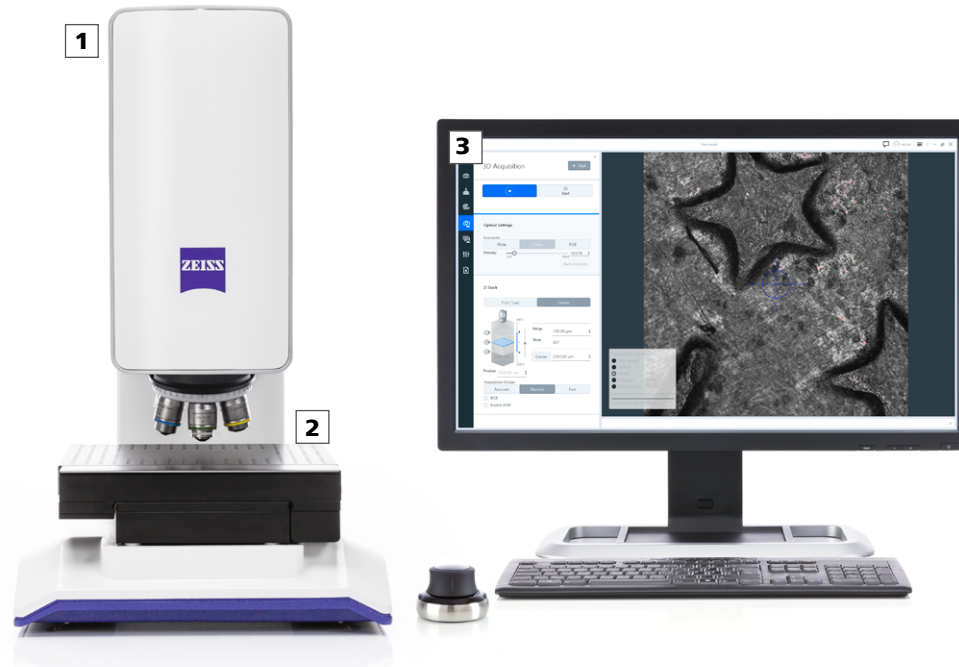


# Your Flexible Choice of Components

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- › The Advantages
- › The Applications
- › **The System**
- › Technology and Details
- › Service



## 1 Microscope

Smartproof 5 consisting of:

- Scan head with fine Z-drive and 4-megapixel camera
- Stand with coarse Z-drive

## 2 Objectives

- EC Epiplan-Neofluar 2.5x/0.06 (always included)
- C Epiplan-Apochromat 5x/0.2
- C Epiplan-Apochromat 10x/0.4
- C Epiplan-Apochromat 20x/0.7
- C Epiplan-Apochromat 50x/0.95

- LD C Epiplan-Apochromat 50x/0.6 (long working distance)
- LD C Epiplan-Neofluar 100x/0.75 (long working distance)

## 3 Computer System

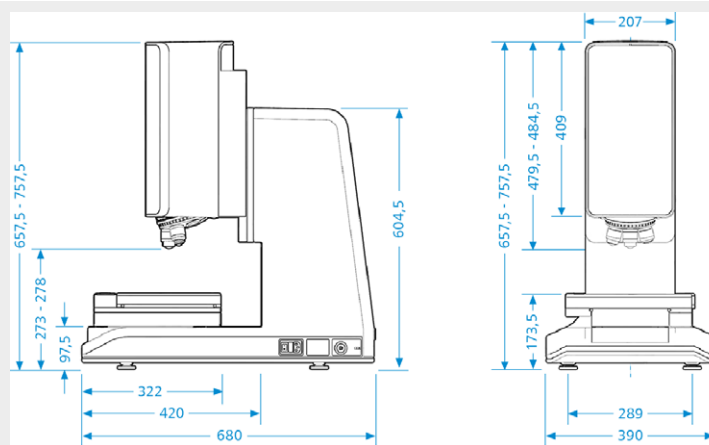
- PC system with Smartproof ZEN software
- Monitor
- 3D mouse for control of XYZ axes

## 4 Software

- ZEN core for data acquisition and imaging
- ConfoMap for data analysis
- ZEN Shuttle & Find for correlative microscopy
- ZEN Data Storage for centralized data management
- ZEN Intellesis for advanced image segmentation
- ZEN Connect for data visualization and analysis of different imaging modalities
- NEO pixel for automated 2D measurements

# System Overview

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## System Components

<b>Optical Unit</b>	Containing the fine Z-drive, the illumination with 405 nm, red, green and blue light, the widefield spinning disc aperture correlation module, 4 megapixel camera and 6 times objective nosepiece.
<b>Objectives</b>	2.5x lens for overview and navigation, 5x to 100x high numerical aperture lenses, specially designed for 405 nm as well as white light.
<b>Stage</b>	Powered by a stepper motor with integrated controller, which makes it possible to move to relevant areas of the sample in a reproducible manner. Alternatively, a fixed stage is available.
<b>Stand</b>	Powered by a motorized Z-drive for sample height adjustment and including controlling electronics.
<b>3D Mouse</b>	Offering intuitive operation of all XYZ axes, including coarse and fine Z-drive
<b>PC</b>	Containing the Smartproof 5 application software and connected to the camera via USB 3 and to the stand via USB 2.

# Technical Specifications

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Image Field According to Objective Magnification	Objective Magnification and Numerical Aperture	Field of View ( $\mu\text{m} \times \mu\text{m}$ )	Free Working Distance (mm)
	5 $\times$ /0.2	2250 $\times$ 2250	21.0
	10 $\times$ /0.4	1125 $\times$ 1125	5.4
	20 $\times$ /0.7	562 $\times$ 562	1.3
	50 $\times$ /0.95	225 $\times$ 225	0.22
	50 $\times$ /0.6	225 $\times$ 225	7.6
	100 $\times$ /0.75	112 $\times$ 112	4.0
<b>Image Pixel Resolution</b>	2048 $\times$ 2048 pixels		
<b>Lateral Resolution (Line-space Pattern) Using 50<math>\times</math>/0.95</b>	0.13 $\mu\text{m}$		
<b>Lateral Measurement Uncertainty <sup>1)</sup></b>	$\pm(0.1 \mu\text{m} + 0.008 \times L)$ (or better)		
<b>Vertical Measurement Uncertainty <sup>1), 2)</sup></b>	$\pm(0.1 \mu\text{m} + 0.012 \times L)$ (or better)		
<b>Movement Resolution of Z-Drive</b>	1 nm		
<b>Illumination</b>	405 nm LED for confocal imaging and RGB LEDs for color imaging		
<b>Camera Frame Rate</b>	50 fps at 2048 $\times$ 2048 pixels using USB 3		
<b>Color Depth</b>	10 bit		
<b>Height Scanning Range</b>	Up to 5 mm		
<b>Maximum Height of Work Piece</b>	100 mm		
<b>Maximum Weight of Work Piece</b>	5 kg		
<b>Scanning Stage Size and Travel Range in X and Y</b>	300 mm $\times$ 240 mm 150 mm $\times$ 150 mm		
	2D: distance, height, angle, constructed elements, profile roughness based on ISO 4287		
<b>Image Data Processing and Measurements</b>	3D: lateral distances, 3D distance, height, angle, constructed points, area, volume, areal roughness according to ISO 25178		
	Additional: Alignment, form removal, filters, noise cut, reporting.		
<b>Power Requirements</b>			
<b>Property</b>	<b>Value</b>		
<b>Mains Voltage</b>	100 V AC to 230 V AC ( $\pm 10\%$ )		
<b>Supply Frequency</b>	50 - 60 Hz		
<b>Power Consumption</b>	140 W		
<b>Protection Class</b>	I		
<b>Overvoltage Category</b>	II		
<b>Ingress Protection Mode</b>	IP 20		

<sup>1)</sup> When measuring a standard sample with C-Epiplan-Apochromat 50 $\times$ /0.95 under setup conditions recommended in the user manual.

<sup>2)</sup> When using the "accurate"-mode for acquisition