



Mitaka



# Mitaka MM51

The legendary Superscope

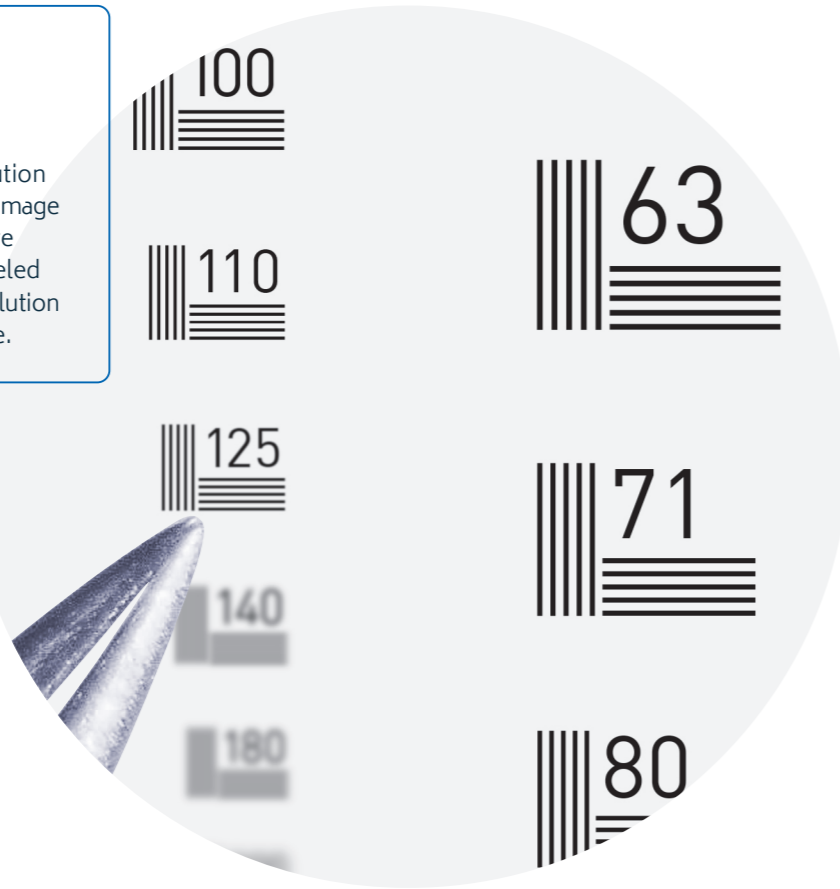
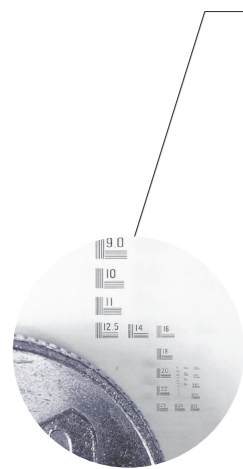
# Resolution Revolution

The larger objective lens of the MM51 combined with Mitaka's advanced 8:1 zoom system creates a microscope with twice the resolution and magnification of other surgical microscopes – without focal length extender accessories.

Exclusive feature of **MM51**

## 118 lp/mm

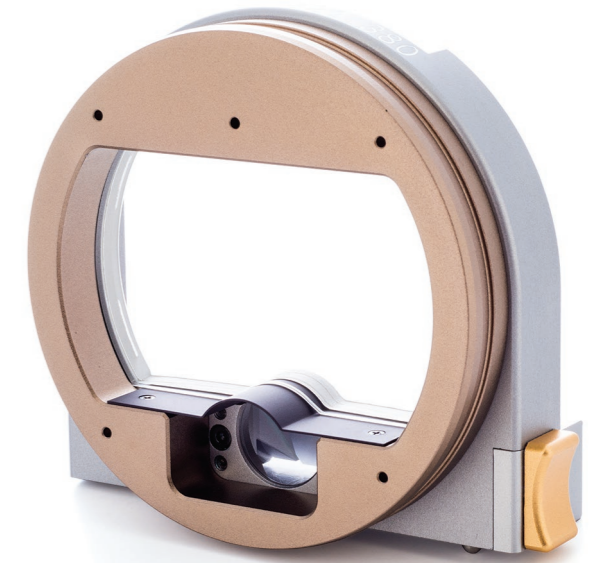
The measure of optical quality is the resolution that allows you to distinguish the details an image holds, expressed in line pairs per millimetre (lp/mm). In MM51 this reaches an unparalleled 118 lp/mm (at 8x) – more than twice the resolution of any surgical microscope sold worldwide.



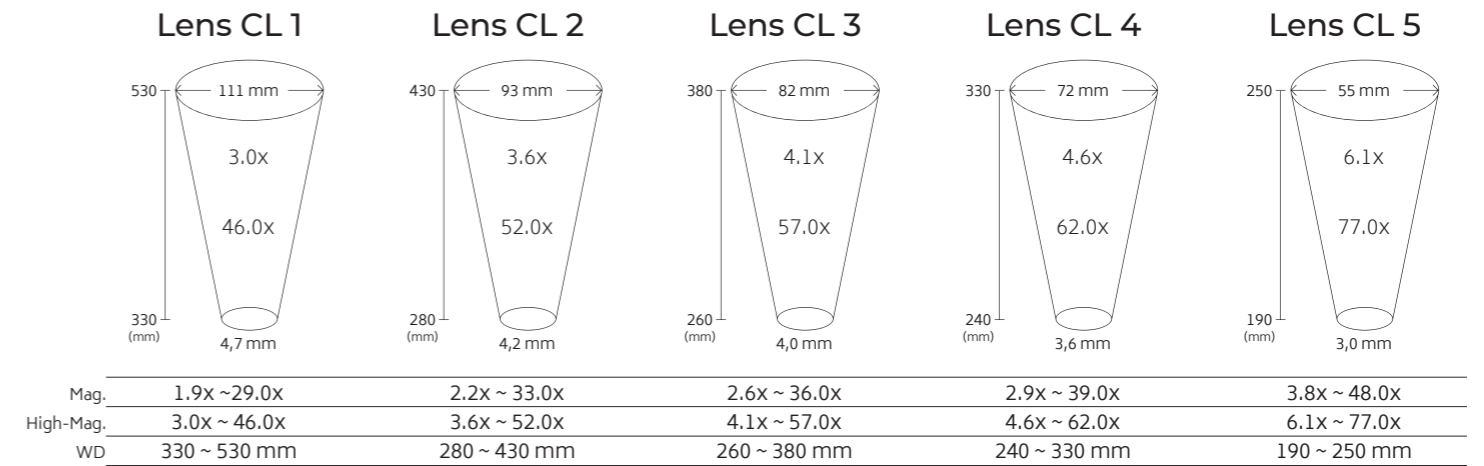
## Originating from space observations

Mitaka has for decades committed effort to designing and manufacturing high-tech astronomical optical instruments, satellite remote sensing and innovative cosmic imaging systems. We use 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 and refining surgical microscope stands and delivering over 4,500 units to the market all over the world have resulted in technology, quality and stability that are second to none - the new generation of microscopes which redefine the amplifying devices used in highly difficult and ultra-precise surgeries.



## Lens line-up - 5 objective lenses applicable



## Overwhelming resolution

The unique design of the Mitaka MM51, adopting the 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 never before seen with a surgical microscope such as the layers of lumen on a vessel smaller than 1 mm diameter. It enables you to accurately perform procedures that were once difficult or impossible due to limited zoom and resolution.

## 77x magnification

### Exceptional magnification

Reference optics in this superscopes surpass any operating microscope on the market due to variable zoom that achieves an unparalleled maximum potential magnification of 77x.



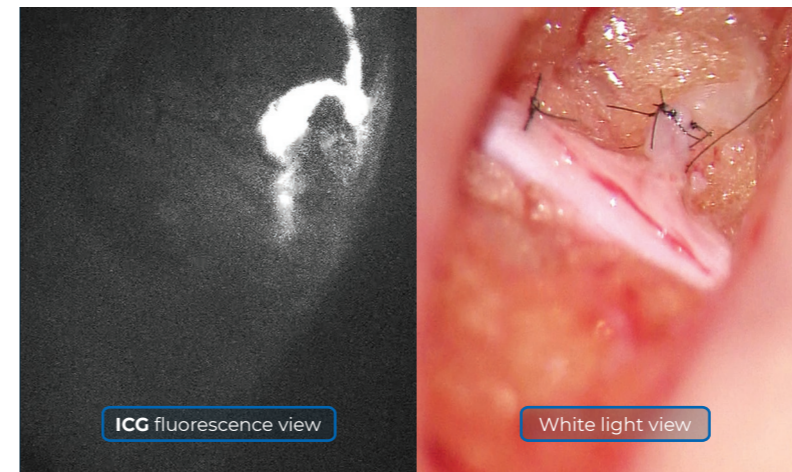
### Wide-range multi-focus

The MM51 is equipped with an apochromatic optical system, the electric stepless type, allowing 8x zoom. Wide-range multi-focus captures an image at each working distance.



### Supermicro scale

Reaching 118 lp/mm, the resolution of the MM51 allows for accurate view and use of instruments with a tip up to 0.05 mm for 11-0 and 12-0 sutures.



Feature of **MM51**

## IR in super HD quality

Multispectral, ICG imaging is included with an option to add fluorescein imaging capability to observe in high definition blood flow in real-time after a vascular or lymphatic anastomosis and to confirm whether there is good patency in vessels.

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



## Bionic design

Synergy between man and device provides surgeons a real, natural feeling in the OR. The independent imaging mode of each eye keeps high-level synchronization throughout. It doesn't result in fatigue and dizziness, even during long-time observation.

### Zero-weight feeling

The reference quality of Mitaka Kohki precision mechanics - derived from the space industry - causes a zero-weight feeling of working with a microscope body. All the movements are supported by advanced servomechanisms, including starting and braking, and are thus extremely smooth and accurate.



### Vibration absorption

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



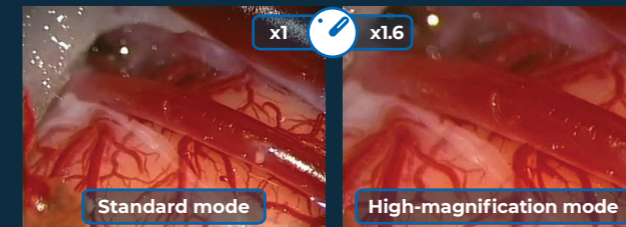
As it's an extension of the hands and magnification of the surgeon's eyes, the **feeling of the scope is key**

Exclusive features of **MM51**

### High-magnification mode



At the flip of a switch, the MM51 can increase magnification by a factor of x1.6. It can be independently controlled for both main and assistant view.



### Adjustable aperture

The adjustable iris diaphragm allows the surgeon to easily extend the depth of field by rotating the top knob. By sacrificing a small amount of light and resolution, an extremely spatial image with greater depth of focus is achieved, emphasizing the stereoscopic effect of the view, which is necessary for supermicrosurgical operations on a few-millimeter field of view.



## 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**  
Since both eyepieces can be operated in a butterfly manner, it can be approached from various heights with excellent handling, covering the height difference between surgeons.



**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 drape suction device with a single button facilitates venting and quick adjustment of the drape to the microscope, reducing size and interference in the operating field.

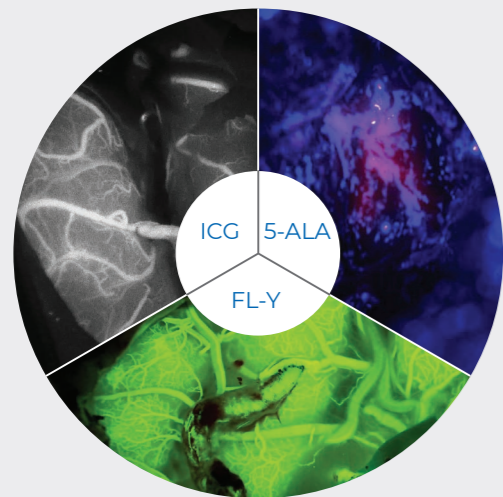
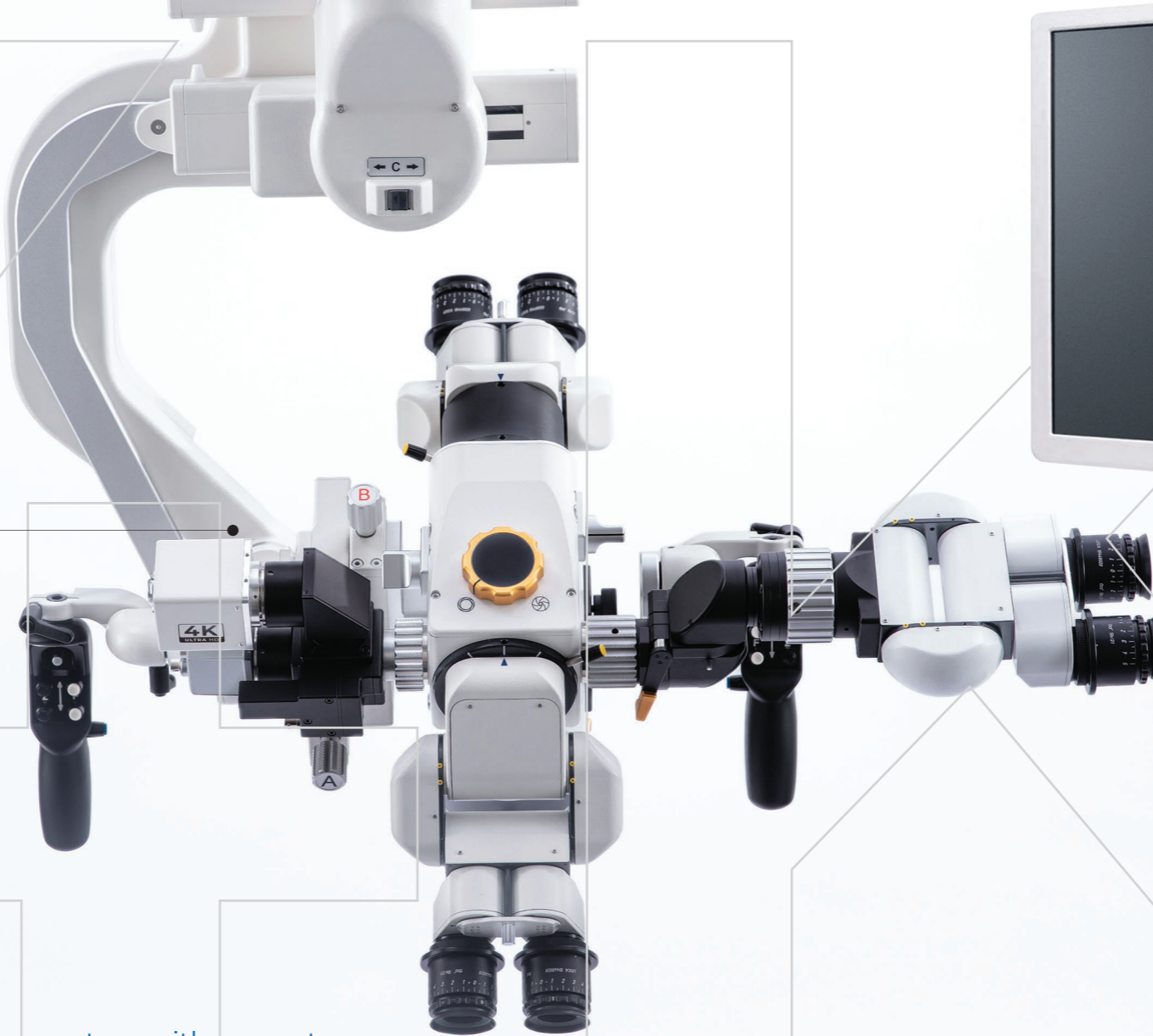
# 4K Camera

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



# 3D Camera

High-precision, real-reduction medical-grade 3D imaging system with accurate depth and colour rendition of the field available as an option with the MM51.



## Three fluorescence modes

### Triple support

Intraoperative fluorescence observation is essential for difficult-to-judge operations. With a high-sensitivity camera unit and high-resolution optics, microscopes come equipped for observing three distinct types of fluorescence. One simple press of a button on the handgrip switches the video and optical system to the chosen fluorescence mode.

- ICG** Intraoperative blood vessel observation module
- 5-ALA** Intraoperative tumour margins observation module
- FL-Y** Fluorescein vascular observation module

## Xenon light source

Feature of YOH stand

### 2x 300W xenon arc-lamp



#### Safety

The microscope is equipped with two completely independent 300W xenon arc-lamp illumination systems (main and spare). 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 alleviates the unwanted risk of possible patient's tissue burns when the working distance is shortened and microscope illuminance becomes too strong. Adjusting the illuminance according to the working distance improves patient safety.

## Key performance - Technical data

Microscope body		Surgical Supermicroscope <b>MM51</b>		
Zoom ratio		<b>8 : 1</b>		
Zoom adjustment		Motorized zoom via footswitch & hand grip control		
Magnification range (depending on obj. lens - see below)		1.9x ~ <b>77.0x</b>		
Focus adjustment		Motorized focus via footswitch & hand grip control		
Focal depth adjustment		⊙		
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		
Objective lens sterilized glass		⊙		
Objective lenses available:	<b>Magnification:</b>	<b>High-magnification (x1.6):</b>	<b>Working distance:</b>	<b>Field of view:</b>
<b>CL 1</b>	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> (option)	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° to the main surgeon		
Side assistant eyepiece (option)		Multi-joints, semi-stereo eyepiece 90° to the main surgeon		
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 weight balancing	
<b>Tilt adjustment:</b>			
Stand arm control method		Electromagnetic lock control	
Observation direction forward-backward (X)		100° (-50° ~ +50°)	
Observation direction left-right (Y)		150° (-30° ~ +120°)	
Foot switch pedal (hands-free)		⊙	
<b>Illumination:</b>			
Main illumination light source		300W xenon arc-lamp	
Spare illumination light source		300W xenon arc-lamp	
Illumination interlocking control		Tissue Care	
<b>Stand data:</b>			
Power supply		AC100-240V (50Hz / 60Hz)	
Power consumption		Max 1100VA	
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		⊙	
Mouth switch for subtle XYZ-movements		⊙	
Camera adapter (with focus adjustment function)		⊙	
Integrated video camera and recorder		⊙	
Integrated monitor and arm		⊙	
Fluorescence observation unit		⊙	
Drape suction device		⊙	

**職人** Shokunin

**The Shokunin way**

When our long-term surgical partners are seeking to make breakthroughs that were previously thought impossible, they often have to face technological limitations in the tools they used. Against current economic trends and refusing to accept 'quick-fix' solutions, we combine the best Japanese traditions of solid handcrafting with cutting-edge innovations in resolution 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 instruments, aligned with these surgeons' incredible abilities, puts them into a category of their own – the supermicro category.



PRO VITA  
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