Vision ENGINEERING

MANTIS

ERGONOMIC STEREO MICROSCOPE

FOCUSED | QUALITY

THE MANTIS ADVANTAGE

Mantis combines optical clarity with ergonomic comfort for fast, accurate assembly, inspection and rework.

Mantis is trusted by thousands of professionals worldwide. Its eyepiece-less design provides a clear stereo view and a comfortable upright posture, helping people work with precision for longer periods.

5MP image quality · Long working distance · Ergonomic position · 3D optical view · Overlay & Image comparison · Import, export settings · Glasses free · Outstanding image quality · 3D illumination

THE MANTIS ADVANTAGE DELIVERS:

01

Large, high quality optical stereo image

Mantis provides a clear, high resolution stereo image that makes fine features easier to recognise and understand. The wide field of view speeds up assessment and increases confidence during inspection, rework and assembly. Teams see the same level of clarity through the optical head and on connected displays, ensuring consistent quality across the process.

02

Ergonomic for comfort and productivity

The eyepiece-less viewer promotes a natural viewing position and reduces strain on the neck, back and shoulders during prolonged or detailed work.

The large exit pupil allows comfortable viewing with natural head movement without losing sight of the subject, maintaining a relaxed working posture throughout use.

Access to ambient light reduces eye fatigue and creates a more relaxed viewing environment. This makes Mantis well suited to tasks that require sustained concentration and shared workspaces.

03

Five ways to illuminate your subject

Five lighting options provide clear, controlled illumination of the subject, helping manage shadows and reflections. This makes form, texture and surface detail easier to see across different materials, enabling confident inspection and rework.

04

Choice to suit every environment

Mantis offers a flexible platform that suits different inspection environments and workflows. A choice of models, objectives and accessories allows the system to be configured to the task, bench layout and working environment. PIXO adds digital capability for capturing images, adding annotations and sharing findings to improve communication and consistent quality.

For more information, visit visioneng.com

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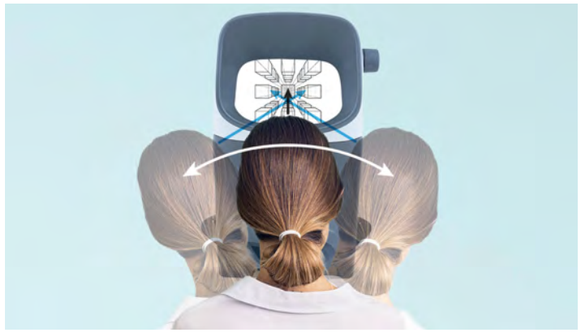
SEE CLEARLY.
WORK ACCURATELY.

Fine features and overall form are easy to recognise with Mantis, ensuring accurate inspection and confident manipulation.

Eyepiece-less design

Mantis' eyepiece-less viewer projects a large, high quality stereo image directly to the eyes. Developed by Vision Engineering, the larger image and true stereo depth make form and fine detail easier to interpret than with binocular microscopes.



Dynamic view optics

Mantis' wide viewing angle and large exit pupil maintain a stable stereo image as the head moves. The exit pupil is around ten times larger than that of a binocular microscope, creating a dynamic view that allows people to look around features rather than from a single fixed point.

This improves understanding of form, depth and surface structure. Being able to view components from slightly different angles provides more usable visual information than a fixed, straight-down image, driving greater inspection accuracy and control during detailed manipulation.

High performance digital imaging

Mantis PIXO adds integrated digital imaging for documentation, communication and review. The integrated camera captures high quality images for viewing on a connected screen, strengthening collaboration across teams.

Images can be annotated, saved and shared to record decisions and highlight key features during inspection or rework. Digital overlays allow live views to be compared with targets, measures or reference guides, ensuring consistent assessment and more reliable communication.

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Custom optics

The lenses used in Mantis are designed specifically for the system, using high quality optical glass and specialised coatings to produce a high resolution, high contrast stereo image. This delivers reliable visual information across a wide range of subjects.

The coplanar objective range delivers super-long working distances for demanding inspection, assembly and rework tasks, giving additional space for tools and component handling under magnification.

Within each lens range, focal distance remains consistent, allowing quick magnification changes without refocusing and maintaining workflow efficiency.

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For more information, visit visioneng.com

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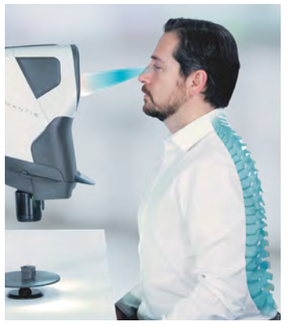
WORK COMFORTABLY. STAY FOCUSED.

Mantis is ergonomically designed to maintain comfort and focus during detailed tasks. A natural viewing position and free head movement reduce physical strain during extended use.



Natural working posture

The eyepiece-less technology delivers a large image at an upright viewing position, reducing strain on the neck, back and shoulders compared with binocular microscopes.

The larger viewing area allows free head movement without losing the view, maintaining comfort during detailed work.

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Viewing comfort

The viewing distance allows access to ambient light, reducing the constant eye adjustment associated with binocular eyepieces.

Corrective or protective eyewear can be worn without loss of clarity, making Mantis suitable for environments where eye protection is required. The viewing distance also suits use in laminar flow cabinets.

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Easy to use and share

Simple controls make Mantis straightforward to learn and use, even when gloves are required.

The rotating multi-view turret provides three magnifications with simple operation, allowing quick changes without interrupting workflow.

The eyepiece-less design and longer viewing distance remove face contact and reduce the need for re-adjustment between users, allowing efficient handover and shared bench use.

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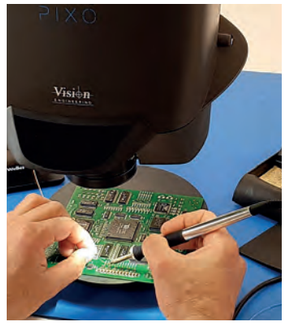


Hand-eye coordination

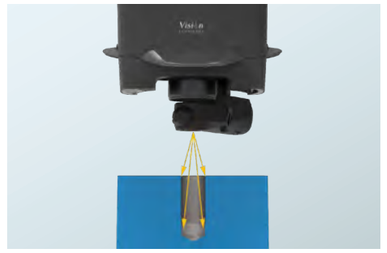
The stereo view provides awareness of both the subject and surrounding area. Visual depth improves judgement of shape, form and tool position, delivering accurate and confident manipulation during inspection or rework.

RIGHT LIGHT. CLEAR VIEW.

Five lighting options deliver controlled illumination that manages shadows, reflections and surface contrast. This improves visibility of form, texture and fine detail across inspection and rework tasks.

Depth control in every detail

Mantis uses two banks of LEDs that operate synchronised or independently. Independent control introduces shadow detail to strengthen visual depth and reduces reflections that can hide surface features.



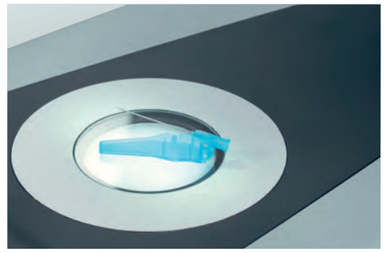
EPI illumination

The episcopic illuminator directs light along the same path as Mantis' viewing system, lighting cavities, recesses and complex shapes effectively. This makes internal features easier to see for accurate inspection.

White / UV illumination

White light provides even illumination for general inspection. UV light reveals materials, dyes and coatings that fluoresce under ultraviolet light.

UV illumination can also be used to cure paints, adhesives, and coatings, and to help detect cracks in materials.



Transmitted illumination

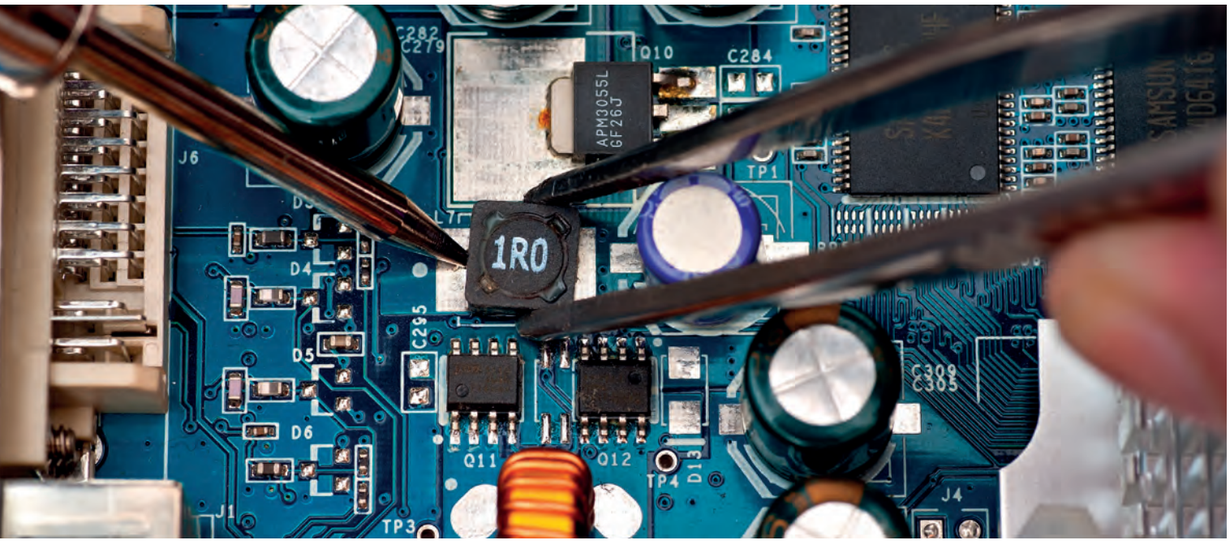
Transmitted light from below increases visibility of transparent, semi-transparent and perforated subjects. Features, edges and internal structures become clearer for accurate inspection.

The Stabila stand has an optional built-in sub-stage illuminator for transmitted lighting.

Contrast enhancing lighting

For more challenging subjects such as plastics, glass, biological samples and other transparent or translucent materials, Mantis offers contrast-enhancing illumination through the optional adjustable contrast base.

Adjust shutter, angle and intensity to control light direction and emphasise key features.



ONE PLATFORM. MANY TASKS.

Mantis is used across a wide range of subjects and materials, from routine inspection to more detailed investigation. Stereo clarity, generous working space and flexible illumination adapt to both quick checks and complex tasks.

Electronics

Clear depth perception and unrestricted head movement improve soldering, PCB inspection and rework during extended tasks. Adjustable illumination reveals solder fillets and bridges while reducing glare.

Case Study in Electronics Manufacturing

A global manufacturer uses Mantis for PCB inspection and manual rework down to 0201 components. The stable stereo image improves tool control and solder joint assessment during fine rework.

"Improved visibility and depth control have reduced failure rates to a negligible level."

Watchmaking and Jewellery

Clear depth perception and precise hand eye coordination improve assembly, inspection and finishing of watch movements and fine jewellery, including positioning balance springs, inspecting pivots and setting stones.

Case Study in Watchmaking

A specialist watchmaking workshop uses Mantis to assemble and inspect mechanical movements. The clear 3D view allows precise placement of wheels and springs, inspection of pivots and escapement components, and controlled handling of delicate parts without contact damage.

"Being able to judge depth and alignment clearly is essential when working on fine mechanical parts."

Dental

Mantis is well suited to detailed dental work such as finishing crowns, bridges and implant components under magnification. Controlled lighting and improved depth control allow technicians to inspect margins, check contact points and evaluate surface finish and colour matching with precision.

Case Study in Dental

A dental laboratory uses Mantis to inspect and finish crowns and bridges before final fitting. The improved spatial awareness allows technicians to refine margins, adjust occlusal surfaces and assess surface texture during final polishing.

"Being able to clearly judge fit and surface finish makes final adjustments faster and more reliable."

Medical

Bright imaging and strong visual depth allow inspection of stent struts, catheter tips, and surface finishes before use. Clinicians can check edge condition, coating coverage and surface defects with confidence. UV illumination reveals residues or coating inconsistencies when required.

Case Study in Medical

A clinical team uses Mantis to prepare small biological samples during procedures. Clear stereo depth allows staff to distinguish tissue layers, trim margins accurately and avoid damaging adjacent structures.

"Clear depth and detail make it easier for staff to assess and prepare samples with greater confidence".

Laboratories and Life Sciences

Mantis is used for sample preparation, dissection and fine manipulation within controlled environments. The eyepiece-less viewing position allows safety glasses to be worn and makes it suitable for use within laminar flow cabinets.

Case Study in Laboratories and Life Sciences

A research laboratory uses Mantis for micro-dissection and preparation of biological samples inside a laminar flow cabinet. The clear 3D view improves depth control during fine manipulation while maintaining compliance with cleanroom protocols.

"The open viewing position allows us to work comfortably inside the cabinet while maintaining precision."

Aerospace and Defence

Strong visual depth and controlled lighting make it easier to inspect machined features, edge conditions, and PCB assemblies. Mantis PIXO allows findings to be captured and shared as part of quality and compliance processes.

Case Study in Aerospace and Defence

An AS9100-certified supplier uses Mantis PIXO to inspect machined features and speed up documentation in a shared quality lab. Lighting control helps reveal burrs and edge conditions inside small cavities.

"Faster inspection and digital capture have improved traceability and reduced documentation time."

Plastics and Rubber

Mantis is used for quality control of rubber seals and plastic components, where stereo clarity and controlled lighting make it easier to identify flow lines, assess injection moulding defects, and carry out rework such as flash removal.

Case Study in Plastics

A plastics manufacturer uses Mantis at a rework station to remove flash from moulded rubber seals. Stereo clarity allows operators to judge edge condition accurately while trimming, reducing the risk of over-cutting and rework.

"Clear depth control enables precise trimming, reducing rework and scrap."

Precision Engineering

Mantis' clear stereo depth and adjustable illumination improve component finishing, inspection for anodising or hardening defects, and tool-based work such as deburring. Controlled lighting reveals edge condition, surface texture and subtle defects that may otherwise be missed.

Case Study in Precision Engineering

A precision engineering company uses Mantis for deburring, inspection, and fine assembly work. Greater depth perception combined with lighting control provides more reliable visibility of edges and surface condition than their previous system.

"IMPROVED VISIBILITY AND DEPTH CONTROL HAVE REDUCED FAILURE RATES TO A NEGLIGIBLE LEVEL."

Global Electronics Manufacturer

For more information, visit visioneng.com

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THREE VERSIONS. ONE CLEAR VIEW.

Mantis is available in three versions for different inspection, assembly and rework workflows. Each delivers the same clear stereo view and ergonomic performance, with features tailored to your application.

MANTIS PIXO

Optical stereo viewing with integrated digital capability

Eyepiece-less stereo microscope with dynamic view optics and integrated camera.

Key Features

- High quality optical stereo image
- Ergonomic working position
- Long working distance
- Integrated high-definition camera
- Video and image capture
- On screen annotation
- Custom overlays
- Magnification 3x – 15x
- 3 lens multi-view turret
- Dynamic 3D lighting
- White/UV lighting option

MANTIS ERGO

Comfortable optical viewing for detailed, long-duration tasks

Eyepiece-less optical stereo microscope with dynamic view optics.

Key Features

- High quality optical stereo image
- Ergonomic working position
- Long working distance
- Magnification 3x – 15x
- 3 lens multi-view turret
- Dynamic 3D lighting
- White/UV lighting option

MANTIS IOTA

Compact, high-performance stereo viewing

Compact eyepiece-less stereo microscope with dynamic view optics.

Key Features

- High quality optical stereo image
- Ergonomic working position
- Long working distance
- Magnification 3x – 8x
- Interchangeable lenses
- Synchronised LED lighting

"THE VIEW IS CONSISTENT ACROSS THE RANGE. THE DIFFERENCE IS HOW YOU CHOOSE TO WORK."

Your choice of objectives

Select the objectives most suitable for your application. Our coplanar range provides super-long working distances for manipulation and assembly tasks. Our standard range provides magnification up to 15× for inspection and handling. Within each range, focal distance remains consistent, removing the need to refocus when changing magnification.

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Stand Options

Stabila stand

Counter Sprung for ease of use, Stabila's compact, stable design features a long range of focus travel, and an optional illuminated base.

Dimensions		PIXO	ERGO	IOTA
A	(Workbench to top of the head)	513–663 mm		449–559 mm
B	(Throat, optical axis to column)	218 mm		218 mm
C	(Length)	422 mm		422 mm
D	(Width)	290 mm		290 mm
E	(Top of stabila to bottom head/objective)	246 mm max		239 mm max

Stabila stand with pilot stage

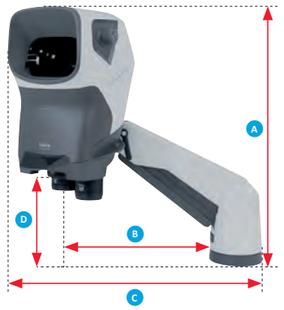
Pilot Stage - 100mm x 100mm travel stage with autolock to prevent unwanted movement.

Dimensions		PIXO	ERGO	IOTA
A	(Workbench to top of the head)	513–663 mm		449–559 mm
B	(Throat, optical axis to column)	218 mm		218 mm
C	(Length incl. movement)	475 mm max		475 mm max
D	(Width incl. movement)	520 mm max		520 mm max
E	(Top of stabila to bottom head/objective)	212 mm max		205 mm max

Verso arm

Versatile 'lift and lower' Verso stand enables Mantis to be swung in and out of position when needed.

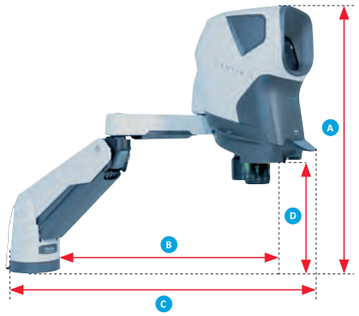
Dimensions		PIXO	ERGO	IOTA
A	(Workbench to top of the head)	429–652 mm		360–590 mm
B	(Throat, optical axis to column)	380–505 mm		375–503 mm
C	(Length)	575–695 mm		590–710 mm
D	(Worksurface to bottom head/objective)	40–285 mm		39–263 mm



Verso arm with forearm

Adds extra stand reach with pivot point, rotation 270°.

Dimensions		PIXO	ERGO	IOTA
A	(Workbench to top of the head)	482–710 mm		416–639 mm
B	(Throat, optical axis to column)	630–755 mm		630–750 mm
C	(Length)	825–945 mm		840–960 mm
D	(Worksurface to bottom head/objective)	106–337 mm		94–316 mm



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Technical Specification

	PIXO				ERGO						IOTA			
Optical														
Compatible Objective Lens	X3	X4	X6	X8	X10	X15	X3 Coplanar	X4 Coplanar	X6 Coplanar	X8 Coplanar	X3	X4	X6	X8
Max. Working distance (mm)	100	100	68	60	54	40	100.2	100.2	113.9	112.9	104	108	74	61
Measured Max FoV (mm)	44.1	35.7	24.2	18	14.2	9.1	44.1	35.7	22.5	17.9	37.0	29.0	20.1	15.0
Pupil Diameter (mm)	23.5	23.6	22.4	19.4	17.0	12.3	18.0	19.0	16.0	14.5	22.8	23.6	22.0	18.0
Illumination														
Incident options														
Brightness	~21 k lux max										~26 k lux max			
Colour temp	5500K at max brightness										5500K			
Control	25 steps										25 steps			
Transmitted (Stabila illuminated base)														
Brightness	36 k lux max													
Colour temp	~4800K													
Control	25 steps													
White / UV version														
Brightness	White: 11k lux UV: 0.47 k lux 53 uW/cm2 Max										—			
Peak wave length	385nm										—			
Control	25 steps										—			
Size (Head only)														
Depth (mm)	275										271			
Width (mm)	218										196			
Height (mm)	371										324			
Weight														
Max. operating (kg)	6.5						6.4				3.5			
Head only (kg)	4.5						4.4				3.2			
Camera (PIXO only)														
Camera resolution (MP)	5.04 MP						—				—			
Best capture resolution (pixels)	2592 x 1944						—				—			
Frame refresh rate	48 frames per second						—				—			
Sensor type	Rear-illuminated CMOS						—				—			
Colour depth	12-bit						—				—			
Interface	SuperSpeed USB 3.0						—				—			
Output connection	USB-C to PC						—				—			
Supplied software	ViCapture													
Optional software	ViFox DimensionOne DimensionTwo ViPlus						—				—			
Image capture formats	PNG, BMP, JPG						—				—			
Saved image sizes (MB)	PNG – 19 Mb BMP – 19 Mb JPG – 400 Kb						—				—			

Disclaimer

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Errors and omissions excepted.

Vision ENGINEERING

Inspection and metrology solutions across industry, science and research

From ergonomic optical magnification to advanced digital microscopy and non-contact measurement systems, Vision Engineering supports inspection, analysis and dimensional verification across a wide range of applications.

Ergonomic stereo microscopy

Mantis and Lynx EVO provide comfortable optical inspection with a large field of view and natural hand-eye coordination. Designed to support detailed inspection tasks while reducing operator strain.

Digital microscopy

ProteQ VISO and the EVO Cam Series represent the latest developments in digital microscopy. Fully digital systems support inspection, analysis, image capture and reporting for documentation and collaboration.

Metrology

Vision Engineering offers a range of vision measurement systems for non-contact dimensional inspection and verification in production and quality control environments.

For more information and sales support, please contact your Vision Engineering branch, local authorised distributor, or visit our website: visioneng.com

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