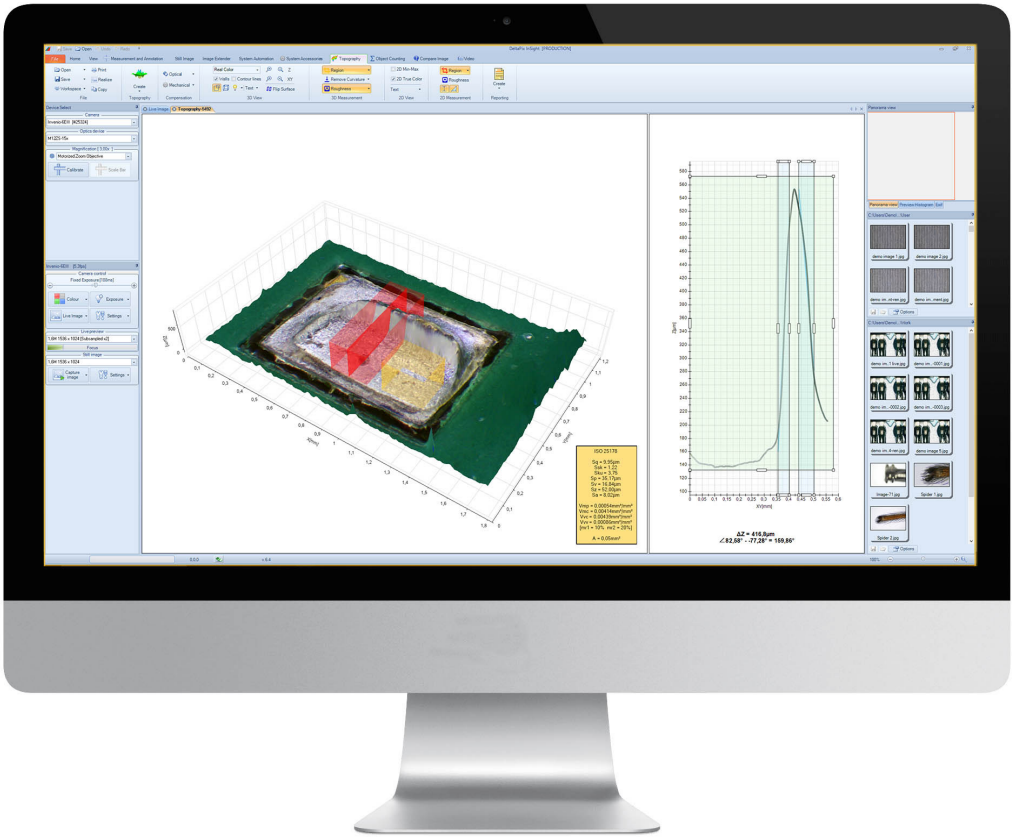
DeltaPix
- Discover the Details

DeltaPix InSight 6.0



- InSight Basic
- 3D topography
- Roughness Measurement
- Video recording
- Segmentation, Counting, and Multiphase Analysis
- Extended Focus, Exposure, and Manual Stitching
- Automation, Stage and Microscope Control

www.deltapix.dk

About DeltaPix

DeltaPix is pioneering the digital microscopy industry and has done so for more than 20 years, introducing many innovative technologies and solutions. The first innovative product to be released by DeltaPix back in 2003, was the groundbreaking Infinity X, with 21 million real color pixels, setting new standards for microscopy cameras at that time.

DeltaPix develops and markets a wide range of digital imaging solutions
for various industrial, forensic and biomedical microscopy applications, and has established a very deep and broad expertise with-in digital image
capturing and processing.

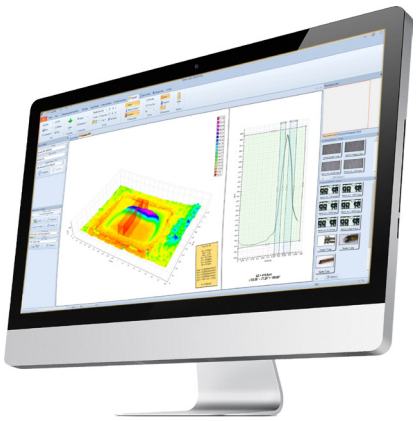
It is the primary strategy of DeltaPix to create innovative new products to be marketed and sold internationally through a network of partners.

Headquarter

DeltaPix Product range

InSight Software

Comprehensive and advanced, but intuitive and easy to use Microscope Software Suite for measurement, analysis, and control of microscopes, cameras, stages, and other connected equipment. The software consists of a basic package (free with all DeltaPix cameras) with optional add-on modules for advanced functions, required for special applications. Suitable for all kind of micro and macro-scope applications.

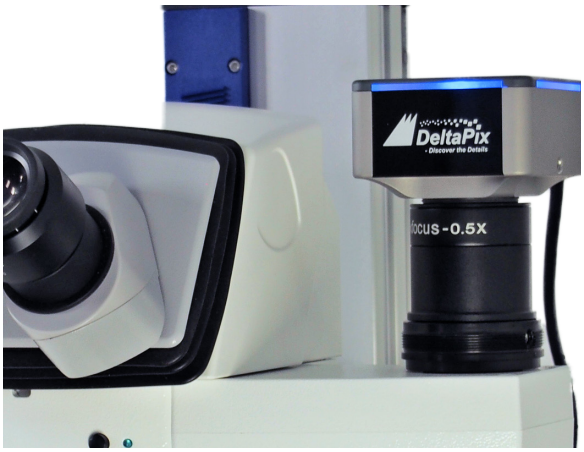


Digital microscopes

Digital microscopes are becoming a vital part of any well-equipped laboratory. DeltaPix aims to provide a high-quality digital microscope for a wide variety of industries and research labs, with a focus on providing reliable 2D and 3D measurements and material information like roughness, depth and height profiles. Offering a flexible solution for virtually any application and budget, ranging from a fully automatic 2D/3D microscope to a simple inspection microscope.

Microscope Cameras

DeltaPix' „Invenio" USB and HDMI camera range, is intended for all kinds of microscopy users, for the basic routine use, to the advanced professional researcher. The range includes cooled and non-cooled, up to 32-MPixel, Newest sensor technologies like Exmor™, CMOS and CCD. All DeltaPix cameras are manufactured to scientific standards with an extreme focus on the details; assembled in a dust-free environment, high-quality IR filters, high-grade sensors, low-temperature design, and long durability.



Microscope acessories

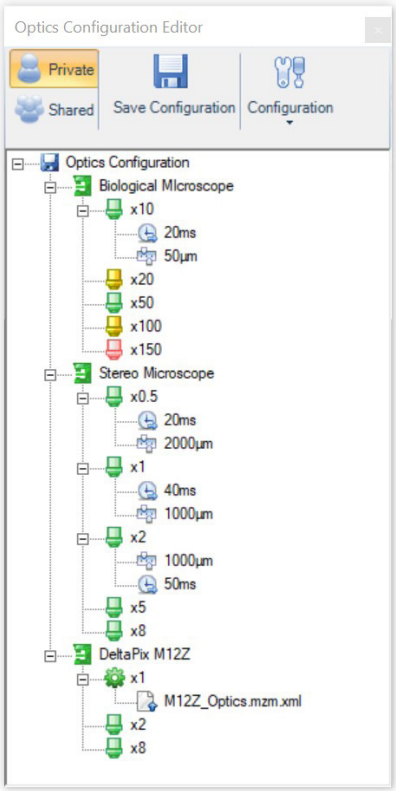
DeltaPix supplies a number of accessories for microscope applications. Light sources of all kinds, manual and motorized stages, objectives, stage controllers, calibration sliders, focus motors and much more.

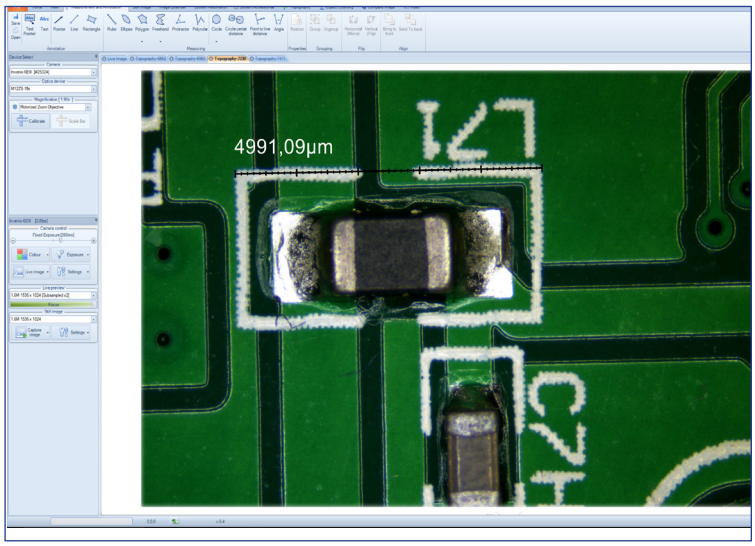
InSight Basic

DeltaPix InSight has a modern and intuitive user interface based on the ribbon band style known from Microsoft Office 2010/2016. Functionality has been grouped logically, and the program is easy to use. DeltaPix InSight is a modular software allowing the operator to purchase modules as needed making DeltaPix InSight very efficient and affordable.

Calibration

Each camera, optical device, and objective can be calibrated individually. In this way, several microscopes and other optical systems can be managed by the same software installation.
In the intuitive optics editor, microscopes are defined along with the installed objectives.
The calibration status of the objective is shown by color codes. For each objective, a preferred exposure time and the DOF can be defined.
Motorized objectives, shown by a gearwheel icon, can link to a descriptive file containing information on calibration and motor.

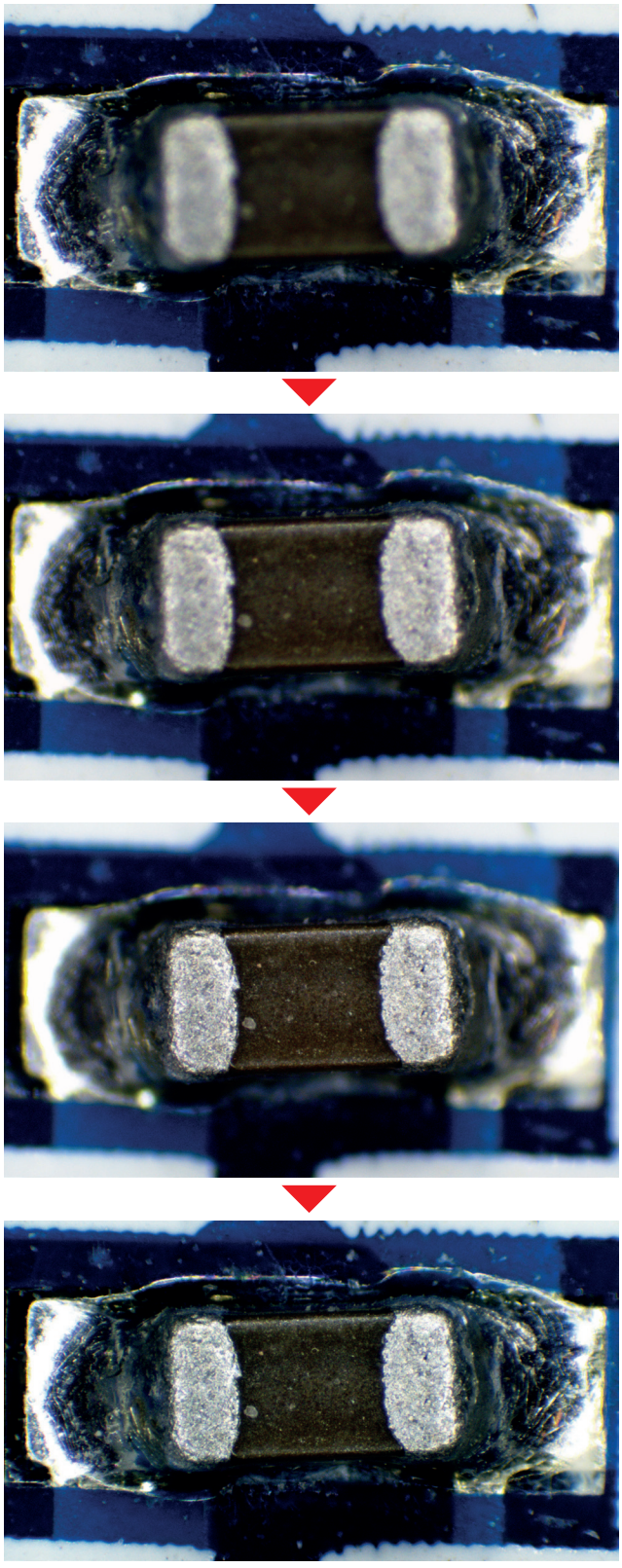




2D measurements

DeltaPix microscopes offer accurate measurements in real-time, or in captured images. The software offers many powerful measuring tools including length, area, angle, diameter and much more. In addition, the actual dimension and measurement results can be saved on the captured image or exported to Excel, CSV or PDF files.
Export to Excel or PDF using the included templates or design a custom template.
Measurements on multiple specimens can be exported to one CSV file for statistical purposes.

Extended Focus, Exposure, and Stitching

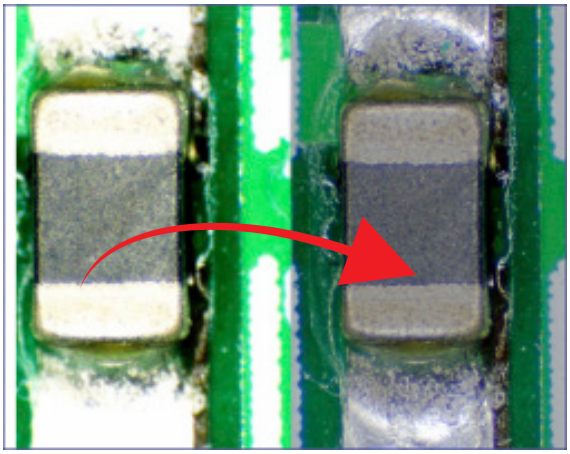


Exteneded Focus image

Extended Focus

With the EE EF module added to InSight Basic, it is possible to capture images with "Super depth of field", by capturing images at different focal planes (se example to the left), and then use an algorithm to find the optimal focused parts in each image, and then combine these parts from different images to form one image perfectly focused everywhere.

The algorithm in DeltaPix InSight also compensates for any change in magnification or image shift in stereo microscopes.



Without Extended Exposure With Extended Exposure

Extended Exposure

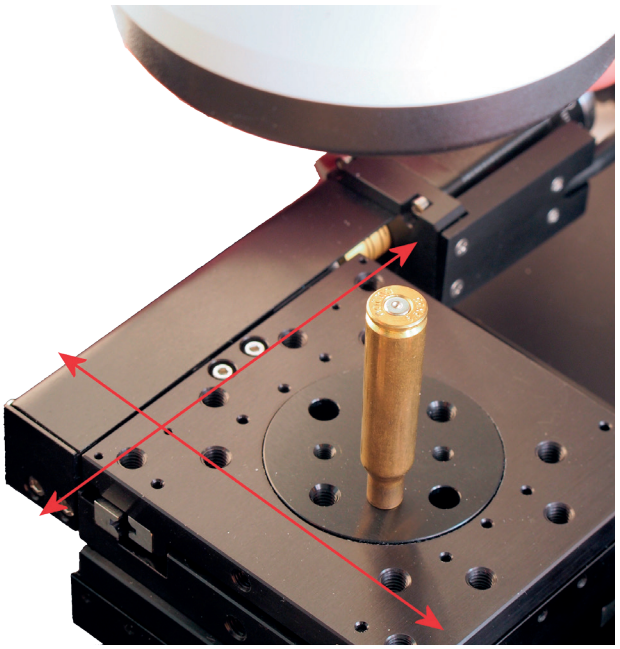
The EE EF module includes a state of the art Extended Exposure function. Extended Exposure function can combine images at different exposure times and combines the images into one single image with perfect exposure.

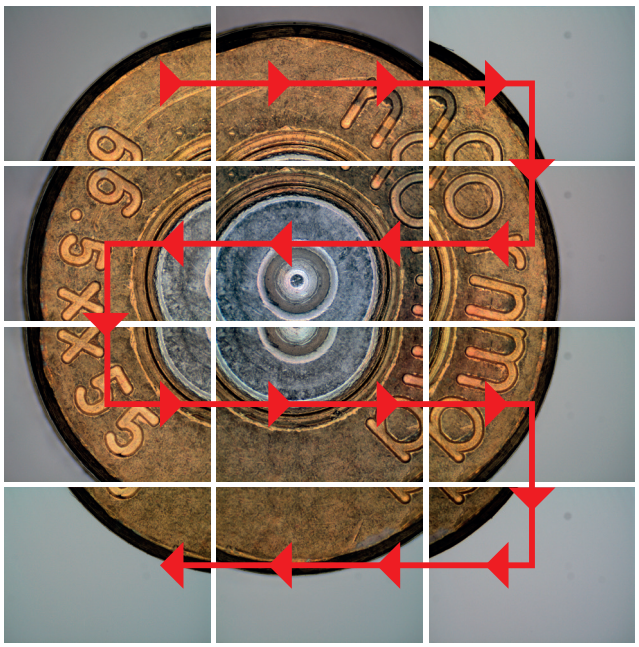
Automatic and manual Stitching

Extend the image FOV without decreasing resolution

Having a large magnification in order to see microscopic details, often sacrifice the ability to get an overview of the specimen under observation. To have both, it's necessary to combine (stitch) many images with high magnification to one image with large Field Of View (FOV). With the intuitive user interface, both automatic and manual stitching of single captured images (which can included extended focus and extended exposure processing), can be performed fast and precise with DeltaPix InSight. With this technique images with unprecedented clarity, depth of field and overview, can be presented. Beside is shown how such an image of a bullet cartridge is created, without reflections, full depth of field and preservation of all microscopic details.

9000Pixels





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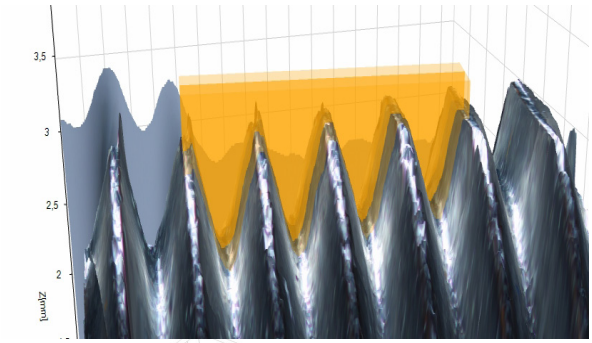
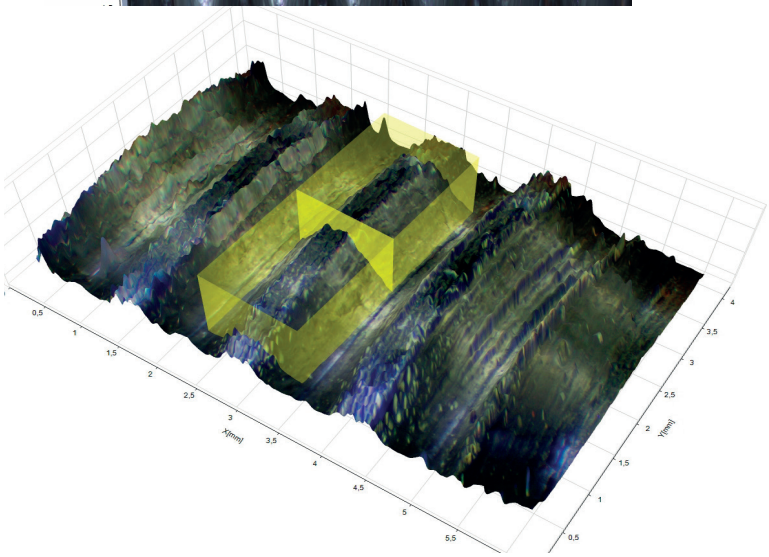
3D Topography

Extend the visualization and measurement from 2D to 3D.



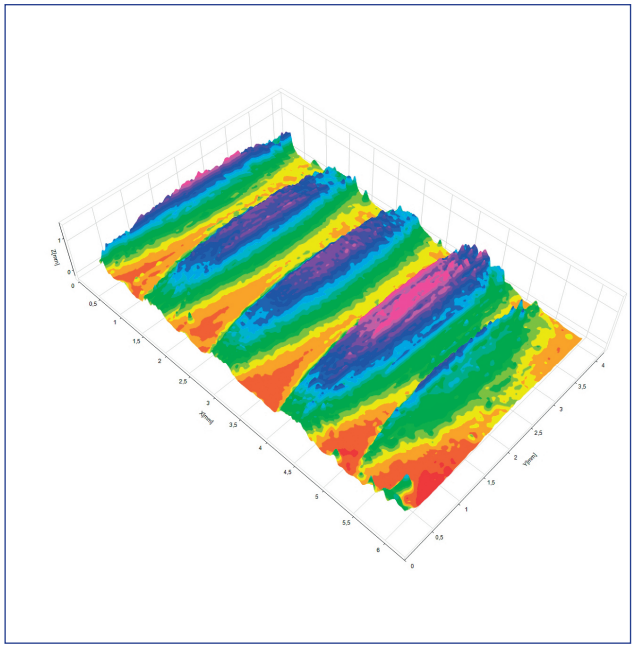


With the 3D Topography module added to InSight, it is possible to display a 3D model of the surface of the specimen under observation. Displaying the 3D model can be in its true color or it can be rendered with various artificial colors to better illustrate the height difference in the specimen.

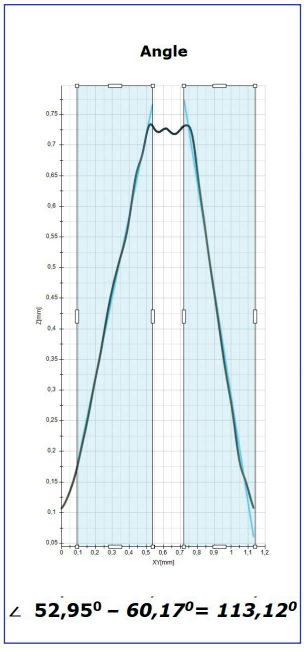
Beside displaying it is also possible to measure parameters like height, depth, angles and volume of specific parts of the surface.

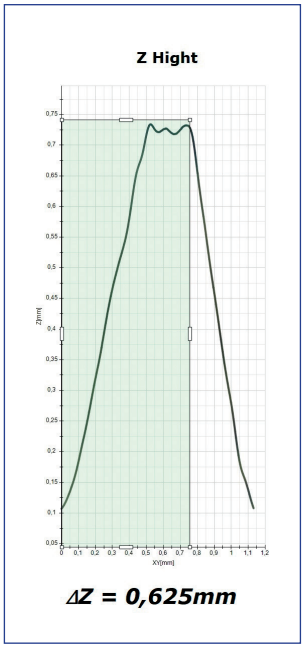
On the left and below is shown an example of displaying the surface of a screw and the thread. By defining a 2D-profile across the thread, it's possible to measure the height and angle of it.

This is a 3D rendering of a screw



3D rendering of a screw with fake colors





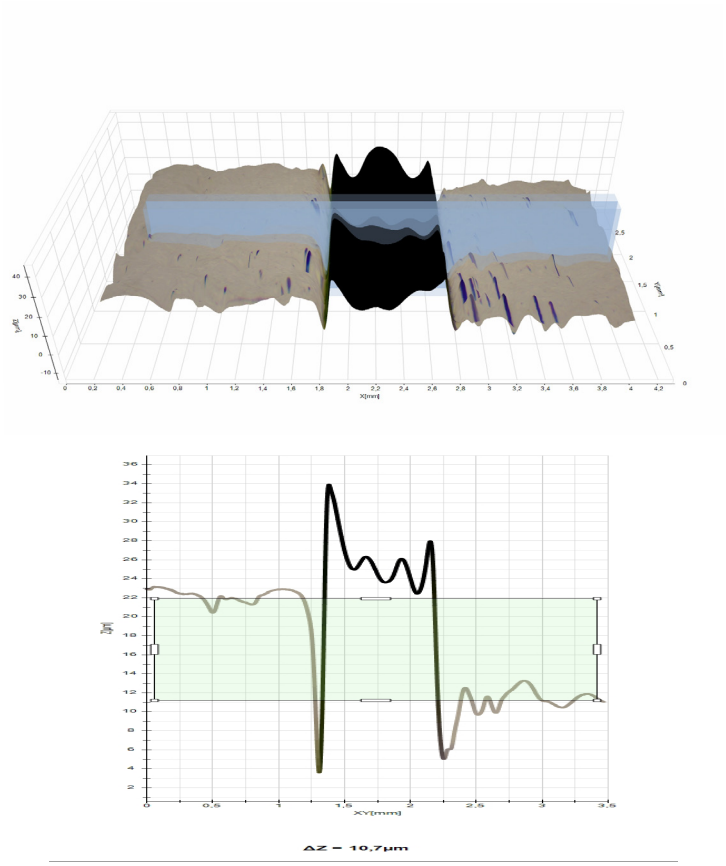
Angle and Hight measurement of the thread

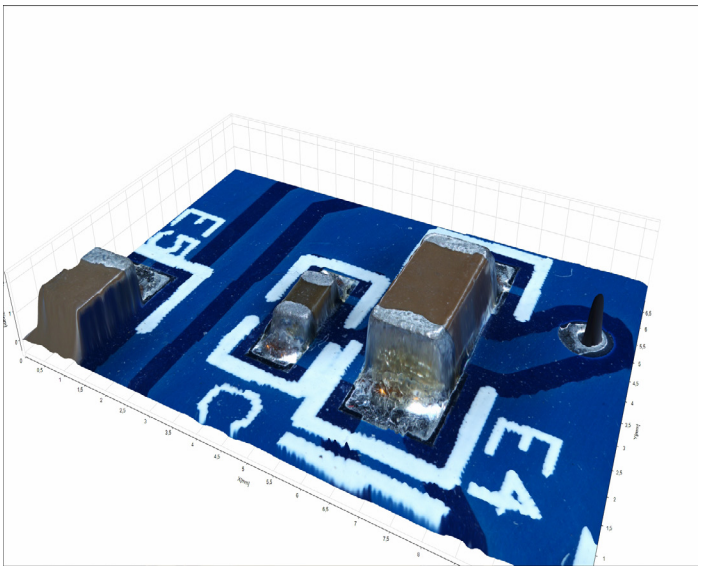
3D Topography

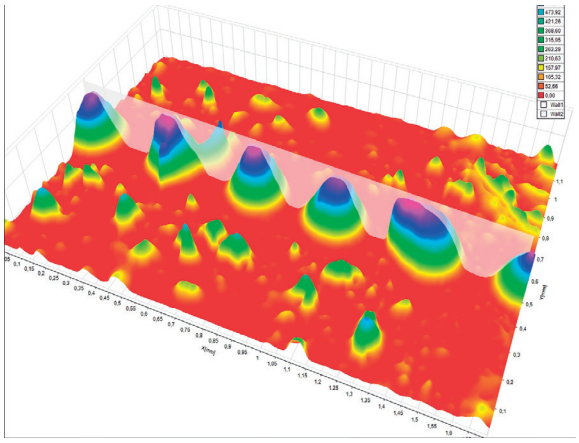
Extend the visualization and measurement from 2D to 3D.

Optical 3D measurements are based on different techniques, which have their individual advantages. DeltaPix InSight uses the technique called „focus variation microscopy", which has the huge advantage over for example „Confocal" microscopy, that its economically attractive, can be added to existing microscopes and can analyze height differences with steep slopes, like shown on the examples to the right.

How precise the measurement is, depends on the mechanics and the optics. InSight can typically achieve a precision of 10-15x the DOF of the objective. Beside is shown a height measurement of a 10 micron step reference, using a 2.5x objective with a DOF of approximately 50 microns. Achieved precision around 2 microns.







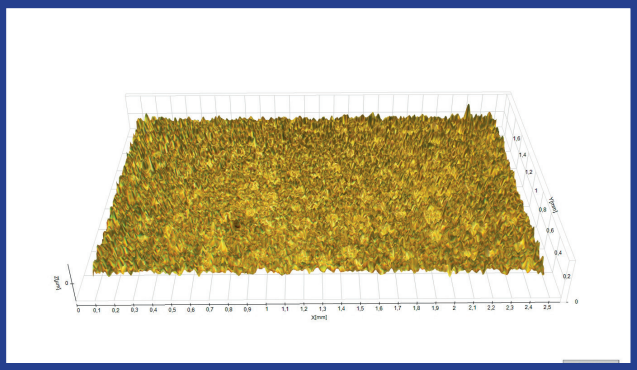
Above is shown examples of topography images in different display modes of various specimens with steep height transitions. At the left is shown an image of typical PCB board, displayed with original colors, and on the right an array of medical sensors, displayed with artificial colors showing the height variations.

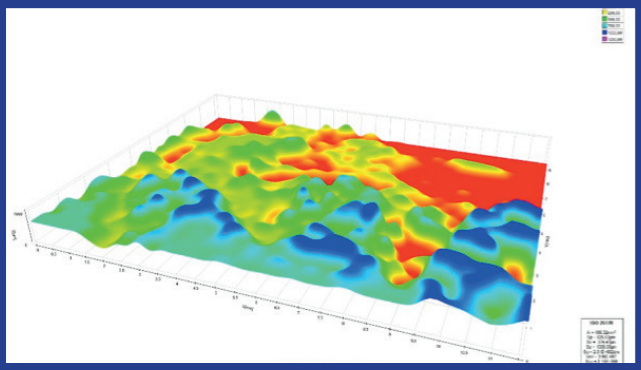
Roughness Measurement

DeltaPix InSight offers a non-contact roughness measurement according to guidelines of ISO 25178-2:2012.

The implementation of surface roughness measurement is based on the data collected from the 3D topography analysis thus the need for a third party add on software is eliminated for most applications.

Roughness measurement of a sample.





The data shown in a panel in the lower right corner is the results of the Roughness 3D calculations.

Sq: Root mean square height of the scale-limited surface
Ssk: Skewness of the scale-limited surface
Sku: Kurtosis of the scale-limited surface
Sp: Maximum peak height of the scale limited surface
Sv: Maximum pit height of the scale limited surface
Sz: Maximum height of the scale-limited surface
Sa: Arithmetical mean height of the scale limited surface

Functional Volume:
Vvv: Dale void volume
Vvc: Core void volume
Vmp: Peak material volume
Vmc: Core material volume

Automation, Stage and Microscope Control

DeltaPix motorization modules make it is possible to add automation and control for XY, focus, and zoom motors. The motorization modules can be combined with other software modules to allow the user to perform automated tasks like Extended Focus images with up to 250 focus positions, 3D topography of a sample surface, do scanning, time-lapse recording in up to 100 positions, looped image acquisition, and much more.

Meiji microscope with DeltaPix Automation solution

Microscope And Stage Interface

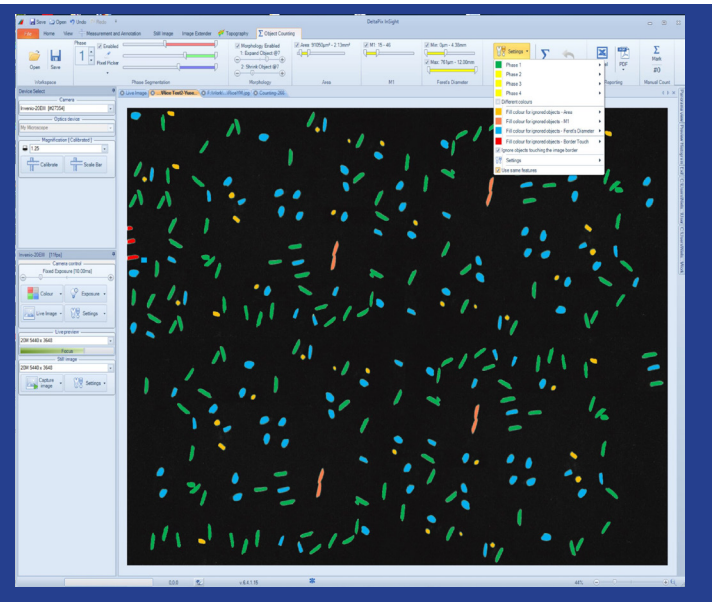
The Interface module can interface to a variety of motor controllers, the following brands are supported:

- Prior
- Märzhauser
- Ludl
- Zeiss via MTB 2011server
- DeltaPix Step4 and ErgoFocus

and can even control a mix of these.

Zeiss V20 microscope with DeltaPix Camera and software

Segmentation, Counting, and Multi-phase Analysis



The Multiphase counting module can utilize up to four phases.
A counting phase is defined by a set of features, like RGB color range and geometrical features.
Preprocessing operations can be done using morphological erode or dilate operations.
Object discrimination is be done using the geometrical features M1, Ferret minimum/maximum distance, and area. The geometrical features can be:
Individual for each phase. This makes counting of objects with different geometrical features possible.
This means that all phases use the same geometrical features. Used when counting objects only segmented by color.
For multiphase counting, an area percentage of each object is calculated, this makes multiphase percentage calculations easy.

The setup is easy and intuitive with interactive fake-color marking of counted objects and an indication of rejected objects.

The counting result can be exported to an Excel spreadsheet for further processing and analysis. The Excel report generator does not require the installation of Excel.
PDF reports can also be generated directly.

All settings can be saved in a dedicated workspace – this makes switching between different counting scenarios quick and easy.

DeltaPix InSight Modules

Added features

InSight Software Module functions. Modules can be combined to get multiple functionalities.	InSigh Basic	EE/EF module	Z-module	XY-module	Autofocus	Zoom Module	Topography & Rough	Segmentation and Counting V2.00	Multiphase Segmentation and Counting	DS-module	Interface
Basic features											
Exposure, gain, white balance, and other camera settings	X										
Calibration of multiple optical systems	X										
Insert of user definable calibration bar	X										
Snapshot mode for CCD cameras	X										
Force and add colors	X										
Shading correction	X										
Save in JPG, JPG2000, BMP and TIFF	X										
Freely configurable GUI	X										
Multiple cameras connected simultaneously	X										
Advanced hotspot removal	X										
Language selection (14 different languages, including Chinese and Japanese)	X										
Online manual	X										
Advanced functions											
Annotations and measurements on live and captured images	X										
Measurements from multiple images to single CSV file	X										
Reports (Excel, PDF and CSV)	X										
Comprehensive Image processing	X										
Extended focus (works also with stereo microscopes)		X									
Extended exposure		X									
Manual stitching		X									
Multiphase counting									x		
Automatic counting, segmentation and area calculation								X	x		
Interface to all "Direct show" cameras										X	
Motor control			X	X							
XY- motor control				X							
Z-motor control			X								
Automatic extended focus			X								
Video and time laps recording	X										
Automatic stitching and multi area scanning				X							
Z-measurement							X				
Control of Zeiss motorized microscope and readout the objectives via MTB											X[1]
Controlling Prior, Marzhauser, Ludl stages											X[2]
Auto focus					X[3]						
Motorized zoom control						X					
3D Topography							X				
Roughness Measurement							X				

Note : Modules work only in combination with InSight Basic, modules will add to the features included in InSight Basic

1. Works in combination with InSight Basic and Z-module
2. Works in combination with InSight Basic, Z-module or XY-module
3. Works in combination with InSight Basic and Z-module.

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Minimum System requirements:

- Intel I5 (quad-core) CPU
- 4 GB of RAM
- 15 GB of free disk space
- Windows 8, Windows 10 64Bit version

Recommended System requirements:

- Intel I7 6th gen or newer
- 8 GB of RAM or more
- SSD drive 120GB or more
- Graphic Card Nvidia GT 1030 or better
- Windows 8, Windows 10 64 bit version
- A high-resolution monitor

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