

# PASCAL<sup>®</sup> Synthesis<sup>™</sup>

Photocoagulator



# Industry Leading PAttern SCAnning Laser Technology

PASCAL® Synthesis™










PASCAL® represents a quantum leap in ophthalmic treatment technology and is committed to helping you deliver effective results for your patients. Demanding ophthalmologists choose PASCAL® because of its speed and ease of use.

Developed in partnership with Stanford University, the PASCAL® method of photocoagulation treats retinal conditions using a single spot or a user-selected pattern array. Most importantly, it was designed to provide, control and flexibility in the treatment of eye conditions.

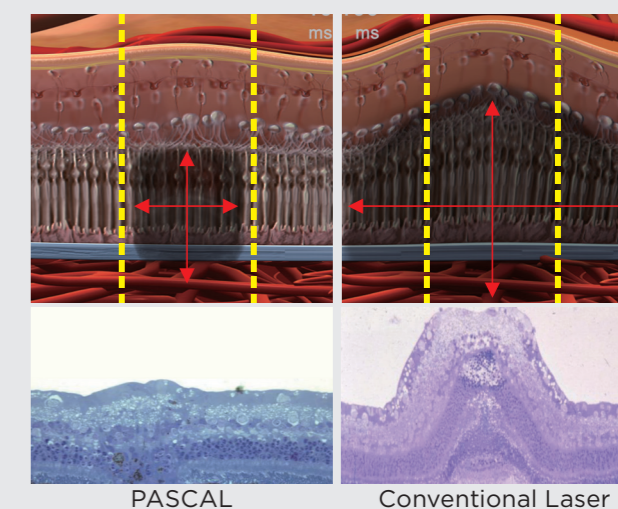


## Experience the PASCAL® Advantage

The collaboration between researchers and clinical experts resulted in a laser system recognized and used by physicians worldwide.

 <p>The PASCAL technology was developed in partnership with Stanford University</p>	 <p>Exclusive Precision Spots with Multi-Fiber Beam Technology</p>	 <p>Reduced power and short pulses produce less discomfort during treatment</p>
 <p>Rapid pattern scanning laser delivery</p>	 <p>Precise alignment and continuous laser pulse directed by high speed galvanometers</p>	 <p>PASCAL HUD<sup>1</sup> ophthalmic image projector</p>
 <p>Fine view by enhanced laser delivery slit lamp</p>	 <p>Endpoint Management for sub-threshold treatment<sup>1</sup></p>	 <p>Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> for IOP reduction<sup>2</sup></p>

Unlike conventional laser burns, PASCAL's shorter pulse duration (10 ms) results in faster procedures with **less pain, collateral damage and scarring for your patients**<sup>3</sup>.



Courtesy: Dr. Daniel Palanker Associate Professor Department of Ophthalmology, School of Medicine, and Hansen Experimental Physics Laboratory Stanford University.

1. Optional  
 2. Mauricio Turati, Felix Gil-Carrasco, Adolfo Morales, Hugo Quiroz-Mercado, Dan Anderson, George Marcellino, Georg Schuele, Daniel Palanker. "Patterned Laser Trabeculoplasty." Ophthalmic Surg Lasers Imaging 2010;41: 538-545.  
 3. Manish Nagpal et. al., "Comparison of laser photocoagulation for diabetic retinopathy using 532-nm standard laser versus multispot pattern scan laser." RETINA 30:452-458,2010



The new HUD-1  
Head Up Display  
simplifies the  
targeting of your  
treatment area



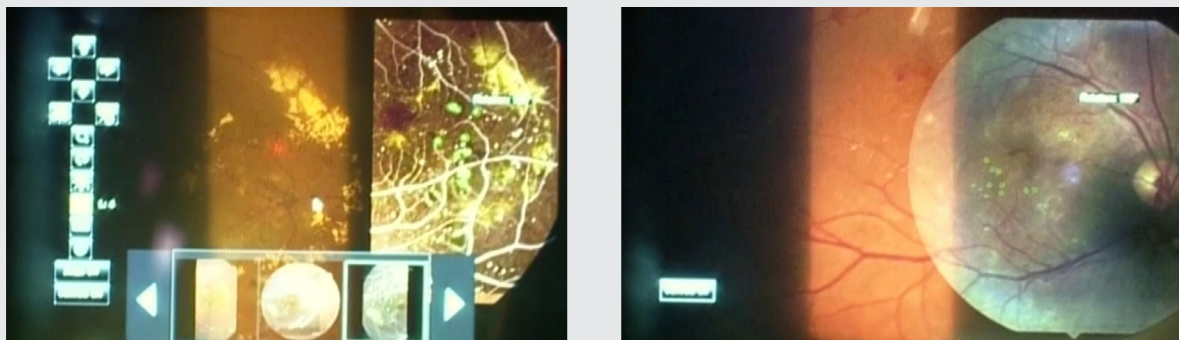
#### Head up display HUD-1

The HUD-1 is an ophthalmic image projector used as an accessory to PASCAL® Synthesis and TwinStar lasers. The HUD-1 lets you compare the target area of treatment with a side-by-side view of a reference image previously obtained from the patient's fundus for location and assessment. Multiple types of eye-fundus images can be displayed, including FA/IA, OCT, B scan and OCTA images.

LEARN MORE



<https://www.youtube.com/watch?v=JifgNHA3HHM&feature=youtu.be>



Observation of image by operator with the HUD-1

## Now Featuring A New Laser Delivery Slit Lamp SL-PA04



#### Ergonomic Design and Improved Optical Design

Improved coaxiality between the slit illumination and the aiming beam provides better visibility of the peripheral retina.



#### Comfortable observation with our **NEW** binocular system

The CB-8 binocular system with 8-degree angle provides clear vision. The smooth movement of the PD adjustment makes it easier to find a comfortable PD range. New magnification configuration improves visibility of the treatment area. The 5x, 8x, 13x, 20x and 32x magnification grouping allows for a wider view of the treatment area.



#### Power Adjustment Knob

Quick and precise adjustment of the laser treatment power.



#### LED Illumination

Sharp and homogeneous LED illumination for comfortable viewing



#### Gooseneck Fixation Target

Easy to adjust the fixation target.



#### Micro-manipulator

Allows precise alignment of aiming beam and treatment delivery.

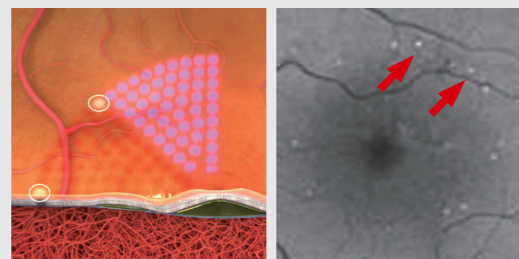
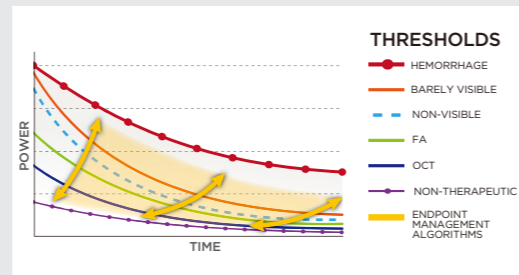


# Endpoint Management™ Sub-threshold Treatment for Retinal Disorders

Endpoint Management (EpM)™ is a pattern sub-threshold retinal laser therapy that uses a unique algorithm to control laser power and pulse duration, optimizing the therapeutic effect of the laser at sub-visible levels.

## Endpoint Management is mathematically precise

The Arrhenius Integral coupled with extensive data on retinal laser-tissue interactions defines the algorithms for Endpoint Management. By use of this formula, heat induced changes in the retina are controlled as Endpoint Management simultaneously modulates the laser power and duration, providing linear control over a non-linear process.



## Landmark™ Patterns

The Landmark feature is a useful tool for tracking the sub-visible areas which have been treated, assisting with the treatment process and taking the guesswork out of successive treatments.

## Easy Operation

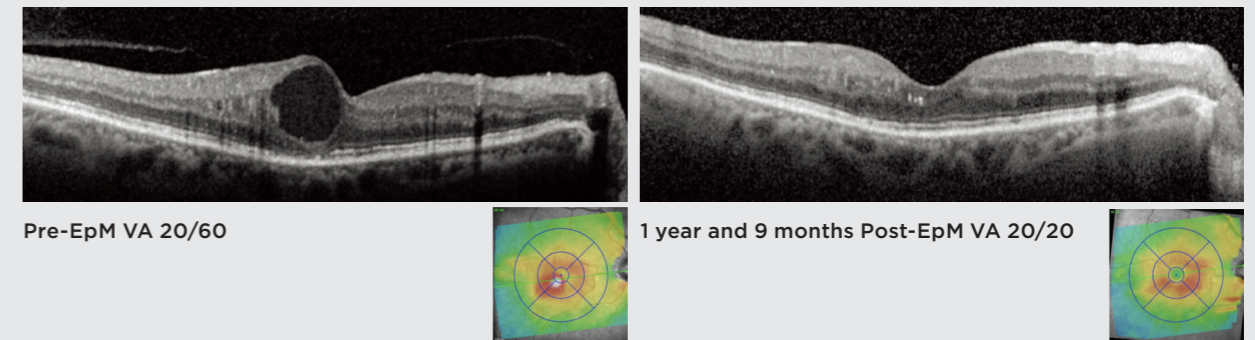
The yellow dots displayed on the user interface treatment pattern display indicate the laser spots that will be delivered using the energy level set by Endpoint Management. While Endpoint Management is active, the red dots indicate the laser spots that will be delivered at the titration energy level ("100% level") and will provide the "Landmark" reference points outlining the treated area.



# Endpoint Management™ Clinical Case



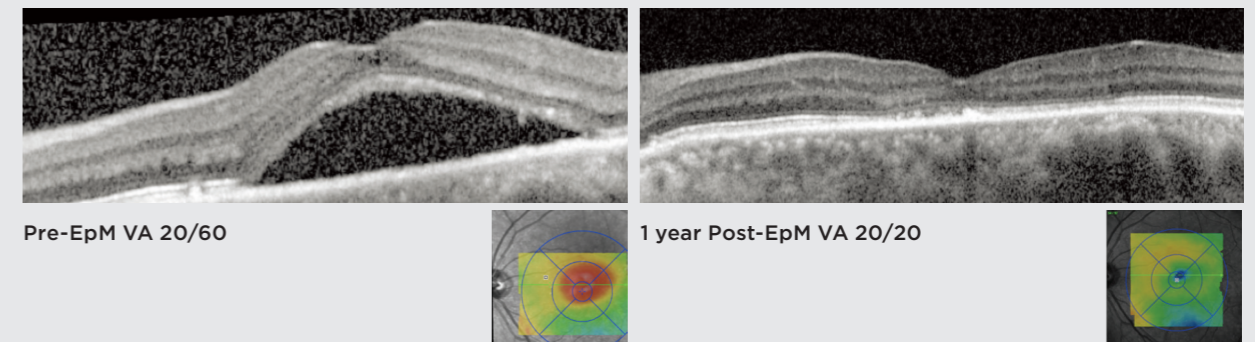
## Diabetic Macular Edema



**Physician:** Dr. Daniel Lavinsky | Porto Alegre, Rio Grande do Sul, Brazil

**Patient:** 64 years old with Type 2 DM for over 20 years. Severe nonproliferative diabetic retinopathy with macular edema OU. Patient submitted to one intravitreal injection of Ranibizumab. She had a panic attack during the procedure and refused additional injections.

## Diabetic Retinopathy



**Physician:** Dr. Daniel Lavinsky | Porto Alegre, Rio Grande do Sul, Brazil

**Patient:** 46 years old, male with decreased visual acuity since childhood due to nystagmus. Patient refused use of steroids or other medications.

\* Courtesy: Lavinsky D, Palanker D. Non Damaging photothermal therapy for the retina: initial clinical experience with chronic central serous retinopathy. Retina. 2015;35(2):213-22.



# PSLT™ (Pattern Scanning Laser Trabeculoplasty) treatment for IOP Reduction



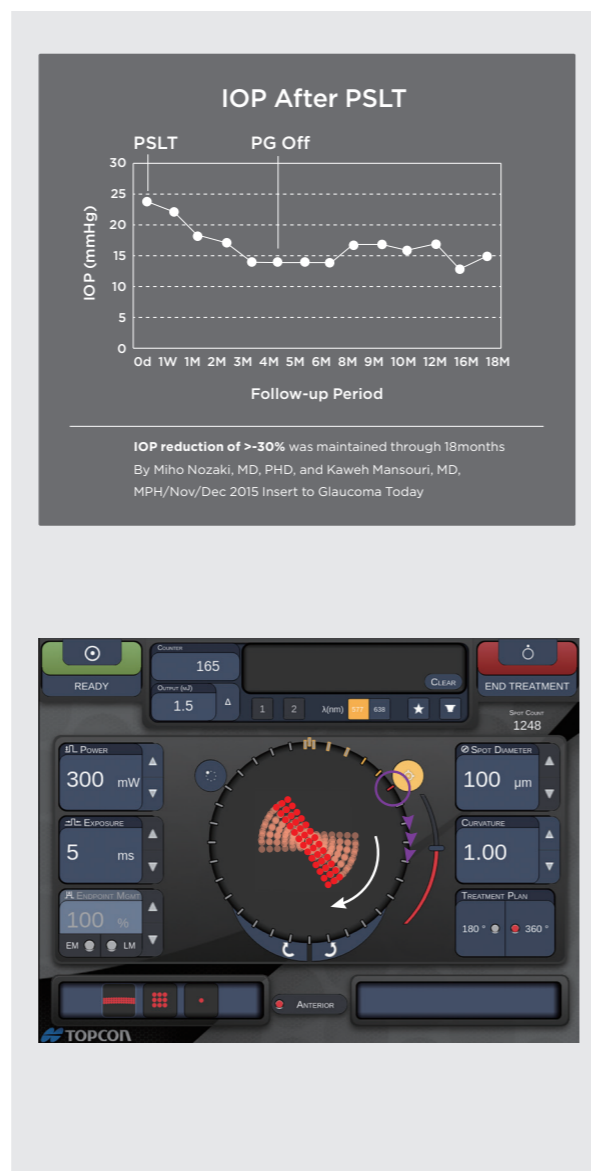
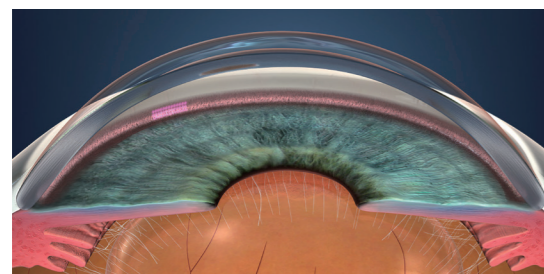
Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> is a tissue-sparing laser treatment for reducing intraocular pressure in open angle glaucoma. PSLT provides a rapid, precise, and minimally traumatic computer-guided treatment that applies a sequence of patterns onto the trabecular meshwork.<sup>2</sup>

## Clear advantages of PSLT

- Computer guided treatment
- Sub-visible procedure
- Clinical studies show an IOP reduction of 24% in 6 months\*
- Ability to retreat if necessary

## Ease of operation

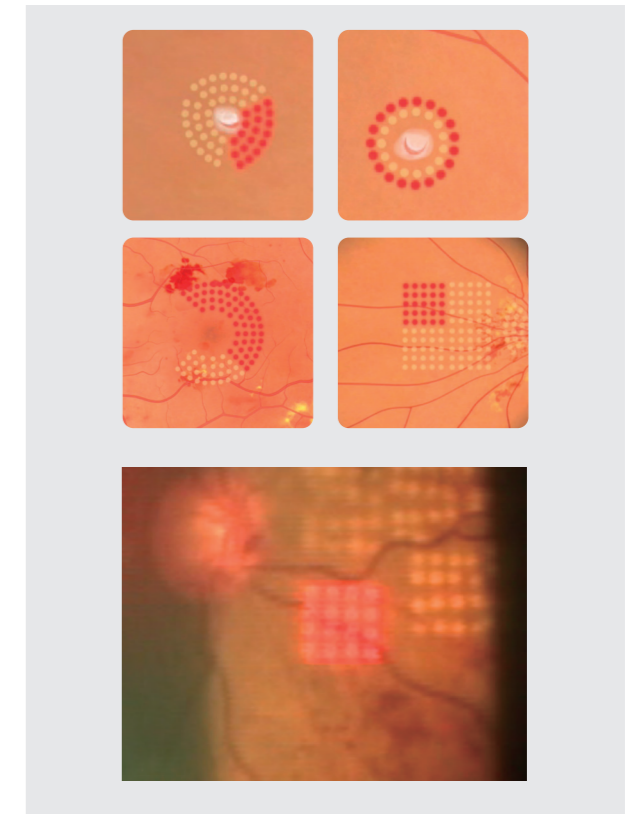
PSLT provides a computer guided placement of the treatment patterns ensuring full coverage of the trabecular meshwork and eliminating the chance of overlap.



# PASCAL's Versatility Maximizes Your Workflow

## More Patterns. More Treatment Options.

PASCAL offers a vast selection of patterns. The extensive pattern palette provides many variations to suit nearly every clinical need.

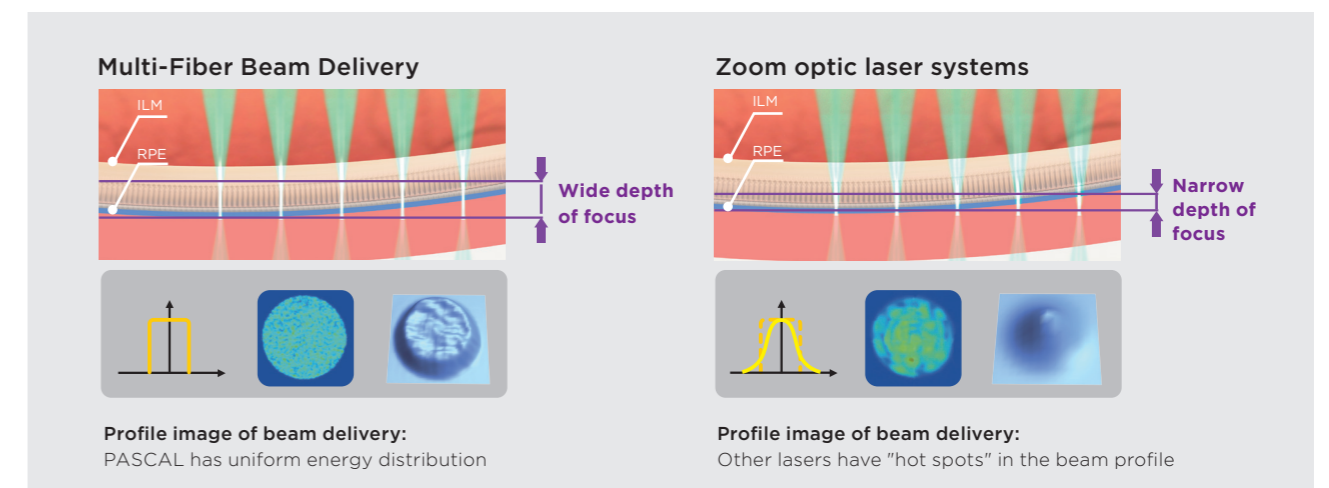


## Uninterrupted aiming beam

Bright and clear continuous aiming beam can help the operator to precisely aim at the target position.

## Multi-Fiber Beam Delivery System

PASCAL Synthesis multi-fiber beam delivery provides one dedicated fiber optic for each spot size. This increases depth of field compared to zoom optic laser systems.



\*1 PSLT is optional software

\*2 Mauricio Turati, Felix Gil-Carrasco, Adolfo Morales, Hugo Quiroz-Mercado, Dan Anderson, George Marcellino, Georg Schuele, Daniel Palanker. "Patterned Laser Trabeculoplasty." Ophthalmic Surg Lasers Imaging 2010;41: 538-545.

# Sophisticated Technology, Elegantly Designed

In order to help you and your patients, we never stop improving. When you understand the science behind our advancements, you'll understand why PASCAL is really a synthesis of innovations, all working together to further the field of ophthalmology.

## PASCAL Synthesis

- Available in 577 and 532 nm wavelengths (yellow/green)
- Integrates seamlessly with Topcon SL-PA04, SL-D7, Haag-Streit™, BM900 and BQ900



Topcon SL-PA04  
G4 and Y4

Topcon SL-D7  
G7 and Y7

## PASCAL TwinStar

- Includes both 577 nm + 638 nm wavelengths (yellow+red) in a single system
- Integrates seamlessly with Topcon SL-PA04 slit lamp



Topcon SL-PA04 (TwinStar)

## PASCAL LIO\*

### (Laser Indirect Ophthalmoscope)

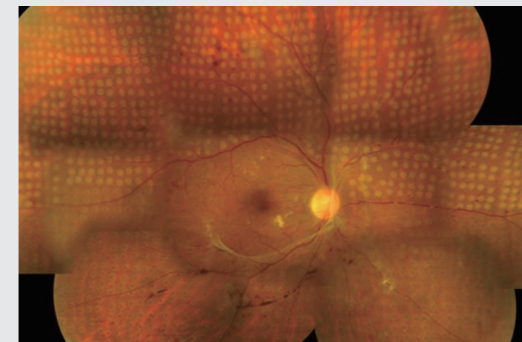
- Allows physicians to offer laser photocoagulation treatments to patients unable to sit at a slit lamp
- Small and lightweight headset battery offers up to 2 hours of use without recharging
- \* Optional accessory to Synthesis, not available with TwinStar



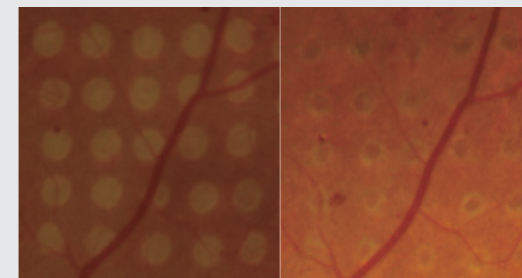
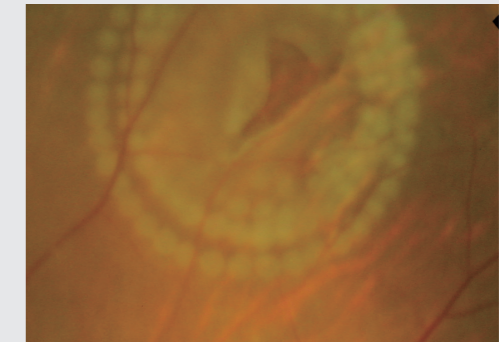
PASCAL LIO

# Case Images

## Proliferative diabetic retinopathy



## Retinal Hole



Post laser  
photocoagulation

Post laser  
photocoagulation  
( 2 months )

LEARN MORE



<https://www.youtube.com/watch?v=nVHqbhI9QbY&feature=youtu.be>

\*Courtesy: Hiroyuki Nomoto, MD, Nomoto Eye clinic



*Pattern scanning method is  
the preferred way and  
I believe it's standard of care.*

**Mark S. Blumenkranz, MD**

HJ Smead Professor and Chair Director of the Byers Eye Institute  
at Stanford University





# Specification

## Synthesis (Y7 / G7 / Y4 / G4)

## Synthesis TwinStar

<b>Laser</b>	Available in 577nm or 532nm Optically Pumped Semiconductor (OPSL)	577nm , 638nm <sup>1</sup>
<b>Patterns</b>	Single Spot, Array, Triple Arc <sup>2</sup> , Triple Ring, Arc, Line, Circle, Enhanced Octants (EpM <sup>3</sup> ), Wedge, Hexagon	
<b>Power</b>	0 - 2000mW	577nm: 0 - 2000mW 638nm: 0 - 600mW
<b>Power Control</b>	3-D Controller <sup>4</sup> and Touch Screen User Interface	
<b>Treatment</b>	Pulse Durations 5 to 1000ms <sup>5</sup>	
<b>Aim Beam</b>	635nm diode	670nm diode
<b>Aim Beam Power</b>	Adjustable to < 1mW	
<b>Delivered Spot Size</b>	50, 100, 200, 400µm	577nm: 50, 100, 200, 400µm 638nm: 60, 200µm
<b>User Interface</b>	3D Controller <sup>4</sup> and Touch Screen Control Panel Display (26.5 cm; 10.4 in)	
<b>Slit Lamp Compatibility</b>	Haag-Streit BM900 and BQ900, Topcon SL-PA04 and SL-D7	Topcon SL-PA04
<b>Laser Console Dimensions</b>	Height: 23 cm (9 in) Length: 31 cm (12 in) Width: 38 cm (15 in) Weight: 15 kg (35 lbs)	
<b>Input Power Requirement</b>	100 - 240 VAC; 50/60Hz 200VA	
<b>Cooling</b>	TEC / Air Cooled	

<sup>1</sup>: 577nm is for Single, Pattern scan, PSLT and Endpoint Management. 638nm is only for single spot.

<sup>2</sup>: Triple arc is only for Angle treatment by PSLT

<sup>3</sup>: EpM is optional software

<sup>4</sup>: Optional accessory

<sup>5</sup>: Pulse Durations 5ms is only for Triple arc



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**IMPORTANT** In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.

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SEEING EYE HEALTH DIFFERENTLY