mm or 2 mm field of view, Nexview profiler provides a constant level of vertical precision. Coherence Scanning Interferometry (CSI) achieves its precision by interferometric sensing, not a variable focal plane. Consequently, measurement resolution is uniform across all objectives and magnifications. Measurement speeds are constant as well—high magnification measurements occur just as fast as low magnification ones.

# Automated for production, powerful and flexible for research

## Highly versatile optical profiling applications



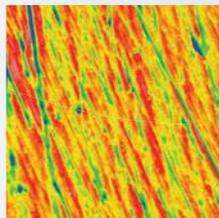
The Nexview™ profiler adapts to your evolving metrology requirements, from the materials research lab, where new technologies are developed, to the production line, where process control is critical.

In the lab, Nexview profiler measures a

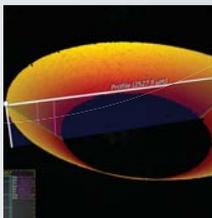
large variety of material surfaces, slopes, reflectivities and size, and provides reliable surface topography data.

In production, the system's programmability provides automated, repetitive measurements in vibration-prone environments with low oversight and maintenance.

## Precision machining



Knee implant roughness

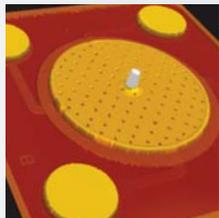


120° cone angle: high slope capability

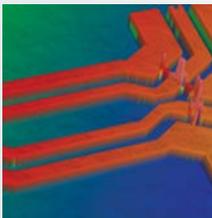
Nexview profilers routinely perform gage capable metrology of ISO 25178 roughness parameters, surface waviness, flatness, step height, and cone angles for precision manufactured components. Advanced software tools including regions

segmentation, 2D vision analysis, and material ratio analysis further expand the application capability. And with SureScan™ technology, Nexview systems can be located closer to the production work cell.

## Microstructures



MEMS microphone surface measurement



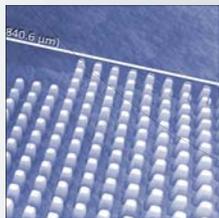
Microstructures: Nexview's analysis easily characterizes areas

Whether for R&D, process development or manufacturing production control, advanced analysis of multiple regions is critical.

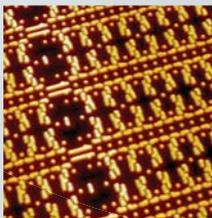
Automated region identification measures relative step height, angle, roughness, and

dimensional features of MEMS devices and other microstructures quickly and easily.

## Semiconductor



30 nm high etched posts in IC lithography application



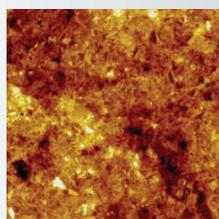
Microelectronics

The automated staging system and Mx software interface allow the Nexview profiler to scan over a large number of sites on a wafer, enabling the metrology of feature heights, sizes, and other surface topography

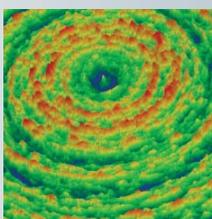
and texture parameters, even in the presence of transparent films.

Results are easily stored in spreadsheet style outputs with automatic computation of statistics for the run.

## Optical production



Super smooth SiC



Diamond turned optics

The Nexview profiler measures surface roughness, flatness, radius of curvature, PSD and more at virtually all stages of the optics manufacturing process. Traditional materials from rough ground to polished

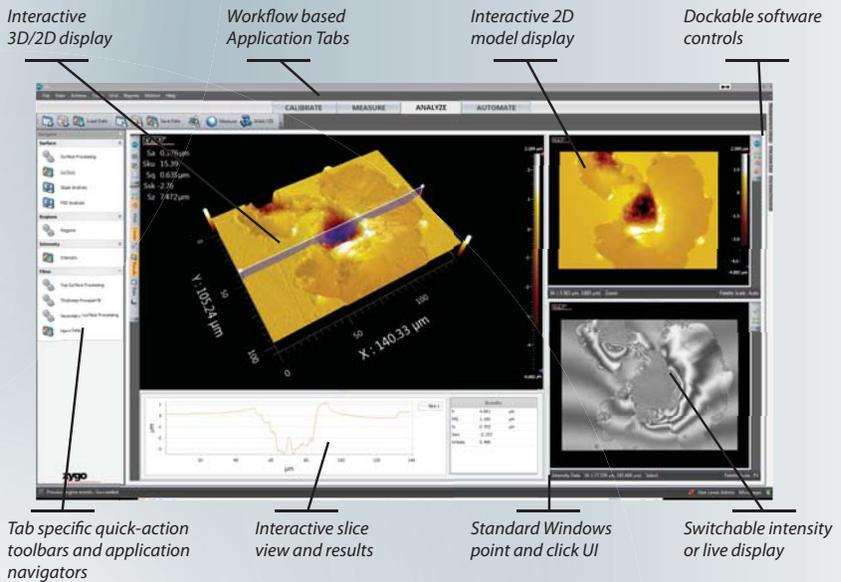
and superfinished are measured regardless of reflectivity. Diamond turned surfaces benefit from the superior optical imaging and powerful filtering tools to completely characterize the surface.

# Intuitive software

## The next standard in metrology software: Mx™ control and analysis

**Mx** software is ZYGO's all new platform for instrument control and data analysis. Using a simple workflow based concept, users easily navigate the metrology experience from setup through analysis and reporting.

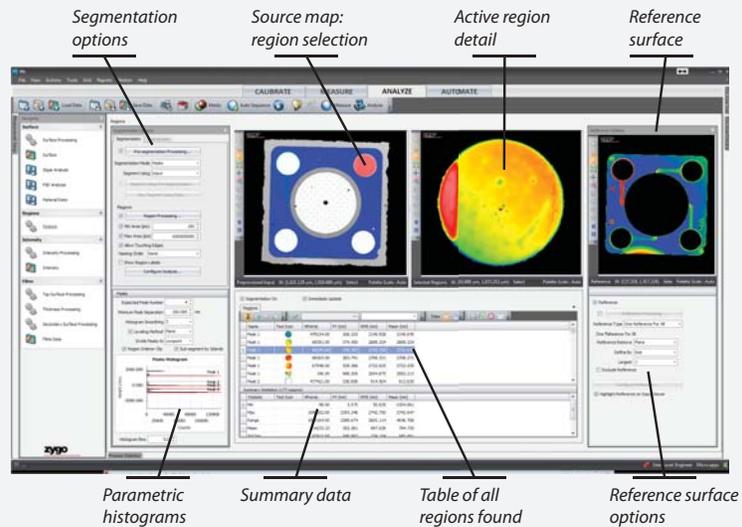
Interactive and detailed plots show full 2D or 3D data; profile slices, material ratio, slope analysis, and PSD views. With built-in SPC, pass/fail indication, data reporting and run charts, production quality analysis is simple.



### ADVANCED ANALYSIS

## Regions analysis

Regions analysis demonstrates the power of area measurements. In an individual data set, whether from a single field of view or stitched as a composite, regions that are separated laterally and/or vertically can be compared.



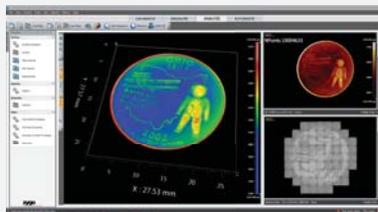
### AUTOMATION

## Stitching and patterned sampling

Stitching is a way of enlarging a field of view and increasing data density. Adjacent fields-of-view are matched at their edges, and joined together into a larger image.

Pattern sampling takes advantage of the highly automated stage and data acquisition capabilities of Nexview.

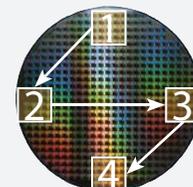
**Stitching** with Nexview™ profiler allows you to explore surfaces at high magnification with high data density.



1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63
64	65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80	81

The Stitching Preview eliminates stitching grid guesswork

**Pattern sampling** is measuring different locations on the stage, such as a tray of samples or evaluating different areas on a larger object.



Automated sampling at each location results in multiple measurements from one loading of the stage

## Features

- Multiple data collection techniques provide maximum application flexibility—for surface heights from angstroms to millimeters
- SureScan™ technology enables precision metrology in vibration-prone environments
- Correlation to 2D and 3D standards with compliance to ISO 25178 topography results
- New streamlined Mx™ software
- Built in pass/fail, SPC, reporting, and run statistics
- Measurement scan rates up to 96 µm/sec
- Built in pneumatic vibration isolation
- Open structure provides clear part visibility and access
- Built in 75 mm head riser accommodates taller samples
- Optional films topography for transparent films >400 nm thick
- Optional 2D analysis Vision Software Suite

## Performance

### Surface Topography Repeatability

- 0.08 nm for all magnifications

### Repeatability of the RMS

- 0.005 nm

### Field of view

- From 16 x 16 mm to 40 x 40 µm

### Sample Stage

- 200 mm XY travel; +/- 4° tilt; 20 lbs capacity

## System Options

- Encoded XYZ stages
- 4 position motorized encoded objective turret
- 50 and 150 mm gantry risers
- Workstation desk with USB hub

## Physical Characteristics

### Dimensions (H x W x D)

- 146 x 73 x 61 cm (57.48 x 28.74 x 24.02 in)

### System Weight

- 248 kg (547 lbs)

## Flexible Configurations



### Objectives

ZYGO maintains the largest selection of interferometric objectives including:

- Standard working distance objectives from 1× to 100× magnification. Our 100× objective with 0.85 NA has the finest optical resolution of any interferometric profiler.
- Long working Distance (LWD), and super long working distance (SLWD) objectives from 1× to 10× magnification.
- Specialized glass compensated (GC) objectives enable sample observation through a transmissive window.

### Gantry Risers

Optional 50 mm (2 in.) and 150 mm (6 in.) base riser kits work with the included 75 mm head riser to increase standard work volume by more than 8 inches, to enable access to very large parts and deeply recessed surfaces.

### Software

Additionally, optional software licenses for vision analysis and transparent films analysis enable multifunctional tool use for a wider variety of applications such as materials characterization, precision machining, prosthetics, MEMS, semiconductor, consumer electro-optics, and optical surface manufacturing.

## Largest selection of objectives available in optical metrology

### Objective Working Distance (mm)

Magnification	1×	2×	2.5×	2.75×	5×	5.5×	10×	20×	50×	100×
Michelson/Mirau Standard working distance	-	-	-	4.5	-	8.0	7.4	4.7	3.4	0.5
Long Working Distance	8.0	21.0	-	-	21.0	-	19.0	-	-	-
Super-Long Working Distance	40.0	-	40.0	-	40.0	-	-	-	-	-
Glass Compensated	-	18.5	-	-	19.0	-	18.0	-	-	-

## Accessorize your Nexview Profiler

Accessory	Description
Workstation	<ul style="list-style-type: none"> <li>▪ Side desk designed to complement the system and accommodate the monitor, keyboard, mouse and joystick pendant</li> <li>▪ Convenience drawer for storage and USB hub for access to the PC (typically located in the Nexview instrument stand)</li> </ul>
Objective turret	<ul style="list-style-type: none"> <li>▪ 4 position, motorized and encoded</li> <li>▪ Various objective mounting and parfocal adapters available</li> </ul>
Calibration standards	<ul style="list-style-type: none"> <li>▪ Step-height: 1.8 µm and 25 µm</li> <li>▪ SiC Reference Flat: choice of 30 and 50 mm diameter</li> <li>▪ Lateral: Standard and high-precision versions</li> </ul>
Gantry risers	<ul style="list-style-type: none"> <li>▪ 50 or 150 mm risers available at the time of manufacture</li> </ul>