

# Zeta 3D Optical Profiler

## Zeta-20 Swivel Head



### Exceptional 3D Imaging and Metrology

Based on *proprietary ZDot™ technology*, the Zeta-20 images and analyzes surface features on samples of all types: smooth to rough, low reflectivity to high reflectivity, transparent to opaque. Hardware and software options customize the Zeta-20 for specialized measurement needs. All hardware is easy to install and easy to use.

### Key Features

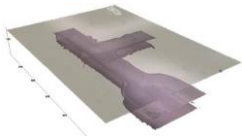
The **Zeta-20** is available with several advanced imaging techniques to match your requirements:

- **ZDot™** innovative 3D imaging is standard on all our optical profilers. The ZDot™ technology with our unique transmissive and dark field illumination schemes as well as a variety of objectives allows the tool to **handle the most ‘difficult’ of surfaces**.
- **ZiC** enhanced differential interference contrast imaging is great for **nanometer level surface roughness**
- **ZSi** shearing interferometer provides **Angstrom level vertical resolution**
- **ZX5** vertical scanning interferometry is ideal for measuring **nanometer heights over large field of view**
- **ZFT** reflectometry based **thin film thickness** measurement option

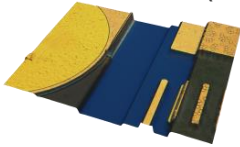


Zeta-20 with Swivel Head

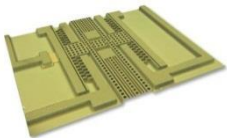
Micro-fluidic Device (mm)



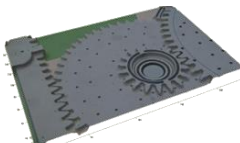
IC Wafer Surface (nm)



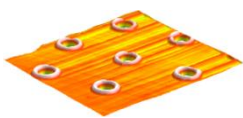
MEMS Device (µm)



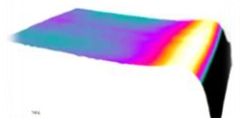
Micro Gear / MEMS (mm)



Laser Texture (Å)



Disk Roll-Off (Å)



### Measurement Channels and Sensitivity

Measurement Required	Recommended Multi-Mode Technique				
	ZDOT	ZX5	ZiC	ZSi	ZFT
Roughness > 40 nm	✓				
10 nm to 25 mm step height	✓				
Film thickness > 10 µm	✓				
Large area feature with small Z height		✓			
5 nm to 100 µm step height		✓			
Roughness < 40 nm			✓	✓	
Defect: < 1 µm in size, < 75 nm in height			✓	✓	
< 10 nm step height				✓	
Defect: > 1 µm in size, < 75 nm in height				✓	
30 nm < film thickness < 15 µm					✓

### Optical System Parameters

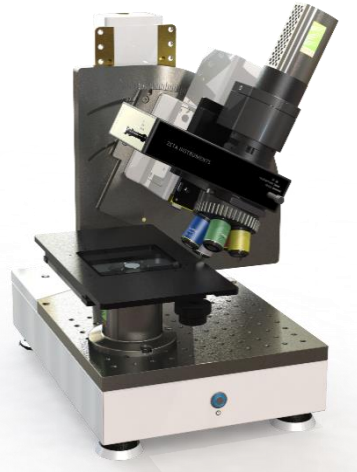
Specifications for standard objectives are shown below. Other options available: long working distance objectives, immersion objectives, and through transmission materials objectives; 0.63X and 1X couplers. \*XY resolution is nominal.

	NA	Working distance (mm)	Z resolution for ZDot (µm)	XY resolution (µm)*	Optical resolution (µm)	FOV with 0.35X coupler		FOV with 0.5X coupler	
						1/3" camera	2/3" camera	1/3" camera	2/3" camera
<b>2.5X</b>	0.08	10.7	22	3.60	4.20	5364 × 4024	9394 × 7044	3788 × 2840	6614 × 4960
<b>5X</b>	0.15	20.0	5.9	1.80	2.20	2682 × 2012	4697 × 3522	1894 × 1420	3307 × 2480
<b>10X</b>	0.30	11.0	1.5	0.90	1.10	1335 × 1000	2327 × 1745	944 × 708	1644 × 1233
<b>20X</b>	0.45	3.1	0.5	0.45	0.75	668 × 500	1169 × 877	468 × 351	822 × 616
<b>50X</b>	0.8	1.0	0.1	0.18	0.42	267 × 200	466 × 349	189 × 142	328 × 246
<b>100X</b>	0.9	1.0	0.005	0.09	0.37	133 × 100	234 × 175	93 × 70	164 × 123
<b>150X</b>	0.9	1.0	0.005	0.06	0.37	88 × 66	156 × 116	62 × 46	109 × 82

# Zeta-20 Optical Profiler with Swivel Head Option

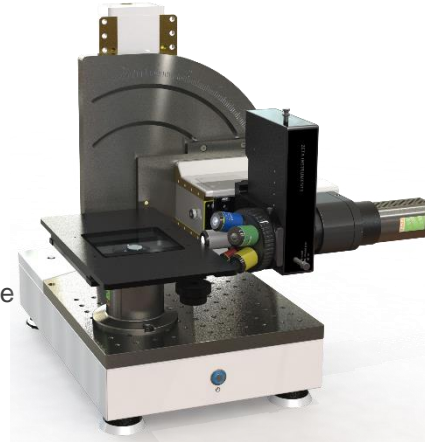
## Hardware Options

The **Zeta-20** is available with several advanced hardware options:



### Zeta-20 Swivel Head

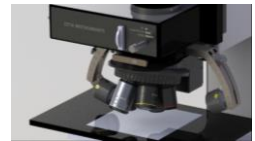
- Enables imaging of large and heavy samples that cannot be rotated easily.
- Swivel head moved along precision grooves from the vertical to the horizontal position.
- Head can be repeatedly positioned at any required angle using the angular scale markings on the support plate.



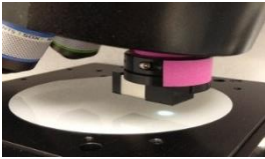
Through Transmissive Illumination



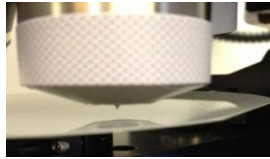
Edge Inspection Fixture with dark field objective



External dark field illumination



ZX5 Interferometer  
ZX100 Interferometer



Diamond Scribe  
to mark defects



Standard, Long,  
Immersion and  
Refractive Index  
Corrected Objectives



Lens AFM  
(atomic force microscope)



Fine Leveling  
Stage  $\pm 2^\circ$  or  $\pm 4^\circ$

## Workstation

Processor: Intel Dual Core  
Operating system: Windows 7, 64-bit  
Memory: 4GB RAM (16GB available),  $\geq 320$  GB HDD  
Monitor: 24-inch LCD standard, 1920 x 1200 pixels

## Vibration Isolation

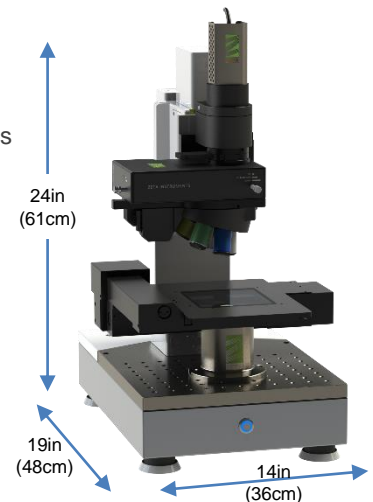
Built-in vibration isolation suitable for most applications  
Optional passive or active vibration isolation tables available for noisy environments  
Optional acoustic isolation case available

## Facilities

Power: 100 – 230 VAC, 2 A  
Operating temp: 15° – 30° C, non-condensing  
Vacuum (optional): 600 mm Hg  
Tool dimensions (W x D x H): 36 x 48 x 61 cm  
Workstation dimensions: 52 x 66 x 51 cm  
Weight: 29.5 kg  
All cabling included with tool

## Support

Warranty: One year parts and labor  
Software: Two years free upgrades  
User manual: Upon delivery  
Service manual: With optional service training  
Calibration: Step height and film thickness standards  
CE mark certification



Zeta-20 with Motorized XY



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*Actual features included will depend on configuration  
Specifications subject to change without notice*