Retina Glaucoma

tt532 & tt577

Pattern scanning laser devices

for retinal photocoagulation procedures

your laser specialist

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LASER EXCELLENCE

Meridian Medical has been at the forefront of ophthalmic laser technology for decades. The ground-breaking Microruptor II, developed by Meridian engineers in collaboration with Dr. Fankhauser, revolutionised ophthalmology treatments and set new industry standards. Committed to innovation and precision, Meridian Medical drives the continuous development of cutting-edge technology, with multiple patents securing our leadership in the field. Meridian Medical prioritizes sourcing the finest local components, ensuring exceptional quality, long-term reliability, and outstanding performance. By following proven engineering practices and maintaining rigorous testing standards, we guarantee that every system meets the highest levels of precision and durability. Our highly skilled and experienced team remains dedicated to delivering the excellence, service, and results our customers expect and trust.

PROTECT YOUR INVESTMENT: ESSENTIAL TIPS

- **Schedule Annual Maintenance** – Regular yearly servicing ensures your laser operates at peak performance and longevity.
- **Adhere to Safety Guidelines** – Always follow the manufacturer's safety recommendations and regulatory requirements to maintain compliance and ensure safe operation.
- **Use as Intended** — Refer to the Instructions for Use (IFU) to ensure proper handling and maximise efficiency and durability.

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INNOVATION

At Meridian Medical, we set new standards in quality, usability and functional design to meet the high demands of today's generation of physicians. Experience excellence with the new TT pattern scanning laser devices – where Swiss precision engineering meets state-of-the art med-tech innovation.

USABILITY

- User-friendly graphic user interface
- User interface includes a safe shutdown
- Laser Indirect Opthalmoscope (LIO) connection port
- New table design, easy manoeuvrability
- One person installation
- Medical grade all in one PC
- 14 mm slit-lamp adapter
- Power control unit out of tempered glass
- Table depth (patient side to doctor side):390mm only
- Ability to save individual settings by user name
- Optical fiber safeguarded by a flexible metal conduit
- Meridian Medical's online remote support empowers on-site service technicians with seamless maintenance assistance
- Service-friendly product design

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ADVANCED SAFETY AND HYGIENICAL MATERIALS

Our new TT units are is designed with the highest biocompatibility standards in mind, utilizing premium materials in contact with patient treating physicians. We have selected Hi-MACS solid surface material and tempered glass to ensure both hygiene and durability. These materials offer a smooth, non-porous surface that is easy to clean and disinfect, providing optimal hygiene and patient safety.

HIGH-TECH TABLETOP MATERIAL

- Non-porous surface making it hygienic and easy to clean
- Chemical-resistant
- Antimicrobial coating
- Durable and resistant to scratches and cracks
- Environmentally friendly and recyclable design

MEDICAL-GRADE MONITOR

- Enjoy a large, water and dust-resistant display
- Experience sharp visuals and quick touch sensitivity
- Noiseless and dust-free due to fanless design
- Choose a design that supports environmental sustainability
- Antimicrobial coating
- Long-lasting durability

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CHOOSE YOUR FAVORITE WAVELENGTH

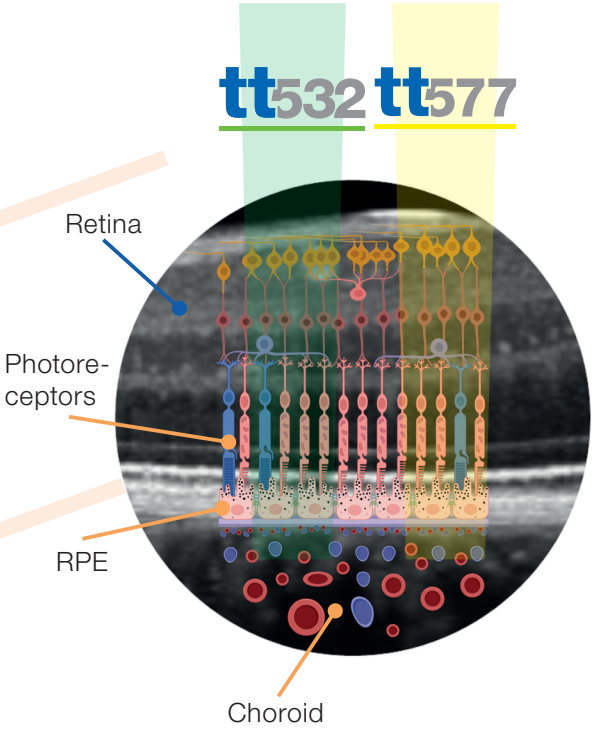
Meridian offers the green (532 nm) wavelength, which has been the gold standard for decades of retinal laser treatment, as well as the popular true yellow (577 nm) wavelength.

CLINICAL INDICATION

Meridian Medicals laser devices are expertly crafted for retinal photocoagulation procedures. Our lasers ensure top-notch performance and industry-leading optical quality for retina treatments. It's suitable for various procedures, including retinal photocoagulation, such as diabetic retinopathy and diabetic macular edema, retina vein occlusion, retinopathy of prematurity, retinal breaks/tears/holes/ degeneration, and iridotomy.

PRECISION ENGINEERING AT IT'S FINEST

- **Swiss made:** The new TT device has been designed, developed, and manufactured at Meridian Medical's headquarters in Thun, Switzerland, proudly upholding the country's legacy of exceptional precision engineering.
- **Swiss-Made Components:** most of the components are produced by Swiss manufacturers, ensuring continuously stable quality and trustworthiness
- Unmatched Quality: the device has been thoroughly tested for excellent performance and durability, meeting any requirements of healthcare professionals globally
- **Invest wisely:** A Smart Investment in Precision: The TT device represents more than advanced technology, it's a long-term investment in reliability, performance, and engineering excellence. Designed, developed, and manufactured at Meridian Medical's headquarters in Thun, Switzerland, the TT embodies the unmatched value and security that come with Swiss-made innovation.



SWISS MADE

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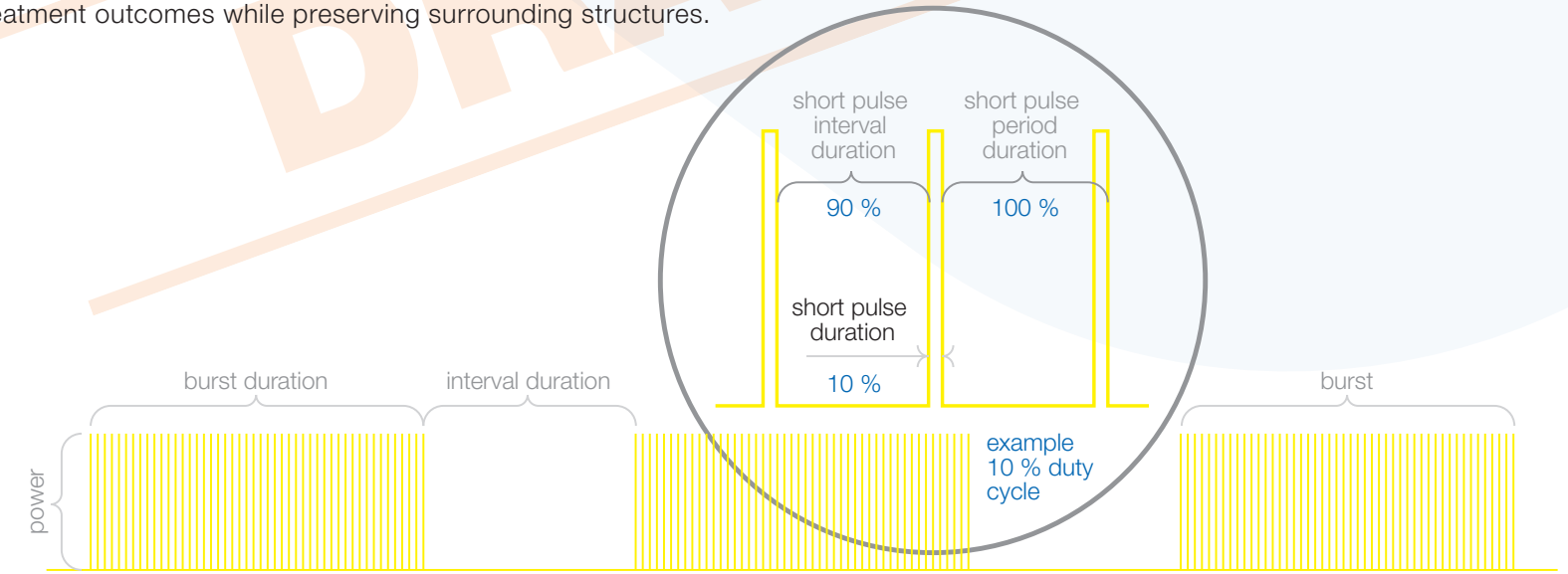
THE PRINCIPLE OF SHORTPULSE

ShortPulse technology delivers precisely controlled bursts of energy, where each pulse consists of multiple short bursts followed by cooling intervals.

- **Gentle Tissue Treatment** – Unlike continuous wave (CW) mode, ShortPulse minimises heat build-up, allowing targeted treatment with reduced thermal damage.
- **Optimised Energy Delivery** – The alternating bursts and pauses enable controlled energy absorption, making it a practical yet gentler approach for delicate ophthalmic procedures.

This advanced pulsing method ensures precise, safe, and tissue-friendly laser applications, enhancing treatment outcomes while preserving surrounding structures.



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WAVELENGTH BENEFITS

532 nm – The green laser is widely regarded as the gold standard for retinal photocoagulation.

It offers **superior absorption by melanin**, enhancing treatment precision and efficacy.

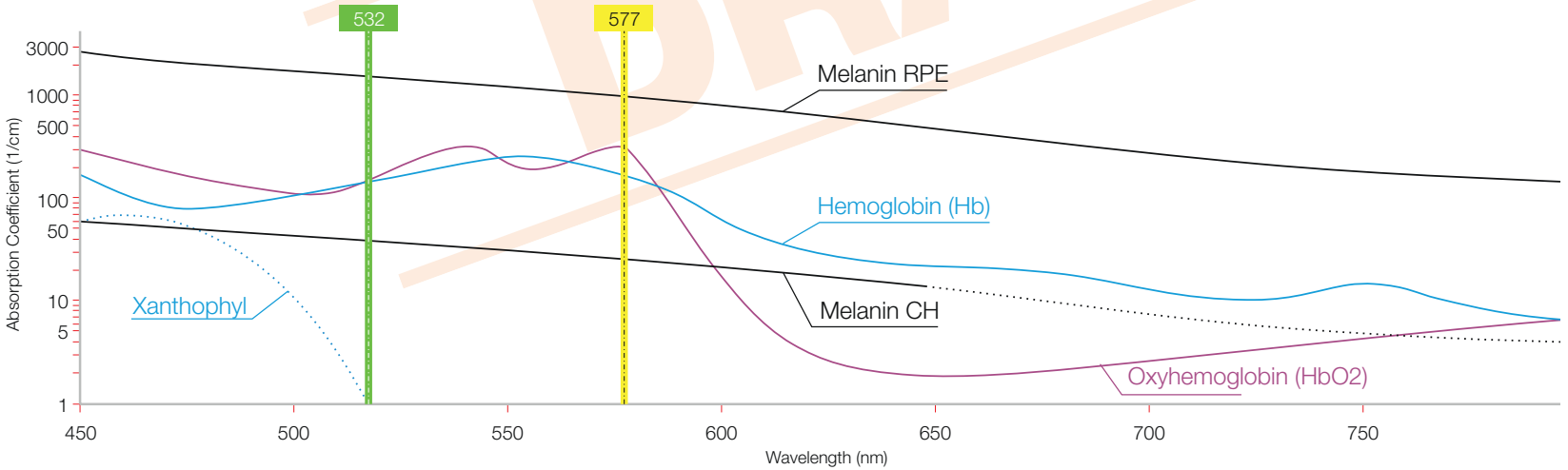
Its wavelength is ideal for **targeting the pigmented retinal epithelium** (RPE).

Clinically proven for a broad range of retinal conditions, particularly where pigmentation enhances therapeutic outcomes.

577 nm – The yellow wavelength demonstrates **reduced ocular scatter**, allowing for deeper tissue penetration and enhanced therapeutic control[1].

It is often better tolerated by patients compared to green wavelengths[2].

Clinical reports indicate **lower levels of treatment-related pain** when using yellow lasers[2].



(1) Sramek, C. K. et al. (2012) 'Therapeutic Window of Retinal Photocoagulation With Green (532-nm) and Yellow (577-nm) Lasers', Ophthalmic Surgery, Lasers and Imaging Retina. SLACK Incorporated, 43(4), pp. 341–347. doi: 10.3928/15428877-20120426-05.
(2) Gonzalez-Saldivar, G., Rojas-Juarez, S., Espinosa-Soto, I., Sanchez-Ramos, J., Jaurieta-Hinojosa, N. & Ramirez-Estudillo, A. 2017, "Single-Spot Yellow Laser Versus Conventional Green Laser on Panretinal Photocoagulation: Patient Pain Scores and Preferences", Ophthalmic Surgery, Lasers & Imaging Retina, vol. 48, no. 11, pp. 902-905.

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ELABORATED USER-FRIENDLINESS

Designed by laser specialists, TT offers a high level of practical features:

- Retinal projection: Laser settings, laser power, pattern selection, size, and rotation are observed through the oculars eliminating the need of removing the eyes from the binoculars. Thus, maximizing the efficiency of the surgeon when performing the treatment
- Intuitive and easy to operate graphical user interface (GUI): All laser parameters but the spot size can be modified through the touch screen (e.g., power, pattern, pulse duration)
- Smart Wheel: Our 3D mouse interface makes the laser operation fast, easy, and intuitive. Power and pattern (type, size, position) can be swiftly modified by using the 3D Mouse
- Power Control Unit: Made of tempered glass, this illuminated unit ensures easy and intuitive grasp of the key switch, the laser stop button as well as the capacitive table up/down switches. With illuminated laser status indicator
- Extremely fast scanning and treatment procedure: Due to the technical solution and construction of the adapter and its operating software the new TT ensures extremely fast treatment options
- Meridian integrates Haag-Streit high-quality slit lamp: Thanks to our decades-long cooperation with Haag-Streit, we offer an integrated adapter that ensures a perfect match and alignment

These advanced features help to speed up the treatment time and reduce patient chair time

TREATMENT PATTERNS

square sector circle arc line single spot

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PHOTOCOAGULATION – TREATMENT GUIDELINES FOR CW LASERS

These guidelines have been prepared following industry standards for retinal treatments, the use of the laser and its parameters are responsibility of the treating ophthalmologist.

Procedure	Spot size(*)	Exposure	Power	Visible effect
PRP (Central)	100 – 200 µm	0.01 s	100 mW	Moderate Burning
PRP (Periphery)	200 – 500 µm	0.02 – 0.03 s	400 mW	Blanching
DME (Focal)	50 – 100 µm	0.01 – 0.02 s	100 mW	Light Blanching within 500 µm of fovea
DME (Grid)	50 – 200 µm	0.01 s	100 mW	Blanching
RVO	100 – 500 µm	0.05 – 0.5 s	100 – 500 mW	Intense burn
CNV	50 – 200 µm	0.1 – 0.5 s	100 – 500 mW	
Tears & Breaks	50 – 1000 µm	0.03 s	400 – 600 mW	Linear with no spacing
Degenerations	500 – 800 µm	0.03 s	400 – 600 mW	Linear with no spacing

(*) Spot size on macula including the lens magnification factor
Suggested parameters for the Posterior Segment taken from Bloom & Brucker (1997) "Laser Surgery of the Posterior Segment"

BINOCULARS IN FOCUS

Each user must have the oculars set for their personal refraction, this way the laser will be in parfocality with the aiming beam and retina. Defocused slit lamp may result in unpredictable laser burns.

TEST PULSES

- Always assure perfect retinal focus before delivering the treatment
- Perform a series of SINGLE SPOT laser pulses in the periphery to test the melanin response, for your test shot aim for a blanching or light burn
- Start with the lowest recommending power and the shortest exposure time

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PHOTOCOAGULATION – TREATMENT GUIDELINES FOR SHORTPULSE LASERS

These guidelines have been prepared following industry standards for retinal treatments, the use of the laser and its parameters are responsibility of the treating ophthalmologist.

Procedure	Spot size(*)	Exposure	Periferal burn	Duty cycle
PRP (Periphery)	300 – 400 µm	200 ms	3×	5%
DME	100 – 200 µm	200 ms	2 – 4×	5%
DME+RVO	100 – 200 µm	200 ms	2 – 7×	5%

(*) Spot size on macula including the lens magnification factor
Suggested parameters for the Posterior Segment taken from Bloom & Brucker (1997) "Laser Surgery of the Posterior Segment"

PERIPHERAL BURN FACTOR

When using shortpulse it is necessary to perform a laser shot to test the melanin response. Apply a burn shot away from the fovea, titrate the power until achieve blanching. Starting with a spot size of 100 – 200 µm, power 50 – 100 mW and exposure of 200ms then slowly increase energy until produce a **barely** visible burn.

The power is multiply to compensate the short pulse duration.

BINOCULARS IN FOCUS

Each user must have the oculars set for their personal refraction, this way the laser will be in parfocality with the aiming beam and retina.

Defocused slit lamp may result in unpredictable laser burns.

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TEST PULSES

- Always assure perfect retinal focus before delivering the treatment
- Perform a series of SINGLE SPOT laser pulses in the periphery to test the melanin response, for your test shot aim for a blanching or light burn
- Start with the lowest recommending power and the shortest exposure time

CW TREATMENT

For CW guidelines, please refer to Merilas 532 alpha brochure.

DELIVERY SYSTEMS – LIO – FEATURES

- Operator can adjust the treatment laser's angle relative to the viewing axis
- Standard LED module
- Neutral LED cooler color providing brighter illumination and longer battery life
- High-contrast optics
- Built-in filters: cobalt blue filter, clear filter, red-free filter, and diffuser
- High magnification lens with additional 1.6× magnification

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DELIVERY SYSTEMS – LIO – TECHNICAL SPECIFICATIONS

Description	Mode
Spot size	1100 µm ± 20%
Working distance (front of LIO to focused spot)	280 mm ± 20%
Operating wavelengths (Factory configured to one therapy wavelength)	Therapy laser: 532 nm, 577 nm or up to 1500 mW Aiming laser: 635 nm, 1 mW
Back-scatter protection	OD > 5.5 at therapy wavelength
Laser Fiber	100 µm core, multimode with A/R coating 3 mm stainless steel protected 5 m length SMA905 fiber connector
Power Source	Wall mounted wireless charger including spare lithium battery

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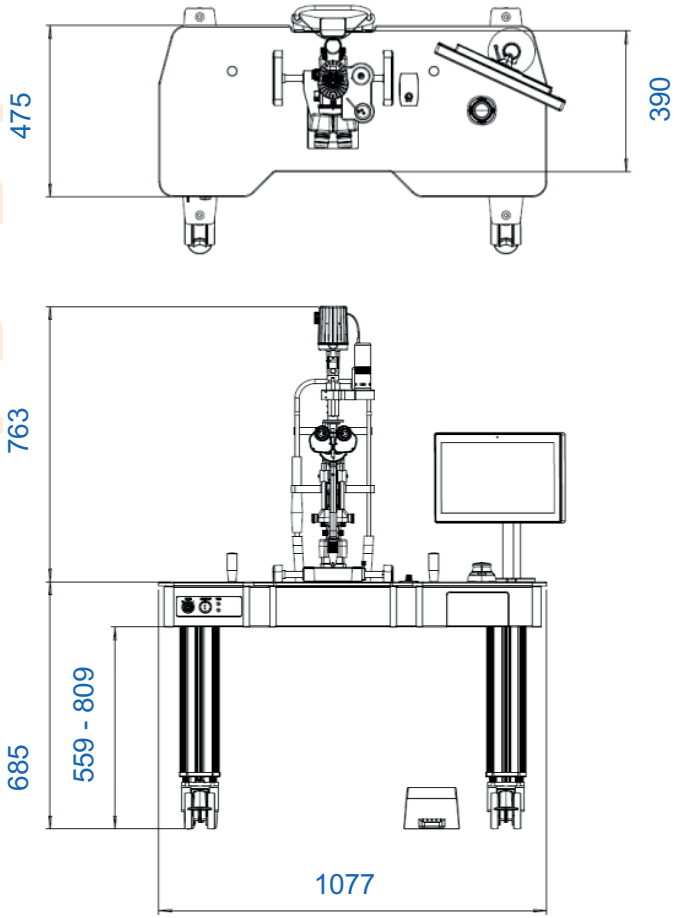
TECHNICAL SPECIFICATIONS*

Device description	Pattern scanning laser device tt532	tt577
Laser wavelength	532 nm	577 nm
Laser Power	60 –2000 mW (± 20 % max.)	
Laser type	Diode Pumped Solid State (DPSS)	Optically Pumped Semiconductor Laser (OPSL)
Single pulse duration	10 - 650 ms	
Pattern pulse duration	10 - 30 ms	
Shortpulse	N/A	Duty cycle: 5 –50% Short pulse period duration: 2 ms (fixed) Short pulse duration: 100 µs (5 %) up to 1000 µs (50 %) Pattern: 100 ms/spot (burst of 50 short pulses
Spot sizes	50 µm, 100 µm, 200 µm, 300 µm, and 400 µm	
Max. laser power	50 µm spot size = 1500 mW 100 µm spot size = 1500 mW 200 µm spot size = 2000 mW 300 µm spot size = 2000 mW 400 µm spot size = 2000 mW Laser Indirect Ophthalmoscope (LIO) = 1500 mW	
Aiming beam	635 nm | adjustable brightness | pattern and energy projection	
Patterns	Square, circle, sector, arc, line, single spot	
Cooling	Laser: TEC / aircooling | PC: fanless and passive cooled touchpanel PC	



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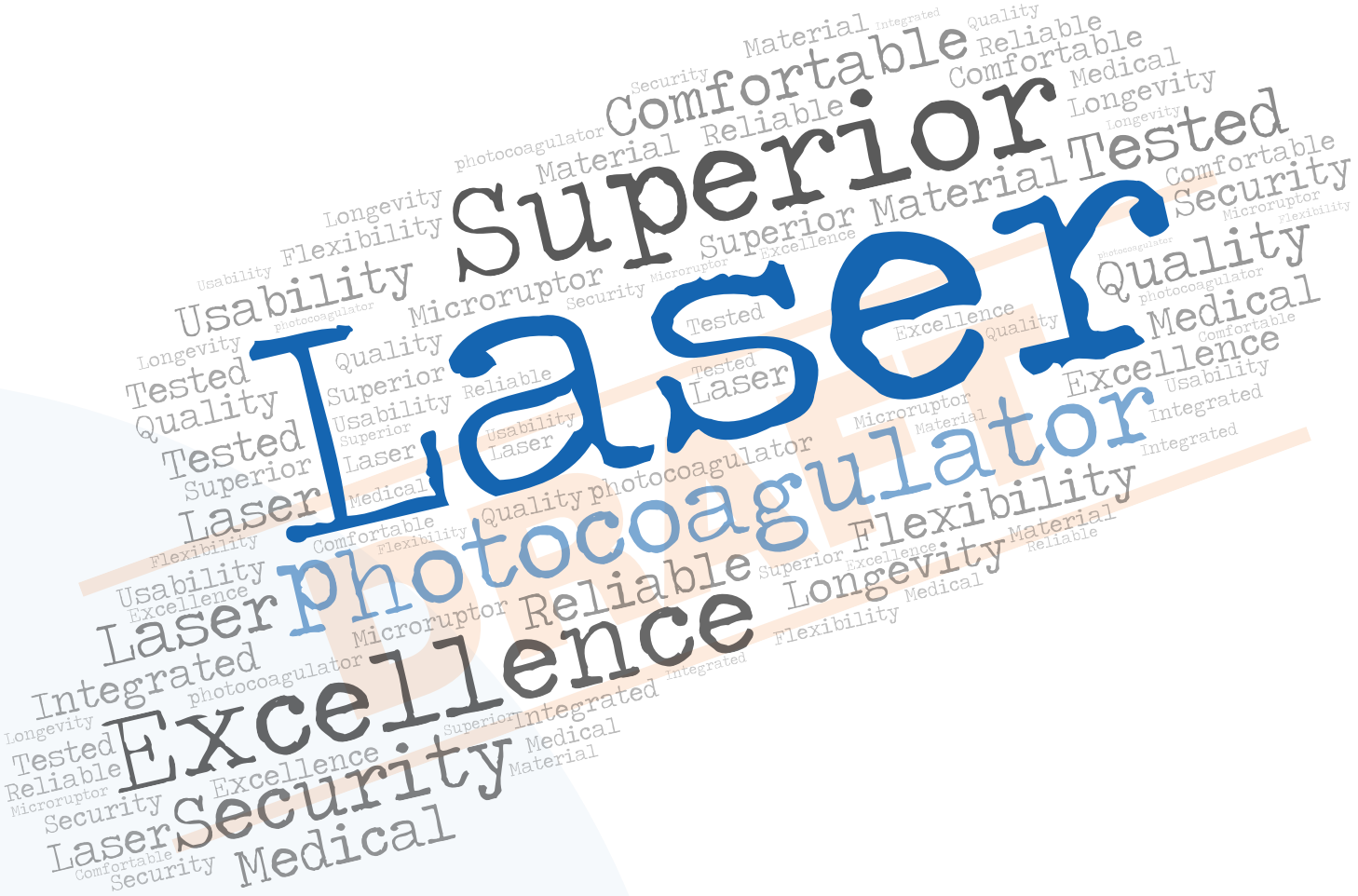
TECHNICAL SPECIFICATIONS* continuation

User interface	16” medical compliance touchpanel PC | Smart wheel (3D mouse)
Slitlamp	Haag-Streit BQ 900 or CSO SL 9900
Power supply	100 – 240 VAC; 50 – 60 Hz ; 450 VA
System weight	Net: 79.5 kg, Gross: 174.5 kg (HS variant) Net: 70.4 kg, Gross: 165.4 kg (CSO variant)

* All technical specifications are subject to change without notice. In accordance with the international general safety standards: IEC 60601-1:2005 + A1:2013 + A2:2021, IEC 60601-1-2:2014 + A1:2020, MDR Regulation (EU) 2017/745. The laser safety is in accordance with the international standards: IEC 60825-1:2014 and IEC 60601-2-22:2019.

** Pending approval MDR and FDA



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