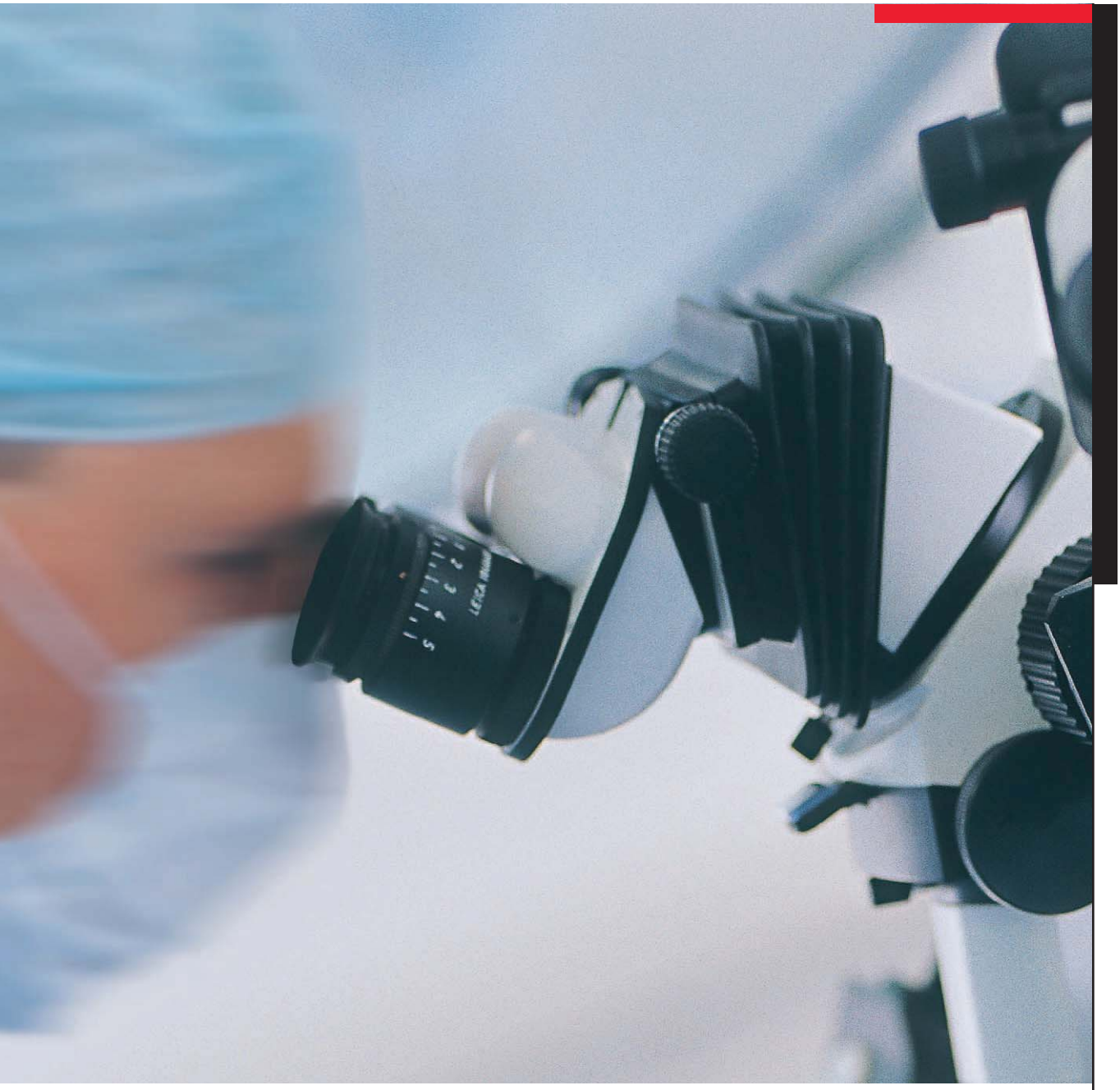


Leica DI C500

Dual Imaging Color Module:
Outstanding optics and information technology

Leica
MICROSYSTEMS

Outstanding Optics and Information Technology

Experience and precision

High-quality, precision optical components are the basis of advanced surgical microscope systems. Leica surgical microscopes are the result of years of extensive experience in the design of optical systems. Leica expands surgical microscope functionality by integrating its outstanding optics with the latest information technology.

Complete solutions for neurosurgery

Leica's new Dual Imaging Color module completes the Leica M500 platform of high-performance, customized optical solutions for neurosurgery. Leica combines high-quality, ergonomic design, straightforward operation, and easy mobility with the complete freedom to integrate a variety of data, perfectly meeting the requirements of neurosurgery.

Supports a variety of imaging methods

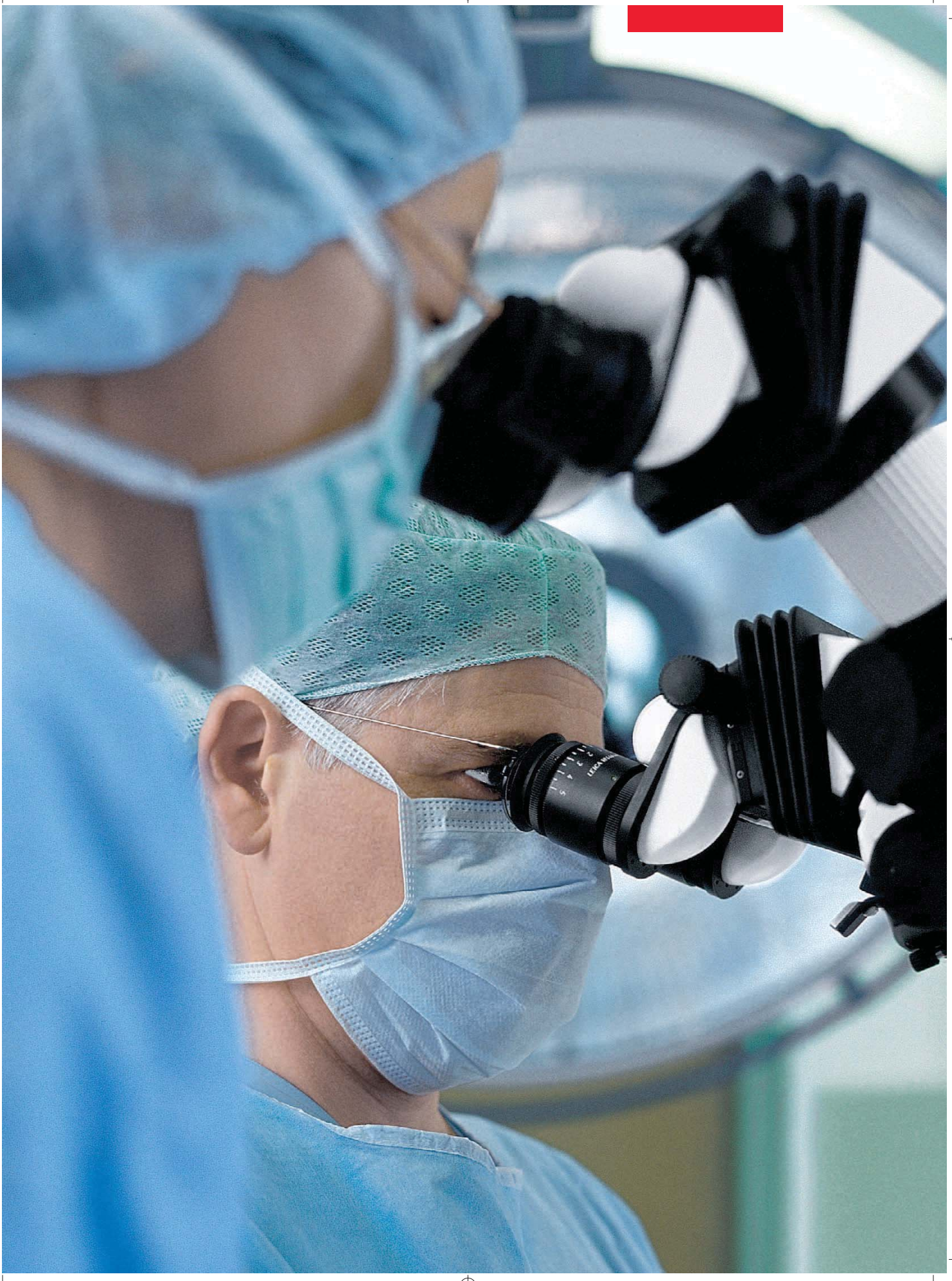
All known preoperative and intraoperative imaging methods, such as CT/MRI scanner, ultrasound, IGS, monitoring, and neuro-endoscopy, can be easily selected and displayed in the highest quality, which supports minimally invasive surgical procedures.

Integrated top quality

The Leica Dual Imaging Color Module features:

- High-resolution display
- High contrast overlay
- Unsurpassed brightness
- Flexible observation of data
- Light-optimized beam paths
- Ability to upgrade
- Outstanding ergonomic design
- Integrated system solution

Maximum flexibility and easy operation in clinical use, e.g., craniotomy.



Convenient Surgical Microscopy

Leica Master-I-View™

The Leica DI C500 allows a surgeon to view inserted data at any time through either the left or the right eyepiece. The Master-I-View™ feature is unique to the Leica DI C500.

Full control

In addition, the Leica DI C500 offers the option of using both beam paths to view non-correlated data. For example, if a surgeon controls the position of an endoscope while viewing with the right eye, observes the endoscopic video with the left eye, and then decides to exclusively concentrate on the inserted data, he or she can switch off the second viewing channel – in this case, the right.

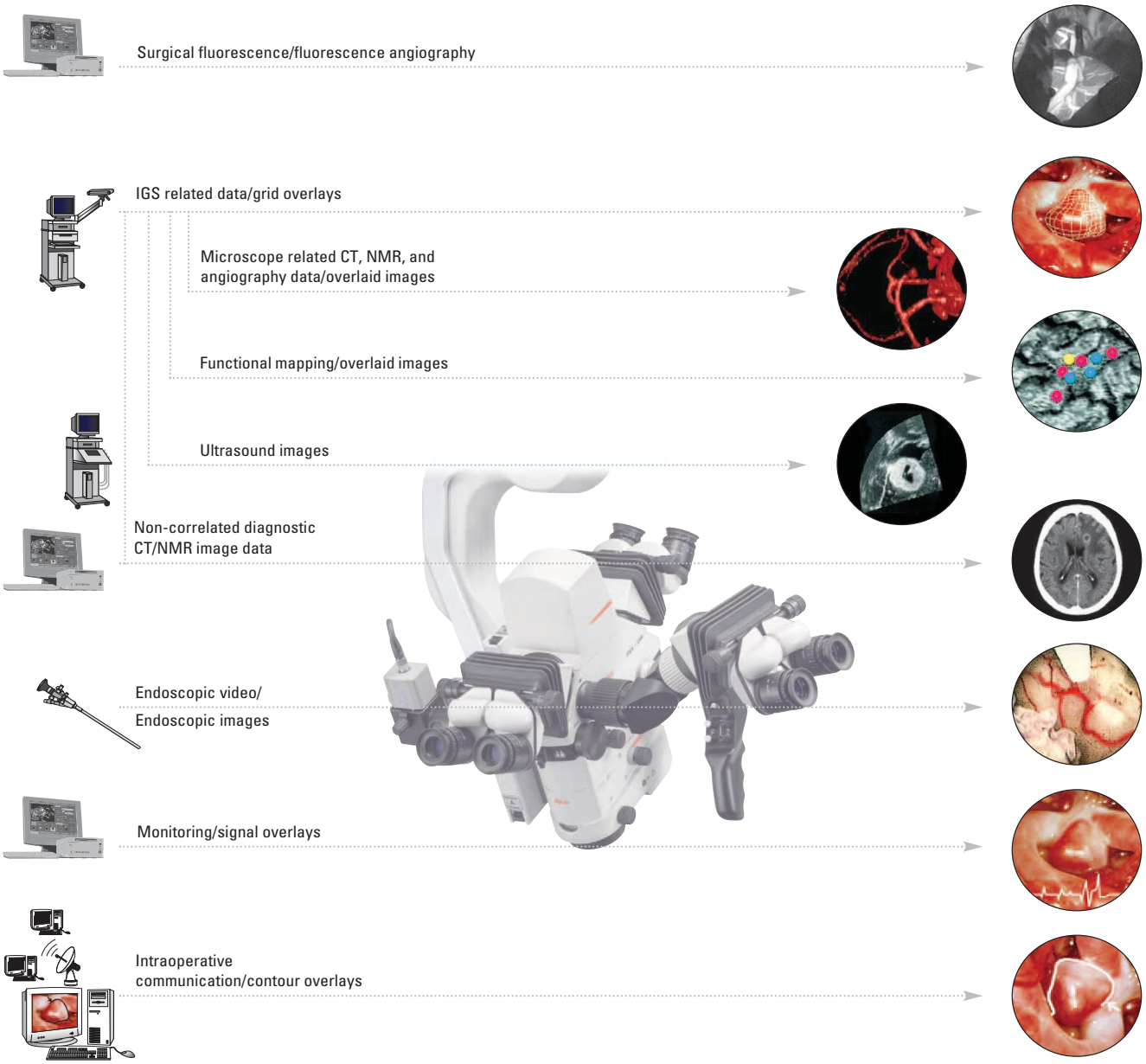
Save settings

All module settings can be individually saved and automatically adjusted to the position of the display, left or right side.

New procedures

The Leica DI C500 supports Leica's new FL800 integrated vascular fluorescence device. The Leica FL800 allows a surgeon to observe blood flow through the microscope's eyepieces to assess the patency of vessels via the fluorescence process of perfusion detection with Akorn™ Indocyanine Green (ICG) fluorescence agent. When looking through the microscope's eyepieces, the surgeon can easily match the ICG fluorescence image with the natural white light image of the patient's anatomy.

1 ICG fluorescence view in the right beam path
2 Overlaid IGS grid model in the left beam path
3 Video insertion (left) with right beam path switched off
4 MRI slice in the left beam path, normal microscope view in the right



Variety of system integration options

Leica's Dual Imaging Color module allows all important intraoperative data to be integrated with the surgical microscope. Both correlated IGS structures and non-correlated information are displayed in high-resolution for the surgeon and the assistant.

The Leica DI C500 integrates with all standard data applications. Data from the IGS system, neuro-endoscopy video, ultrasound, standard scanner diagnostics, and monitoring can be accessed via an easy-to-use hand control. Automated shutter control is also integrated through the user-friendly handle control.

Training applications

Interactive, intraoperative communication for education and training is an additional feature of the Leica Dual Imaging Color module.

Finer, clearer, brighter optical quality

Leica's outstanding optical technology does true justice to the rich diversity of data displayed. Leica has adapted technology that consists of three separate LCD displays of the highest optical quality for red, blue, and green at 1024×768 pixels. This presents an outstanding true color matrix in the final image product.

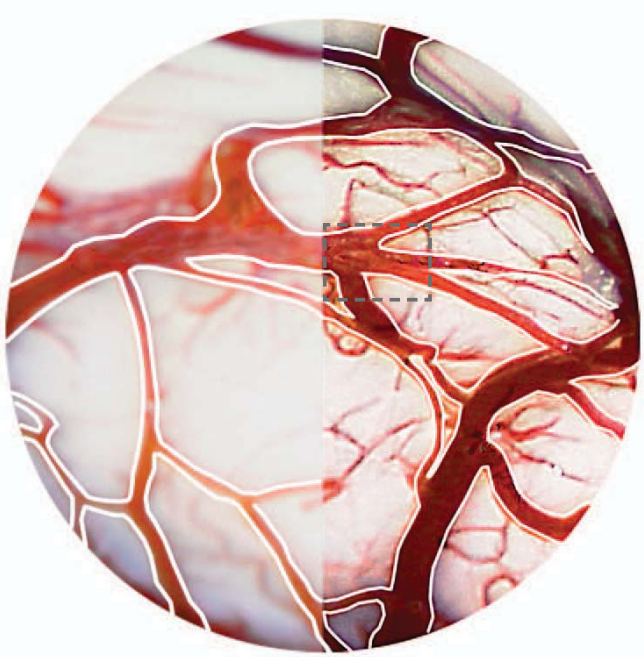
More light than ever before

In conjunction with Leica's OptiChrome™ optics with silver coating, the Leica DI C500 module transmits more light with higher efficiency. The light management system delivers additional light to the surgeon for a brighter and clearer view, while keeping the amount of illumination at lower, safer levels.

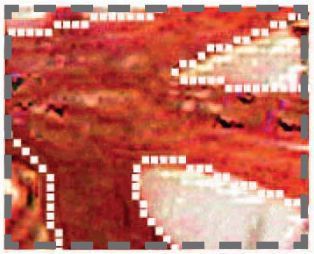
The uniquely integrated assistant ports provide light selectivity, which leads to a visible increase of brightness. Leica's new optical design allows the best possible and most flexible adaptation of observers – as well as a video option for all aspects of cranial and spinal surgery.

Fluorescence ready

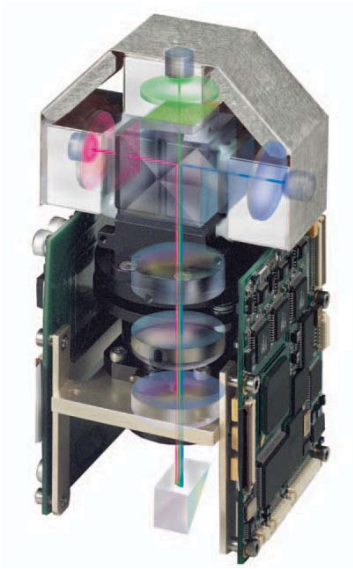
The Leica DI C500 is perfectly prepared for surgical fluorescence applications. To observe ICG fluorescence images of angiography cases in a bright and clear manner, the Leica DI C500 delivers 100% of the near infrared images to both the video output port and the NIR detecting camera.



Standard display
Resolution 800×600 pixel
Contrast 1:100



Leica DI C500
High resolution 1024×768 pixel
High contrast 1:300



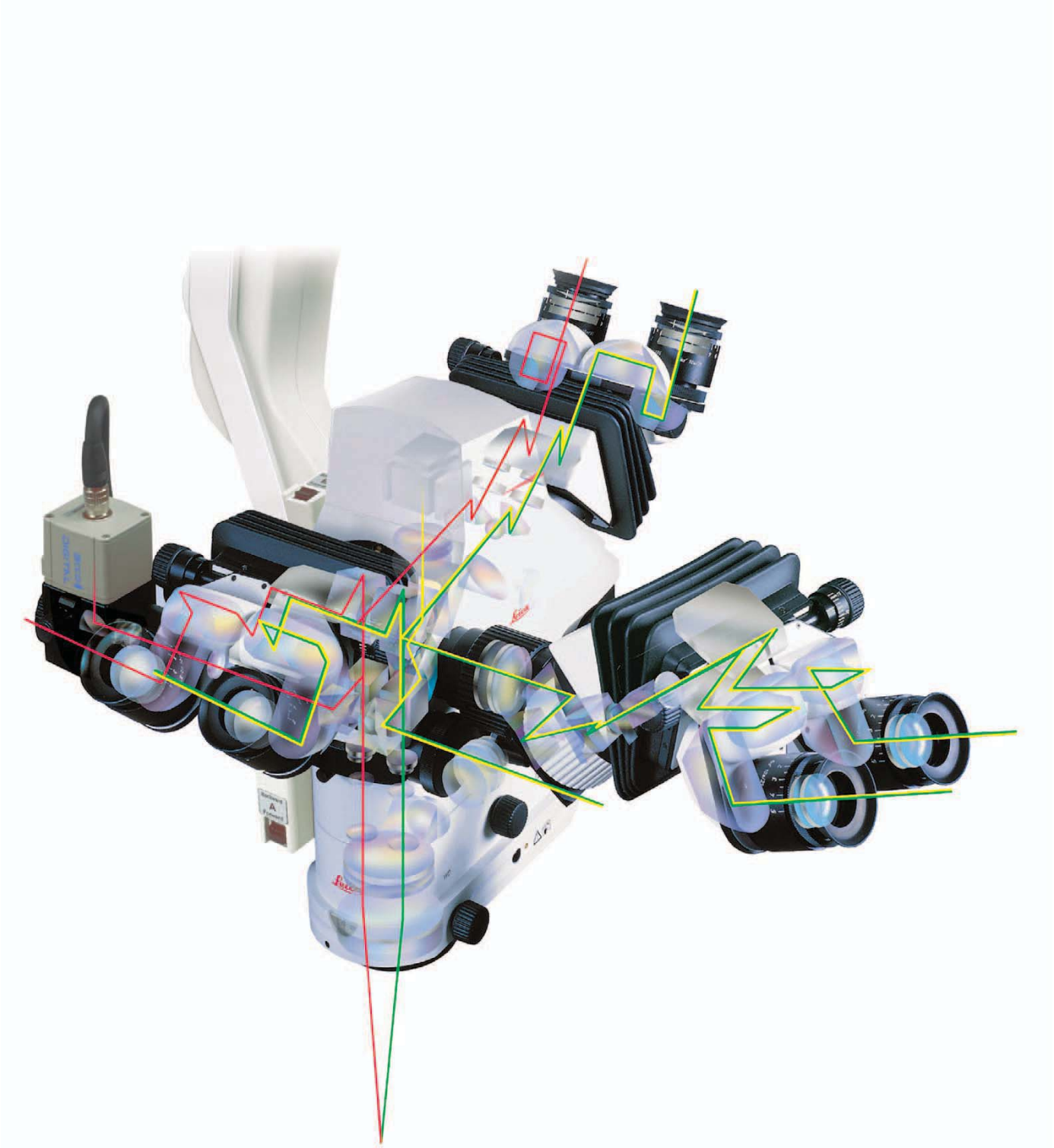
Automatic shutter control

Leica Microsystems, inventor of the shutter function for the display of non-correlated data, has continued the development of this principle to perfection.

Individual setup

Leica's QUAD Shutter Technology™ allows the surgeon to choose any data and the integration channel, without having to manually close the shutter. The system does this automatically.

Individual settings of the second shutter can be stored and will automatically follow the position of the inserted image, left or right.



Beam path of the Leica Dual Imaging Color module
with Leica M525 optics carrier.

Outstanding Optics

Leica M525 with Leica DI C500 and cranial accessory: Assistant on the right, zoom-video adapter with a 3CCD video camera on the left.

An important detail of the Leica DI C500 for more light: Switching lever for the assistant port – observation on the side or rear.

Data display in left or right beam path.

More light than ever before

With new Leica OptiChrome™ optic coatings, the Leica ULT 500 Ultra Observer module transmits more light with higher efficiency. The Leica ULT 500 delivers additional light to the surgeon for a brighter and better view, keeping the amount of illumination at lower, safer levels. The unique integration of the assistant ports provides light only to the main eyepieces and leads to a visible increase of brightness as compared to conventional solutions. The new optical design allows the best possible and most flexible adaptation of the mono observers – as well as a video option for all aspects of cranial and spinal surgery.

Fluorescence ready

The Leica DI C500 is perfectly prepared for surgical fluorescence applications. To observe ICG images of fluorescence angiography cases in a bright and clear manner, the Leica DI C500 delivers 100% of the near infrared images to both the video output port and the NIR detecting camera.

Flexible

Ease of operation supports the functional convenience – an important plus for the outstanding image quality of the Leica M525 series of optics.

Modular

The Leica ULT 500 Ultra Observer easily attaches to all existing Leica M500 Series microscopes.

Easy to Use

Ergonomic design

Comfort and ease of use have been Leica's highest goals in the development of new, ergonomically adapted handles. The standard functions of brake release, zoom, and focus are easily accessible. The Dual Imaging and any adapted information system, e.g., IGS, are controlled via the integrated multifunctional control button. All handle functions are matched to the Leica CAN bus. On/off switching of the control data is always done using the same button sector, which makes the system easy to operate. The three other touch points control the system parameters and menus.

System-oriented

Based on the CAN bus connection between the Leica DI C500, IGS system, Leica optics control unit, and handles, IGS data – particularly correlated and overlaid inserted data – automatically adjust to the correct perspective if the data display changes from the left to the right beam path and vice versa.

Ergonomic Design

Short design

The Leica DI C500 is ergonomically designed with a 45° tube adaptation and the option of different Leica binoculars. Minimizing the distance from the eyepieces to the operative site supports every surgery situation, even special ones such as posterior fossa.

Easy and relaxed

The built-in 30° rotation plates allow the surgeon and assistant to reorient their binoculars when the optical head is tilted in acute side-to-side positions.

The feather-light touch movement of the Leica M525 optics carrier in combination with the Leica Dual Imaging Color module is ensured by a complete balancing system.

Extra low design minimizes observation distances.

Leica M525 optics with Leica DI C500 or Leica ULT 500 Ultra Observer, ergonomic horizontal position of the tube despite an optics carrier in tilted position.

Leica M525 optics with Leica DI C500 configured for spine and cranial surgery.

Technical data Leica DI C500

Observation	
Surgeon stereo observer	45% per eyepiece
Assistant left, mono observer	35%[1], 17.5% per eyepiece[1] [1] switchable output: rear stereo assistant output or left and right mono observer
Assistant right, mono observer	35%[1], 17.5% per eyepiece[1]
Assistant rear, stereo observer	35% per eyepiece
Video adaptation left	20%, 100% near infrared for Leica FL800
Video adaptation right	20%, 100% near infrared for Leica FL800
Display	
Resolution	1024 × 768 pixel
Display field coverage	Full field of view
Color resolution	24 bit, true color
Gray tone resolution	8 bit, 256 grayscale
Color temperature	6500°K (variable 3000–9000°K)
Contrast	≥ 300:1
Ergonomics	
Integrated tube adapter	Surgeon and assistant
Integrated 30° binocular rotation plate	
Observation modes display	
Non-correlated data mode by left and right main shutters	
Exclusive non-correlated data mode by left and right surgeon shutter	
Observation control modes	Automatic and manual
Optical integration of data	Left or right, manually selectable
Dominant eye / assistant mode	

Communication interface			
Functional interface	CAN bus		
Video and data interface	XGA, VESA standard (60, 70, 75, 85Hz)		
Power supply			
Voltage	24V, through M520 CAN bus		
Physical dimensions			
Weight	4.2kg		
Dimensions	230mm × 150mm × 199mm		
Dual imaging handles			
Functions	Focus, zoom, 3 brakes, 6 brakes, 4×		
IGS menu or display functions			
Interface	CAN bus		
Ergonomics	Designed specifically for the left and right handle		
Standards	IEC601, UL544, EN 60601-1/ -1-1/ -1-2		
Compatibility			
Optics carriers	Leica M525, Leica M520, Leica M500 N		
Stands	Leica M525 OH4	Leica M520 OH3	Leica OH3
	Leica M525 F40	Leica M520 MS3	Leica MS3
	Leica M525 C40 / CT40	Leica M520 MS2	Leica MS2,
	Leica M525 MS3	Leica M520 OHS1	Leica OHS1
		Leica M520 F40	Leica MS1
			Leica MC1
IGS	All major IGS suppliers		

Conformity CE

- Medical devices directive 93/42/EEC
  Classification: Class I, in compliance with appendix IX, rule 1, with reference to rules 10 and 12 of the directive.
- Medical electrical equipment, Part 1: General requirements for safety IEC 60601-1; EN 60601-1; UL60601-1; CAN/CSA-C22.2 NO. 601.1-M90
- Electromagnetic compatibility IEC 60601-1-2; EN 60601-1-2

The Surgical Division, within Leica Microsystems (Schweiz) AG, has the management system certificate for the international standards ISO 9001:2000 / ISO 13485:2003 and ISO 14001:2004 relating to quality management, quality assurance and environmental management.

Winner 2005

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The World's First Innovation Award

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