VISULAS 532s

Compact laser workstation
for state-of-the-art retinal therapy

ZEISS

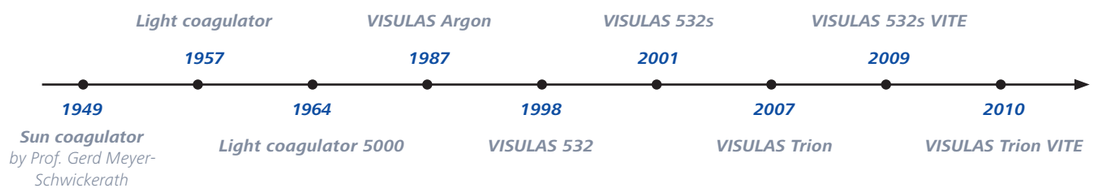
We make it visible.

When darkness led to enlightenment,
when spontaneous retinal damage led to an effective therapy.

Sparked by the solar eclipse in 1945
and driven by visionary partners

Carl Zeiss has been committed to precision, innovation and passion for more than half a century in retinal photocoagulation. Ever since the first photocoagulation with sunlight was tested from the rooftop of a Hamburg eye clinic in 1949, dedicated Zeiss employees have sought intense dialogue with visionary ophthalmologists of their time. Dialogue that led, in 1957, to the first commercially available photocoagulator in the world. Simultaneously this marked the birth of contactless surgery on the human eye.

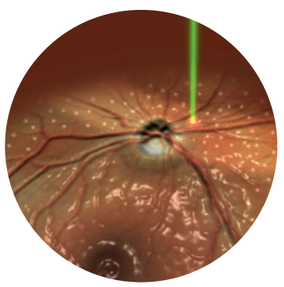
Carl Zeiss has been a strong driving force behind the focused optical therapy of retinal diseases. Committed to this tradition, the VISULAS 532s ranks seamlessly into a chain of innovative solutions with one sole objective: precise, effective and gentle therapy to preserve the eyesight and quality of life of patients.



VISULAS 532s

Mastering everyday life in the clinic.
Reliable. Competent. Superior.

Exceptionally precise beam control and treatment accuracy.
Extremely compact and reliable in daily clinical practice.
Outstandingly ergonomic and intuitive to operate.
The VISULAS® 532s is an impressive, powerful, diode-pumped solid-state laser for controlled and gentle photocoagulation of the retina.



3D illustration of a single pulse coagulation

Fundus image of a single pulse coagulation near the optic nerve head

Effective and reproducible treatment

The VISULAS 532s is setting performance benchmarks. The efficient solid-state laser reveals its sustainable strength even in high-demand practices. The VISULAS 532s has sufficient power reserves for any treatment strategy – whether it is with short laser pulses in the millisecond range for a gentle grid treatment, or long pulses for an effective retinopexy or even angioma sclerotherapy. Its built-in thermoelectric cooling system ensures maximum temporal stability of the laser power and thus meets the basic prerequisite for reproducible clinical results.

A laser workstation par excellence

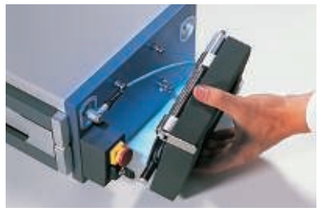
In combination with the ZEISS Laser Slit Lamp LSL 532s, the VISULAS 532s becomes a perfectly integrated laser workstation.

The electronic micromanipulator allows for sensitive, synchronous laser beam positioning and slit lamp illumination. The ParFocus zoom system delivers a homogeneous, sharply-defined and reproducible laser spot on the retina, which minimizes heat-related side effects on the patient's cornea. The active ClearView physician safety filter offers not only a unique and true-to-color slit lamp image, but also reliably protects the physician, automatically swinging into position when the therapy beam is activated.

Navigate efficiently and confidently

The VISULAS 532s has a language-independent color touch screen for convenient and easy operation. The removable control panel can easily adjust to the viewing angle of the user. The PowerPress control enables direct selection of the power setting, without losing sight of the patient's fundus.

Navigating with fingertip precision: the electronic micromanipulator.



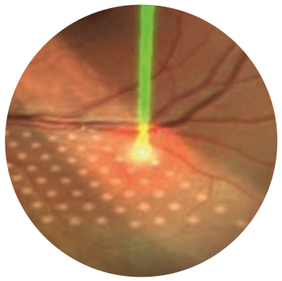
Removable control panel …

… can be placed ergonomically on the instrument table.

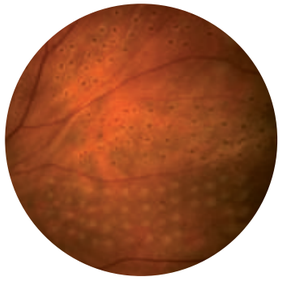
VISULAS 532s *VITE*

Expanding with your needs.
Fast. Flexible. Physician-controlled.

In addition to the conventional single-spot mode, the VISULAS® 532s *VITE* can also operate in multi-spot mode. A linear sequence of up to 12 laser pulses can be triggered at the touch of a button on the slit lamp joystick of the VISULAS 532s *VITE*.



3D illustration of a contoured VITE cascade



Fresh and pigmented laser lesions (pulse duration: 20 ms) [2]

Significantly reduce treatment times

The automated micromanipulator reliably controls the fast progression of an entire sequence of laser spots. Extremely precise, and long-term stable linear motors move the laser beam in just a few milliseconds to the next pre-calculated target position reducing conventional treatment time by 30 % to 60 %[1].

Customize treatment strategies

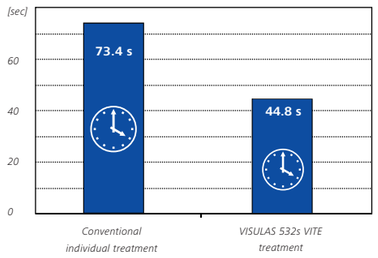
The active control on the trigger button of the slit lamp allows the physician to maintain control over treatment progress at all times, with "fingertip precision". A slight rotation or movement of the joystick is all that is needed to adjust the position of the aiming beam as treatment proceeds. Flexible and precise. A multi-spot cascade allows the treatment strategy to be customized to the irregular contours of the retina.

Intelligently streamline treatment workflows

The clear layout of the graphic elements on the control panel follows a logical sequence and efficiently supports clinical workflows. Multi-spot treatment parameters, such as spot spacing, number of laser spots per sequence, and angle of orientation of a sequence, are homogeneously embedded in the VISULAS 532s user interface and can be adjusted during treatment. The illuminated *SPOTview* display allows the physician to continuously monitor the laser spot diameter, even in darkened environments.

Handle treatment interruptions with no stress

The physician may interrupt treatment at any time in an instant: with spot precision within the current sequence and in a controlled manner. This ensures the physician maximum precision and the patient optimum protection.



Comparison of average treatment time per 100 laser lesions for PRP treatments in conventional single-pulse mode of the VISULAS 532s (Group A: 35 patients) compared with PRP treatments in multi-spot mode of the VISULAS 532s VITE (Group B2: 37 patients). Time saving of around 40 %[1].

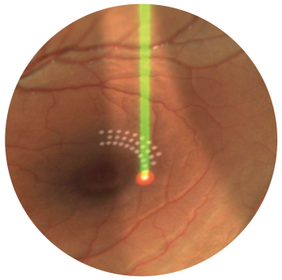
[1] *Roeckl A, Blum M: Multispot laser photocoagulation with the VISULAS 532s VITE: A comparative study of 101 patients, Publication no. 000000-1839-880, LAS.2979, 06/2010.*
[2] *Roeckl A, Blum M: Pan-retinal laser photocoagulation with reduced pulse duration – first experiences with linear spot cascades, Klinische Monatsblätter der Augenheilkunde, 2011 (DOI: 10.1055/s-0031-1273432)*

// PATIENT COMFORT
MADE BY CARL ZEISS

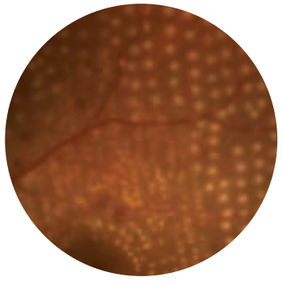
VISULAS 532s *VITE*

Results to be proud of.
Effective. Gentle. Comfortable.

The VISULAS® 532s *VITE* offers a clinically effective and gentle retinal laser therapy for conventional treatment strategies, such as pan-retinal photo-coagulation, central grid coagulation and central focal coagulation.



3D illustration of a circular VITE cascade



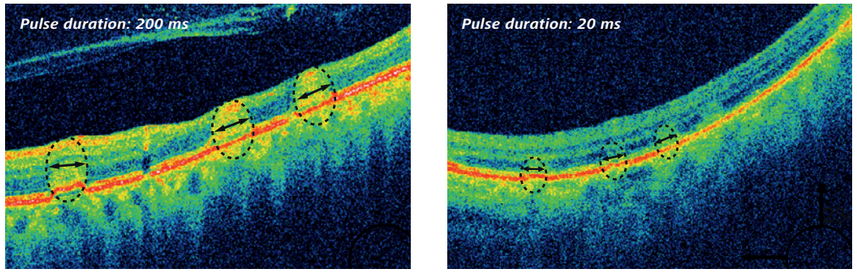
Combined grid/PRP treatment with VITE cascades[3)]

The must-have feature: conventional therapy with single pulses
The VISULAS 532s provides effective single-spot treatment using laser parameters that have established themselves as the evidence-based gold standard in accordance with the results of major clinical studies for the treatment of diabetic retinopathy and diabetic maculopathy (DRS, ETDRS, mETDRS, DRCR.net).

The exclusive add-on: conventional therapy with spot sequences
The particular advantage of the VISULAS 532s *VITE*: it is the only coagulation laser that conforms to study-recommended laser settings, not only in the single-spot mode but also in the multi-spot mode (e.g. 50 ms pulse duration or 50 µm laser beam diameter). Initial clinical results prove that a significant reduction in treatment time can be achieved – without compromising the gold standard.

The compelling highlight: gentle therapy with short pulses
With the VISULAS 532s, it is also possible in short-pulse mode to set laser lesions efficiently and in a controlled fashion, with typical laser pulse duration between 10 and 40 ms – thanks to guaranteed laser output of 1.5 watt. Although a higher laser output is necessary to compensate for the lower pulse duration, in order to achieve a lesion of the same intensity, short-pulse photocoagulation is a gentle alternative to conventional laser therapy. This is due to a significantly lower energy load per unit per area[2)].

In addition, shorter laser pulses cause less damage to surrounding tissue, since thermal conduction is not able to progress as far during the shorter pulse durations, thus protecting the inner layers of the retina (see images). This significantly enhances patient comfort[2)]. Short pulses create sharply outlined lesions with highly controlled heat propagation. Clinical research is currently underway on the potential positive effects of the combination of short pulse durations and small beam diameters.



OCT B scans (Cirrus™ HD-OCT by Carl Zeiss Meditec, Inc.) prove: A 20 ms laser pulse shows a less extensive lesion than a 200 ms pulse[3)] (the beam diameter was 100 µm in both cases).

[2)] Roeckl A, Blum M: Pan-retinal laser photocoagulation with reduced pulse duration – first experiences with linear spot cascades, Klinische Monatsblätter der Augenheilkunde, 2011 (DOI: 10.1055/s-0031-1273432)
[3)] Dr. Fang Lu, West China Hospital, Sichuan University, Chengdu, China

// ADAPTABILITY
MADE BY CARL ZEISS

VISULAS 532s

A credible team player in operative use.
Adaptable. Portable. Versatile.

The VISULAS® 532s is designed for universal use. Due to its adaptable concept, the VISULAS 532s is ready to use in a blink of an eye – for the outpatient retina clinic or operating room. A wide range of applicators and high-quality accessories compliment the high-performance, multifaceted VISULAS 532s.

VISULINK 532/U – compatible with many diagnostic slit lamps

The VISULINK® 532/U – consisting of optical laser link and mechanical adapter – offers spot sizes of 50 µm to 1000 µm, and is equipped with a true-to-color physician safety filter. It converts diagnostic slit lamps made by Carl Zeiss, or e.g. Haag-Streit into fully-fledged laser workstations in an instant. The easy to use mechanism allows fast switching between different diagnostic slit lamps. To use the slit lamp diagnostically, the VISULINK 532/U can be swiveled out of the way.

VISULINK 532s/U in operation

LIO 532s/Trion – high contrast and reliable

The Heine indirect ophthalmoscope specifically is modified for the application requirements of Carl Zeiss: the LIO 532s/Trion is suitable for both the VISULAS 532s and the multi-wavelength laser VISULAS Trion. It is light and stable and stands out in particular due to its high aiming beam contrast compared to the retinal background.

LIO 532s/Trion indirect ophthalmoscope

VISULAS 532s – strong performance in the operating room

With the coagulation laser VISULAS 532s and the surgical microscope OPMI LUMERA® 700 Carl Zeiss provides surgeons with a perfect duo which interact in harmony, guaranteeing successful surgical interventions in the posterior eye segment. The variable view, font size and color contrast of VISULAS 532s display are predestined for application in the operating room: all parameters are always clear and distinctly legible – even from a distance and in a darkened environment.

The precise centration of the aiming and therapeutic beam, combined with the integrated slit illumination of the OPMI LUMERA 700, create an optimally illuminated treatment field and thus guarantees confident operation, whether in the periphery or in the vicinity of the macula. The fixed ClearView physician safety filter only minimally increases the height of the view for the operator. The active physician safety filter always provides effective protection when the laser is triggered. It gives the operator unfiltered vision when the laser is not in use.

VISULAS 532s and OPMI LUMERA 700 in the operating room

Laser endoprobe with protective cap

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VISULINK 532s/U in operation

LIO 532s/Trion indirect ophthalmoscope

Technical data
VISULAS 532s

VISULAS 532s / VISULAS 532s *VITE*	
Laser type	Frequency doubled solid state laser
Wavelength	532 nm
Aiming beam	Diode, 620 to 650 nm, adjustable brightness max. 1 mW at the cornea
Rated voltage and frequency	100 V to 240 V, 50/60 Hz
Pulse duration (single pulse)	10 to 2500 ms, cw
Pulse duration (*VITE* option)	20 to 50 ms
Pulse interval (single pulse)	100 to 6000 ms
Max. power	1.5 watts at the cornea
Cooling system	Thermoelectric
Laser console dimensions	H 150 mm x W 300 mm x D 400 mm (H 59 x W 118 x D 157) inches
Weight	14 kg (30.8 lbs)
Accessories	LIO 532s/Trion indirect ophthalmoscope, Instrument table, laser safety goggles, contact lenses, laser warning light

LSL 532s / LSL 532s *VITE* laser slit lamp	
Laser beam delivery	Interlaced with slit illumination system
Laser treatment spot size	continuously adjustable, 50–1,000 µm (without contact lens), parfocal, larger spot sizes depending on contact lens used
Illumination	12 V, 30 W brightness continuously adjustable
Slit adjustment	Slit length: variable in steps of 1/3/5/9/14 mm Slit width: continuously adjustable from 0 to 14 mm Slit image rotation: 0°, ±45°, 90°
Magnification	5 x, 8 x, 12 x, 20 x, 32 x
Physician safety filter	True-to-color, ClearView
Micromanipulator	Servo-electric
Weight	11 kg (24.2 lbs)
Accessories	Tonometer, co-observation tube, video documentation equipment from the range of accessories for the slit lamps SL120 and SL130

VISULINK 532/U	
Laser treatment spot size	continuously adjustable, 50–1,000 µm (without contact lens), parfocal
Compatible slit lamps	ZEISS SL 115 Classic, SL 120, SL 130, 20 SL, 30 SL Haag Streit 900® BM / 900® BQ
Physician safety filter	True-to-color
Weight	0.4 kg (0.9 lbs)
Accessories	Transport case for VISULINK 532/U and VISULAS 532s

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