

Mitaka



# Mitaka HawkSight

The 8-sensor 4K3D Video Microscope





## Microscopy essentials, enhanced

This Video Microscope was based on our decades of expertise in developing optical and mechanical microscopy solutions. Since the digital microscope is a continuation of the surgical microscope and not its successor, the visual performance and ergonomics were guaranteed.

**8-sensor  
2x4K camera**

Bring your team together with large-screen surgery visualised at high resolution

Sharing the first-person 4K3D perspective with the assisting team gives them a better understanding of what's happening and ensures that progress is smoother. This leads to safer procedures and shortens surgery time. The experience is also better for the spectators.

The optical power and versatile stand of HawkSight

## covers a range of applications

### High magnification made possible with the Video Microscope

The 8:1 optical zoom ratio guarantees a range of magnification of a specific area of the operating field without loss of quality or resolution. The guiding laser supports instantaneous focusing, facilitated by the autofocus.

The HawkSight optical system achieves the maximum magnification of an uncompromising 110x (with WD 200 mm on a 55" monitor). The field of view is illuminated by an ultra-bright and durable LED light.

## with the ultimate head-up setup

### Based on proven surgical microscope principles

HawkSight is built on a fully functional microscope stand with the legendary Mitaka Kohki counterbalance overhead design. The unique shape of the arm allows approaches to be taken from different angles. The unprecedented range of the working distance means the head can be positioned from 100 cm above the operating field to 20 cm. The shortest distance is useful when the highest magnification and resolution are needed for the most demanding deep-cavity access.

# Unparalleled Working Distance of 200 - 1000 mm

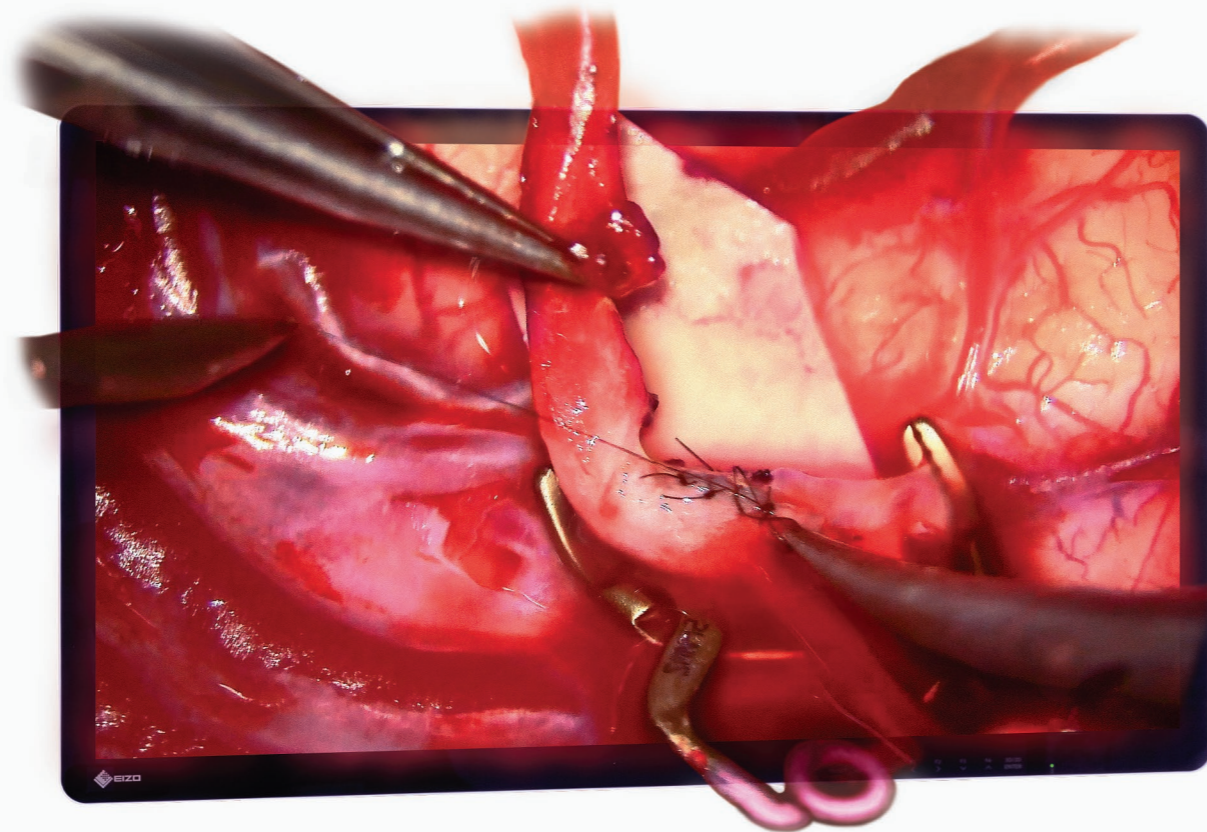
## Comprehensively supports surgeons from any angle

The 4K3D HawkSight with its specially developed optical lenses provides extremely bright and high-resolution 3D images.

The unique design provides an unparalleled working distance of up to 100 cm above the operating field. This setup supports most micro-surgical procedures and can be used as an alternative to loupes or glasses in micro- and macro-surgery, increasing comfort with a wider field of view. In addition, the surgical possibilities are enhanced with extra magnification or feedback from fluorescent agents in vascular or oncological procedures.

The specially designed offset arm places the microscope head off centre to give a perfect view to the operator. Moreover, the imaging and light axis can be moved through a range of angles. The surgeon can use the microscope either standing or sitting, thus alleviating any postural discomfort.

**The ergonomic features of the microscope comprehensively support surgeons when performing macro-, micro- and deep-seated procedures.**



Unique features of HawkSight  
**Bird's-eye view**  
 HawkSight has the largest Working Distance of any microscope, ranging **from 20 cm up to 100 cm.**



**Offset arm**  
 When working in deep cavities, the head can be moved to achieve the highest resolution at a magnification of up to 110x. The unique offset arm allows the image to be clearly visualised from a range of angles.

[The above image is a composite image]

**110x**  
magnification

**Optical magnification**  
 The 4K3D Video Microscope achieves high resolution thanks to its specially designed, optical zoom system, which has a maximum achievable magnification of 110x (at WD 200 mm with a 55" monitor).

**8:1**  
zoom ratio

**Versatile zoom ratio**  
 HawkSight has a motorised 8:1 zoom, giving a versatile range of magnification of a specific area without changing the WD or causing disorientation.

**AF**  
autofocus

**WD setup made easy**  
 Due to the incomparably wide range of focal lengths, HawkSight has an autofocus function that quickly adapts the Working Distance needed by the surgeon.

## "Zero-weight" balancing

The superb quality of Mitaka's precision mechanics - developed through our work for the space industry - means positioning a Mitaka HawkSight has a "zero-weight" feeling. All movements are counter-balanced, including starting and braking, and are thus extremely smooth and accurate.



## Vibration absorption

The Video Microscope stand has the unique Mitaka shock-absorbing system, which was developed for astronomical telescopes. Vibrations caused by external forces are eliminated as well as those generated while manoeuvring. Perfected in microscopes and proven in action for decades.





# "Exoscope done right"

The experience we gained from our decades of constructing microscopes, along with our work on previous generations of digital microscopes, allowed us to design solutions for the challenges faced by surgeons.

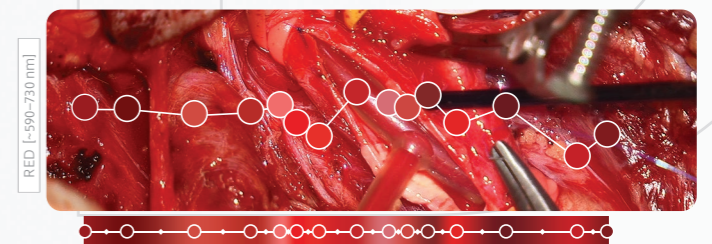
## Innovative dual 4-chip camera

**8-sensor  
2x4K camera**

With four times the pixel count of full high definition, an extremely highly resolved image is achieved. Even minute blood vessels, lymphatic vessels, nerves, and 12-0 micro sutures can be clearly identified. This reduces fatigue of the surgeon's eyes and enables safer and more precise surgery.

## Red is finally red

The HawkSight camera is a spectroscopic multi-prism system that precisely separates wavelengths onto individual sensors. Subtle overlapping prevents the loss of visually important information. We paid extra attention in addressing the common red colour issue. A dedicated prism enables the sensor to precisely pick up the dynamic range of red, thus visualising all the primary and secondary steps of red. This results in realistic anatomy imaging without the loss of clinically relevant details.



## Imaging with no delays

For surgeons who have to make split-second decisions, even the slightest latency can be stressful. With HawkSight, there is no recognisable delay between the surgeon operating and the images being displayed on the monitor.

## Anti-flicker algorithm

The averaging algorithm eliminates any unexpected increase in light input from the selected field of interest, thus preventing unwanted flickering.

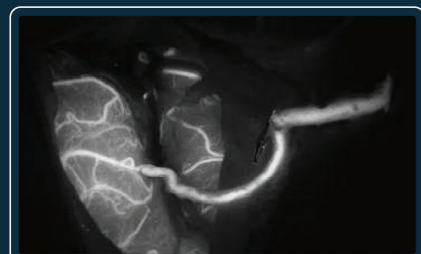
# True heart of a digital microscope

The dual 4-sensor camera specially developed for the HawkSight Video Microscope gives the highest native resolution of 4K3D. This special lens system transmits 100% of the irradiated light to the multispectral sensors, producing an extremely bright, high-contrast and clear image.

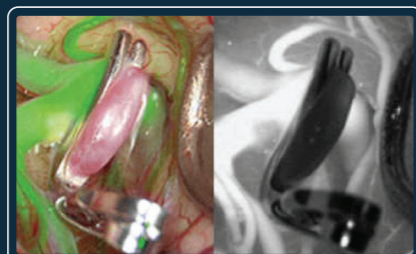
## Three fluorescence modes

This microscope system is the first in the world to enable the simultaneous observation of visible and NIR light with one camera. Invisible light wavelengths reaching the ultra-sensitive sensors are precisely filtered by dedicated prisms and amplified, so that a low-noise NIR image can be presented or superimposed over the visible light image. Bright 4K3D images are available for all modes.

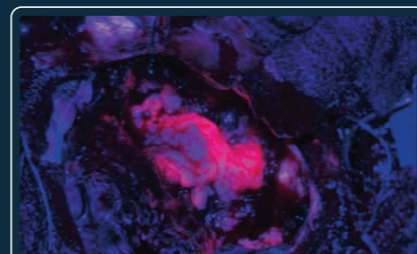
### ICG fluorescence



### ICG / visible overlay

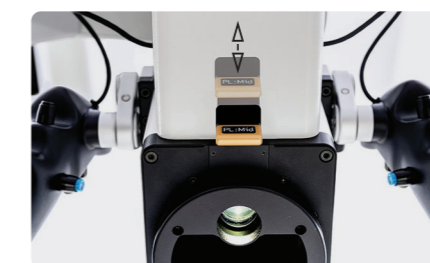


### 5-ALA fluorescence



## Focal depth adjustment

As the magnification and resolution increase, it may be necessary to widen the depth of focus. With one button push, you can narrow the light iris to increase the focal depth.



## Polarisation filter

In addition to the anti-flicker algorithm, the camera incorporates a manual switchover polarising filter to quickly get rid of light reflections from instruments or other solid or liquid structures.



## Hands-free micromovements

Motorised XY-tilting of the microscope head is available via a hand grip and foot switch. Foot control allows for remote micromovements of the image axis and fine adjustment of the field of view.

## Key specifications - Technical data

Microscope body	8-sensor 4K3D Video Microscope <b>HawkSight</b>
Zoom ratio	<b>8 : 1</b>
Zoom adjustment	Motorised zoom via hand grips & footswitch control
Maximum magnification	<b>110.0x</b> (at WD 200 mm, with 55" monitor)
Focus adjustment	Motorised focus via hand grips & footswitch control
Autofocus	⊙
Focus assistant	Laser focus guide
Focal depth adjustment	⊙
Working distance	200 mm ~ <b>1000 mm</b>
Built-in camera	8-sensor 4K3D camera
Light source for observation	High brightness LED
Fluorescence observation	ICG, 5-ALA
Polarisation filter	Manual switchover
Microscope stand type	<b>Overhead</b> , counterbalanced (see below)
Microscope stand	Overhead stand
Stand structure	<b>Counterbalance type electromagnetic locking mechanism</b>
Motorised XY function	⊙
Handgrip functions:	Free and lock operation of all axes, zoom and focus operation (Working Distance), motorised XY control, brightness adjustment, fluorescence observation on/off
Vibration absorption mechanism	⊙
Stand control	All free / Partial free with handgrips
Drape suction unit	Automatic 2-step suction system
Stand data:	
Power supply	AC 100/120/220/230/240V (50Hz / 60Hz)
Power consumption	Max 750VA
Floor occupation area	720 mm × 720 mm
Storage space (length × width × height)	1900 mm × 720 mm × 2100 mm
Gross weight	250 kg
Storage position:	



### The Shokunin way



When microsurgeons are seeking to make breakthroughs that were previously thought impossible, they often have to face technological limitations in the tools they use. Against current economic trends and refusing to accept "quick-fix" solutions, we combine the best Japanese traditions of solid handcrafting with cutting-edge innovations to invoke the spirit of Shokunin and create truly robust technology that allows surgeons to ignore previous limitations and devote themselves to perfecting their intricate procedures. The precision of our products, aligned with the surgeons' incredible abilities, puts them into a category of their own – the supermicro category.



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