DRI OCT Triton Series
Swept Source Optical Coherence Tomography
The best just became better: TOPCON’s new dimension of OCT technology.

See, Discover, Explore
TOPCON Swept Source OCT with multi-modal fundus imaging.
New Dimension of OCT Imaging: DRI OCT Triton

Swept Source OCT

» More confident initial diagnosis and ability to track change over time
  - Deep scanning and high-resolution TOPCON swept source technology, penetrates cataract and hemorrhage, providing more information for better patient care.

» Greater clinical efficiency
  - Next generation SMARTTrack™ eye tracking combined with ultra-fast swept source technology maximizes data quantity to give a truer record of your patient’s eye while minimizing image acquisition time.

» Greater patient comfort
  - Rapid, invisible scan, and SMARTTrack™ minimize the impact of eye movements for patients who struggle to maintain fixation.

» Single scan capture of comprehensive data
  - New, deep-range swept source OCT and TOPCON’s color fundus photography, captures retinal and choroidal data in a single action for a scan that is fast, simple and comfortable for operators and patients.

DRI OCT Triton from TOPCON delivers the future of OCT today!
The first commercially available swept source imaging combined with color fundus photography. Next generation technologies provide unprecedented scan and the most comprehensive images for fast, simple, and superior diagnosis and monitoring of anterior segment and retinal abnormalities.
TOPCON OCT legacy

In 2006 TOPCON was the first company to introduce the commercial Spectral Domain (SD) OCT. Spectral Domain had many advantages over Time Domain OCT. The first SD OCT of the TOPCON line was the TOPCON 3D OCT-1000, which was the world’s first instrument to incorporate a true color fundus camera, which proved to be a valuable tool alongside OCT analysis.

In 2009 TOPCON introduced the next model, the 3D OCT-2000 and the 3D OCT-2000 FA / FAplus which converted the OCT into a unique multi-modal tool for OCT imaging, color fundus images, FA and FAF images.

In 2012 TOPCON introduced the first commercial retinal Swept Source OCT, the DRI OCT-1 Atlantis. The Atlantis produces stunning images of the vitreous body and choroidal structures.

In 2013 TOPCON introduced the world’s first fully automated SD OCT with integrated color fundus camera, the 3D OCT-1 Maestro. The 3D OCT-1 is operated by 1 touch of your finger tip, which is unique in the world.

DRI OCT Triton, Swept Source, 3rd generation OCT technology

TOPCON continues its philosophy of developing innovative technologies with the introduction of a new dimension of OCT technology using Swept Source.

TOPCON is the first in the world to introduce a combined anterior & posterior Swept Source OCT, the DRI OCT Triton. The DRI OCT Triton incorporates full color high resolution fundus photography and FA & FAF imaging1.

1FA photography and FAF photography can be performed in only DRI OCT Triton plus.
Swept Source OCT deep range imaging

**Swept Source technology & 1,050nm wave length**
Swept source OCT provides a significant improvement over conventional OCT. Due to the optimized long wavelength scanning light (1,050nm), there is better penetration of the deeper layers of the eye. Furthermore, this scanning light also penetrates better through cataracts, hemorrhages, blood vessels and sclera.

**The world’s fastest**
**scanning speed 100,000 A-Scans/second**
Approximately twice higher scan speed will bring more scans for a single B scan image, and more informative image supports efficiency and quality of diagnosis.

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**Better Penetration**
The high penetration of the swept source light can easily and clearly visualize deep layers in the eye, such as choroid and sclera. A further benefit of Swept Source is that it can clearly visualize both the vitreous and choroid in a single scan, that are uniformly clear and noise-free. This eliminates the need for time consuming vitreous/choroidal combination scans.

**Wide and deep scans**
In one single image the vitreous & choroid are revealed in a crystal clear way. The DRI OCT Triton enhances visualization of outer retinal structures and deep pathologies. The DRI OCT Triton automatically detects 7 boundaries including the chorio-scleral interface. The 12mm B-scan covers both the macular area and the optic disc.

**Invisible scan lines**
The invisible 1,050nm wavelength does not distract patients. Patients do not see the scanning line, which is an advantage with elderly patients and children. Reduction in movement artifacts and increased repeatability.
**See, Discover, Explore**

DRI OCT Triton offers a unique combination of anterior & posterior OCT imaging. In both cases detailed structures are revealed. With DRI OCT Triton you can scan a large area of the eye with wide-field OCT patterns such as the 12 X 9mm scan or the 16mm anterior scan.

**Time efficiency - create one single overview**

Combination scans cover the macular and disc areas in a single shot, and offer both macular and Retinal Nerve Fiber Layer (RFNL) analysis. Combination scans are time efficient for the operator and convenient for the patient. Combination scans allow both macular and disc analysis in one overview.

**Accurate choroidal thickness maps**

For the first time, accurate high speed choroidal thickness maps can be produced; which is crucial, not only for early disease recognition, but also for the monitoring of inflammatory abnormalities. The choroid reveals valuable information about the health of an eye. A thin choroid can be an indication of myopic or choroidal atrophy for example. A thick choroid may indicate the presence of choroiditis, Central Serous Chorioretinopathy (CSCR) or hyperopia. Tumor visualization and classification is enhanced due to the penetration of the Swept Source*.

* Retinal Physician, Volume 10, Issue: March 2013, page(s): 42 - 48

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**Combination scan**

- 7 boundaries segmentation / 5 layers thickness map / caliper function
Gather more data

**En Face OCT imaging**

En Face imaging allows for independent dissection of the vitreoretinal interface, retina, Retinal Pigment Epithelium (RPE), and choroid, and uniquely projects these layers so that macular pathology throughout the posterior pole can be studied and correlated with a patient’s symptoms, their abnormality, and its progression.

*optional software

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**EVV (Enhanced Vitreous Visualization™)**

Enhanced vitreous visualization with DRI OCT Triton helps assess the natural history and treatment response in vitreoretinal interface abnormalities. Contrast can be quickly adapted to the needs of the physician, depending on the area of interest. This time-saving function avoids the need for elaborate tools in photographic software.
5 in 1 diagnostic tool

See, Discover, Explore the ultimate 5-in-1 instrument

Multi modal fundus imaging
The DRI OCT Triton offers a true color, non mydriatic fundus image while using a very low intensity flash. This unique feature is a perfect tool for identifying the location of scans in the eye utilizing TOPCON’s patented Pinpoint Registration™. The DRI OCT Triton Plus offers a wide range of diagnostic options with multi-modal color fundus imaging, Fluorescein Angiography (FA) and Fundus Autofluorescence (FAF) for even more diagnostic possibilities*1. For the first time Pinpoint registration™ will be available with fundus auto fluorescence and Swept Source OCT.

FA imaging
FA imaging is incorporated in the DRI OCT Triton Plus.
FAF imaging is also available with the DRI OCT Triton Plus.

*1 FA photography and FAF photography can be performed using only DRI OCT Triton plus.
Import function
Color / FA / FAF / Indocyanine Green Angiography (IA) images can be imported with an OCT scan captured at a selected location on the image. By double-clicking a specific point on the OCT image or the imported photograph, the location will be indicated on both images with a green cross. Comparison across a range of imaging modalities may better enhance understanding of disease pathophysiology.

High quality true fundus images
The resolution and contrast of the retinal images has been specifically tuned to give a natural appearance.

Stereo photography*
Images taken in the stereo photography mode show the true color fundus photo in 3D, revealing details about depth. In the stereo photography mode, software assists acquisition of the stereo pair. Following the prompts on the screen, a stereo pair for stereo viewing can be quickly and easily acquired.

Auto Mosaic*
The panorama function provides wide coverage of the retina from the central macular area out to the periphery; almost the complete fundus.

* Optional software
**New tracking system - SMARTTrack™**

SMARTTrack™ is a very useful tool to compensate for the ever present involuntary eye movements (microsaccades).

SMARTTrack™ allows the automatic acquisition of a follow-up scan in precisely the same anatomical location.

SMARTTrack™ enhances the user-friendliness of the machine.

- Fundus Guided Acquisition (FGA)
- Follow up
- Tracking

**Fundus Guided Acquisition (FGA)**

The DRI OCT Triton simultaneously acquires an OCT and fundus image. With FGA the operator can choose to take a fundus image (or import an image), select scan area and DRI OCT Triton will automatically produce a B scan of the selected area.

**Live Fundus View (LFV)**

Due to the fast scanning speed, a live En Face fundus image can be generated. The live fundus view is an ideal tool for precisely locating the scan position.

**Ease of use through small pupil**

OCT-LFV image will show the live fundus image clearly even in an eye with a small pupil*. The disc, retinal vessels and scanning position will be very easy to see.

* 3.3mm to 4.0mm Diameter pupil
Ease of use

Follow-up function

For accurate diagnosis and time savings at subsequent visits, the follow-up function is a vital tool for retrieving and re-analyzing the same anatomical location.

Motion correction

DRI OCT Triton is equipped with an advanced motion correction tool that can compensate for eye movement in all 3 dimensions. In part, this motion is corrected with an automatic rescanning function, saving time for the operator.

OCT capture mode without retinal photography

DRI OCT Triton has the option of capturing a 3D scan with, or without, color fundus photography in order to avoid a miotic response, and to facilitate capturing a scan for small pupil patients.

Alignment Guidance

Different color dots on the monitor help the operator capture more easily. Many automatic functions are incorporated into the DRI OCT Triton to help save time, and support operation efficiency.

- When you take Color/FAF images: Auto focus function/ Auto shoot function
- When you take OCT images: Auto focus function/ Auto Z & Z-lock function
Detailed Comprehensive Reports

Rich scan protocols

A wide range of scan patterns is clearly laid out, allowing the operator to quickly select the correct pattern.

Unique scan modes

The Combination scan and 12mm x 9mm 3D Wide scan offers information on both macular and RNFL analysis. This is time efficient for the operator as one single shot will provide the necessary data analysis.

Glaucoma and macular imaging and analysis

» Combination scan
This new scan pattern provides both 3D wide scan (12mm x 9mm) and Line / 5 line cross / radial scan. Previous OCT models do not offer the option to capture B scan and 3D images at the same time. The new combination scan provides a thickness map and a clear B scan image / images from the 3D data.

» 12mm x 9mm 3D Wide scan
One rapid scan can cover both the macular and disc areas providing more information for efficient diagnosis. This mode provides macular analysis, thickness map of RNFL, GCL+IPL, RNFL+GCL+IPL and a significance map; all data supporting the diagnosis of macular abnormality and glaucoma.
Complete OCT functionality
Fully comprehensive analyzed data

Glaucoma analysis

» **3D disc analysis**
Disc topography combining fundus photography, various peripapillary parameters, and RNFL thickness is available. A normative RNFL database is also incorporated.

» **3D Macula glaucoma analysis**
With vertical box scan of the macular area, Ganglion Cell Complex (GCC) analysis is available and a normative database for Retinal Nerve Fibre Layer (RNFL), GCC and retina thickness is incorporated.

Analysis of 3D Macula

» **Trend Analysis (3D Macula Analysis)**
Macular Analysis of up to 4 sets of macular data (8 results for both eyes), is shown in a report, enabling you to compare old and new patient data.

» **Trend analysis (RNFL)**
3D disc scans can be compared and analysed over time, which is useful for glaucoma follow-up.
Complete OCT functionality
Full comprehensive data analysis

**Macular analysis**

» **Analysis of 3D Macula**
A horizontal box scan can be captured in the macular area, allowing a 3D image to be created; useful for fully understanding the form of the macular area. A thickness map and normative database for retinal thickness are available.

» **Radial scan**
This rapidly captures 12 radial scans of the target area, allowing detailed understanding of a particular area.

» **Line scan**
This captures a high resolution B-scan with a maximum of 50 overlapping slices.

» **5 Line Cross Scan**
This instantaneously captures 5 line scans horizontally and 5 lines scans vertically. This is useful for screening and follow-up as it will not miss the target position during quick scanning.

**Anterior**

» **Anterior radial scan**
This captures 12 radial scans of the cornea to comprehensively examine the condition of the central cornea. Corneal curvature and corneal thickness maps are also available.

» **Anterior line Scan**
This allows the angle area to be observed.
Optional anterior segment analysis

**Anterior segment analysis***

The DRI OCT Triton can be extended to include anterior imaging, making the Swept Source a versatile diagnosis tool for both anterior and posterior imaging.

The anterior attachment ensures sharp images, even in the periphery of the cornea and in depth images of the anterior chamber.

» OCT image C scan length 16mm

> Anterior segment attachment kit

Anterior segment attachment

Head rest attachment

*Observation & photography of anterior segment can be performed only when the optional anterior segment attachment kit is used.

» Radial anterior segment

» 3D anterior segment
Connectivity

All images that are generated with the DRI OCT Triton can be examined in viewing software. OCT scans from other TOPCON OCT devices can also be viewed.

The Viewer software can be integrated in a network enabled hospital set up for an improved workflow.
Image and Data Management

Pre-exam

Exam

Advanced Diagnostics

Treatment

VA Test Room

Doctors Room

Consultation Room
Swept source OCT with multimodal true fundus imaging

Proliferative Diabetic Retinopathy

Prof. P. E. Stanga, Manchester Royal Eye Hospital, Manchester Vision Regeneration (MVR) Lab at NIHR/Welcome Trust Manchester CRF & University of Manchester

*FA photography and FAF photography can be performed using only DRI OCT Triton plus.
“Swept source adds a new dimension to OCT. The TOPCON DRI swept source OCT is easy to use, provides unique clinical information, and has improved my practice. For the first time we can in-vivo visualize not only the vitreo-retinal interface but also the cortical vitreous which is important at the time when more and more therapies are delivered via intra-vitreal injections. Deeper imaging brings choroidal assessment into the picture and shows the role and value of measuring choroidal thickness, helping guide my clinical decisions. Seeing more helps guide my therapy and allows me to treat more effectively. I find Swept Source OCT an essential tool to look for biomarkers of disease regression or progression.”

Prof. P. E. Stanga, Manchester Royal Eye Hospital, Manchester Vision Regeneration (MVR) Lab at NIHR/Welcome Trust Manchester CRF & University of Manchester
Swept source OCT with multimodal true fundus imaging

Central Serous Retinopathy

Prof. P. E. Stanga, Manchester Royal Eye Hospital, Manchester Vision Regeneration (MVR) Lab at NIHR/Welcome Trust Manchester CRF & University of Manchester

*FA photography and FAF photography can be performed using only DRI OCT Triton plus.
Macular Pucker

Retinal distortion and thickening
Epiretinal membrane
Distortion of ellipsoid layer
Intraretinal cystoid changes
Anterior surface of the sclera
Choroid
Case studies


Dr Florence Coscas, Dr Eric Souied et al., “Swept Source OCT versus Spectral Domain-EDI-OCT dans les DMLA Revue des outils de suivi”, Pratiques en Ophtalmologie • Février 2015 • vol. 7 • numéro 61 [French]


Kaweh Mansouri, Felipe A. Medeiros, Robert N. Weinreb, “Assessment of Choroidal Thickness and Volume during the Water Drinking Test by Swept-Source Optical Coherence Tomography”, Ophthalmology 2013;120:2508-2516

Karen B. Schaal, Claudine E. Pang, Michael Engelbert, “The Premacular Bursa’s Shape Revealed In Vivo by Swept-Source Optical Coherence Tomography”, Ophthalmology 2014;121:1020-1028


### Specifications

#### Observation & Photography of Fundus Image

<table>
<thead>
<tr>
<th>Photography Type</th>
<th>Color, FA*, FAF*, Red-free**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picture Angle</td>
<td>45°, Equivalent 30° (Digital Zoom)</td>
</tr>
<tr>
<td>Operating Distance</td>
<td>34.8mm</td>
</tr>
<tr>
<td>Photographable Diameter of Pupil</td>
<td>Normal: 84.0mm or more; Small pupil diameter: 9.3mm or more</td>
</tr>
</tbody>
</table>

#### Observation & Photography of Fundus Tomogram

<table>
<thead>
<tr>
<th>Scanning Range (on fundus)</th>
<th>Horizontal: Within 3 to 12mm; Vertical: Within 3 to 12mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Patterns</td>
<td>3D scan; Linear scan (Line-scan/Radius-scan/Radius-scan)</td>
</tr>
<tr>
<td>Scan Speed</td>
<td>100,000 A-Scans per second</td>
</tr>
<tr>
<td>Lateral Resolution</td>
<td>20μm</td>
</tr>
<tr>
<td>In-depth Resolution</td>
<td>Digital: 2.6μm</td>
</tr>
<tr>
<td>Photographable Diameter of Pupil</td>
<td>62.5mm or more</td>
</tr>
</tbody>
</table>

#### Observation & Photography of Fundus Image / Fundus Tomogram

| Fixation Target | Internal fixation target:  
|-----------------|----------------------------------------------------------|
|                 | • Dot matrix type organic electroluminescence (el)  
|                 | • The display position can be changed and adjusted  
|                 | • The displaying method can be changed  
|                 | • This is displayed according to the internal fixation target display position  
|                 | • External fixation target |

#### Observation & Photography of Anterior Segment***

<table>
<thead>
<tr>
<th>Photography Type</th>
<th>IR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Distance</td>
<td>17mm</td>
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</table>

#### Observation & photography of Anterior Segment Tomogram***

<table>
<thead>
<tr>
<th>Operating Distance</th>
<th>17mm</th>
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<tbody>
<tr>
<td>Scan Range (on cornea)</td>
<td>Horizontal: Within 3 to 16mm; Vertical: Within 3 to 16mm</td>
</tr>
<tr>
<td>Scan Pattern</td>
<td>3D scan; Linear scan (Line-scan/Radius-scan)</td>
</tr>
<tr>
<td>Scan Speed</td>
<td>100,000 A-Scans per second</td>
</tr>
<tr>
<td>Fixation Target</td>
<td>Internal fixation target; External fixation target</td>
</tr>
</tbody>
</table>

#### Electric Rating

<table>
<thead>
<tr>
<th>Power Source</th>
<th>Voltage: 100-240V; Frequency: 50-60Hz</th>
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</thead>
<tbody>
<tr>
<td>Power Input</td>
<td>250VA</td>
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</table>

#### Dimensions / Weight

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>320-359 mm(W) X 523-554 mm(D) X 560-590 mm(H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>21.8kg (DRI OCT Triton); 23.8kg (DRI OCT Triton Plus)</td>
</tr>
</tbody>
</table>

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* FA photography and FAF photography can be performed in only DRI OCT Triton plus.  
** In this digital red-free photography, the color image is processed and is displayed as a pseudo red-free photographed image.  
*** Observation & photography of anterior segment can be performed only when the anterior segment attachment kit is used. The design and the specifications are subject to change without prior notice for the product improvement.  
* Not available for sale in the US  
** Not available in all countries, please check with your distributor for availability in your country.