PASCAL®
Pioneer in Pattern Scanning Lasers

Gold Standard for Retinal Laser Treatment
What PASCAL Experts Say

“For diffuse oedema, I am an advocate of combined laser and intravitreal pharmacotherapy, as laser seems to reduce the number of injections needed and perhaps the long term side-effects of repeated anti-VEGF therapy such as Geographic Atrophy.”

Paulo Stanga, MD
Manchester Royal Eye Hospital Manchester, UK

“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

“Result is greater patient comfort with decreased pain”
“Much safer, much more effective”

Pravin U. Dugel, MD
Retinal Consultants of Arizona

“When using Endpoint Management, I have seen very nice long term results in decreasing fluid and improved visual results”
“A very quick treatment”

Daniel Lavinsky, MD
Federal University of Rio Grande do Sul Porto Alegre, Brazil

“PASCAL’s Endpoint Management algorithm provides very precise and reliable control of the laser settings below ophthalmoscopic visibility. Especially exciting are the clinical results confirming efficacy of the non-damaging retinal treatment for CSR. Our basic research demonstrates that cellular response to this treatment begins with up-regulation of heat shock proteins, and involves expression of alfa-A Crystallin, known for its neuro-protective properties”

Daniel Palanker, PhD
Associate Professor
Department of Ophthalmology & Hansen Experimental Physics Laboratory at Stanford University

“Less tedious by both shortening the procedure time and decreasing patients’ discomfort without sacrificing efficacy”
“Unlike Micropulse, Endpoint Management allows the surgeon to visually see where he has placed burns”

Manish Nagpal, MD
Retinal Foundation Gujrat, India

“More comfortable treating areas closer to the fovea”

Rahul Khurana, MD
Northern California Retina-Vitreous Associates

“For diffuse oedema, I am an advocate of combined laser and intravitreal pharmacotherapy, as laser seems to reduce the number of injections needed and perhaps the long term side-effects of repeated anti-VEGF therapy such as Geographic Atrophy.”

Miho Nozaki, MD, PhD
Nagoya City University

“Physicians should consider PSLT as a good option to reduce IOP...”
PASCAL® METHOD

Less Pain, Less Destruction

Conventional Laser

More Painful, Cellular Destruction

PASCAL LEGACY

The PASCAL (Pattern Scanning Laser) method of photocoagulation was initially developed at Stanford University. The PASCAL Method of Photocoagulation is designed to treat retinal diseases or glaucoma using a single spot or a predetermined pattern array. With the PASCAL Method of photocoagulation less heat is diffused to the Retinal Nerve Fiber Layer and the Choroid. Photo thermal stimulation is a method which enables the tissue to regenerate without being destroyed.

10 Reasons for Choosing PASCAL®

1. The original Pattern scanning laser with Highest quality, and largest installed base
2. Strong body of clinical evidence using PASCAL Pattern Scanning Laser Treatment in 532 nm and 577 nm wavelengths --more than 20 peer-reviewed clinical articles.
3. Redefining Laser Therapy™ photo-thermal stimulating Endpoint Management™ technology
   - Provides freedom to treat closer to the fovea without fear of causing retinal damage or vision loss
   - Allows for greater physician flexibility and control in providing therapeutically effective, vision-sparing treatment of retinal disease
   - Superior to Micropulse technology due to Landmark Patterns providing visible indicators of the treated region and “one setting” interface
4. Affordable pricing competitive to single spot lasers.
5. PASCAL method delivers increased patient comfort during treatment with exposure durations down to 10 ms.
6. PASCAL technology saves time and allows more patients to be seen
   - A full PRP can be completed in just one treatment session.
   - Less patient and Doctor fatigue during any photocoagulation procedure
7. Four fiber beam delivery:
   - Maintains a long and constant depth of focus for all spot sizes
   - Offers a safer, easier to use platform when compared to other pattern scanning technologies
   - Even power distribution across entire beam profile
8. Multi-functional, PASCAL Lasers can Treat Both Retinal and Glaucoma Disorders
9. PSLT™ (Pattern Scanning Laser Trabeculoplasty™) for Glaucoma
   - Minimally traumatic computer-guided therapy for Laser Trabeculoplasty
   - Successfully reduces IOP without scarring and burns
   - Auto advance feature increases speed and accuracy of treatment
   - Retreatment is available for the patient
   *Not yet available in the US.
10. Unique PASCAL features to simplify procedures and save time
    - Intuitive touch screen that provides physicians with easy access to patterns and control of power
    - 3-D Remote Control
    - Printed reporting to easily log patient data and treatment parameters

*Not yet available in the US.
New Approach for Glaucoma Treatment: PSLT™

PSLT (Pattern Scanning Laser Trabeculoplasty™) for Glaucoma

The scanning technology and precision of PASCAL systems uses a tissue sparing laser delivery modality for laser trabeculoplasty. Pattern Scanning Laser Trabeculoplasty (PSLT)* provides rapid, precise, and minimally traumatic (subvisible) computer-guided treatment with exact abutment of the patterns. The patterns readily align to the meshwork, allowing faster and easier applications compared to other laser modalities. Physicians can now use their PASCAL lasers for glaucoma management with either ALT or PSLT; along with other conventional procedures.


The advantages are clear:

- Computer guided treatment
- Non-destructive procedure
- Clinically effective
- Ability to retreat if necessary

PASCAL Technology

PASCAL is not only the first pattern scanning laser in the world, it also incorporates the optimal design for pattern scanning.

- More beam fibers
  The PASCAL technology incorporates four separate fibers in the design, one for each spot size. Advantages are:
    - Low energy density on the cornea
    - A long and constant depth of focus for all spot sizes
    - A uniform power distribution within each laser spot
    - Comprehensive images of 4 beam spots on retina

More Patterns

Based on 8 years of experience, PASCAL offers an easy accessible wide range of comprehensive retina and macular patterns as well as patterns for treating glaucoma. Precise pattern spacing allow consistently spaced burns. A single spot laser is incorporated as well.

4-Fiber Beam Delivery

Other lasers have "hot spots" in the beam profile

PASCAL has uniform energy distribution

PASCAL Modularity

All PASCAL Synthesis Lasers can be upgraded with software modules, which enhance the treatment and increase the functionality of your laser. With the PSLT module you can add anterior functionality to your retinal laser, converting it into a versatile tool. Endpoint Management adds thermal retinal stimulation therapy to your PASCAL Synthesis.

* PSLT is not available in all countries, please check with your distributor for availability in your country
* PSLT is optional software
Landmarks are a unique and highly useful tool to identify an area which has been treated with photo thermal stimulation.

It takes the guess work out of successive treatment.

Redefining Laser Therapy™

Endpoint Management™

Endpoint Management™ is mathematically precise

The Arrhenius Integral coupled with research and data on RETINAL laser-tissue interactions create the algorithms that are applied with Endpoint Management software. 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.

A simple, single selection of the percentage of energy to deliver, activates the Endpoint Management algorithm to automatically adjust power and duration to the appropriate levels.

Optional Software

* Endpoint Management is not available in all countries, please check with your distributor for availability in your country.
* Endpoint Management is optional software.
PASCAL Aiming Beam Pattern Delivery

Unlike competitive systems, PASCAL aiming beam pattern delivery is identical to the treatment pattern, without flashing rows or treatment outlines.

Intuitive User Interface

The touchscreen user interface is intuitive and easy to navigate through the different pattern parameters.

3D Controller

Allows the physician an ergonomic and illuminated device to conveniently manipulate patterns, power settings and laser positioning.

Easy Operation

- Slide up/down
- Side buttons left/right
- Pull (Up)
- Tilt up/down
- Rotate CW/CCW

A Multitude of Available Patterns

Physician designed pattern palette provides many variations to encompass almost any clinical need. Synthesis has a unique macular pattern. The “ring”, which can be adapted from inside rings, and/or outside rings.

Case Images

- PDR
- Retinal breaks
- After treatment
- 2 months later
- Zoom up images
**PASCAL Line Up**

### PASCAL Synthesis Series

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Wavelength</th>
<th>Slt Lamp</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y7 Type</td>
<td>577nm, 638nm</td>
<td>Detachable</td>
<td>Short pulse duration, Continuous laser pulse, Precise pattern spacing, 4-Fiber Beam Delivery, Compact design ideal for use in an outpatient clinic or operating room, Dual-ports offer convenience of switching between an LIO and endophotocoagulation probe without interchanging connections, Endpoint Management™, PSLT™</td>
</tr>
<tr>
<td>G7 Type</td>
<td>577nm, 638nm</td>
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</tr>
<tr>
<td>Y4 Type</td>
<td>577nm, 638nm</td>
<td>Integrated</td>
<td>Short pulse duration, Continuous laser pulse, Precise pattern spacing, 6-Fiber Beam Delivery, Compact design ideal for use in an outpatient clinic or operating room, Dual-ports offer convenience of switching between an LIO and endophotocoagulation probe without interchanging connections, Endpoint Management™, PSLT™</td>
</tr>
<tr>
<td>G4 Type</td>
<td>577nm, 638nm</td>
<td>Integrated</td>
<td>Short pulse duration, Continuous laser pulse, Precise pattern spacing, 6-Fiber Beam Delivery, Compact design ideal for use in an outpatient clinic or operating room, Dual-ports offer convenience of switching between an LIO and endophotocoagulation probe without interchanging connections, Endpoint Management™, PSLT™</td>
</tr>
<tr>
<td>TwinStar™</td>
<td>577nm, 638nm</td>
<td>Integrated</td>
<td>Short pulse duration, Continuous laser pulse, Precise pattern spacing, 6-Fiber Beam Delivery, Compact design ideal for use in an outpatient clinic or operating room, Dual-ports offer convenience of switching between an LIO and endophotocoagulation probe without interchanging connections, Endpoint Management™, PSLT™</td>
</tr>
</tbody>
</table>

**Optional Accessory**

**PASCAL LIO™**

**Laser Indirect Ophthalmoscope**

**Specifications**

- Allows physicians to offer laser photocoagulation treatments to patients unable to sit at a slit lamp
- Compatible to PASCAL 532nm and 577 nm laser systems
- Provides increased access to the far periphery of the retina
- Large or small aperture selection for dilated or non-dilated or small pupils
- Aperture selections automatically adjust illumination and viewing mirrors for maximum stereopsis
- Multiple illumination filters available in clear white, cobalt blue, red-free and diffused allow physicians to examine and/or treat with superior visualization of the retina
- Independent illumination and laser position control
- LED light source offers brighter and whiter illumination for high definition retinal images
- Conveniendy mounts on wall or desktop for easy access
- Small and lightweight headset battery offers up to 2 hours of use without recharging
- Soft cushioned headband adjusts and balances perfectly to suit all head shapes and sizes

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### Specifications

<table>
<thead>
<tr>
<th>Synthesis (Y7 / G7 / Y4 / G4)</th>
<th>Synthesis TwinStar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Laser</strong></td>
<td>Available in 577nm or 532nm Optically Pumped Semiconductor (OPSL)</td>
</tr>
<tr>
<td><strong>Patterns</strong></td>
<td>Single Spot, Array, Triple Arc™, Triple Ring, Arc, Line, Circle, Macular grid, Glaucoma (PSLT™)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>0 - 2000mW</td>
</tr>
<tr>
<td><strong>Power Control</strong></td>
<td>3-D Controller and Touch Screen User Interface</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Pulse Durations 5 to 1000ms*2</td>
</tr>
<tr>
<td><strong>Aim Beam</strong></td>
<td>635nm diode</td>
</tr>
<tr>
<td><strong>Aim Beam Power</strong></td>
<td>635nm diode</td>
</tr>
<tr>
<td><strong>Delivered Spot Size</strong></td>
<td>50, 100, 200, 400μm</td>
</tr>
<tr>
<td><strong>User Interface</strong></td>
<td>3-D Controller and Touch Screen Control Panel Display (26.5 cm; 10.4 in)</td>
</tr>
<tr>
<td><strong>Slit Lamp Compatibility</strong></td>
<td>Haag-Streit 900 BM / BQ, Topcon SL-PA01</td>
</tr>
<tr>
<td><strong>Laser Console Dimensions</strong></td>
<td>Haag-Streit 900 BM / BQ, Topcon SL-PA01</td>
</tr>
<tr>
<td><strong>Input Power Requirement</strong></td>
<td>Topcon SL-PA03</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>100 - 240 VAC, 50/60Hz 200VA</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>TEC / Air Cooled</td>
</tr>
</tbody>
</table>

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*1: OPSL is for Single, Array, Patterns only. OPSL is not available if Endpoint Management is only for single spot.
*2: 635nm Only for Angles treated by PSLT.
*3: PSLT is not available in some countries.
*4: PSLT is available in some countries only for Triple Arc.