

Optical Coherence Tomography

3D OCT-2000 Series



THE ULTIMATE ALL-IN-ONE PRODUCT

Created to be fast, easy and precise
Unveiling Topcon 3D OCT-2000 full line-up of spectral domain OCTs with high resolution fundus cameras



The Topcon 3D OCT-2000 Series is an optimal choice for all eye care professionals
The 3D OCT-2000 Series of spectral domain OCTs with high resolution fundus cameras have been designed to meet the needs of a comprehensive fundus imaging device for all eye care professionals from the single doctor practice to a large university hospital.

3D OCT-2000 FA plus



OCT (Anterior) Color Red-free FA FAF

>> OCT, Color, Red-free, FA, FAF images acquirable

3D OCT-2000



OCT (Anterior) Color Red-free

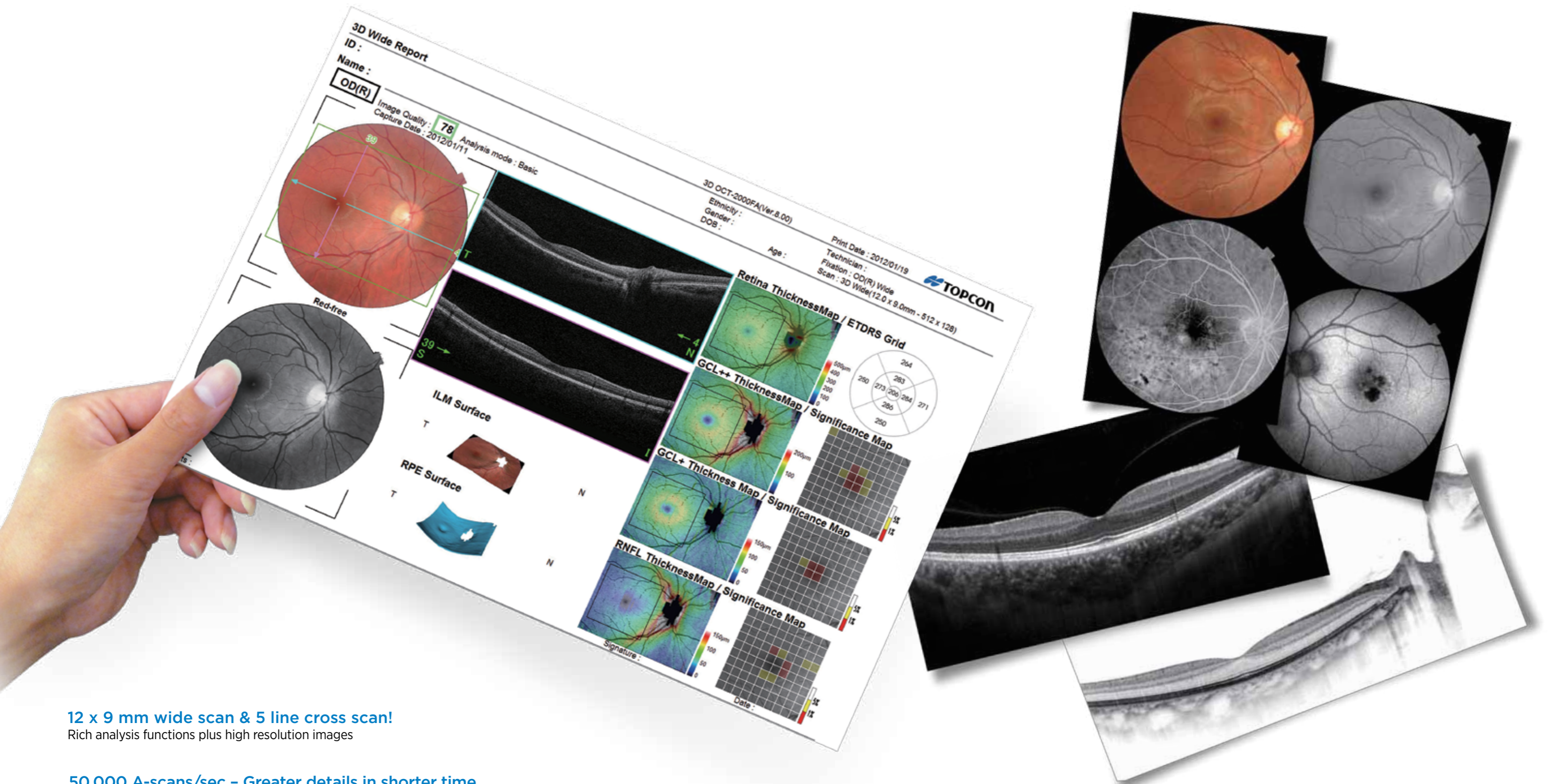
>> OCT, Color, Red-free images acquirable

Features

- » Compare function: follow-up treatment
- » Wide scan 12x9 mm: perfect overview capture
- » Unique all-in-one OCT & fundus camera: patient friendly, provides easy workflow
- » Small foot print: space saving
- » High resolution images: OCT, true colour fundus, FA*, FAF* and red-free
- » Intuitive workflow: user friendly
- » Normative database: easy comparison
- » Glaucoma & Drusen analysis module: disease management and comprehensive screening
- » Auto focus, auto shoot, speed of capture: user and patient friendly
- » Full network support
- » IMAGeNet i-base connection

* only for 3D OCT-2000 FAplus model

SOPHISTICATED OCT TECHNOLOGY WITH INTEGRATED FUNDUS CAMERA



12 x 9 mm wide scan & 5 line cross scan!
Rich analysis functions plus high resolution images

50,000 A-scans/sec – Greater details in shorter time

The enhanced 50,000 A-scans/sec allows for faster tomography acquisition and available to produce clear cross-sectional retinal images. Now there are even more imaging variations with the new 12x9mm wide scan enabling the user to capture a wider area of the retina from optic disc to macula with a single shot. Additionally the 5 Line Cross Scan can be a perfect solution for detailed screening and quick follow-up. Moreover, Topcon's "Enhanced Choroidal Mode" visualizes further internal structures, allowing much superior visualization of the interface between choroid and sclera. Data analysis is now selectable from 2 formats – Fine or Basic, and can be performed fast or in detail according to your purposes. Experience sophisticated examination with the new evolved Topcon 3D OCT-2000 Series.

Stunning retinal images with integrated high resolution retinal camera

Combining OCT and a color fundus camera in one unit, the Topcon 3D OCT-2000 line-up is perfected now with FA and FAF photography functions. Furthermore digital Red-free images can be displayed easily at the touch of a button. Owing to flexibly changeable ISO sensitivity, reduced flash level with crystal-clear fundus observation is available resulting in reduced patient fatigue and miosis. If the OCT image is only required, simply select "Color Photography OFF".

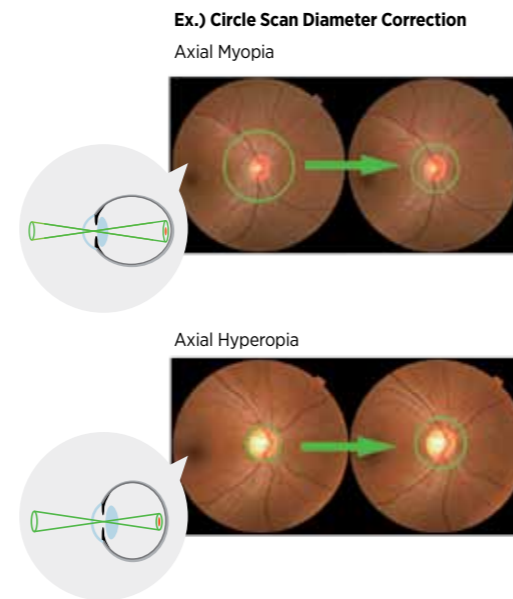
4 EASY STEPS FOR OPERATION FLOW

1 Register / Select patient



After registering select a patient by clicking on  button

When registering a patient, it is possible to input eye refractive data. Based on the inputted refractive information, the software adjusts the circle diameter for the circle scan and corrects 3D papillary diameter, area and volume, while also calculating magnification compensation, which enables accurate scan performance.



2 Select scanning pattern



Intuitive color touch panel on instrument

The color touch panel allows for easy selection of a scan pattern icon. Scan icons are easily customized from the selection of over 500 different scan patterns. Making it possible to create an individual combination of commonly used icons.



3 Capture




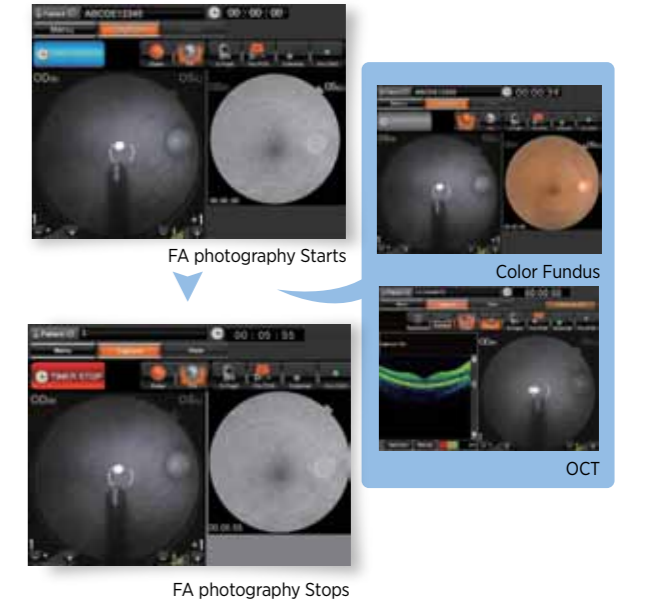
Color fundus / OCT / FA FAF photography

Auto functions enables any user to take high quality images with minimal training.

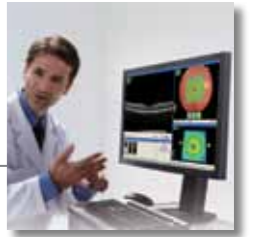
» **Color fundus / FAF photography:**
Auto Focus / Auto Shoot

» **OCT photography:**
Auto Focus / Auto Z / Auto Z lock / Auto Polarization and Auto Optimise ensure the highest sensitivity of captured scan.

» **FA photography:**
Touch  button simultaneously along with the dye injection. The timer starts to count. The capturing mode can easily be switched to color fundus or OCT during FA photography without stopping the timer.



4 View & analysis



View & analysis

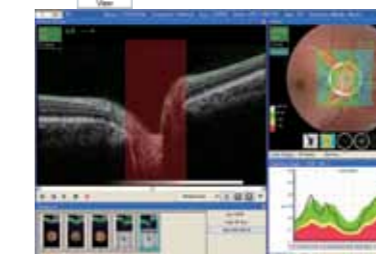
An instant comparison of the enface OCT projection image and the color fundus image is available.

Ex. 3D Disc

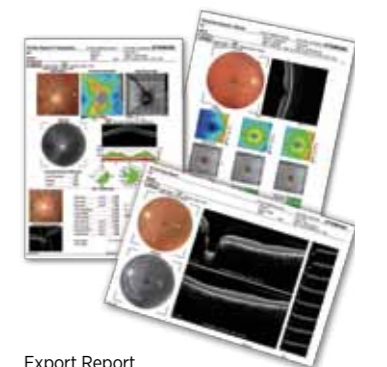


Photography Window

Click  and analysis can be implemented.



Analysis Window



Export Report

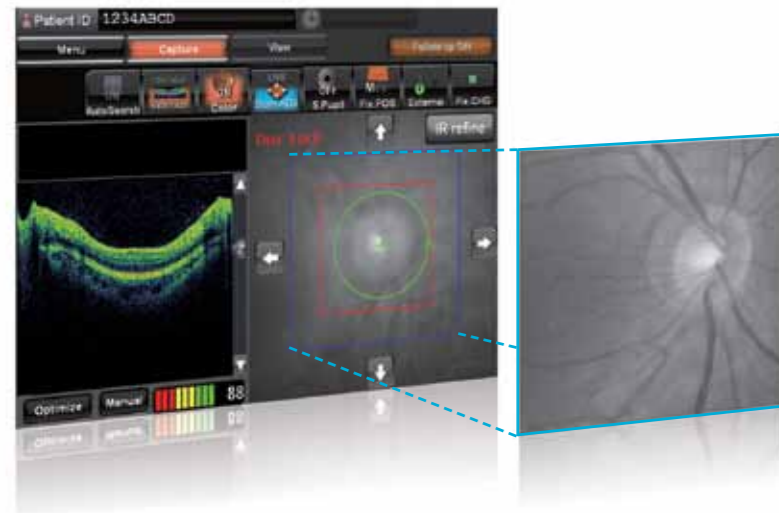
3D OCT-2000 DESIGNED TO PROVIDE HIGHLY ACCURATE DATA

During capture

After capture

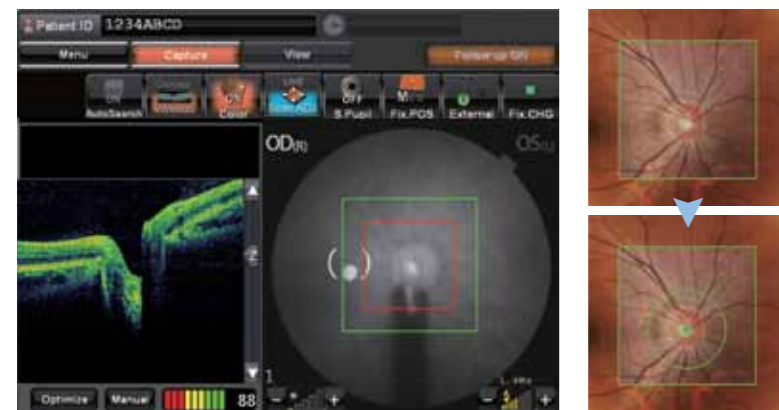
PC

3D OCT-2000



Auto disc search function

Automatically detects the disc center referring to the IR image. Tracking the disc center position, it contributes to better accuracy and scan positioning when circle scanning.

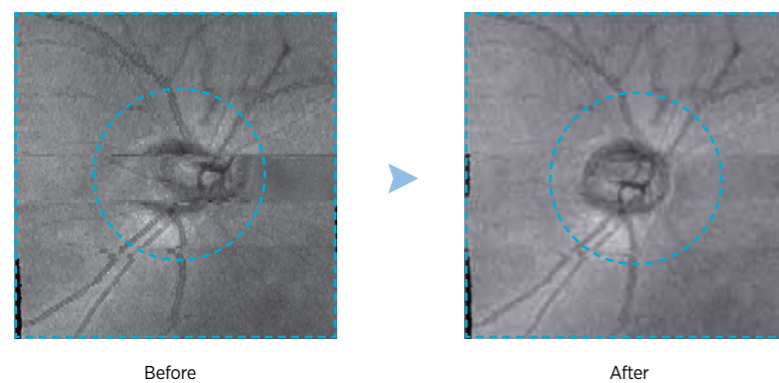


Auto disc center detection

After 3D scanning, the disc center is automatically detected.

» Measurable scan range

- 6×6mm 512×128
- 4.5×4.5mm 256×256
- 3×3mm 256×256



Motion correction / Compensation / rescanning function

» Motion correction

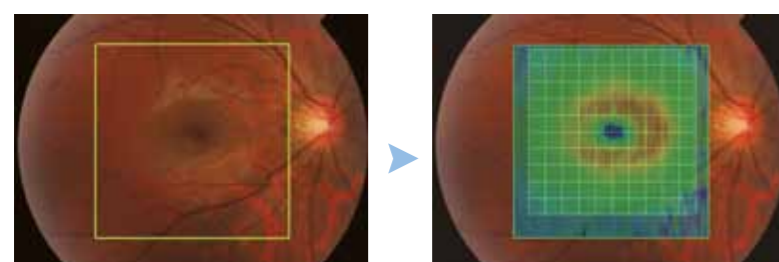
Corrects the Z direction movement.

» Compensation function

Tracks the ocular and then compensates the X direction movement.

» Rescanning function

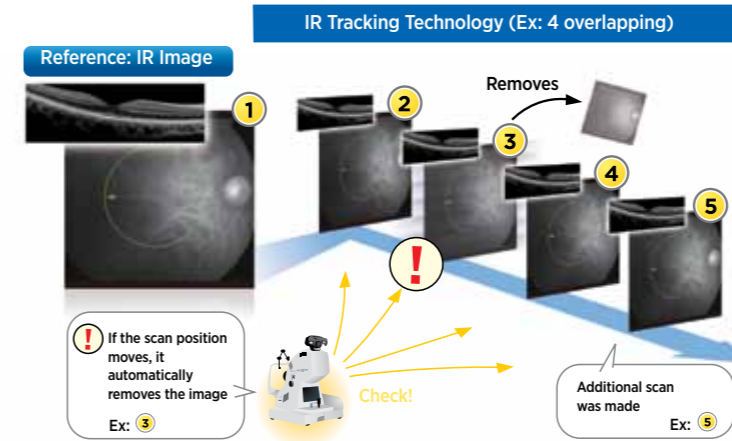
Due to Y direction movement, the scanning area may be missed. In such a case, the rescanning function automatically activates.



Auto fovea center detection

The 3D OCT-2000 Series can also automatically center the fovea to ensure accurate reporting and analyzing.

* The function is available in Glaucoma Analysis - Macula



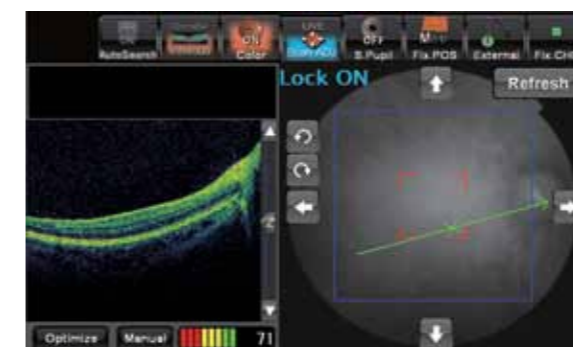
IR tracking

IR tracking utilizes the IR image during capture to overlap exactly the same place on the retina. If the scanned area moves, the rescanning function automatically begins referring to the first scanned image.

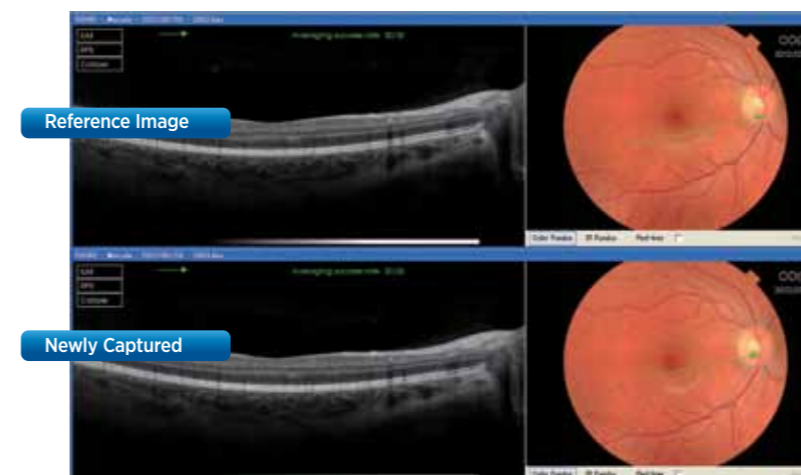
* The number of re-scans can be preset in the range of 0 to 4.



1 Reference Image Displayed

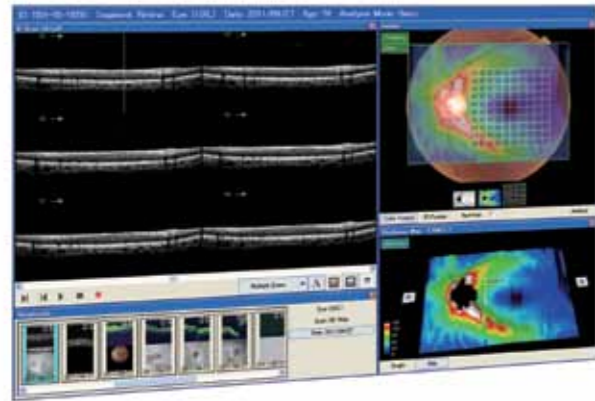


2 Lock ON Before Capture



3 Immeditate Comparison

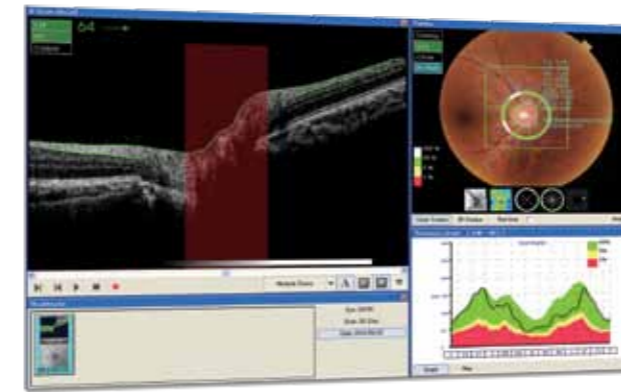
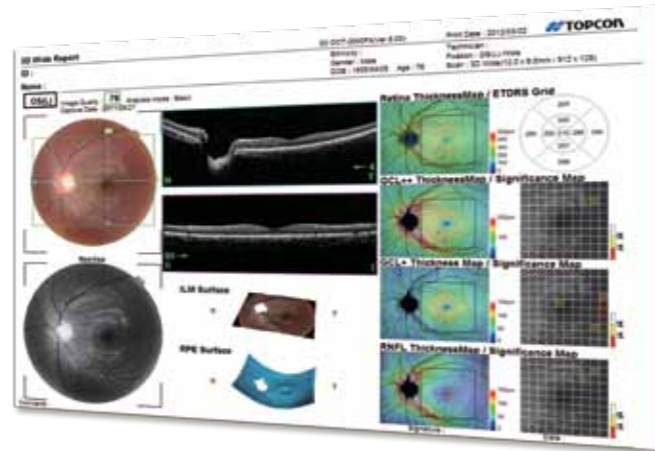
FULLY COMPREHENSIVE ANALYZED DATA



GLAUCOMA & MACULA

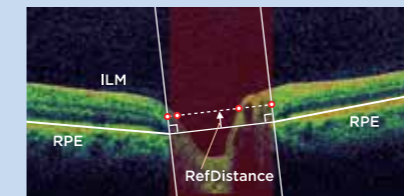
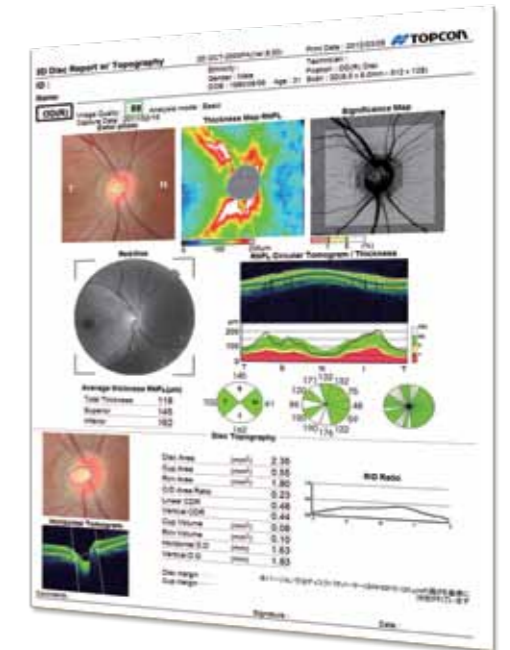
» 12x9 mm 3D wide scan

The capability to capture a wide angle image from macula to optic disc strongly contributes to better effectiveness of the examination and reduction of patient's fatigue. Macula analysis as well as thickness and significance maps of NFL, GCL+IPL, NFL+GCL+IPL are useful in detecting various macular diseases and glaucoma.



» 3D Disc Report

The below image is an example of a standard glaucoma analysis. The reference plane distance can be customized as 120 μm, 60 μm or 90 μm or any other value in the range of -90 ~ +210 μm.

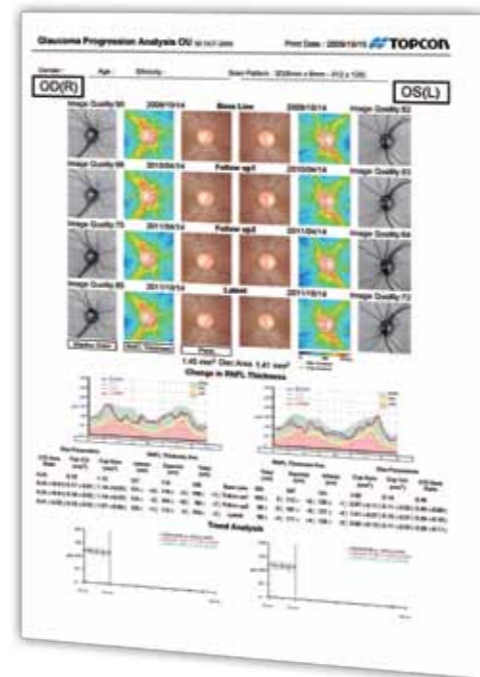
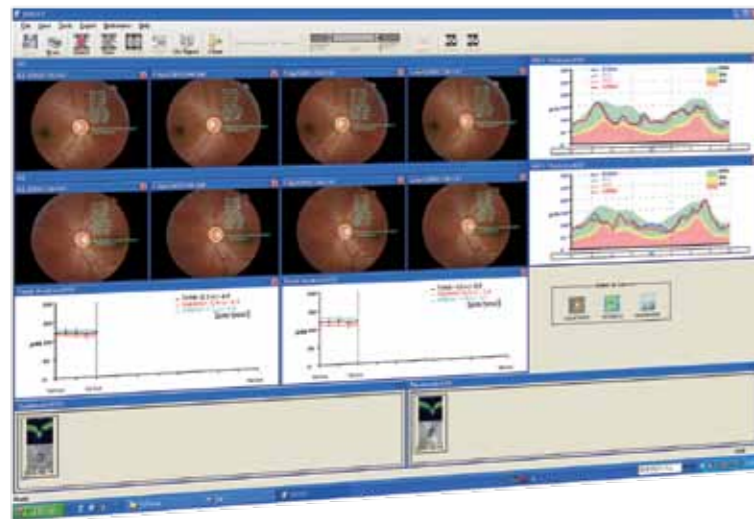


» Disc margin

Based on the edges of the RPE of each B-scan, the software automatically determines the disc margin.

» Cup margin

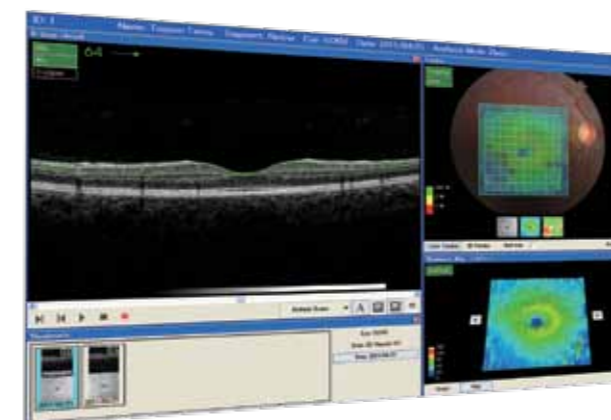
The software automatically detects the edges of the RPE and using a horizontal line between the RPE edges as a reference point creates a line 120 μm above it. The Cup margin will be determined at the cross points of the reference plane and the ILM.



GLAUCOMA

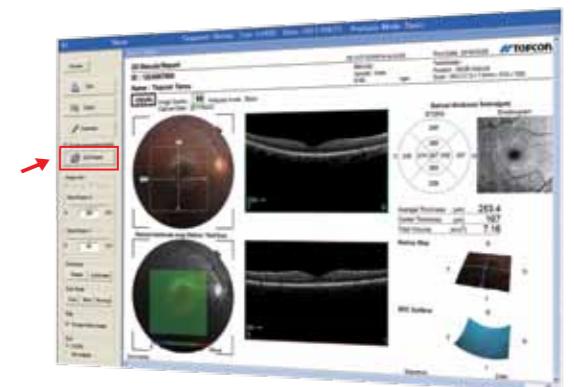
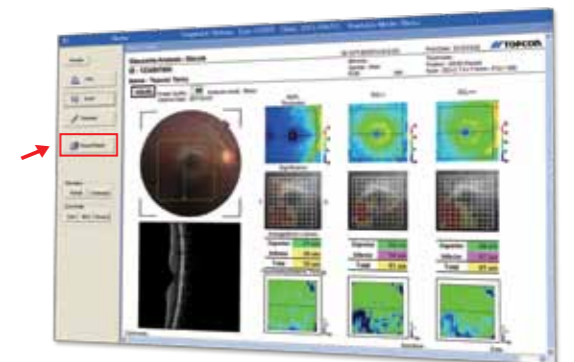
» RNFL Trend analysis

A maximum of 8 images of both eyes can be displayed on one screen, taking the earliest capture date as a baseline. In addition, checking "register" assures analyzing the same scanned position under the same scanning conditions every time. Color fundus/ RNFL thickness map/ OCT images/ cup and disc ratio can be generated and compared to the normative database.



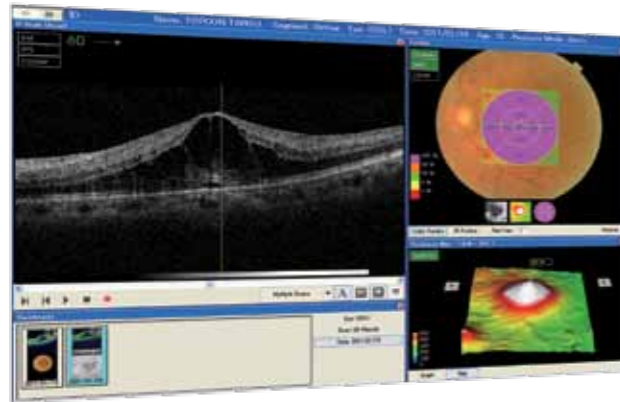
» Glaucoma analysis - macula

7x7mm Thickness map, significance map over the red-free image with a comparison of normative database, average data of superior, inferior, total thickness with normative database, and an asymmetry map which produces a differential value of the superior and inferior thickness can all be shown on one report. By clicking "3D macula analysis report" 3D macula analysis report is displayed. The glaucoma analysis (macula) function is useful for glaucoma and macular disease diagnosis.



FULLY COMPREHENSIVE ANALYZED DATA

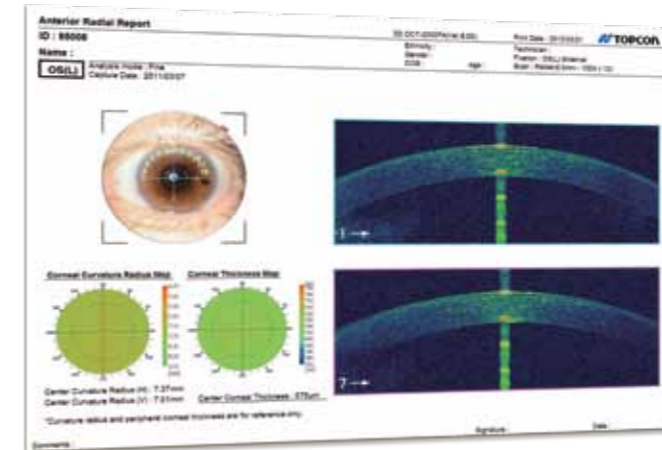
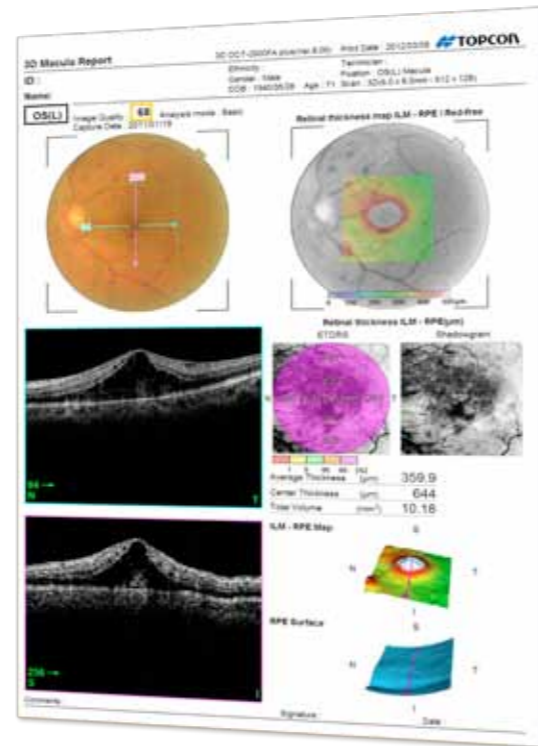
OTHER FUNCTIONS



MACULA

» 3D macula report

Comparison to the rich normative database, thickness map display, and 3D detail evaluation is available with this 3D analysis.



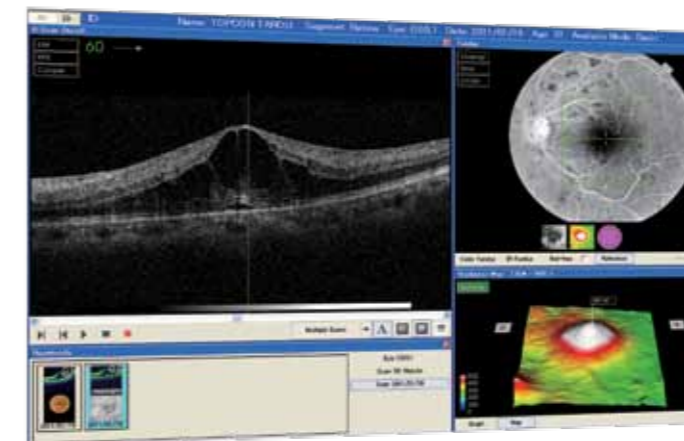
ANTERIOR

» Anterior segment analysis

Corneal thickness map, corneal thickness distribution diagram, curvature radius distribution diagram, curvature radius and peripheral corneal thickness analysis, manual angle measurement are all available.

*In order to capture anterior segment photography, it is necessary to use the headrest attachment.

Case: Central retinal vein occlusion (CRVO)

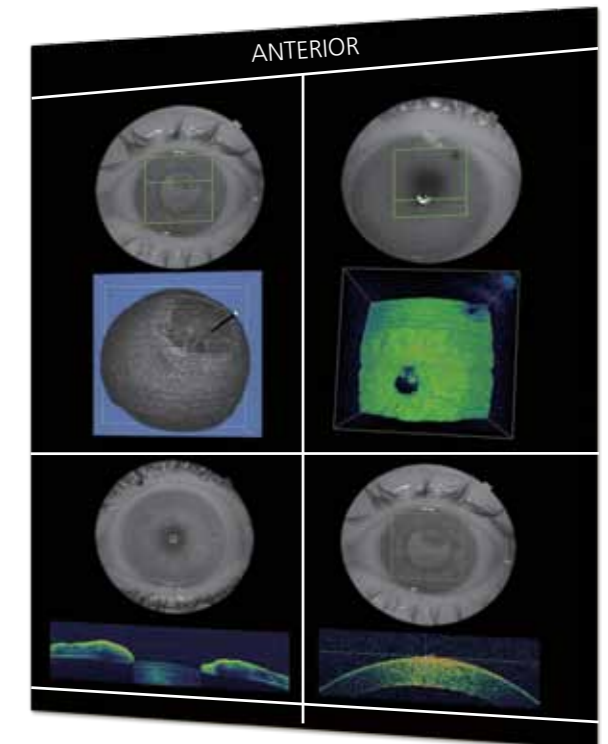


Import image

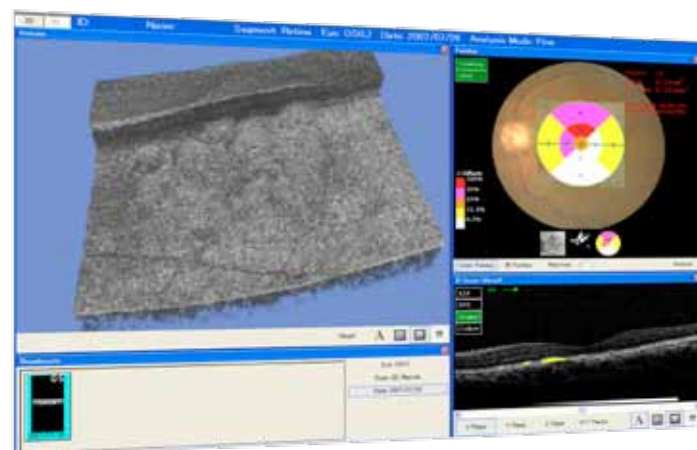
FA · FAF

» Import function

FA, FAF, ICG, Red-free images can be imported easily into Fastmap software. Simultaneous observation of OCT and imported images become available.

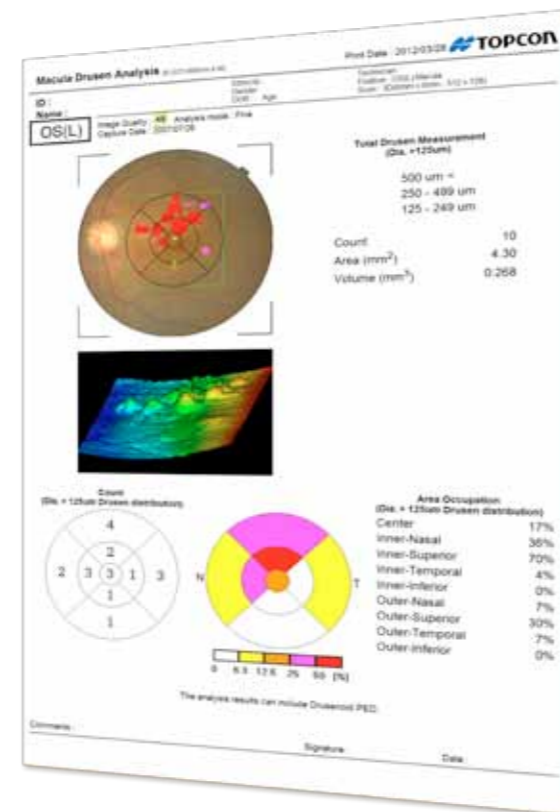


Reference: Dr. Frederique Matonti

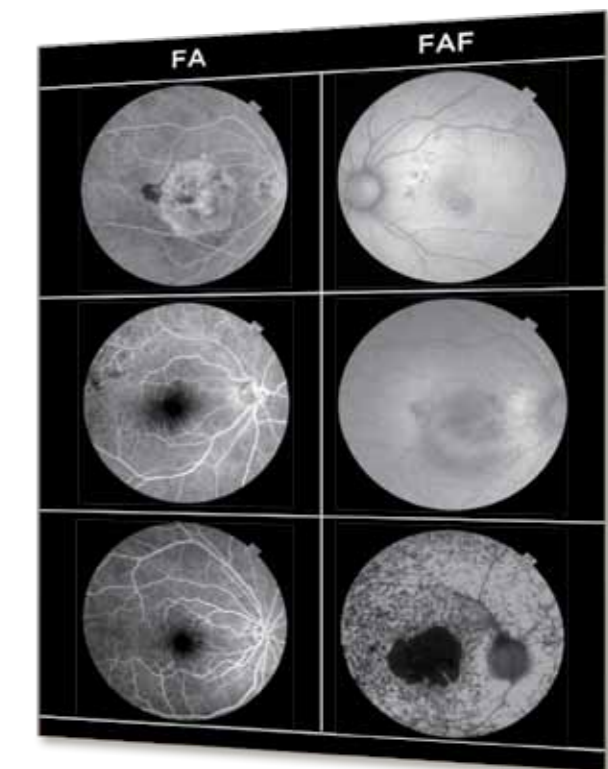


» Macula Drusen analysis

Drusen counts are described on the color fundus image and report, and are color-coded according to the Drusen area in each ETDRS grid.



* Drusen analysis is available only at 3D 6x6mm 512x128 Fine Analysis
 * Drusen defined here counts a suspicious drusen of ϕ 125 μ m or larger

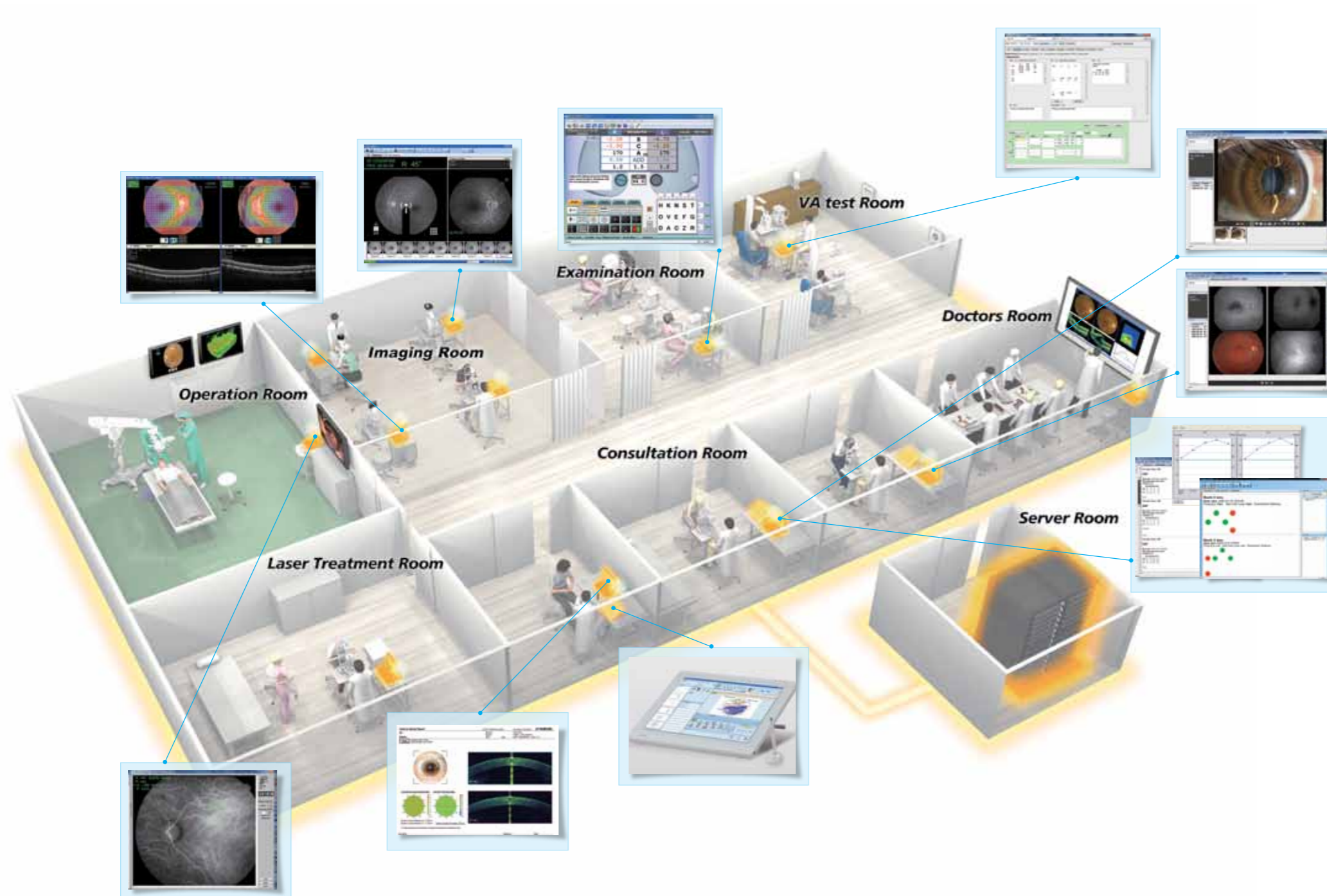


The FA and FAF images were photographed by 3D OCT-2000 FA and 3D OCT-2000 FA Plus model.

3D OCT-2000 IN A HOSPITAL NETWORK

IMAGEnet™ digital imaging system

The Topcon 3D OCT-2000 and its viewing software plays a powerful role in the management of the patient's data. The unique software enables all patient imaging and data to be collected, saved and reviewed remotely through one unified network, IMAGEnet™. OCT images can be viewed and analyzed through the network at any location; medical meetings, surgical simulation in the operating room and in a patient consultation room. Furthermore, an integrated IMAGEnet™ system allows all clinical images taken throughout the ophthalmology department to be stored in one patient file, thereby facilitating comprehensive diagnosis.



Articles

Medina FJ, Callén CI, Rebolleda G, Muñoz-Negrete FJ, Callén MJ, Valle FG., "Use of Nonmydriatic Spectral-Domain Optical Coherence Tomography for Diagnosing Diabetic Macular Edema.", *Am J Ophthalmol.* 2011 Oct 11.

Huang J, Liu X, Wu Z, Sadda S., "Image quality affects macular and retinal nerve fiber layer thickness measurements on fourier-domain optical coherence tomography.", *Ophthalmic Surg Lasers Imaging.* 2011 May1;42(3):216-21.

Wong R., "Longitudinal study of macular folds by spectral-domain optical coherence tomography.", *Am J Ophthalmol.* 2012 Jan;153(1):88-92.

Skiadaresi E, McAlinden C, Ravalico G, Moore J., "Optical coherence tomography measurements with LENTIS Mplus multifocal intraocular lens.", *Graefes Arch Clin Exp Ophthalmol.* 2012 Jan 4.

Sayanagi K, Pelayes DE, Kaiser PK, Singh AD., "3D Spectral domain optical coherence tomography findings in choroidal tumors.", *Eur J Ophthalmol.* 2011 May-Jun;21(3):271-5.

Menke MN, Dabov S, Knecht P, Sturm V., "Reproducibility of retinal thickness measurements in patients with age-related macular degeneration using 3D Fourier-domain optical coherence tomography (OCT) (Topcon 3D-OCT 1000).", *Acta Ophthalmol.* 2011Jun;89(4):346-51

Menke MN, Dabov S, Sturm V., "Features of age-related macular degeneration assessed with three-dimensional Fourier-domain optical coherence tomography.", *Br J Ophthalmol.* 2008 Nov;92(11):1492-7.

Bruce A. Pacey IE, Dharni P, Scally AJ, Barrett BT., "Repeatability and reproducibility of macular thickness measurements using fourier domain optical coherence tomography.", *Open Ophthalmol J.* 2009 Apr 20;3:10-4.

Sayanagi K, Sharma S, Kaiser PK., "Comparison of retinal thickness measurements between three-dimensional and radial scans on spectral-domain optical coherence tomography.", *Am J Ophthalmol.* 2009 sep;148(3):431-8.

Monteiro ML, Costa-Cunha LV, Cunha LP, Malta RF., "Correlation between macular and retinal nerve fibre layer Fourier-domain OCT measurements and visual field loss in chiasmal compression.", *Eye (Lond).* 2010 Aug;24(8):1382-90

Malamos P, Sacu S, Georgopoulos M, Kiss C, Prunte C, Schmidt-Erfurth U., "Correlation of high-definition optical coherence tomography and fluorescein angiography imaging in neovascular macular degeneration.", *Invest Ophthalmol Vis Sci.* 2009 Oct;50(10):4926-33

Specifications

Observation & photography or fundus image		
Scan mode		Color, FA ^{*1} , FAF ^{*1} (Spaide Filters), Red-free ^{*2}
Observation		Near IR
Picture angle		45° Equivalent 30° (Digital Zoom)
Diopter scale range^{*3}		-13 D to +12 D (in fundus photography)
Operating distance		40.7 mm (in fundus photography) 63.7 mm (in anterior segment photography) ^{*4}
Photographable diameter of pupil		45°: ϕ 4.0 mm or more Small pupil diameter: ϕ 3.3 mm or more
Observation & photography or fundus image/ Anterior segment tomogram		
Scanning range	(On fundus) (On cornea)	[Lateral] within 3-9mm [Vertical] within 3-9mm [Lateral] within 3-6mm [Vertical] within 3-6mm
Scan patterns^{*5}	(Recommended) Macula: 3D scan Macula: radial scan Macula: 7 line raster Disc: 3D scan Disc: circle scan Anterior: radial scan (for cornea) Anterior: line scan (for angle chamber)	512x128 (128 horizontal scan lines comprised of 512 A-scans), 6 x 6 mm 1024x6 or 12 (6 or 12 radial scan lines comprised of 1024 A-scans), 6 mm 1024x7 (1024 A-scans per B-scan x 7), 6 mm 512x128 (128 horizontal scan lines comprised of 512 A-scans), 6 x 6 mm 1024 A-scans, ϕ 3.4 mm 1024x12 (12 radial scan lines comprised 1024 A-scans), 6 mm 1024 (line scanline comprised of 1024 A-scans), 3mm
Scan speed		50,000 A-scans per second / 27,000 A-scans per second
Scan depth		2.3 mm
In-depth resolution		5 μ m - 6 μ m
Photographable diameter of pupil		ϕ 2.5 mm or more
Observation & photography of fundus image / fundus tomogram		
Retinal layers identified		Macula: ILM, IS/OS, RPE, BM Glaucoma: ILM, NFL, IPL
OCT reference focus		Vitreous and choroid
Fixation		Adjustable internal matrix LCD and external fixation device (Matrix LCD :The display position can be changed and adjusted. The presenting method can be changed.)
Light source / power source / power supply		
Light source		Super luminescence diode (SLD) Wavelength 840nm Half Bandwidth: 50nm Output on cornea - 0.65 mW
Power source		Voltage: 100/110/120/220/230/240V Frequency: 50-60Hz
Power supply		200VA (Max 400VA)
Dimensions / weight		
Dimensions		545 mm(W) x 535 mm(D) x 600 - 630 mm(H)
Weight		35 kg (3D OCT-2000) 37 kg (3D OCT-2000 FA Plus)

^{*1} Only for FA plus model
^{*2} Display digital Red-free
^{*3} Without the diopter compensation
^{*4} With anterior segment attachment
^{*5} More variable scan patterns available with a combination of different pixel and scan range



IMPORTANT

Subject to change in design and/or specifications without advanced notice.
 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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