Vision ENGINEERING

DeepFocus 1

Digital microscope with extended depth of field

FAST - FOCUSED - FULL VIEW

DeepFocus 1 digital microscope, incorporating Zeiss Visioner 1 and MALS™ technology, offers greater depth of field (DoF) than conventional microscope systems, providing real-time clear images in a single view.

Whether you are in the quality lab, responsible for R&D or on the production line, the quicker you can identify and report issues or understand prototype failures, the faster you can deliver quality products.

The advanced 3D visualization of DeepFocus 1 allows the subject to be viewed from any angle. Height map and topographic views display captured data, including Z-height detail, in an easy to understand view.

These viewing modes ensure failure analysis and quality control become more efficient, delivering accurate results much faster than conventional inspection systems.

All-in-focus

Conventional inspection systems are limited by a shallow depth of field, especially at high magnification. Only a small area of the sample is in focus at any time, risking features being overlooked and the inspection being incomplete.

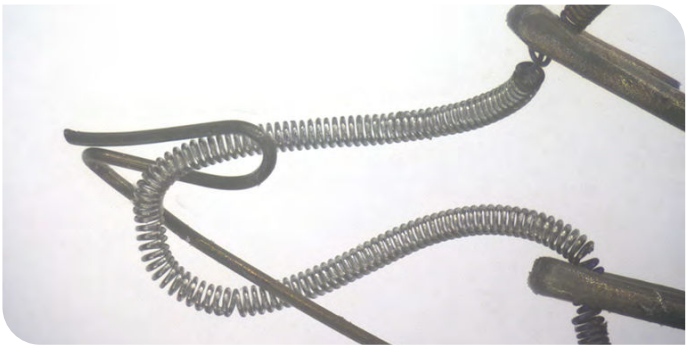
DeepFocus 1 digital microscope enables up to 100x more sample depth to be in focus in a single view.

Sharply focused images of components with a depth of up to 69mm are displayed in a single view, removing the need to re-position components and avoiding any additional re-focusing or Z-stacking processing.

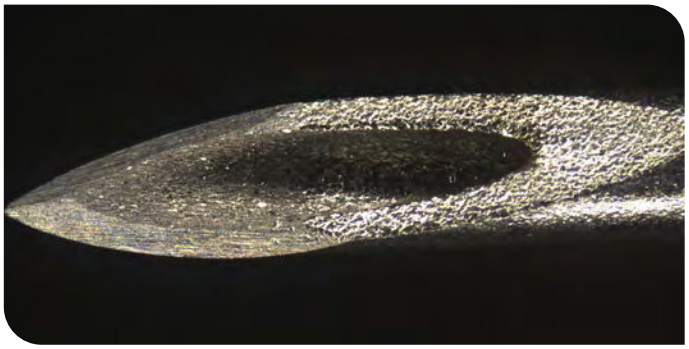
Applications

The modular architecture of its construction, software and accessories make DeepFocus 1 configurable to a wide range of applications, for a broad range of subjects in most industrial environments.

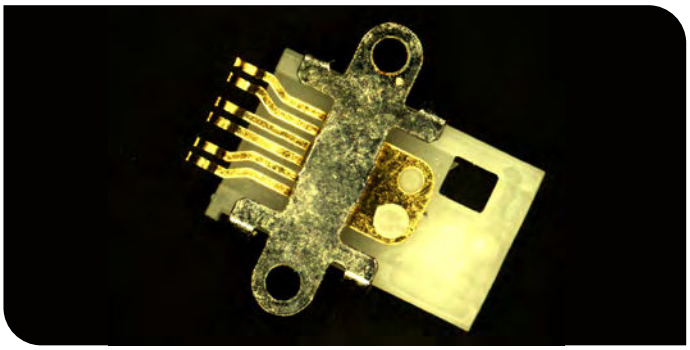
Its small footprint makes it perfect for shop floor quality control. The ability to instantly document inspection tasks makes it ideal for tightly regulated industries such as aerospace and medical device manufacture.



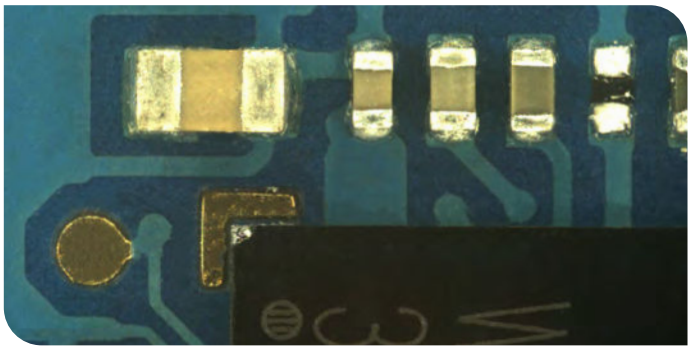
Extended depth of focus (EDoF) view of lightbulb filament



Extended depth of focus (EDoF) view of needle



Extended depth of focus (EDoF) view of connector

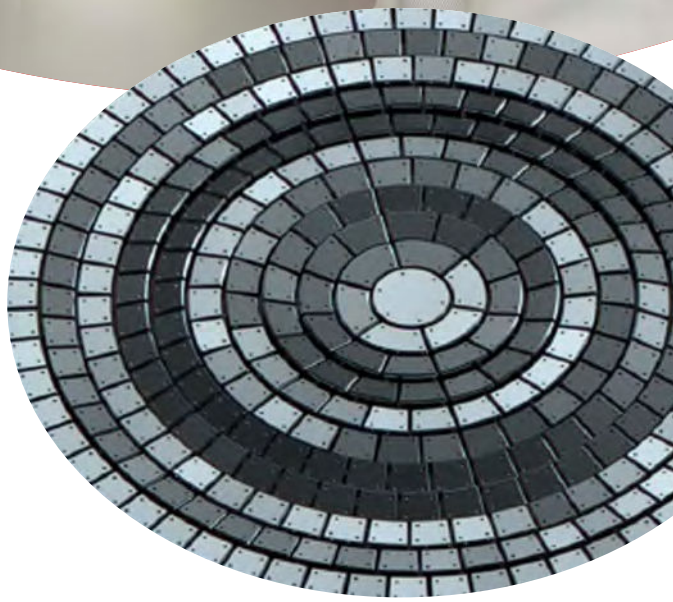


Extended depth of focus (EDoF) view of PCB

What is MALS™ technology?

Ultra-fast visual inspection is made possible via MALS™ technology, which delivers up to 100x more usable extended depth of field (EDoF), in real-time.

Using a micro-mirror array lens system (MALS™) enables the generation of “virtual” lenses with distinctly different curvatures, thus focus planes. This is achieved by changing the orientation of each individual micro-mirror in an orchestrated way. Re-shaping the curvature of this “virtual” lens at speed enables ultra-fast focusing and real-time all-in-focus imaging and documentation.



DESIGNED FOR PRODUCTIVITY

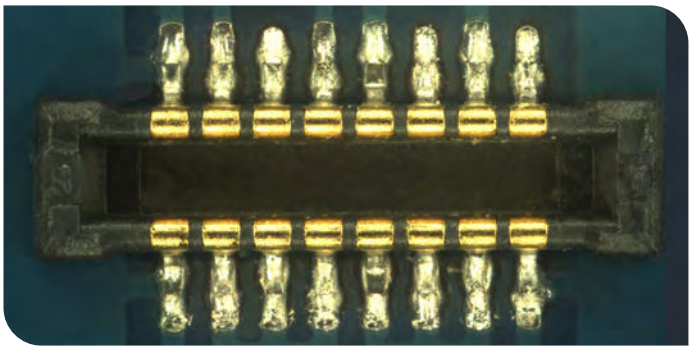
DeepFocus 1 not only simplifies the imaging and documentation task, but the real-time EDoF enables users to inspect their components faster, delivering higher throughput.

As with all Vision Engineering products, DeepFocus 1 is designed for operator efficiency. DeepFocus 1 maintains a sharp focused image even when the operator is maneuvering the component, or when an object has moving parts.

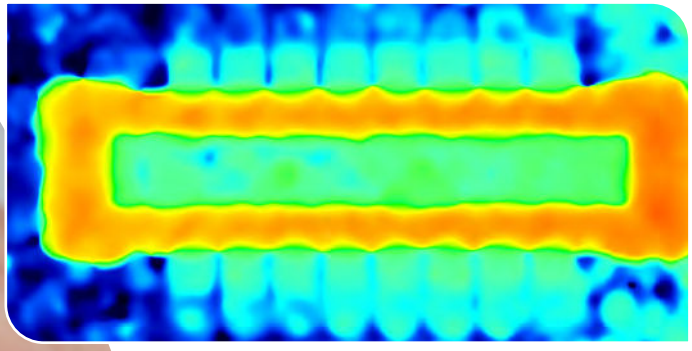
Productivity levels are significantly improved by removing the need for re-focusing during inspection, or time-consuming post inspection Z-stacking image treatments.

Three ways to see the detail

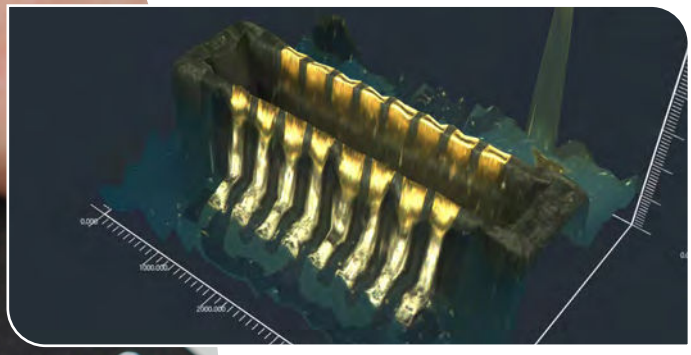
As well as the world leading extended depth of field view (EDoF) the subject is displayed in 'Height Map' mode or 'Topo View'. By displaying the information in different ways features can be highlighted and understood more clearly.



Extended depth of field (EDoF)



Height map view



Topo view

Easy, rapid reporting

Industry regulations and quality control processes mean detailed inspection reports are a necessary and important requirement. 2D image acquisition from the live field of view is fast and easy. These images can then be used and analyzed like any standard wide-field microscope image. Measurement overlays can be applied to live images and give in/out tolerance indication immediately.

Customizable workbenches enable easy, repeatable reports for switching between different parts and inspections, streamlining processes and reducing errors.

Measurement

Built-in measurement features including "in/out" of tolerance warning means detailed reporting is simple. Measurement taken from the live views, and enhanced measurement from captured images speed up and simplify detailed analysis. Simple inspection of profile features adds the important Z-dimension to the information available.

Measurement tools

Live measurement of circle, line, polygon and rectangle detailing dimensions, area, separation and angle.

Static measurement adds Z-axis angle, distance and radius as well as additional annotation, multi-distance measures and spline.

Optimized illumination

High clarity imaging of different features often requires specific lighting modes. DeepFocus 1 has controllable ring-lights and episcopic lighting for the correct illumination of each subject.

Automatic glare control technology gives live, glare free images for the most reflective subjects. Integrated episcopic lighting is ideal for illumination of reflective surfaces and the sides, and bottom of fine holes for clear, shadow-free images.

Additional software options

Expand the range of applications, increasing efficiencies and extending capability with a selection of additional digital microscope software options. Add advanced image analysis, auditable/traceable workflows, automated measurement and evaluation, and much more.

Learn more: **www.visioneng.us/deepfocus1software**

TECHNICAL INFORMATION

Optical			
Field of view (max)	0.11”x 0.4’ (2.8 x 2.1mm)	0.21”x 0.16” (5.4 x 4.0mm)	0.8”x 0.6” (20.1 x 15.1mm)
Working distance (optics)	0.67” (17mm)	1.85”(47mm)	6.6” (167mm)
Resolution (max)	125 Lp/mm	65 Lp/mm	17 Lp/mm
Extended depth of focus (max)	0.07” (1.8mm)	0.25” (6.4mm)	2.71” (69.0mm)

Illumination
Integrated coaxial LED epi-illumination
LED ring light illuminator with 3 rings and 8 segments (supports glare removal)
Optional LED right light illuminator with 1 ring optimized for 2.5x magnification (supports glare removal)

Integrated 3MP color camera
Maximum image size: 2048 x 1536 pixel (live and snap mode)
Maximum image size: 800 x 600 pixel (live and snap mode)

Stand options

Bench stand

Highly stable and a small footprint ideal for small components. Ideal for high magnification use for small components. Coarse and fine Z-positioning for easy set up.

Multi-axis stand

Highly flexible and adaptable. Rotate, tilt, raise and reposition, quickly and easily. Ideal for use with large area subjects with long throat depth and easily adjustable working distance. Can be mounted direct to workbench.

EVOTIS configuration

Advanced inspection workstation, ideal for large area subjects such as PCBs and palletized components. Independent X/Y axis lock.

Vision ENGINEERING

ZEISS Solution Partner

VISION ENGINEERING + OUR DIFFERENCE

Vision Engineering Ltd. has been designing and manufacturing high quality ergonomic microscopes, digital instruments, inspection, contact and non-contact measuring systems for over 60 years.

Innovation

With a philosophy of design innovation, Vision Engineering holds world patents for a number of optical / digital techniques, significantly improving viewing ergonomics and enabling customer quality and productivity improvements. In 2020, we were awarded a Queen's Award for Enterprise in the Innovation category, for our high tech ergonomic optical inspection microscope Lynx EVO.

Quality

Vision Engineering prides itself on quality products, electronics, mechanics and optics and is certified for the quality management system ISO 9001:2015. We are also now a UKAS accredited calibration laboratory, after attaining ISO 17025:2017. Quality is as important to us as it is to our customers. Our systems have proved themselves many times over and are chosen by the world's leading companies.

Global

Vision Engineering has manufacturing and design facilities in the UK and USA, plus sales and support offices throughout Europe, the Americas, the Far East, and Asia. We support our customers with close technical and service support anywhere in the world.

To see our focused quality, please contact your Vision Engineering branch, local authorised distributor, or visit our website: visioneng.us

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Vision Engineering Ltd. has been certified for the quality management system ISO 9001:2015 and calibration accreditation ISO 17025:2017.

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