Sanma

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Surgical Operating Microscope

Focused Vision for the Finest
Neuro & Spine **Procedures**

- Neuro
- Spine
- Plastic & Reconstructive
- Skullbase

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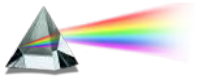

Apochromatic - BBAR optics

Perfect Opto-Mechanical Design

Precision Optics for the Most Delicate Neurosurgical Procedures
Enhancing visualisation and accuracy in complex cranial and spinal surgeries.
Un-compromised Clarity for Critical Neuro & Spine Interventions
Designed to support the surgeon's focus, depth, and dexterity during intricate operations.
Advanced Visualisation for Neurosurgical Excellence
Enabling safe and precise dissection with high-definition optical performance.
Empowering Neurosurgeons with Unmatched Optical Precision
Combining ergonomic design, stability, and superior illumination for optimal surgical outcomes.
Focused Vision for the Finest Neuro & Spine Procedures
Delivering high-resolution depth perception and illumination where precision matters most.

Model

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Optimal

experience

Configurable Surgical Microscope System

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Face to face optical bridge for lateral assistance view

Binocular view co-observer tube with 3 axis angulation and image orientation for positioning viewing convenient options

Enables real-time interaction and verbal coordination between the surgeon and co-observer, improving teaching clarity and procedural teamwork.

The co-observer tube allows an assistant surgeon, trainee, or observer to view the same surgical field seen by the main surgeon in real time.
It provides binocular vision, maintaining the same magnification and depth perception as the primary surgeon.
Enhanced Team Coordination
The assistant can monitor every movement and step of the surgeon.
This enables better instrument handling, anticipation of needs, and smoother surgical workflow.
Educational and Training Purpose
In teaching hospitals and training centers, co-observer tubes allow residents and fellows to learn from live surgeries directly through the microscope optics.
Facilitates hands-on guidance, as the trainer can correct or demonstrate techniques while the trainee observes simultaneously.
Documentation and Demonstration
When coupled with a camera adapter or video system, the co-observer tube can also assist in recording or broadcasting the procedure for academic or review purposes.
Flexible Positioning
It can be mounted on either side of the microscope to suit surgeon–assistant ergonomics.
Adjustable inter-pupillary distance ensures comfortable viewing for different users.

Side Co-observer tube

- Binocular optical design with independent focusing.
- Image parity identical to the main binoculars—so no inversion or mirror effect.
- Optional rotatable mount for flexible positioning during multi-surgeon setups
- 3 axis adjustable angles and image rotating

Motorized focus - working distance: 200 - 500mm continuous variable focal lens

Superior Visualisation -

- Provides high-resolution, stereoscopic magnification for intricate neural and spinal structures.
- Enhances differentiation between healthy tissue, lesions, and critical vascular structures.

Enhanced Surgical Precision -

- Enables accurate dissection and micro-manipulation within confined anatomical spaces.
- Facilitates delicate suturing and nerve preservation during microsurgical interventions.

Improved Depth Perception & Illumination

- Coaxial LED illumination ensures uniform lighting without shadows.
- Three-dimensional depth perception improves hand-eye coordination and procedural safety.

Better Ergonomics for the Surgeon

- Adjustable viewing angles and motorised positioning reduce surgeon fatigue during long procedures.

- Promotes steady hand posture and minimizes tremors for more controlled movements.
- Supports image and video documentation for teaching, review, and medico-legal record.

Enhanced Outcomes & Reduced Complications

- Greater surgical accuracy leads to minimal tissue trauma and reduced blood loss.
- Improves postoperative recovery and reduces complication rates.

Educational & Collaborative Benefits

- Integrated 4K 2D or 3D visualisation and recording options aid in training, live demonstrations, and team coordination.

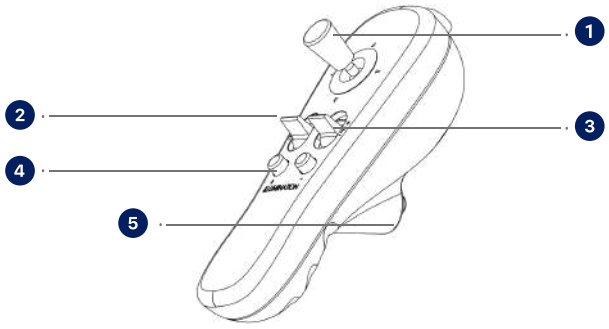
When surgeons exposed in routine and prolonged surgeries, eventually victimized ache and discomfort. Considerably Sanma designed a simply best feature optically and mechanical feature to overcome the challenge

The 30° inclined angulated extended provision offers the binocular tube for better seating and comforts positioning neck, thereby ensures strain and convenient extended surgical time.

Joy stick powered optical movements

Unique design from Sanma

helps surgeon to position the optical head for fine adjustments without accessing the electromagnetic brakes



Handgrip Controls

Joystick swirls its access to reach
-20° to +90° axially and -40° to +40° side wise

1. Joy stick for fine optical head movements
2. 1:6 ratio continuous zoom
3. Focus / Variable adjustment
4. Illumination intensity
5. 6 axis electro magnetic brakes

Controls & Movements

- 6 axis electro magnetic brakes or smooth articulated spring functional
- Joy stick powered head movements for fine swivel and axial positioning
- Multifunctional handgrip control for zoom, focus, illumination (Optional: Foot switch)
- XY movements

Optional
Foot Switch Control

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Optical Head Configuration

1. Optics: zoom & continuous variable
2. Assistant binocular view observer tube
3. Face to face optical bridge
4. Tilt able binocular tube
5. Camera mount
6. Camera 4K 2d or 3D
7. Handgrip control functions
8. Knob to change the handgrip direction for positioning
9. Integrated filters: yellow 560 / IR 800

Sanma's tailor made imaging system offers users a clear choice to pick the configuration as per the need

4K

- Recording: live video & still image
- Storage memory capacity: 4TB
- Connectors: 3G SD-HDI, DVI-D
- Network connectivity
- 2D Monitor Size 27" or 32"

Features	Description	Optional
Optics	Fully apochromatic Galilean type, broad bandwidth anti-reflective coated	
Binocular tube	▪ 0°- 210° tilt able binocular tube	
Stereo base	22mm	
Eye piece	10x pair of wide field push sleeves & high eye point	12.5x pair of wide field push sleeves & high eye point
Inter pupillary distance	50mm to 75mm	
Diopter adjustment	-6D to +6D	-8D to +5D with magnetic locks
Assistant View	Side observer tube with 3 axis adjustable angles and image rotating	face to face lateral view observer tube
Motorized magnification	1:6 ratio continuous zoom	
Filed of View	181-15.26mm	
Working Distance	Sanma's i-focus 200 - 500mm continuous variable working distance controlled by motorized handgrip	
Illumination	Hi-power LED Homogenous co-axial shadow free bright white spot, light guide: through fused fiber optic cable, day light color temperature, inbuilt UV filter , stand by light source	
Field of Illumination	Ø70.5mm - Ø141mm (200 - 500mm distance range)	
Optical head fine movements	Motorized Joystick for fine optical head adjustment positioning -20° to +90° axially and -40° to +40°side wise	Foot switch
Handgrip Controls	for adjusting variable working distance, magnification, light intensity	Foot switch
Microscope Movements	6 axis electro-magnetic access for smooth microscope postitioning	Articulated gas spring arm movements counter balanced accordingly to optical head weight and movements
2D 4KImaging System	• 4K - 3840x2160 • HD-SDI / HDMI • push buttons access to control on/off live recording & still image • Internal HDD storage 2TB or 4TB	▪ Monitor* : 27" / 32"

*size subject to availability

EMC 2014/108/EC
EAR Regulation (EU) 2017/745 on Medical Devices
Clinical Evaluation report as per EU MDR 2017/745
Technical documentation as per Annex II of EU regulation 2017/745
ISO 13485:2016
CDSCO: TN/M/MD/0004755

www.sanmas.com

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"Enhancing visualisation and accuracy in complex cranial and spinal surgeries.

Sanma Medineers Vision PVT LTD
68-A, Aavin Dairy Road, North Phase,
SIDCO Industrial Estate, Ambattur,
Chennai, TN - 600098, India

Email: sales@sanmas.com