



**Mantis**

## Ergonomic stereo microscopes

Superior imaging for a wide range of inspection & rework tasks



FM 557119

Vision Engineering Ltd has been certified for the quality management system ISO 9001:2008.

- Patented optical technology for fatigue-free viewing and superb image quality
- Wide range of magnification options to 20x
- Long working distances; large depths of field
- Shadow-free true colour LED illumination



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# A smarter way to work

The latest generation of Mantis is the result of a continual research and development programme, bringing together pioneering optical developments with over 50 years experience.

## The Mantis advantage

For over half a century, Vision Engineering has been a pioneer in cutting-edge optical developments, introducing eyepiece-less microscopes to the world in the 1970s. The latest generation of Mantis is the result of a continual research and development programme, bringing together pioneering optical developments with over 50 years experience.

As comfortable as a bench magnifier, with the power of a stereo microscope, the Mantis' unique eyepiece-less design is at the heart of the Mantis advantage. From this, a stunning 3D macro world opens up to the user. With enhanced depth perception and the ability to look around the subject, Mantis' unparalleled ergonomics opens up a new dimension of enhanced comfort, efficiency and productivity.

No other company has dedicated so much time to advancing microscope ergonomics, since we understand the critical link between operator ergonomics and increased efficiency and productivity. Vision Engineering's patented eyepiece-less stereo microscopes are naturally ergonomic without the need for special adjustment, modification or optional extras. Users benefit dramatically from improved comfort and ease of use; businesses benefit from increased productivity, improved quality and reduced costs.

But don't just take our word for it, you could always ask one of more than 150,000 Mantis users.

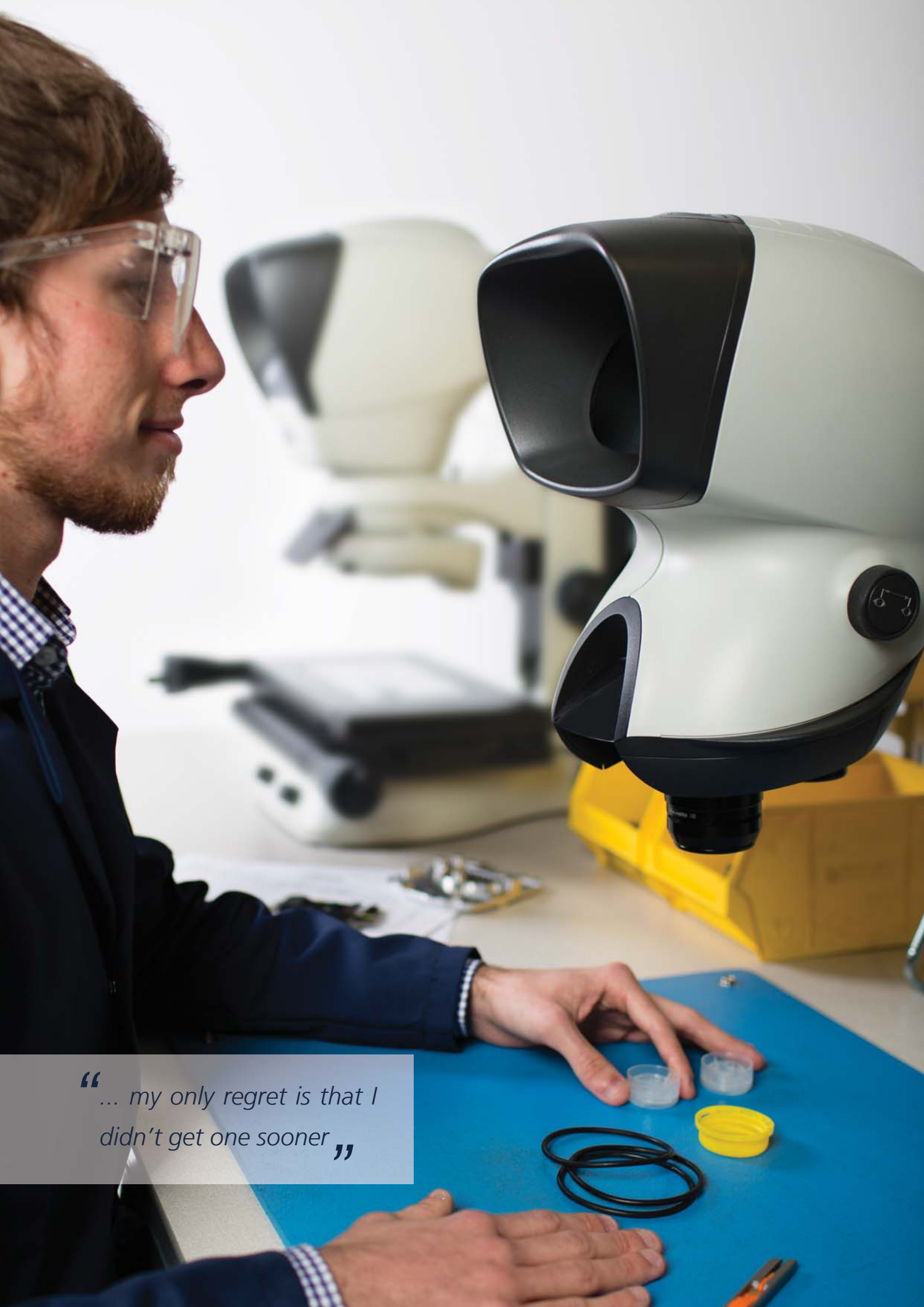
*“We pride ourselves on providing a fast turnaround time for our customers, so we rely on the accuracy and ease of use of Mantis”*

*“... my only regret is that I didn't get one sooner”*

*“We invested in Mantis since it adds both precision and pace to our production line”*

*“As easy to use as a bench magnifier - as powerful as a stereo microscope”*





*“... my only regret is that I  
didn't get one sooner ”*



# Improving operator ergonomics is not just about improving comfort

Businesses choose Vision Engineering's ergonomic stereo microscopes because operators are more comfortable during inspection, so more efficient, more accurate and more productive.

So the operator benefits and so does the business.

## Give your stereo microscope a health check!

### ✓ Ergonomic working position

An ergonomic body position makes the Mantis more comfortable, less fatiguing and, more importantly, much easier to use. Additionally, optimal operator ergonomics minimises the risk of repetitive strain-related injuries.

A happy worker is a productive worker.

### ✓ Freedom of head movement

An additional benefit of Vision Engineering's patented eyepiece-less design is that users do not need to align their eyes with eyepieces. This freedom of movement reduces associated neck and back strain associated with the fixed body position of conventional microscope eyepieces.

### ✓ A natural view of the subject

With conventional microscope eyepieces, operators must position their eyes very close to the eyepieces, blocking out ambient light. The intense light exiting the eyepieces causes the pupils to contract. Constant contraction and expansion of the pupils is the main cause of eye fatigue with microscopes.

With the patented eyepieces of Mantis, users sit back from the viewer, allowing ambient light into the eyes. Additionally, the light exiting the 'viewing lens' is spread over a larger area, proving a more natural view of the subject.

### ✓ Ability to wear glasses

With Mantis, operators do not need to remove their glasses (or safety glasses) to use the microscope.

### ✓ Easy hand-eye co-ordination

Easy hand-eye co-ordination is possible with the Mantis – critical for re-work, repair, dissection and other manipulation tasks. Sitting back from the viewer provides users with much better peripheral vision, so they can co-ordinate hands in a natural manner.



Read about our patented technology:  
[www.visioneng.com/ergonomics](http://www.visioneng.com/ergonomics) »

**Mantis Compact** is a high value stereo microscope which excels in the low magnification range for inspection or manipulation tasks where bench magnifiers have traditionally been used.

Patented optical technology allows operators freedom of head movement for superb ergonomics and hand-eye co-ordination, with the ability to wear glasses if required. All Mantis systems aid with productivity and quality improvements.

- Superior ergonomics for improved productivity and increased throughput
- Long working distances for easy sample manipulation and rework
- 2x, 4x, 6x and 8x quick change objectives
- Bright white, true colour, LED illumination providing up to 10,000 hours of shadow-free viewing
- Superb hand-eye co-ordination for inspection and manipulation tasks
- Patented eyepiece-less optics maximise head freedom providing unrivalled ergonomic performance.



Mantis Compact, with counter-balanced universal stand, for flexibility and ease of use.



High stability bench stand, with integral focus and substage illumination.



Articulated arm, designed specifically for applications requiring extended reach, without compromising stability.

## Options



### Floating Stage

Provides smooth and sensitive control allowing for samples to be accurately inspected. For use with bench stand only.



### UV Lighting

For UV inspection applications and fast and accurate fault detection.



### Secondary Link Arm

A secondary link increases total reach of articulated arm to 847.5mm and provides added flexibility and manoeuvrability.



### Floor Stand

Ideal for inspection where subjects are immobile or require a standing position. For use in conjunction with articulated arm. Lift, swing, tilt and rotate capability.

## Optical Data

Objective Lenses	Working Distance	Field of View
2x	167mm	45.0mm
4x	96mm	27.5mm
6x	73mm	19.2mm
8x	58.5mm	14.3mm

## Accessories

Lens protection caps  
Dust cover  
Replacement LED array

**Mantis Elite** is a high performance stereo microscope, offering 3D optical imaging with magnification options up to 20x, making it a perfect alternative to more traditional stereo microscopes.

Large fields of view and generous working distances allow for a wide range of inspection, preparation and manipulation tasks to be carried out, all with exceptional hand-eye co-ordination.



Mantis Elite, with counter-balanced universal stand for flexibility and ease of use.



Articulated arm, designed specifically for applications requiring extended reach, without compromising stability.

Optical Data		
Objective Lenses	Working Distance	Field of View
2x	160mm	57.0mm
4x	96mm	34.0mm
6x	68mm	23.0mm
6x SLWD*	112mm	20.0mm
8x	59mm	17.0mm
10x	54mm	13.5mm
15x	40mm	8.8mm
20x	29mm	6.5mm

Accessories
Lens protection caps
Dust cover
Replacement LED array

\* cannot be used together with 2x or 20x lens

- High value, high specification patented design with superb optical performance
- Long working distance and large field of view for easy sample manipulation and rework
- 2x - 20x magnification options with quick change turret allows users to switch between low magnification inspection and high magnification fine detail tasks
- Bright white, true colour, LED illumination providing up to 10,000 hours of shadow-free viewing
- Superb hand-eye co-ordination for inspection and manipulation tasks
- Patented optics maximise head freedom providing superb ergonomics and minimal eye fatigue

High stability bench stand with integral focus and substage illumination.



## Options



### Floating Stage

Provides smooth and sensitive control allowing for samples to be accurately inspected. For use with bench stand only.



### Episcopic Illuminator

Through-the-lens illumination for the inspection of bore holes and complex internal/external features. Iris control for precise light positioning.



### UV Lighting

Switchable UV-white light illumination for UV inspection applications and fast and accurate fault detection.



### Secondary Link Arm

A secondary link increases total reach of articulated arm to 847.5mm and provides added flexibility and manoeuvrability.



### Floor Stand

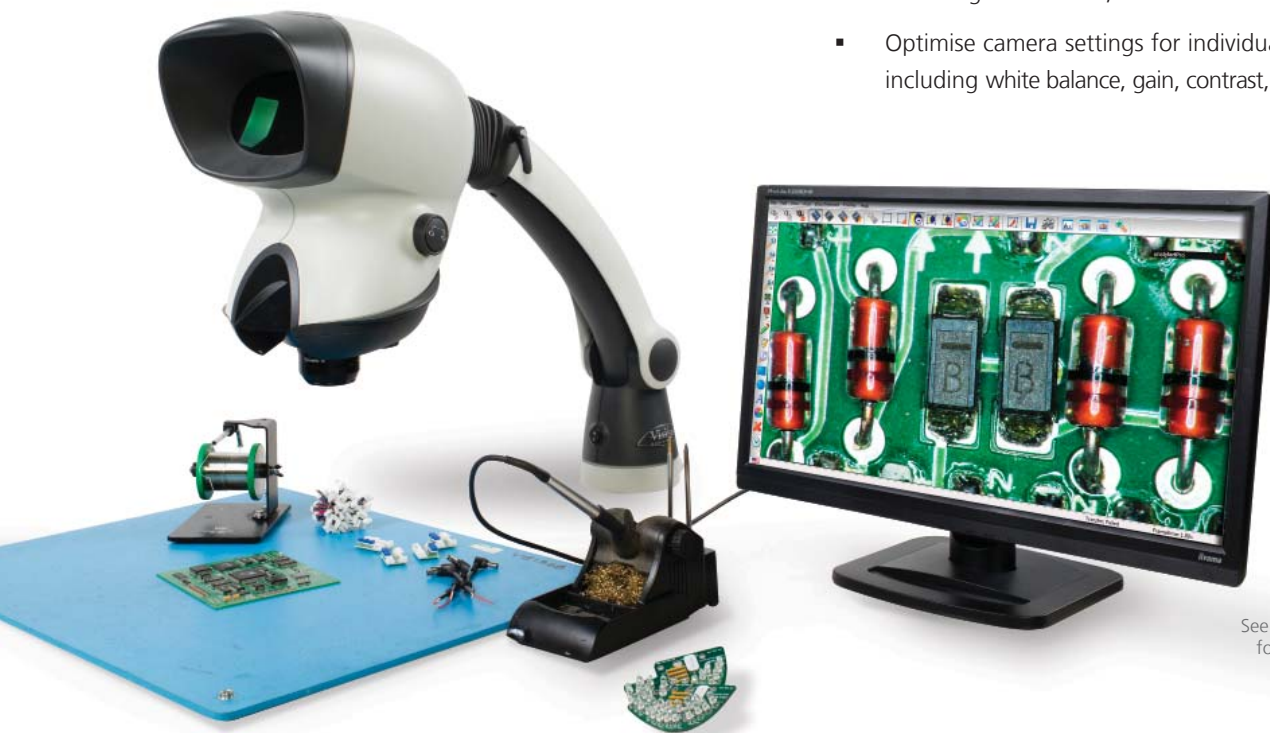
Ideal for inspection where subjects are immobile or require a standing position. For use in conjunction with articulated arm. Lift, swing, tilt and rotate capability.

**Mantis Elite-Cam HD** is a variant of the successful Mantis Elite stereo microscope, with an internally integrated USB2.0 digital camera, bringing image capture capabilities to the outstanding optical performance of Mantis.

By adding an HD camera to Mantis Elite, Vision Engineering has created a supremely capable inspection solution, providing flexibility and simplicity for any precision magnification task.

Simple, easy-to-use image and video capture software is included as standard to allow you to get up and running quickly, optimise camera settings for individual applications, or make annotations for documentation purposes.

- Quickly and simply add annotations / mark-up to captured images using the uEye software supplied
- Image capture in a variety of formats (.bmp, .jpg and .png)
- Video recording (.avi), ideal for training purposes
- Multi-lingual software, available in all major languages
- Optimise camera settings for individual applications, including white balance, gain, contrast, colour channel gain



See Technical details  
for camera details.

#### Mantis Elite-Cam HD includes

USB cable, 1 metre  
Simple and easy-to-use software - available in all major languages.

#### — *DimensionOne™* software option —

*DimensionOne™* is a powerful software solution for Mantis Elite-Cam HD, providing enhanced annotation, as well as on-screen measurement and dimensioning capabilities.



*DimensionOne™* comes with a  
CD and calibration artefact for  
accurate on-screen measurement.

A range of alternative software options are also available.



## Mantis Compact, Mantis Elite, or Mantis Elite-Cam HD?

### Mantis Compact

Mantis Compact excels in the low magnification range for inspection or manipulation tasks where bench magnifiers have traditionally been used. Mantis Compact has a small footprint and low investment cost giving a superb price/performance ratio.



### Mantis Elite

Mantis Elite has enhanced optical performance, including higher magnification, a large field of view plus long working distances, making it a perfect alternative to traditional stereo microscopes for a wide range of inspection, preparation and manipulation tasks requiring hand-eye co-ordination.

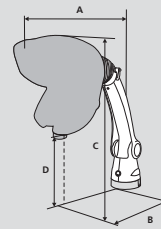


### Mantis Elite-Cam HD

Mantis Elite-Cam HD is a supremely capable inspection tool for the quality conscious, combining the outstanding 3D optics of Mantis Elite with the power and flexibility of HD image capture. Inspect, document and share with ease.



#### Universal Stand



#### Mantis Compact

**Dimensions:**  
A = 565mm - 775mm  
B = 335mm - 545mm  
C = 395mm - 605mm  
D = 110mm - 320mm

**Unpacked weight:**  
Head 2.1kg Stand 3.3kg

**Packed weight:**  
Head 4.1kg Stand 4.6kg

**Power:**  
9V DC external plug transformer, available in all worldwide plug configurations.

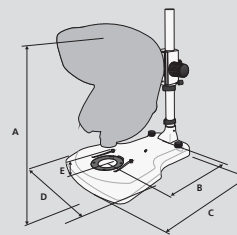
#### Mantis Elite

**Dimensions:**  
A = 593mm - 802mm  
B = 352mm - 622mm  
C = 415mm - 624mm  
D = 103mm - 312mm

**Unpacked weight:**  
Head 3.0kg Stand 3.3kg

**Packed weight:**  
Head 5.0kg Stand 4.6kg

#### Bench Stand



#### Mantis Compact

**Dimensions:**  
A = 475mm - 608mm  
B = 300mm  
C = 380mm  
D = 330mm  
E = 256mm max., less working distance

**Unpacked weight:**  
Head 2.1kg Stand 5.0kg

**Packed weight:**  
Head 4.1kg Stand 8.4kg

**Power:**  
100-240VAC 50-60HZ 1.0A max., available in all worldwide plug configurations.

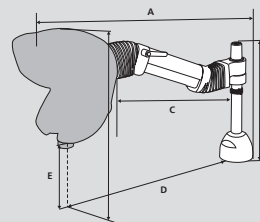
#### Mantis Elite

**Dimensions:**  
A = 487mm - 620mm  
B = 300mm  
C = 380mm  
D = 330mm  
E = 255mm max., less working distance

**Unpacked weight:**  
Head 3.0kg Stand 5.0kg

**Packed weight:**  
Head 5.0kg Stand 8.4kg

#### Articulated Arm



#### Mantis Compact

**Dimensions:**  
A = 880mm  
B = 430mm  
C = 510mm  
D = 650mm  
E = 290mm

**Unpacked weight:**  
Head 2.1kg Stand 11kg

**Packed weight:**  
Head 4.1kg Stand 13.5kg

**Power:**  
9V DC external plug transformer, available in all worldwide plug configurations.

#### Mantis Elite

**Dimensions:**  
A = 880mm  
B = 430mm  
C = 510mm  
D = 650mm  
E = 290mm

**Unpacked weight:**  
Head 3.0kg Stand 11kg

**Packed weight:**  
Head 5.0kg Stand 13.5kg

#### Illumination

##### Mantis Compact

Lighting Data		
Light intensity measured at subject plane with colour correction filters.		
20 LEDs	9,400 LUX	Up to 10,000 hours
Substage illumination (bench stand only)		
58 LEDs	2,700 LUX	Up to 10,000 hours

##### Mantis Elite

Lighting Data		
Light intensity measured at subject plane with colour correction filters.		
24 LEDs	11,000 LUX	Up to 10,000 hours
Substage illumination (bench stand only)		
58 LEDs	2,700 LUX	Up to 10,000 hours

#### Camera

Camera Data	
Sensor type	CMOS
Resolution (H x V)	1600 x 1200 pixels
Sensor size	1/3"
Pixel size	2.8µm
Colour depth	8-bit
Refresh rate (fps)	18.3 fps max.
Interface	USB2.0
File formats	BMP, JPEG, PNG
Power supply	USB powered
Supplied software	uEye Cockpit



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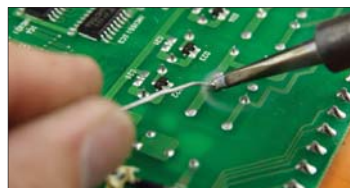
The Mantis family of stereo microscopes enable users to inspect and re-work a wide range of components including...

## Electronics



Mantis stereo microscopes are ideally suited for electronics PCB inspection and rework.

The patented optical viewing head provides an unrivalled 3D view with ergonomic advantages of simple hand-eye co-ordination and fatigue-free soldering / inspection work.



## Plastics and rubber



Rubber seals, packaging, caps and closures are designed and precision manufactured to make them work effectively. Inspection for quality is essential. Rework, such as the removal of flash from the injection mould process may also be required, meaning Mantis' long working distance is essential.



## Medical devices



From stents to catheters, medical device components require 100% inspection to ensure every product sent out meets the exacting product specifications. Mantis is excellent for critical manual inspection because of its excellent image contrast.



## Precision engineering



Precision engineered components are often critical components and utilised in industries such as aerospace and automotive. Mantis' clear view and superior ergonomics are ideal for critical inspection for defects as they aid visual accuracy and minimise errors caused by user fatigue.



## Laboratory / Life sciences



Sample preparation and dissection in a laboratory is made safer and easier with Mantis. Mantis 'eyepiece-less' viewing head not only allows safety glasses to be worn, but also allows Mantis to be used when placed in a laminar flow cabinet.



## Hair restoration



Mantis is a popular solution for use with hair restoration. The detailed and time limited work of splitting hair follicles requires the operator to be able to maintain high levels of concentration and visual accuracy.



## Dental



Dental prosthetics are medical devices that need to be tailored for each individual. The manufacturing process often requires magnification from inspecting the initial moulds, to colour matching the final product.



There are many other applications where Mantis is used, including agriculture, education, restoration of antiques, engraving, forensics, and much more...

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# More about Vision Engineering...

## About us

Vision Engineering has been designing and manufacturing ergonomic microscopes for over 50 years.

With a philosophy of design innovation, Vision Engineering holds world patents for a number of optical techniques which significantly improve microscope ergonomics.

To date, over 300,000 'eyepiece-less' and 'expanded image' microscopes have been installed for both industry and life science applications.

## ISO 9001:2008

Vision Engineering Ltd is certificated for the quality management system ISO 9001:2008.

## Service & support

Vision Engineering has a network of international offices throughout North and South America, Europe, and Asia, supported by fully trained distributor partners. Full user training, service, and support is available, ensuring the highest levels of customer support is maintained.

## Company history

Vision Engineering was founded in 1958 by Rob Freeman, a toolmaker who had previously worked as a race mechanic with the Jaguar Racing Team. While at Jaguar, Rob developed a borescope for inspecting internal race engine parts without the need for disassembly.

Subsequently he formed Vision Engineering as a means of developing his interest in optics applied to manufacturing technology.

Over the years Vision Engineering has delivered leading-edge inspection and measurement products that have helped improved productivity and quality for thousands of companies the world over.



Falcon 3-axis measuring machine.



Swift-Duo dual optical and video measuring system.

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# Other solutions from Vision Engineering...

## Stereo microscopes

Vision Engineering's acclaimed eyepiece-less technology utilised in their range of stereo microscopes offers stunning 3D (stereo) imaging combined with unrivalled ergonomics. The ergonomic patented viewer liberates users from restrictive working practices, opening up a world of enhanced efficiency and productivity.

With more than 50 years' experience in the design and manufacture of innovative optical solutions, Vision Engineering has the expertise to advise you on the best solution for your application.

[www.visioneng.com/stereo](http://www.visioneng.com/stereo)

## Digital inspection

Take advantage of the power of digital imaging with Vision Engineering's range of digital video inspection systems. High resolution images combined with simple operation make digital inspection a powerful alternative for any task requiring precision magnification.

The range includes handheld digital solutions for inspection on the move, to full HD digital imaging with real-time video, for instant results.

[www.visioneng.com/digital](http://www.visioneng.com/digital)

## Non-contact measurement

Measurement applications vary greatly. This is reflected in the wide range of measurement solutions provided by Vision Engineering.

Vision Engineering manufacture a full range of non-contact measuring systems, including 'workshop' measuring microscopes, dual optical and video measuring systems, plus the latest field of view 'instant' measurement systems.

Vision Engineering also has a suite of inspection systems and software solutions, designed for simple on-screen dimensioning.

[www.visioneng.com/measurement](http://www.visioneng.com/measurement)



A full range of stereo microscopes and digital inspection solutions are available.

## For more information...

Vision Engineering has a network of offices and technical distributors around the world. For more information, please contact your Vision Engineering branch, local authorised distributor, or visit our website.

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# [www.visioneng.com](http://www.visioneng.com)



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