Making a difference.

ZEISS PENTERO 800 S

zeiss.com/pentero

ZEISS

Seeing beyond

An iconic platform
Reimagined

Modern microsurgery builds upon advances in providing comprehensive visual information at the right moment. PENTERO® from ZEISS has significantly shaped this progress: With more than 20 million surgical procedures to date, it is one of the most widely used surgical microscopes around the world.

ZEISS PENTERO 800 S opens up the next chapter in this success story. With your constantly evolving challenges in mind, we reimagined the iconic PENTERO platform for today's digital age – to support you in elevating your microsurgical interventions to yet another level.

Designed to suit your ambitious needs in spine surgery, neurosurgery, as well as plastic and reconstructive surgery, ZEISS PENTERO 800 S allows you to make a difference. It offers:

- Visual Certainty
- Seamless Performance
- Integrated Connectivity

Visual Certainty
with extended optical capabilities

During microsurgical interventions, you have to be certain you are making the right decisions at the right time. Therefore, detailed and immediate visual information on the anatomy is key to achieving the best outcome for your patients.

ZEISS PENTERO 800 S provides you with visual certainty at each step of the surgical procedure. It combines a fully integrated 4K 3D camera system with excellent ZEISS optics. In addition, it extends your surgical view with refined resolution, enhanced depth of field, and QEVO® from ZEISS, the unique hand-held Micro-Inspection Tool for around-the-corner perspectives.

Get deeper insights – ZEISS PENTERO 800 S

Digital Hybrid Visualization
ZEISS PENTERO 800 S enables you to leverage all the benefits of an exoscope with 4K 3D resolution while still having access to the proven optics of an operating microscope at all times. With our unique hybrid approach, you can easily switch between digital and optical visualization on demand during the procedure. This gives you the full flexibility to choose your preferred method for optimized team communication, ergonomic posture, and free movement.

Resolution Enhancer
ZEISS PENTERO 800 S assists you in performing reconstructive surgery on delicate anatomical structures with more confidence, such as during a lymphaticovenous anastomosis (LVA). Attaching the unique Resolution Enhancer delivers additional clarity at the submillimeter level by providing 60% higher magnification and 50% higher resolution[1] with at least 120 lp/mm. You can zoom in closer to the application at hand and at the same time increase image quality to reliably visualize even the smallest details (submillimeter vessels).

Lymphaticovenous anastomosis (LVA)

With +60% higher magnification and +50% higher resolution

View in deep corridor

Increased depth of field with Depth+

Depth+
With the new Depth+ mode, you can further increase depth of field for a higher resolution in the outer area of your current focal point. This allows you to see everything in your field of view sharply with just a click. For example, during a minimally invasive transforaminal lumbar interbody fusion (TLIF), instant visual information on different anatomical layers is key to an efficient and safe procedure.

Straight line of sight view

QEVO view behind tissue or corners

ZEISS QEVO
With ZEISS QEVO, you can eliminate blind spots in the microsurgical view and effectively look around corners. Whenever needed, plug it in to your ZEISS PENTERO 800 S to get an immediate endoscopic view of the anatomy without increasing the surgical footprint. For instance, during spine surgery, you can inspect the anterior point of the spinal cord without retracting the anterior vasculature.

[1] Relative to the predecessor ZEISS product generation

Seamless Performance
with reinvented interactions

For outstanding performance, every move must be spot on. Therefore, intuitive handling and repositioning of the operating microscope is not only imperative but key to maintaining constant focus on the patient and application at hand.

With the ZEISS PENTERO 800 S, we have optimized each and every device interaction throughout your clinical workflows and attuned it to your intuition. The combination of the new user interface with the characteristic weightless movability will make it your trusted partner for real efficiency and seamless collaboration in the OR in no time.

Get in the flow – ZEISS PENTERO 800 S

Intuitive user interface
ZEISS PENTERO 800 S comes with an intuitive graphical user interface on a high-definition touch screen. This allows you to change system settings such as light intensity or handgrip configuration with the click of a button. The process of onboarding new users is sped up and time spent on routine tasks is saved for each case.

Integrated Connectivity
with leading digital solutions

Today, the day-to-day management of surgical information involves processing large amounts of data. Being able to easily transfer and use the data instantly across systems is essential for smooth and efficient processes.

With ZEISS PENTERO 800 S, you can exploit the full potential of the digital era – now and in the future. The Advanced Visualization System enables you to access leading digital solutions from ZEISS to simplify data management and facilitate peer collaboration and education. Apps such as ZEISS Surgical Cloud and ZEISS Livestream allow you to effectively store, share, and stream clinical cases directly from your device. All through a seamless connection to your existing workflows as well as your IT infrastructure.

Get connected – ZEISS PENTERO 800 S

Simplified patient data management
ZEISS Surgical Cloud directly synchronizes recorded images and videos including patient and treatment information with your ZEISS PENTERO 800 S and allows you to manage them easily. It supports you to enhance your professional collaboration and extend your network by remote sharing of large files and knowledge with your peers.

Broadcast your experience
ZEISS Livestream allows you to schedule a live surgery or treatment and send out invitation links to participants in advance. On the day of the live event, your participants can watch the procedure via the secure web link with just a few clicks.

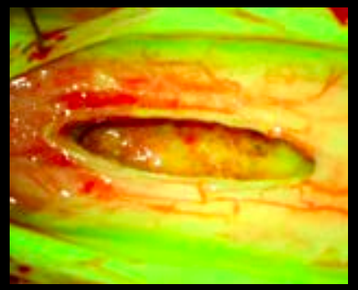
ZEISS Intraoperative Fluorescence Technologies

Deeper insights. Greater control.

During challenging cases, surgical visualization adjuncts are essential for making the right decisions at the right time. ZEISS PENTERO 800 S comes with leading intraoperative fluorescence technologies from ZEISS. You can select the fluorescence options according to your needs.

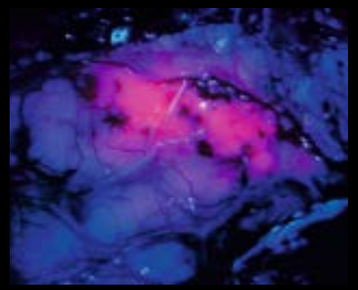
ZEISS INFRARED 800

With ZEISS INFRARED 800, it is possible to visualize submillimeter blood vessels. Intraoperative imaging of cerebral blood flow is of particular interest in vascular neurosurgery and free flap surgery in reconstructive applications. ZEISS INFRARED 800 enables intraoperative visual assessment of blood flow after an anastomosis has been created and visualizes the vascular patency of the grafted tissue.



ZEISS YELLOW 560[2]

The first intraoperative fluorescence module to highlight fluorescence-stained structures while visualizing non-stained tissue in its natural-like color.



ZEISS BLUE 400[2]

Allows intraoperative differentiation of high-grade glioma cells and healthy tissue in suspected high-grade gliomas (grade III and IV). The only microscope integrated fluorescence module to prove its efficiency in a successfully conducted Phase III multi-center study[3].

[2] Please use the fluorescent agent as per the approval status for the application in your country.
[3] Stummer W, Pichlmeier U, Meinel T et al: Fluorescence-guided surgery with 5-aminolevulinic acid for resection of malignant glioma: a randomised controlled multicentre phase III trial. Lancet Oncol 7: 392-401, 2006

ZEISS Consumables and Services

Adding value beyond the devices

The challenges you face every day include growing demands on clinical efficiency. The ZEISS offering goes beyond the device and software applications. It is rounded out by services and consumables, that support you in optimizing the clinical management of your patients.

ZEISS SMARTDRAPE

Combining simplicity and innovation, SMARTDRAPE® from ZEISS has been designed together with ZEISS PENTERO 800 S. It allows you and your team to have the benefits of a vivid view, efficient OR preparation, and effective patient protection. Simply activate AutoDrape® to automatically evacuate the air from the sterile drape within seconds.

ZEISS OPTIME

Our tailor-made service agreements for medical equipment offering modular services to help prevent unplanned breakdowns and assist you in running your business smoothly. Service agreements for ZEISS PENTERO 800 S can include remote support via ZEISS Smart Services for even faster qualified assistance.

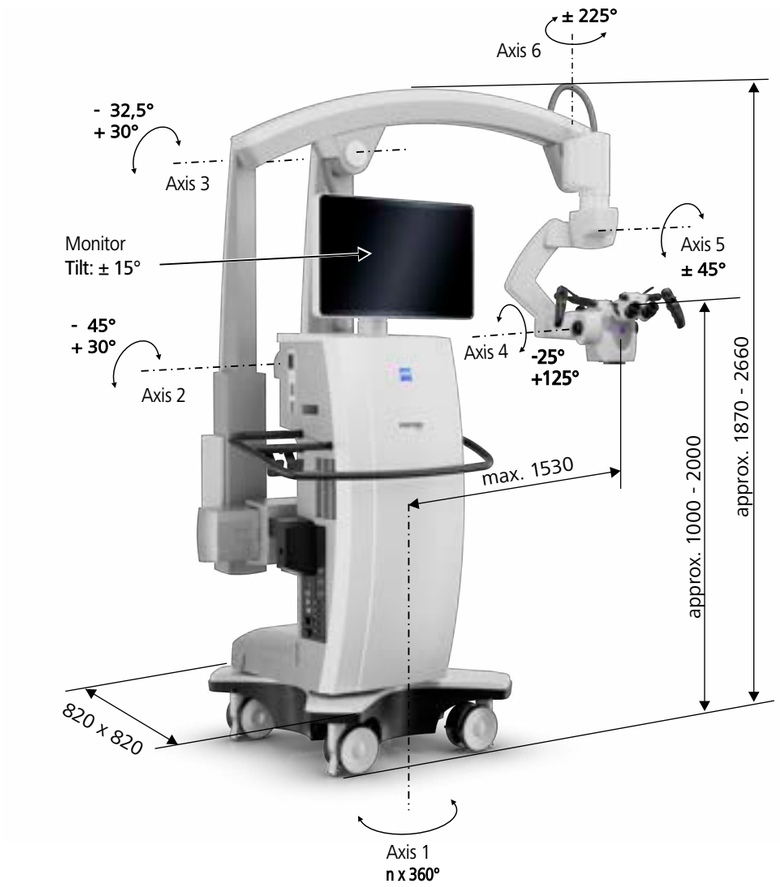
MyZEISS

The ZEISS customer platform that enables you to unlock the full potential of your ZEISS devices. It offers a wide selection of training videos and peer insights to help you use your products effectively and efficiently.

Technical Data

PENTERO® 800 S from ZEISS

Technical Data	
Rated Voltage	100 V–240 V AC
Current Consumption	Max. 1.200 VA
Rated Frequency	50 Hz–60 Hz
Electrical Standard	IEC 60601-1, IEC 60601-1-2, IEC 60825, IEC 62304, CAN/CSA-C22.2 NO. 60601-1
	Degree of protection against electric shock: Class 1
	Class 2 laser product as per IEC 60825
Weight	Total weight of device with max. add. load: Max. 365 kg
	Total weight of the device incl. single-use transport box: Approx. 800 kg



		Packages	Standard	Spine Comfort	P&R Comfort
System	PENTERO 800 S basic system		●	●	●
Main Tubes	Straight binocular tube		○	□	□
	180° tiltable tube		○	○	–
	Foldable Tube f170/f260		○	○	●
Eyepieces	10× widefield eyepieces		○	○	–
	12,5× widefield eyepieces		○	○	○
Focus	Laser Autofocus		□	●	●
Working Distance	200 – 500 mm		●	–	–
	200 – 625 mm		□	●	●[4]
Illumination	Xenon – Fully integrated Xenon light source with automatic lamp exchange		●	●	●
Co-Observation	Face-to-face		□	●	●
	Left / right with stereo co-observer		□	□	□
Tube for co-observation	Straight binocular tube		○	○	○
	180° tiltable tube		○	○	○
	Foldable Tube f170/f260		○	○	○
Balance	AutoBalance		●	●	●
XY-Movement	Angular movement with joystick or foot pedal		□	●	●
Video System	4K Video Package – Fully integrated 4K 3Chip camera, 2160p		○	○	○
	4k 3D Video Package – 2× fully integrated 4K 3Chip camera, 2160p		○	○	○
Video Options	Video Recording		□	●	●
	HD Video-In		□	□	●
	External 55" 4K 3D monitor with monitor cart		□	□	□
Fluorescence[5] / QEVO	INFRARED 800 with FLOW 800 Option[6]		□	□	●[7]
	YELLOW 560		□	□	□
	BLUE 400		□	–	–
	QEVO		□	□	□
Visualization	Integrated Depth+		–	●	–
	MultiVision		□	□	□
	Resolution Enhancer		–	–	□
Networking & Storage	Integrated 1TB hard drive		●	●	●
	WLAN package		●	●	●
	ZEISS Surgical Cloud and ZEISS Livestream Preparation		□	□	□
	ZEISS Smart Services Package – Connectivity for ZEISS Smart Services		●	●	●
	Shared Network Package – Storage on shared network directories		□	□	□
	DICOM Package – Patient data exchange with PACS system via DICOM		□	□	□
	LAN interface		□	□	□
Navigation	Navigation Package		□	□	□
Foot Control Panel	Foot Control Panel wired / wireless		□	□	□

● Basic ○ Configurable □ Option

[4] Working distance without Resolution Enhancer mounted
[5] YELLOW 560 and BLUE 400 can only be combined with INFRARED 800 with FLOW 800 Option, not with each other
[6] For PENTERO 800 S the FLOW 800 Option is not available
[7] Preparation for one fluorescence module included; separate license necessary

Corpectomy: Image courtesy of Prof. Dr. Oliver N. Hausmann, Hirslanden Klinik St. Anna, Lucerne, Switzerland (Cover page and page 10 and 11)
Spinal arachnoid web using ZEISS QEVO: Image courtesy Prof. Dr. Claudius Thomé, Medical University, Innsbruck, Austria (page 5)
Lumbar spine decompression using Digital Hybrid Visualization: Image courtesy of Prof. Dr. Oliver N. Hausmann, Hirslanden Klinik St. Anna, Lucerne, Switzerland (page 6)
Lymphovenous anastomosis: Image courtesy of Dr. Christian Taeger, Private Clinic, Munich, Germany (page 7)
Anterior cervical interbody fusion: Image courtesy of Prof. Dr. Oliver N. Hausmann, Hirslanden Klinik St. Anna, Lucerne, Switzerland (page 8)
Vessel patency after anastomosis using INFRARED 800: Prof. Dr. Milomir Ninkovic, University Clinic, Bogenhausen, Germany (page 12)
Intramedullary spinal tumor resection using YELLOW 560 (off-label use): Yu-Mi Ryang, MD, Head of Department Neurosurgery and Center for Spine Therapy, Helios Klinikum Berlin-Buch, Germany (page 12)
Glioma surgery using BLUE 400: Prof. Dr. Walter Stummer, Department of Neurosurgery, University Hospital, Münster, Germany (page 12)

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PENTERO 800 S
QEVO ECU

CE 0297

QEVO
INFRARED 800
SMARTDRAPE

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