

# PASCAL® Synthesis<sup>TM</sup>

Photocoagulator



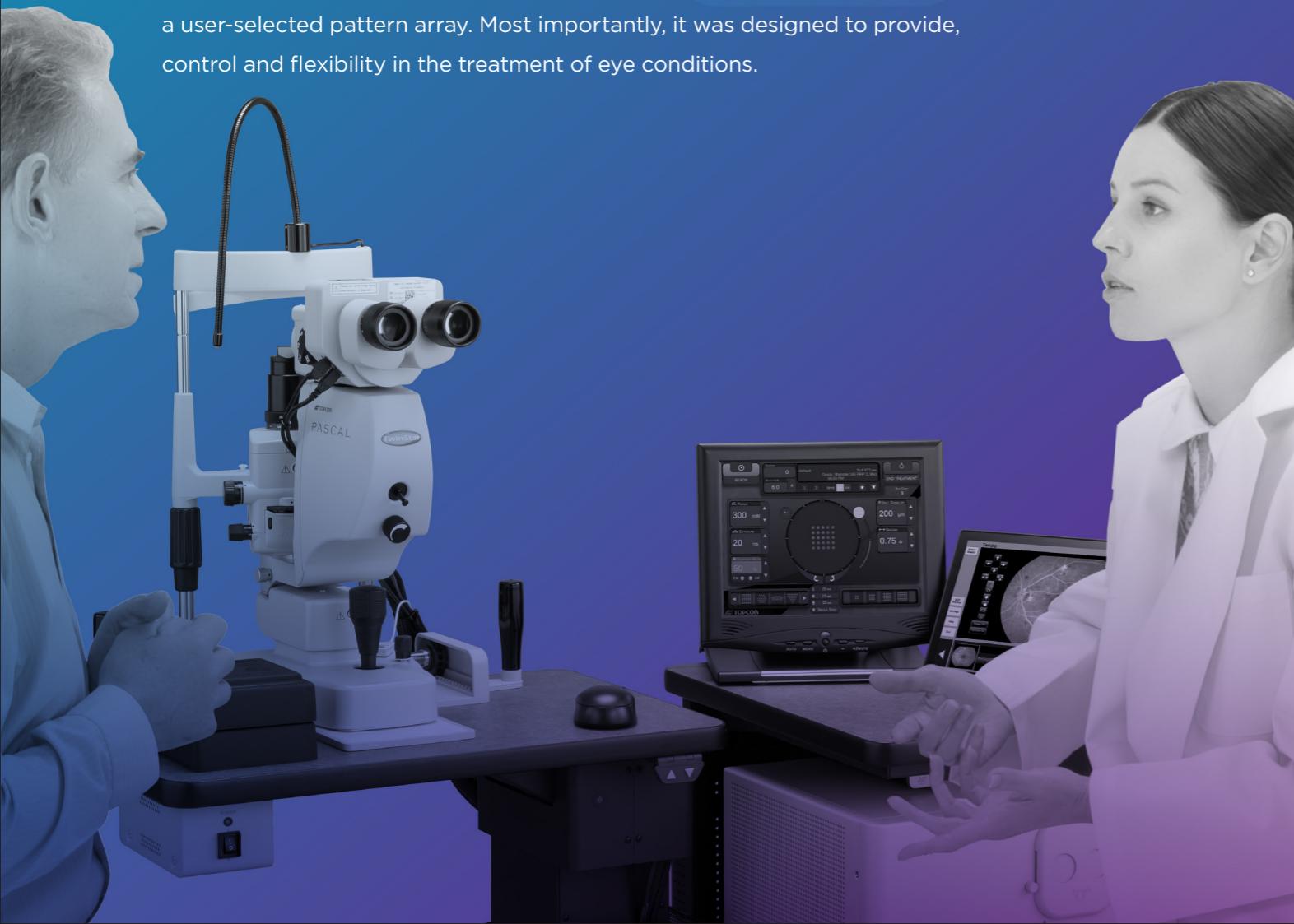
 **TOPCON** Healthcare  
SEEING EYE HEALTH DIFFERENTLY

# Industry Leading PAtern 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 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.



The PASCAL technology was developed in partnership with Stanford University



Exclusive Precision Spots with Multi-Fiber Beam Technology



Reduced power and short pulses produce less discomfort during treatment



Rapid pattern scanning laser delivery



Precise alignment and continuous laser pulse directed by high speed galvanometers



Fine view by enhanced laser delivery slit lamp

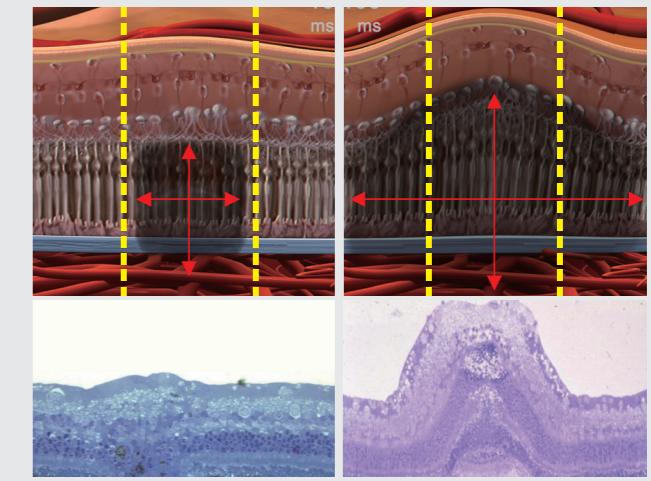


Endpoint Management for sub-threshold treatment<sup>1</sup>



Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> for IOP reduction<sup>2</sup>

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 multisport 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=JifgNHA3HJM&feature=youtu.be>



Observation of image by operator with the HUD-1

\* Courtesy: Masakazu Morioka, MD, Department of Ophthalmology Faculty of Medical Sciences, University of Fukui

## 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

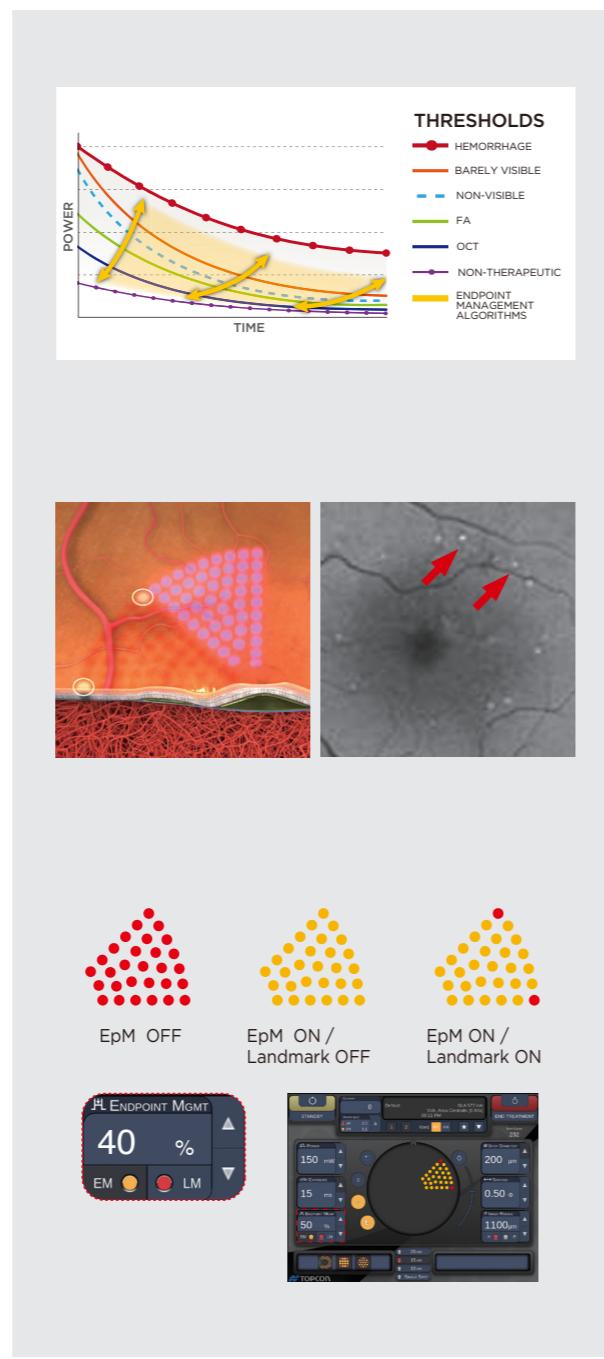
The Arrhenius Integral coupled with extensive data on retinal laser-tissue interactions defines the algorithms for Endpoint Management. By use of this formula, heat induced changes in the retina are controlled as Endpoint Management simultaneously modulates the laser power and duration, providing linear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

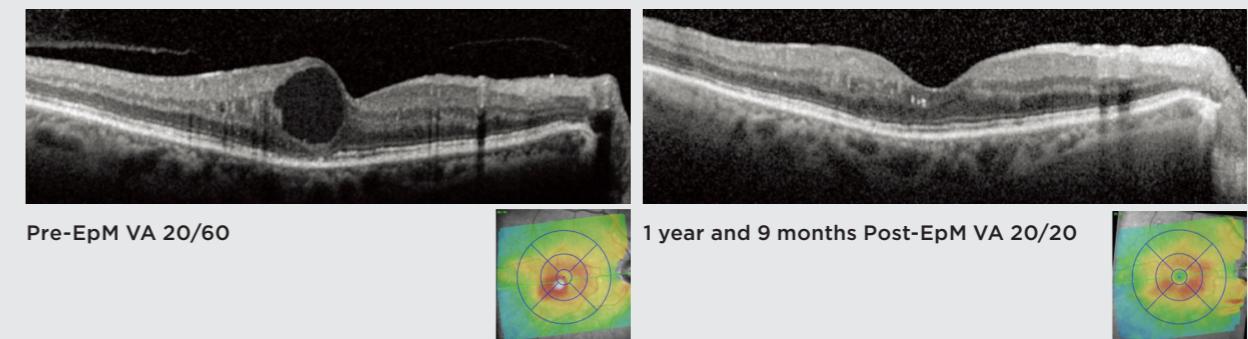
The yellow dots displayed on the user interface treatment pattern display indicate the laser spots that will be delivered using the energy level set by Endpoint Management. While Endpoint Management is active, the red dots indicate the laser spots that will be delivered at the titration energy level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



# Endpoint Management™ Clinical Case



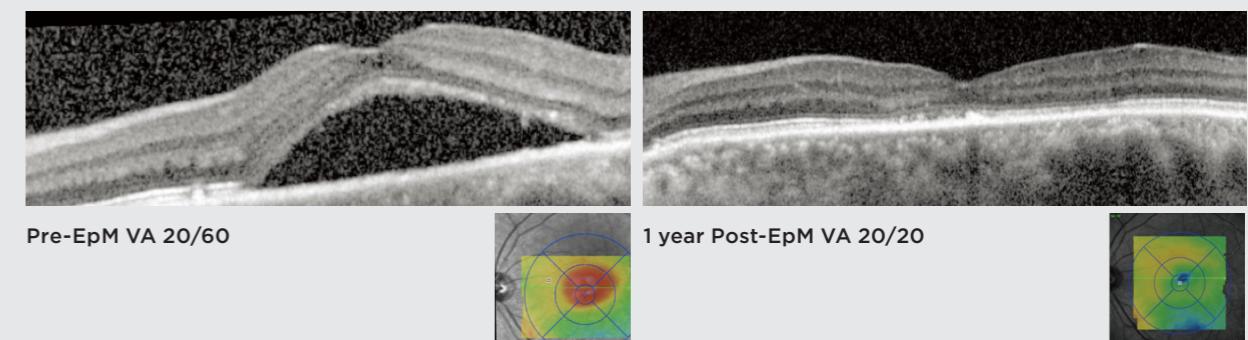
## Diabetic Macular Edema



**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



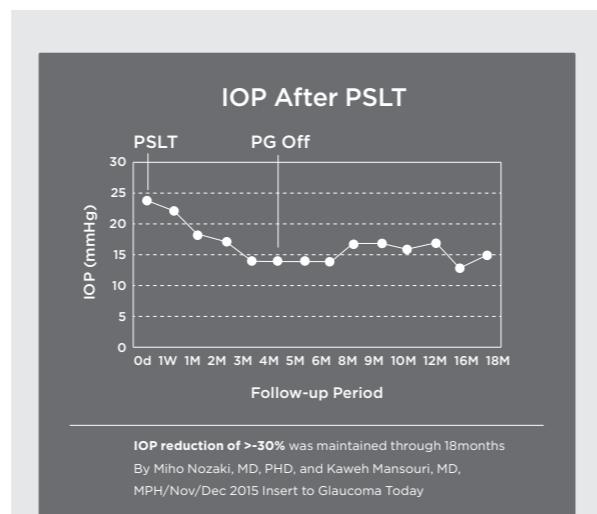
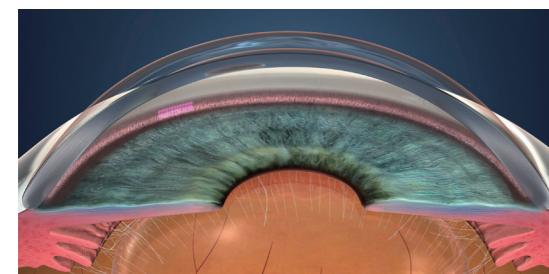
Pattern Scanning Laser Trabeculoplasty (PSLT)<sup>1</sup> is a tissue-sparing laser treatment for reducing intraocular pressure in open angle glaucoma. PSLT provides a rapid, precise, and minimally traumatic computer-guided treatment that applies a sequence of patterns onto the trabecular meshwork.<sup>2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

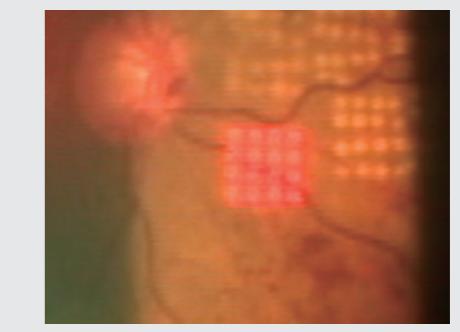
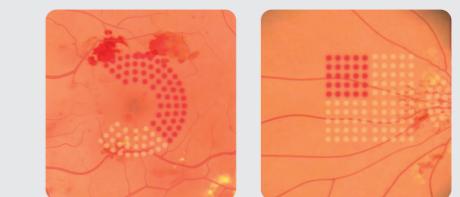
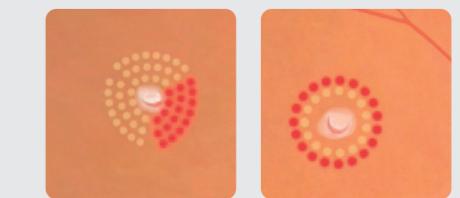
PSLT provides a computer guided placement of the treatment patterns ensuring full coverage of the trabecular meshwork and eliminating the chance of overlap.



# 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.

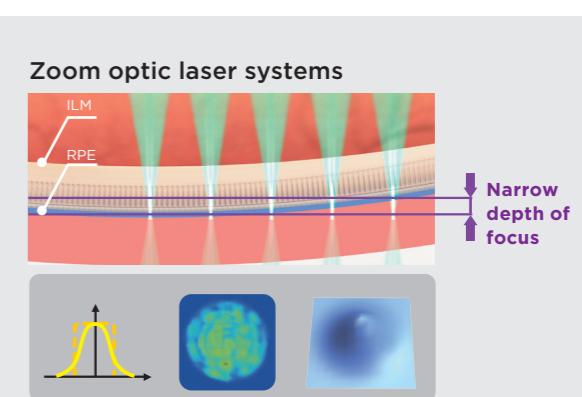
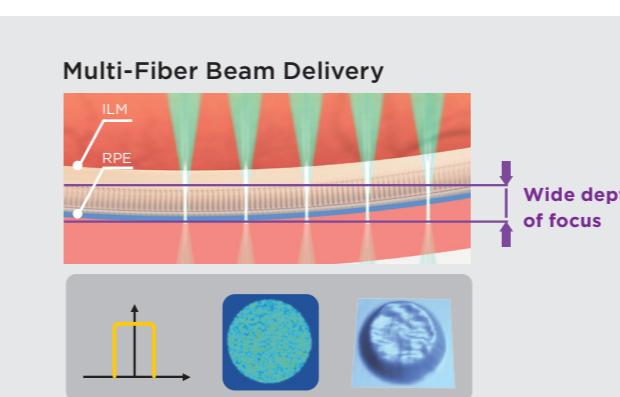


## Uninterrupted aiming beam

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

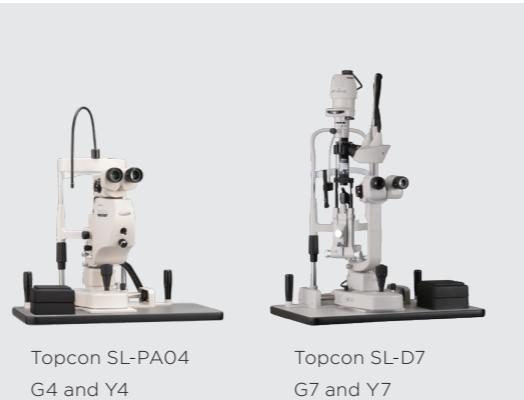
\*2 Mauricio Turati, Felix Gil-Carrasco, Adolfo Morales, Hugo Quiroz-Mercado, Dan Anderson, George Marcellino, Georg Schuele, Daniel Palanker. "Patterned Laser Trabeculoplasty." Ophthalmic Surg Lasers Imaging 2010;41: 538-545.

# 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



## PASCAL TwinStar

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



## PASCAL LIO\*

### (Laser Indirect Ophthalmoscope)

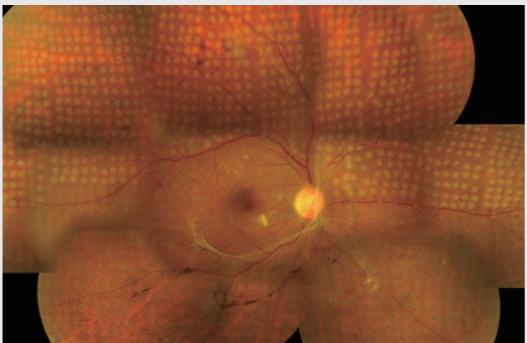
- Allows physicians to offer laser photocoagulation treatments to patients unable to sit at a slit lamp
- Small and lightweight headset battery offers up to 2 hours of use without recharging

\* Optional accessory to Synthesis, not available with TwinStar



# Case Images

## Proliferative diabetic retinopathy

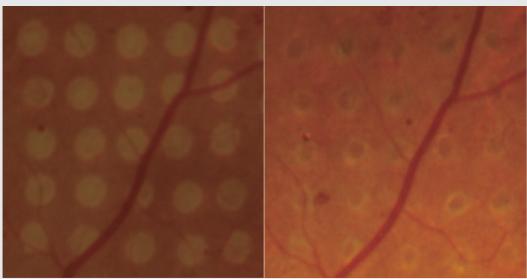


## Retinal Hole



LEARN MORE

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



Post laser photocoagulation  
Post laser photocoagulation (2 months)  
\*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

\*1: 577nm is for Single, Pattern scan, PSLT and Endpoint Management. 638nm is only for single spot.

\*2: Triple arc is only for Angle treatment by PSLT

\*3: EpM is optional software

\*4: Optional accessory

\*5: Pulse Durations 5ms is only for Triple arc



## TOPCON CORPORATION

75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580, JAPAN. Phone: +81-(0)3-3558-2522/2502 Fax: +81-(0)3-3965-6898 www.topcon.co.jp

**TOPCON MEDICAL SYSTEMS, INC.**  
111 Bauer Drive, Oakland, NJ 07436,  
U.S.A.  
Phone: +1-201-599-5100  
Fax: +1-201-599-5250  
www.topconhealthcare.com

**TOPCON CANADA INC.**  
110 Provencher Avenue, Boisbriand, QC  
J7S 1N1 CANADA  
Phone: +1-450-430-7771  
Fax: +1-450-430-6457  
www.topcon.ca

**TOPCON HEALTHCARE SOLUTIONS, INC.**  
111 Bauer Drive, Oakland, NJ 07436,  
U.S.A.  
Phone: 1-201-599-5100  
Fax: 1-201-599-5250  
www.topconhealthcare.com

**TOPCON HEALTHCARE SOLUTIONS ASIA PACIFIC PTE. LTD.**  
1 Jalan Kilang Timor, #09-01  
Pacific Tech Centre, SINGAPORE 159303  
Phone: +65-68720606  
E-mail: medical\_sales@topcon.com.sg  
www.topcon.com.sg

**TOPCON HEALTHCARE SOLUTIONS EMEA**  
HQ & Product Development  
Saaristonkatu 23  
90100 Oulu, Finland  
Phone: +358 20 734 8190  
www.topconhealth.eu

**TOPCON HEALTHCARE SOLUTIONS AUSTRALIA PTY LTD**  
14 Park Way, Mawson Lakes,  
South Australia, 5095, Australia  
Phone: +61-8-8203-3306  
Email: au.info@topcon.com  
www.topconhealth.com.au

**TOPCON ITALY**  
Viale dell'Industria 60, 20037 Paderno Dugnano, (Milano), ITALY  
Phone: +39-02-9186671  
Fax: +39-02-91081091  
E-mail: info@topcon.it  
www.topcon-medical.eu

**TOPCON DANMARK**

Praestemarksvej 25, 4000 Roskilde,  
DANMARK

Phone: +45-46-327500

Fax: +45-46-327555

E-mail: info@topcon.dk  
www.topcon-medical.dk

**TOPCON IRELAND MEDICAL**  
Unit 299, Block G, Blanchardstown,  
Corporate Park 2 Ballycoolin  
Dublin 15, D15 DX58, IRELAND  
Phone: +353-12233280  
E-mail: medical.ie@topcon.com  
www.topcon-medical.ie

**TOPCON DEUTSCHLAND MEDICAL G.M.B.H.**

Hanns-Martin-Schleyer Strasse 41, D-47877  
Willich, GERMANY

Phone: +49-(0)2154-8850

Fax: +49-(0)2154-885177

E-mail: info@topcon-medical.de  
www.topcon-medical.de

**TOPCON SCANDINAVIA A.B.**

Neongatan 2, P.O.Box 25; 43151 Mölndal,  
SWEDEN

Phone: +46-(0)31-7109200

Fax: +46-(0)31-7109249

E-mail: medical@topcon.se  
www.topcon-medical.se

**TOPCON ESPAÑA S.A.**

Frederic Mompou, 4, 08960 Sant Just Desvern Barcelona, SPAIN

Phone: +34-93-4734057

Fax: +34-93-4733932

E-mail: medica@topcon.es  
www.topcon-medical.es

**TOPCON (GREAT BRITAIN) MEDICAL LTD.**  
Topcon House, Kennet Side, Bone Lane,  
Newbury, Berkshire, RG14 5PX, UK  
Phone: +44-1635-551120  
Fax: +44-1635-551170  
E-mail: medical@topcon.co.uk  
www.topcon-medical.co.uk

**TOPCON FRANCE MEDICAL S.A.S.**

1 rue des Vergers, Parc Sven,

Bâtiment 4, 69760 Limonest, FRANCE

Phone: +33-4-37581940

Fax: +33-4-72238660

Email: topconfrance@topcon.com  
www.topcon-medical.fr

**TOPCON POLSKA SP. Z. O. O.**

ul. Warszawska 23,  
42-470 Siewierz, POLAND

Phone: +48-(0)32-6705045

Fax: +48-(0)32-6713405

Email: info@topcon-polska.pl  
www.topcon-medical.pl

**TOPCON SINGAPORE MEDICAL PTE. LTD.**

1 Jalan Kilang Timor #09-01

Pacific Tech Centre SINGAPORE 159303

Phone: +65-68720606

Fax: +65-67736150

E-mail: medical\_sales@topcon.com.sg  
www.topcon.com.sg

**TOPCON INSTRUMENTS ( MALAYSIA ) SDN. BHD.**  
No. 6, Jalan Pensyarah U1/28, Hicom Glenmarie Industrial Park, 40150 Shah Alam, Selangor, MALAYSIA  
Phone: +60-(0)3-50223688  
Fax: +60-(0)-50313968

**TOPCON INSTRUMENTS ( THAILAND ) CO., LTD.**

77/162 Srinatharn Tower, 37th Floor,  
Kruengthepnari Rd, Klongtonsa,  
Klongtoey, Bangkok 10600, THAILAND

Phone: +66(0)2-440-1152-7

Fax: +66-(0)2-440-1156

**MEHRA EYETECH PRIVATE LIMITED**

801 B Wing, Lotus Corporate Park, Graham

Firth Street Compound Goregaon (East)

Mumbai 400063 Maharashtra, INDIA

Phone: +91-22-61285455

www.mehraeyetech.in

**TOPCON (BEIJING) MEDICAL TECHNOLOGY CO., LTD.**

Room 2808, Tower C, JinChangAn Building,

No.82, Middle Section of East 4th Ring Road,

Chaoyang District, Beijing 100124, P.R. CHINA

Phone: +86-10-8794-5176

**TOPCON MEDICAL LASER SYSTEMS, INC.**

606 Enterprise Court Livermore, CA 94550

Phone: (925) 245-3394 Customer support/service: (888) 850-1223

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

Not available for sale in all countries. Please check with your local distributor for availability in your country.

©2010 E287-1

**TOPCON Healthcare**  
SEEING EYE HEALTH DIFFERENTLY