

*Mitaka*



# Mitaka MM51

The legendary Supermicroscope



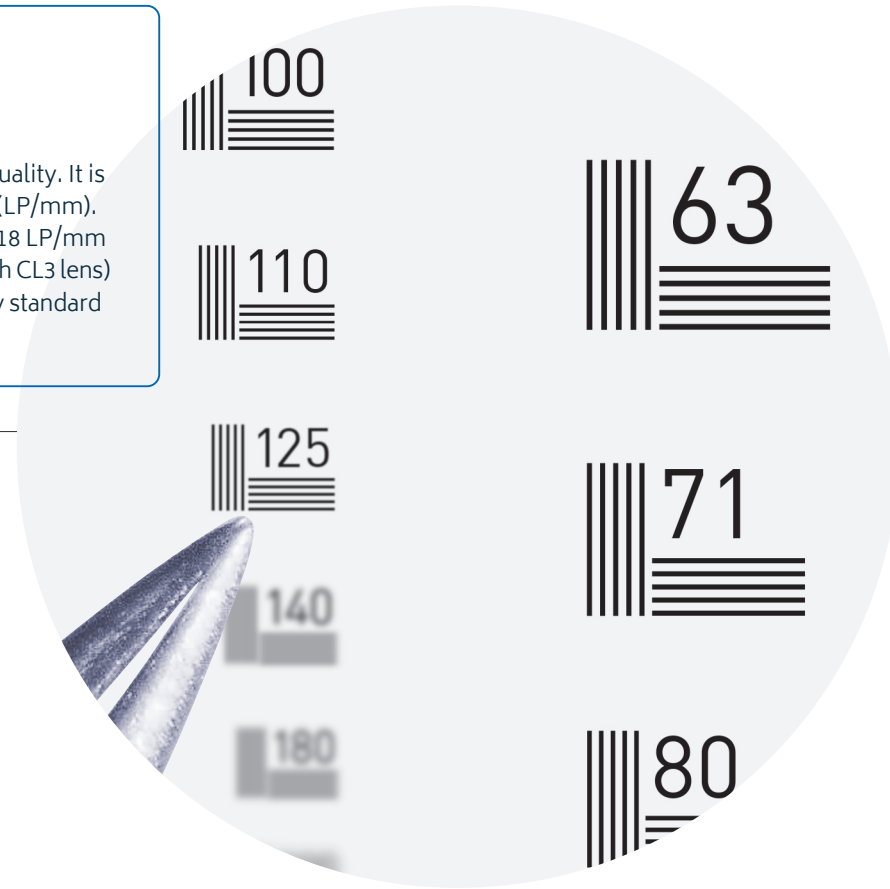
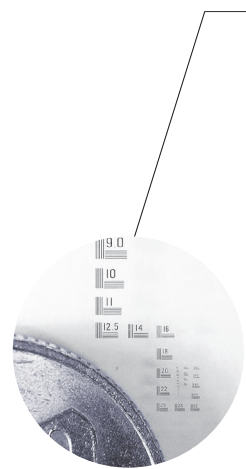
# Resolution Revolution

The large objective lens of the MM51 combined with Mitaka's advanced 8:1 zoom system creates a supermicroscope with twice the resolution and magnification of standard surgical microscopes – without focal length extenders.

Unique feature of MM51

## 118 LP/mm

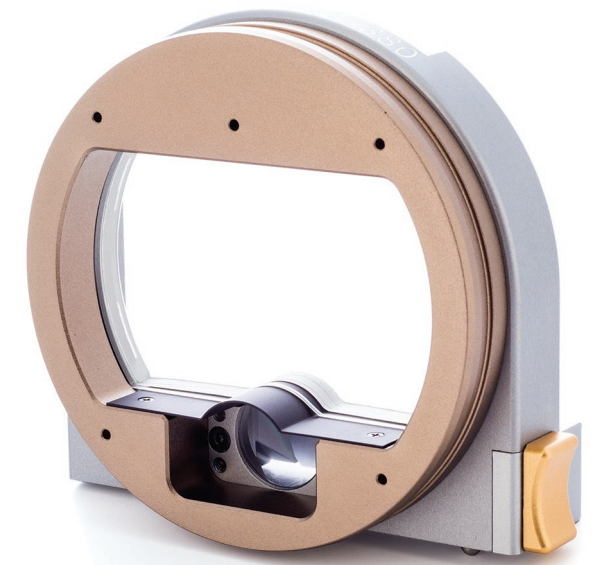
Resolution is the measure of optical quality. It is expressed in line pairs per millimetre (LP/mm). The MM51 allows you to distinguish 118 LP/mm (at 8x magnification and WD300 mm with CL3 lens) – more than twice the resolution of any standard microscope.



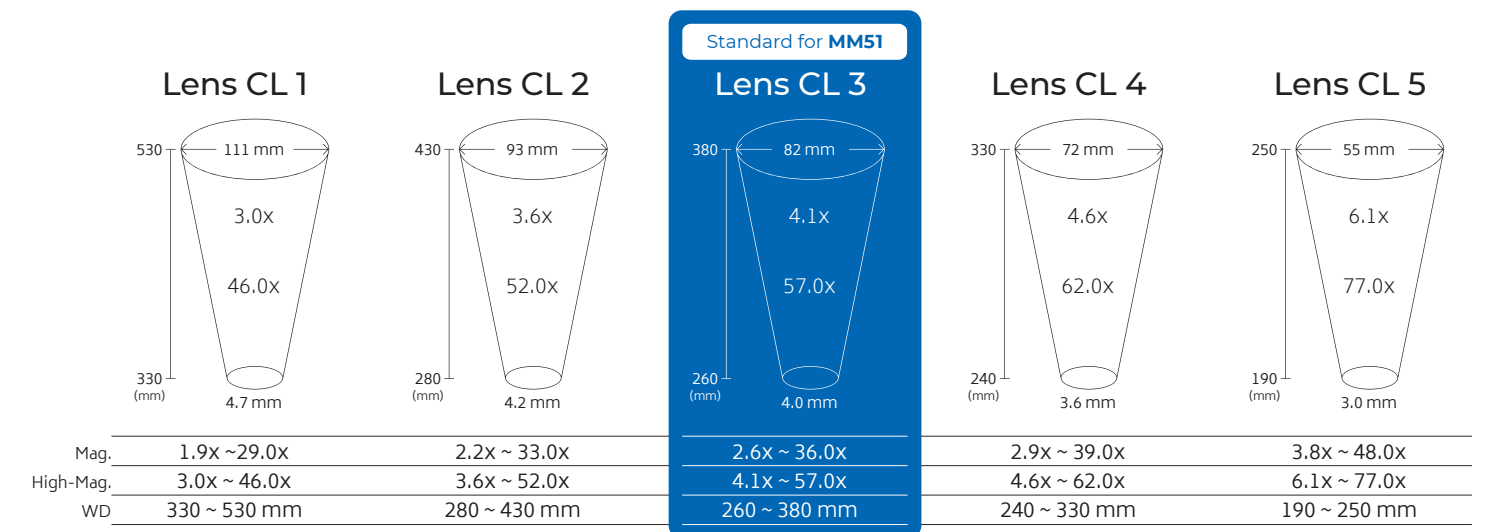
## Originating from space observations

Mitaka has dedicated effort over decades designing and manufacturing high-tech astronomical optical units, satellite remote sensing technology and innovative cosmic imaging systems. We pour the experience we've gained in the space industry through integrating advanced technology and high-precision processing techniques into developing systems for the medical field.

Many years of designing surgical optics, delivering over 4,500 stands to the market all over the world, have resulted in technology, quality and stability that are second to none - the next generation of microscopes that redefine the benchmark used in highly difficult and ultra-precise surgeries.



## Lens line-up - 5 objective lens options



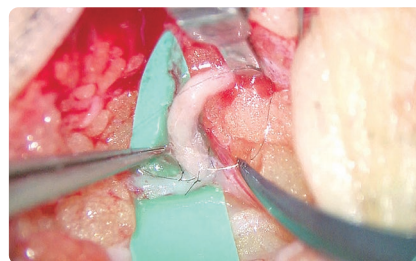
## Outstanding resolution

The unique design of the Mitaka MM51, adopting 8:1 zoom ratio, provides a brilliant image at high magnification, without loss of light level, depth of focus or contrast - therefore it allows you to observe anatomical details not visible with a standard microscope such as the lumen of vessels smaller than 1 mm diameter. It enables you to accurately perform surgeries that were impossible before due to limited zoom and resolution.

## 77x magnification

### Exceptional magnification

The reference optics in the Mitaka MM51 Supermicroscope surpass standard microscopes with variable zoom and a potential maximum magnification of 77x.



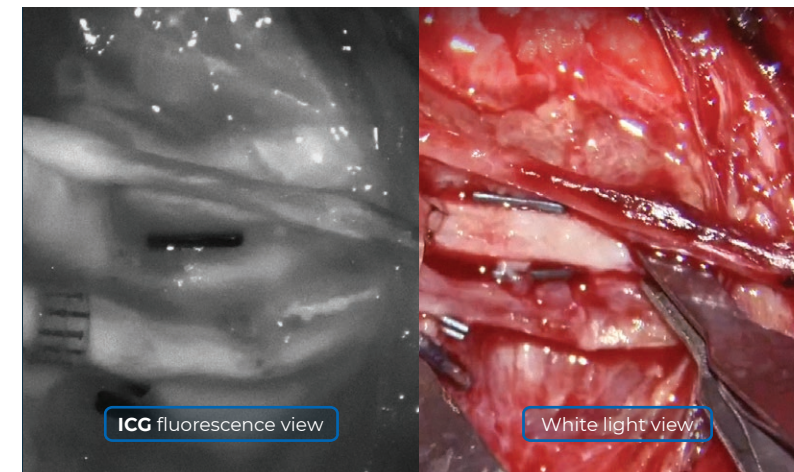
### Wide-range multi-focus

The Mitaka MM51 is equipped with a unique apochromatic optical unit and an electric stepless 8:1 zoom. The wide-range multi-focus is capable of capturing a vivid image at each working distance.



### Supermicro scale

Surpassing a resolution of 118 LP/mm, the MM51 provides excellent sight and allows the use of instruments with a tip up to 0.05 mm and 12-0 USP sutures.



Feature of MM51

## IR in super HD quality

Multispectral ICG imaging is included with the option to add fluorescein to observe super-sensitive and real-time IR image.

The Mitaka MM51 is a superior supermicroscope dedicated to the needs of **supermicro, plastic, hand and reconstructive surgeons**





## Bionic design

Synergy between man and machine provides surgeons with a real and natural feeling during surgery. The independent imaging of each eyepiece provides high-level synchronization throughout. This avoids fatigue and dizziness even during long-time usage.

### "Zero-weight" balancing

The reference quality of Mitaka precision mechanics - derived from the space industry - creates the "zero-weight" feeling while working with a Mitaka supermicroscope. Its counter-balanced stand and proprietary braking system provide extremely smooth and accurate movement.



### Vibration absorption

The YOH microscope overhead stand makes use of the unique shock-absorbing system, developed by Mitaka for astronomical telescopes. This system can eliminate vibrations caused by external forces as well as those generated during manoeuvring.



As it's an extension of the surgeon's eyes, the

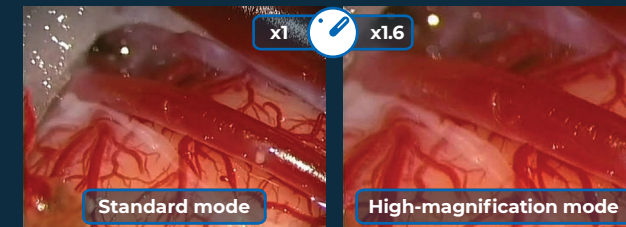
# positioning of the scope is key

Unique features of **MM51**

### High-magnification mode



At the flip of a switch, the MM51 can increase the magnification rate by the factor of 1.6. It can be set independently for both main and assistant binoculars.



### Adjustable aperture

The adjustable iris diaphragm allows to easily extend the depth of field by rotating the aperture knob. By sacrificing a small amount of light and resolution, an extremely dimensional image with greater depth perception is reached changing the stereoscopic view, which is necessary for supermicrosurgical interventions on a few-millimetre surgical site.



## Smart and compact

In the limited space of an operating field, where many devices may be concentrated, the small size of the MM51 body minimizes interference with other equipment.



#### 4 different binocular positions

Both eyepieces can be adjusted in multiple positions. Adaption for every user can easily be achieved.



#### Handgrip, foot & mouth switch

The truly ergonomic design of the handgrip provides maximum comfort. The foot switch controls zoom, focus and motorized XY-tilting and the optional mouth switch allows activation of subtle XYZ-movements.



#### Drape suction system

The suction system wraps the drape to the supermicroscope with a click of a button, reducing size and interference in the operating field.



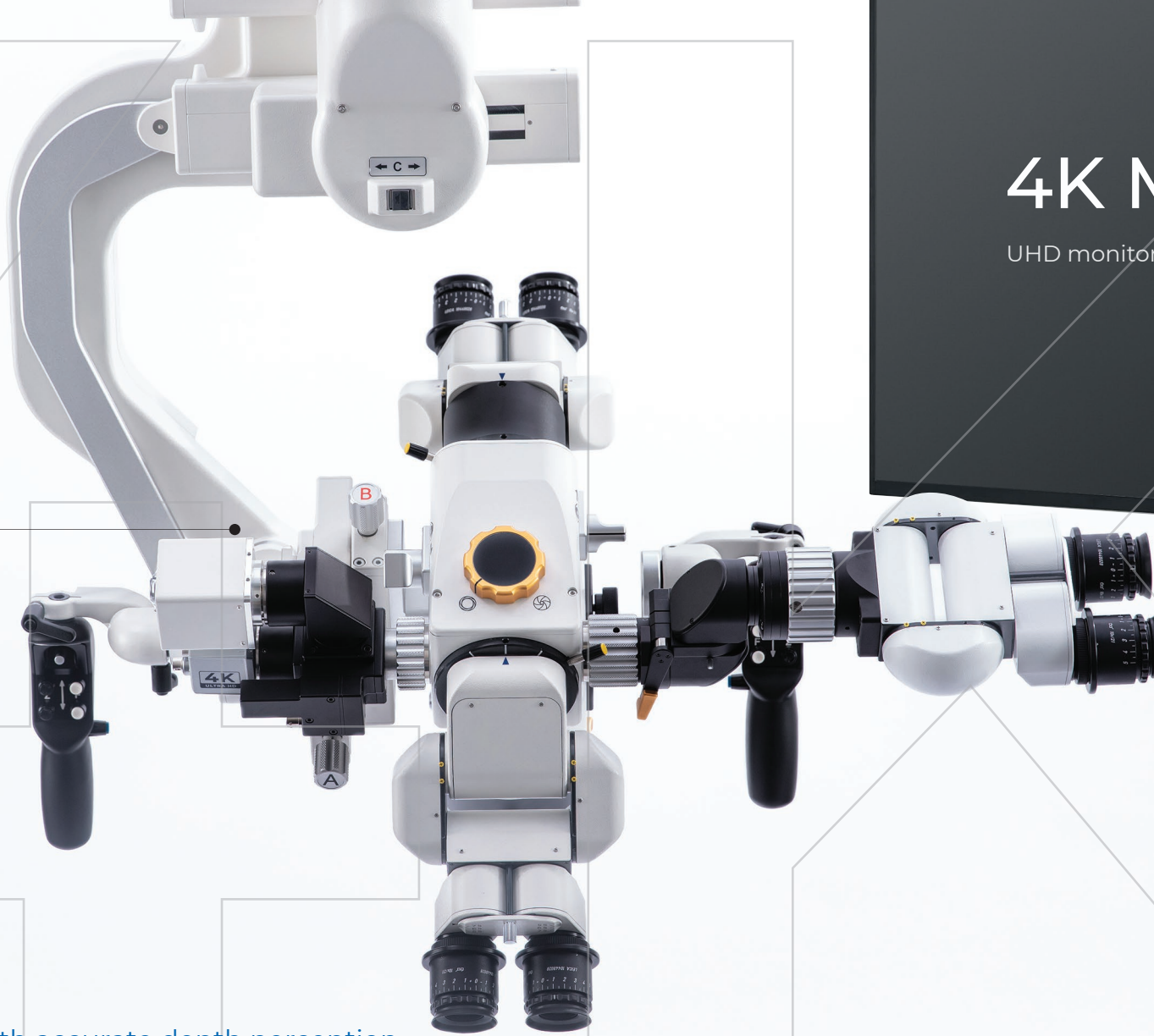
# 4K Camera

The highest imaging resolution available without compromise in the operating room for the most important procedures.



# 3D Camera

A high-precision medical-grade 3D imaging system with accurate depth perception and authentic color representation is available as an option for the MM51.



# 4K Monitor

UHD monitor 32" - 43" available.

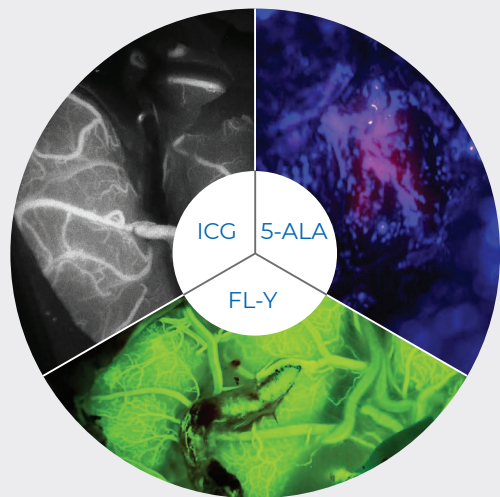


## Three fluorescence options

With a high-sensitivity camera unit and high-resolution optics, the Mitaka MM51 may be equipped for observing three types of fluorescence. A simple press of a button on the handgrip switches the video and optical system to the chosen fluorescence mode.

### Triple support

- ICG
- 5-ALA
- FL-Y



## Xenon light source

Feature of YOH stand

### 2x 300W xenon arc-lamp



### Safety

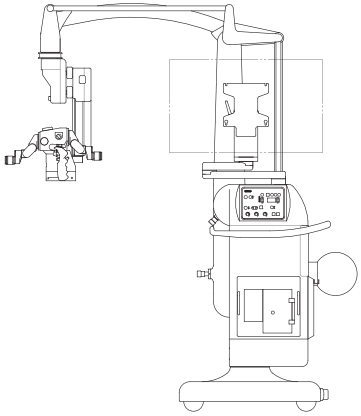
The supermicroscope is equipped with two completely independent 300W xenon arc-lamp illumination systems. It can be quickly switched to the second light source if the current one is not functioning correctly - preventing unexpected interruptions during surgery.

### Tissue-Care

The Tissue-Care system avoids the unwanted risk of patient's tissue burns when the working distance is shortened and microscope illuminance becomes too strong. Automated adjustment of the illuminance according to the working distance improves patient safety.

## Key specifications - Technical data

Microscope body		Surgical Supermicroscope <b>MM51</b>		
Zoom ratio		<b>8 : 1</b>		
Zoom adjustment		Motorized zoom via hand grip & foot switch control		
Magnification range (depending on obj. lens - see below)		1.9x ~ <b>77.0x</b>		
Focus adjustment		Motorized focus via hand grip & foot switch control		
Focal depth adjustment		<input checked="" type="radio"/>		
Working distance (depending on obj. lens - see below)		190 mm ~ <b>530 mm</b>		
High-magnification mode		<b>x1.6</b>		
Field of view (10x/21B eyepiece / depending on obj. lens - see below)		3.0 mm ~ <b>111.0 mm</b>		
Illumination		Coaxial lighting		
Sterilizable objective lens cover		<input type="radio"/>		
<b>Objective lenses available:</b>	<b>Magnification:</b>	<b>High-magnification (x1.6):</b>	<b>Working distance:</b>	<b>Field of view:</b>
<b>CL 1</b> (option)	1.9x ~ 29.0x	3.0x ~ 46.0x	330 ~ 530 mm	4.7 ~ 111.0 mm
<b>CL 2</b> (option)	2.3x ~ 33.0x	3.6x ~ 52.0x	280 ~ 430 mm	4.2 ~ 93.0 mm
<b>CL 3</b>	2.6x ~ 36.0x	4.1x ~ 57.0x	260 ~ 380 mm	4.0 ~ 82.0 mm
<b>CL 4</b> (option)	2.9x ~ 39.0x	4.6x ~ 62.0x	240 ~ 330 mm	3.6 ~ 72.0 mm
<b>CL 5</b> (option)	3.8x ~ 48.0x	6.1x ~ 77.0x	190 ~ 250 mm	3.0 ~ 55.0 mm
Front assistant eyepiece		Folding, binocular eyepiece 180° across the main eyepiece		
Side assistant eyepiece (option)		Multi-joints, semi-stereo eyepiece 90° across the main eyepiece		
Microscope stand type		<b>Overhead YOH</b> (see below)		

Microscope stand		Overhead Stand <b>YOH</b>	
<b>Balance adjustment:</b>			External view:
Balance adjustment method	Omnidirectional electric manual balancing		
<b>Tilt adjustment:</b>			
Stand arm control method	Electromagnetic lock control		
Observation direction left-right (X)	100° (-50° ~ +50°)		
Observation direction backward-forward (Y)	150° (-30° ~ +120°)		
Foot switch pedal (hands-free)	<input checked="" type="radio"/>		
<b>Illumination:</b>			
Main illumination light source	300W xenon arc-lamp		
Spare illumination light source	300W xenon arc-lamp		
Illumination safety mode	Tissue-Care		
<b>Stand data:</b>			
Power supply	AC100-120/220-240V (50Hz / 60Hz)		
Power consumption	Max 1100W		
Floor occupation area	720 mm × 720 mm		
Storage space (length × width × height)	1500 mm × 720 mm × 1880 mm		
Gross weight	220 kg		
<b>Options:</b>			
Semi-stereoscopic side assistant		<input type="radio"/>	
Mouth switch for subtle XYZ-movements		<input type="radio"/>	
Camera adapter (with focus adjustment function)		<input type="radio"/>	
Integrated video camera and recorder		<input type="radio"/>	
Integrated monitor and arm		<input type="radio"/>	
Fluorescence observation unit		<input type="radio"/>	
Drape suction unit		<input type="radio"/>	

## The Shokunin way



When microsurgions 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 these surgeons' incredible abilities, puts them into a category of their own – the supermicro category.



### Mitaka Europe GmbH

Kurfürstendamm 194 Tel. +49 30 610814570  
 10707 Berlin, Germany Fax +49 30 610814577  
 Email: office@mitakaeuropa.com  
 www.mitakaeuropa.com