

HOCT-1/1F

All-in-One Optical Coherence Tomography with Fundus and Angiography

Specification

Type	Spectral Domain OCT, Fundus Digital Photography	
OCT	Resolution in Tissue	20um(Lateral), 6~7um(z-axis) at index 1.36
	Scan Speed	Max. 68,000 A-scan/sec.
	Scan Range	X: 6~12mm, Y: 6~9mm, Z: 2,34mm
	Acquisition Time of 3D Image	1.4 sec.(Normal Mode, A512 x B96)
	Minimum Pupil Diameter	2.5mm
	Light Source	840nm
	Optical Power at Cornea	≤650uW
	Scan Pattern	Macular: Macular Line, Macular Cross, Macular Radial, Macular 3D, Macular Raster Disc: Disc Circle, Disc Radial, Disc 3D, Disc Raster
	Angiography Range	X: 3~12mm, Y: 3~9mm(Optional)
	Angiography Map	Superficial, Deep, Outer, Choriocapillary, Retina, Custom, Enface, Thickness, Depth coded Map
Angiography Analysis	FAZ, Vessel density Tools(Optional)	
Fundus	Camera	Built-in 12 Megapixel, Color
	Angle of View	45°
	Minimum Pupil Diameter	4.0mm(Normal Mode), 3.3mm(Small Pupil Mode)
	Flash Light	White Light, 10 Levels
Common	Resolution	Center: 60 Line pair/mm Middle: 40 Line pair/mm Periphery: Line pair/mm
	Working Distance	33mm
	Display	12.1 inch, 1280x800 pixel, Touch Panel Color LCD
	Dioptric Compensation	-33D~+33D Total -13D~+13D with No Compensation Lens +7D~+33D with Plus Compensation Lens -33D~-7D with Minus Compensation Lens
	Internal Fixation Target	LCD(internal), White LED(external)
	Horizontal Movement	70mm(back and forth), 100mm(left and right)
	Vertical Movement	30mm
	Chinrest Movement	62mm(up and down), Motorized
	Auto Tracking	30mm(up and down) 10mm(right and left) 10mm(back and forth)
	Network	DICOM File support (Need to be customized)
PC	Built in Computer	
Power Supply	AC100~240V, 50/60Hz, 1.6~0.7A	
Dimensions / Mass	330(W)x542(D)x521(H)mm / 30kg	
Accessories(Optional)		
Anterior Segment Module	Scan Pattern	ACA Line, Anterior Radial
	Scan Range	6~9mm(width), 2.3mm(depth)
	Software Analysis	Corneal Layers, Thickness Map, Thickness & Angle
Wide Anterior Segment Module	Scan Pattern	ACA Line, Anterior Radial
	Scan Range	16mm(width), 2.3mm(depth)
Web-Viewer	Web-based, Multi users can be accessible. Progression Analysis, Comparison Analysis, 3D Analysis	

Designs and details above can be changed without prior notice for the purposes of improvement.



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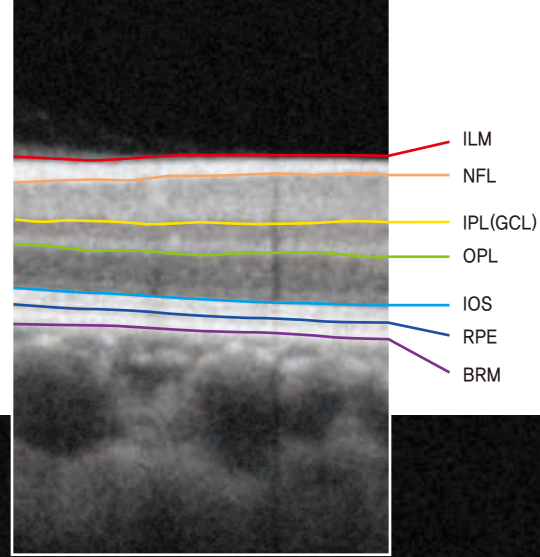
3D OCT FUNDUS ANGIOGRAPHY

Huvitz All-in-One OCT

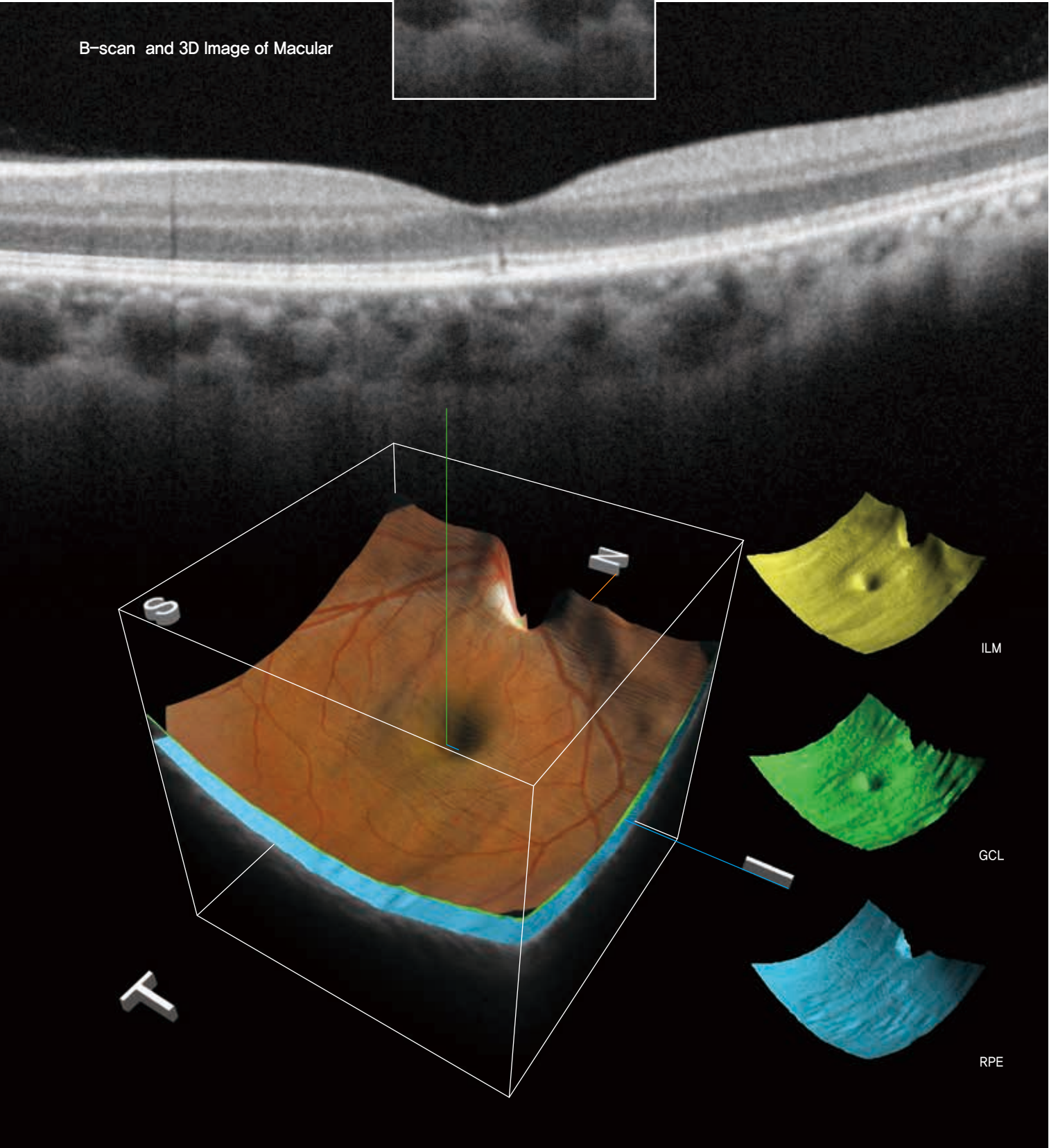
Combination of Fundus Camera and Angiography in 3D OCT

All-in-One HOCT is smart.
3D OCT Angiography and Fundus Camera, Totally integrated system combined with PC.
All-in-One HOCT is easy to use.
One button, it creates a High-speed Scan and a High-quality Image, giving greater insight for the ophthalmology clinic.
One space, allows the acquisition of various types of analysis and diagnosis results.
Easy to use and the results are outstanding and easily follow.
Huvitz All-in-One HOCT will be the icon for leading a new era of Optical Coherence Tomography(OCT).

Segmentation of Seven Retinal Layers



B-scan and 3D Image of Macular



High-Speed & High-Quality

Incredible speed of 68,000 A-scan/sec. :
More Realistic and Clearer image in high resolution

Provides High-speed Scan, High-quality Image by using Huvitz's outstanding optical technology and innovative image software. Shows extensive information, such as 3D structure of Retina, Macula's thickness and separation in a vivid image.

High Resolution Image – min. 60 lines/mm of central Fundus

Creates 3um OCT Digital Resolution medical images, allows more precise Retina observation and useful follow-up examinations.

Accurate and Stable Image Averaging

It is very important to obtain high-quality images that are accurate and stable in all OCTs. However, it's not easy to capture these due to patient eye movement over the period of the test. The HOCT detects fast eye movements with image processing algorithms of fast Scan Speed* and Smart Viewing Technology(SVT)** and scans up to 68,000 points per second, and calibrates to create a high-quality optical image. HOCT can acquire high-quality images without any repetitive operation for first time users.

* 68,000 A-scan / sec., Less than 1.4 sec. in 6x6 mm2 3D shooting

** Smart Viewing Technology : Huvitz's Speckle-Noise-Reduction System & Pre-Acquiring Algorithm to acquire high-quality images

Vividly Visualized Retinal Layers

Visualizing with precise B scans and smooth 3D images at faster scan speed makes it easier to observe pathological shapes and status in stratified Retinal Layers. It is also useful to further elucidate the pathological rheobase of Macula and Optic Disc, including factors that impair Photoreceptor Function, Retinal & Choroidal Vasculature(vascular system) in a slice image for Retinal Layer consists of 7 pieces.

Brightness Level Adjustment

Precisely identify lesions by minutely adjusting image's brightness and contrast. In this way, specific parts of lesions can be highlighted which help users to easily see details.



Macular – Radial

Optic Disc – 3D



One for All System

3D OCT Angiography, Fundus Camera, Built-in PC :
Combined-One is more accurate and useful

By combining OCT Angiography, Full Color Fundus Camera, and PC, it can generate high resolution images providing multi-purpose functions for diagnosis. It saves both time and space by performing frontal view(Enface) of eye diseases, Tomography, cross-compare and diagnosis in a single run.

Upgraded Combined-One

Provides maximum psychological stability to the patient without re-shooting and reduces stress during shooting*.

Easily checking lesion's position by Fundus Image, it precisely guides the location of the OCT Scan Image.

*Motion detection technology: Smart Scan Technology (SST) is applied to achieve perfect images without re-shooting even though there're flicker or movement (see Smart Scan page).

Compact Design – it can be installed in a small space

Thanks to HOCT's space-saving design, it is perfect for hospitals and research areas with a variety of diagnosis devices & treatment equipment. HOCT can maximize the convenience for users as well as patients by saving time & space.

Web Browsing System to view data anytime, anywhere

Patient's test data can be analyzed anywhere on the Internet. You can check and analyze all data of HOCT through Web Browser such as Internet Explorer, Safari, Chrome without installing special software separately.



User Friendly

Auto Tracking & Auto Shooting :
makes it easy to use and obtain reliable data

HOCT is smart.– Obtains reliable data with minimum deviation of image quality according to user's measurement proficiency.

Fast and Stable Full Auto Mode

Simply press the button once to capture the image quickly and easily without any errors with Auto Tracking, Optimize, Auto Shooting at the correct position. Depending on the application, select Semi Auto to obtain more detailed images.

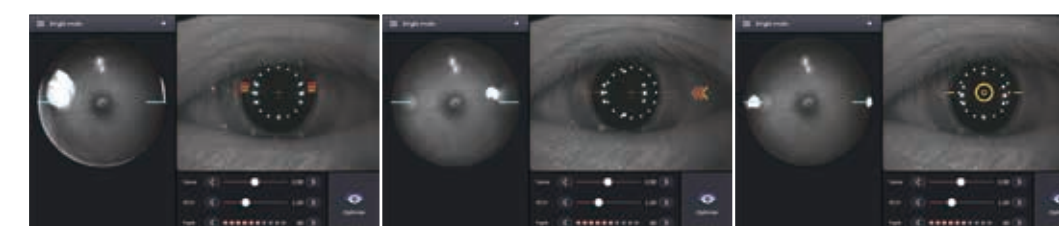
Semi Auto Mode for more precise images

You can obtain a more precise image by shooting Semi Auto Mode turning one's gaze to the side for patients with eye diseases such as cataract, strabismus, or optic disk and peripheral measurements.

Semi Auto Mode can also be applied to eyes with weak signals.

XY alignment, focus is automatically adjusted, and manual operation during auto adjustment is also possible.

Focusing and Firing functions can be judged and involved by users so that users can obtain images in an intuitive way.



Forward - Back

Left - Right

Optimized Focus

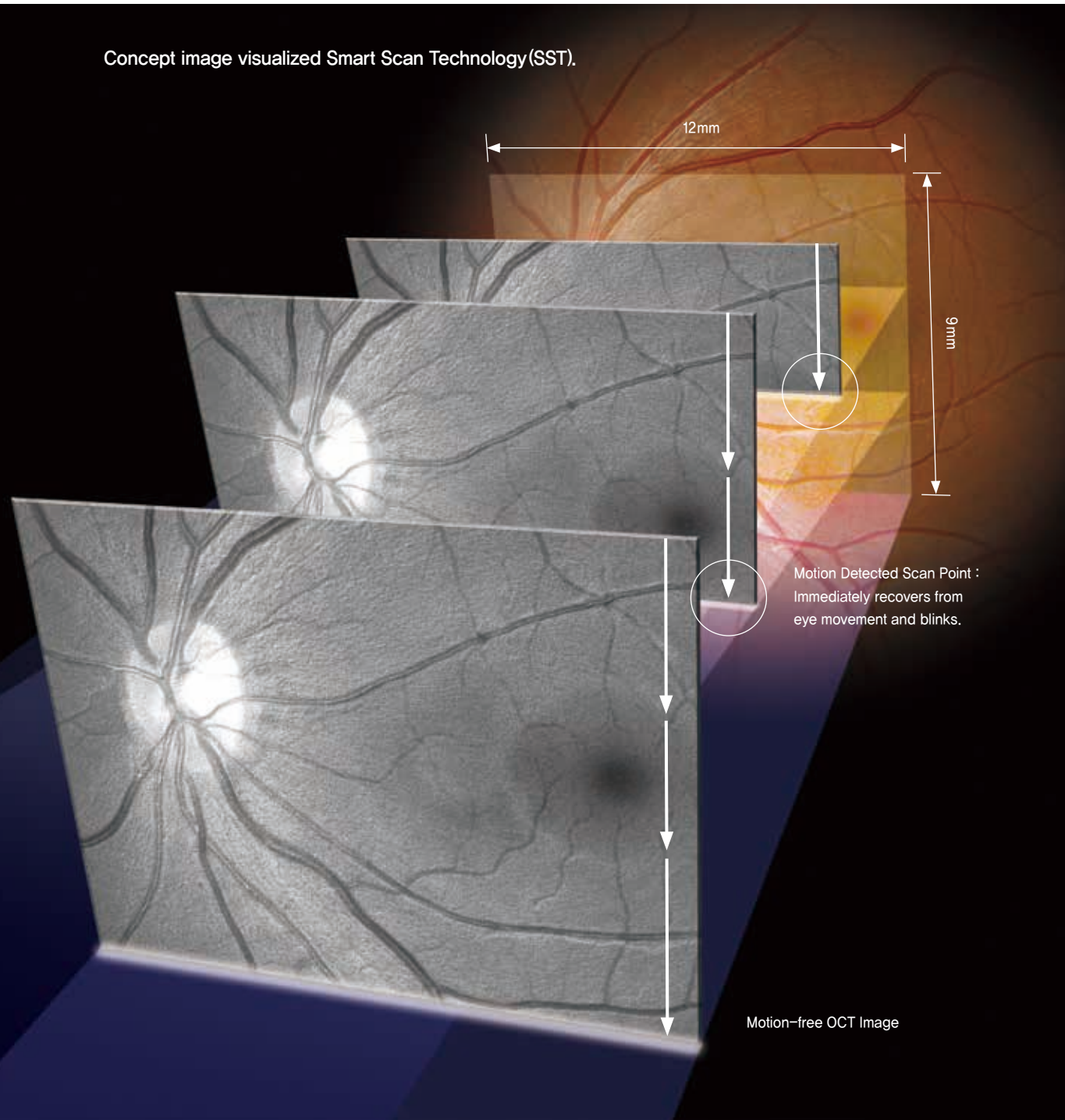
Smart Scan

Start and finish instantly through only one-click :
Speedy process reduces errors in forward looking of patients

It provides convenience & accuracy by offering easy & various scanning functions with Macula, Optic Disc, and Anterior.



Concept image visualized Smart Scan Technology(SST).



Wide Area Scan(12mm x 9mm) for efficient diagnosis

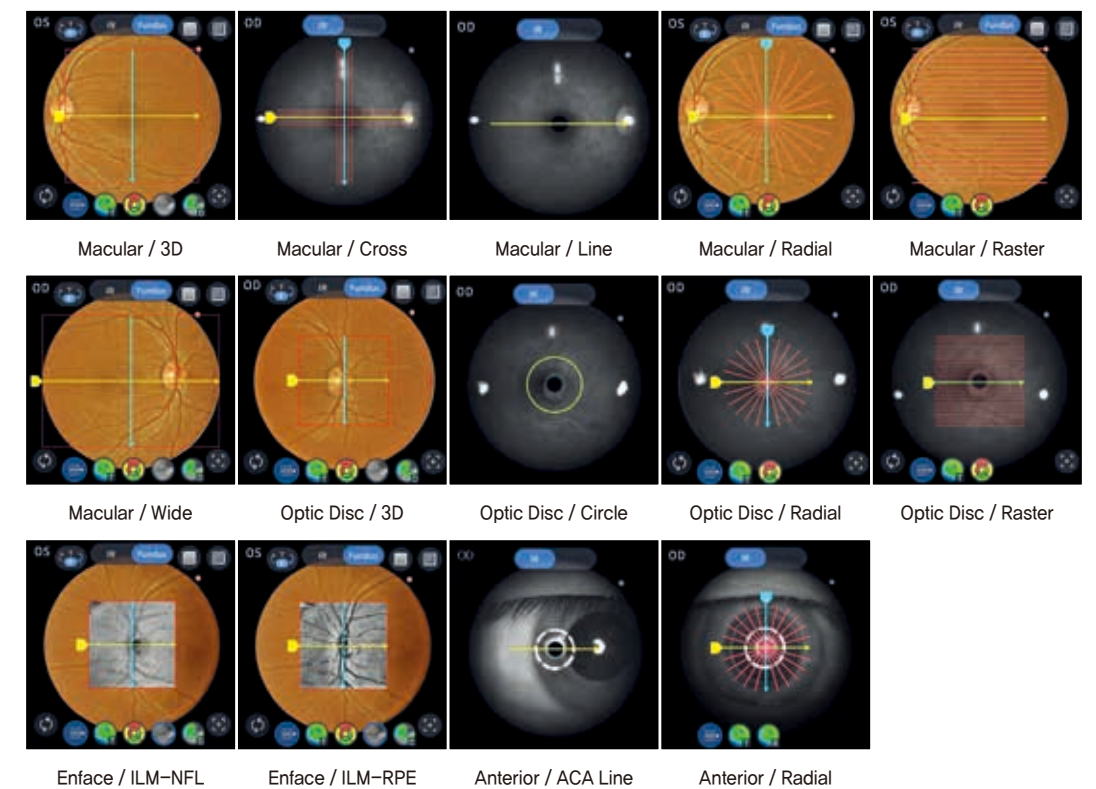
A quick scan covers Macula and Optic Disc areas extensively. By scanning around Optic Disc or Macula for patient's pathological status, you can check the Thickness Maps between RNFL(Retinal Nerve Fiber Layer), GCL(Ganglion Cell Layer) and RPE Layers.

Smart Scan Technology with Motion Detection

Image analyzer with Huvitz's unique Smart Scan Technology(SST) obtains a complete and perfect C-scan image by detecting any motion of eye flicker or movement that would prevent disappearance of scan line and image collection during measurement.

Providing Various and Useful Scan Patterns

12 different patterns make it available to choose and apply the optimized pattern to the main symptoms or the area of retinal disease without repetitive work or time-wasting.



Accurate Analysis

Accurate segmentation and measurement : Analyze pathology status from various perspectives

A complete analysis helps you observe symptoms, illnesses and progress of each patient at a glance. Key indicator values compared to Normative Data are displayed in table and chart format.

Progression to track pathological changes

OCT scan and fundus image of a patient can be compared at a glance to sequential measurement results from baseline to present.

Progression from past to present helps analyze disease progression and treatment process.

Thickness, Enface, and ETDRS can be superimposed on the IR or Fundus at each measurement point so that the change in thickness of nerve fiber can be confirmed according to the transition.

It also provides a trace graph so you can study at a glance.

Compare before and after patient's symptom

You can compare and analyze the baseline data of a patient with the current data.

3D modeling in high speed and wide area

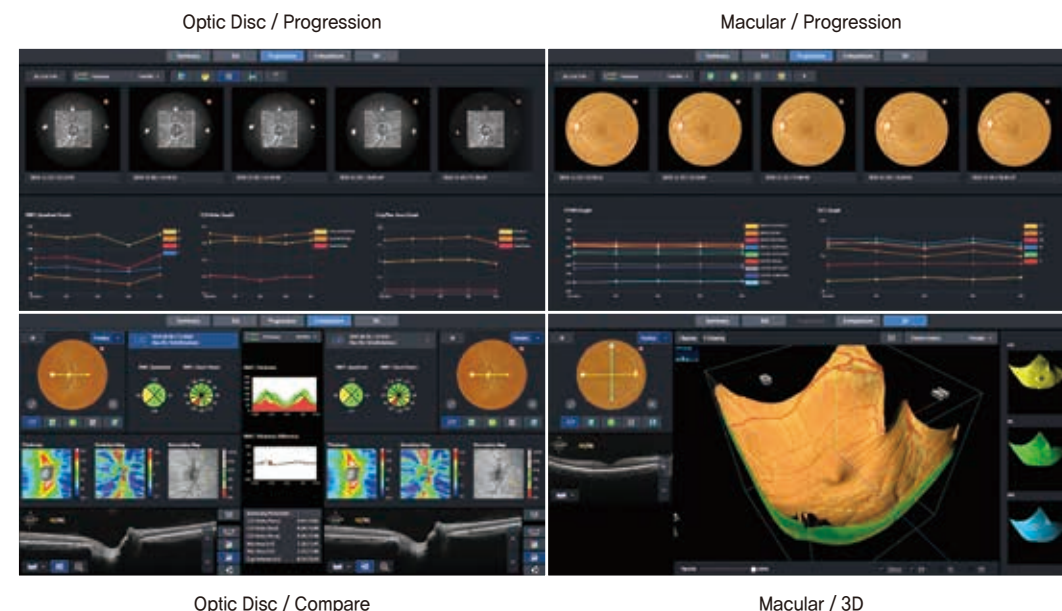
High-speed, wide area(12mm x 9mm) 3D images help you quickly and comprehensively understand the condition of the Retina. Also, layer thickness maps can be used from ILM to RPE, respectively and Morphological changes on the measured surface of the layers can also be visually confirmed.

OU to cross-analyze function of binocular

Provides comparative analysis for Macular Thickness, RNFL Thickness, ONH(Optic Nerve Head) of binocular.

Summary : Monocular-Scan and OCT / Fundus image

Provides a summary analysis of Macula retina, RNFL, ONH at a glance. Helps identify whether follow-up examinations are needed or not. Easy to explain the results to the patient after diagnosis.

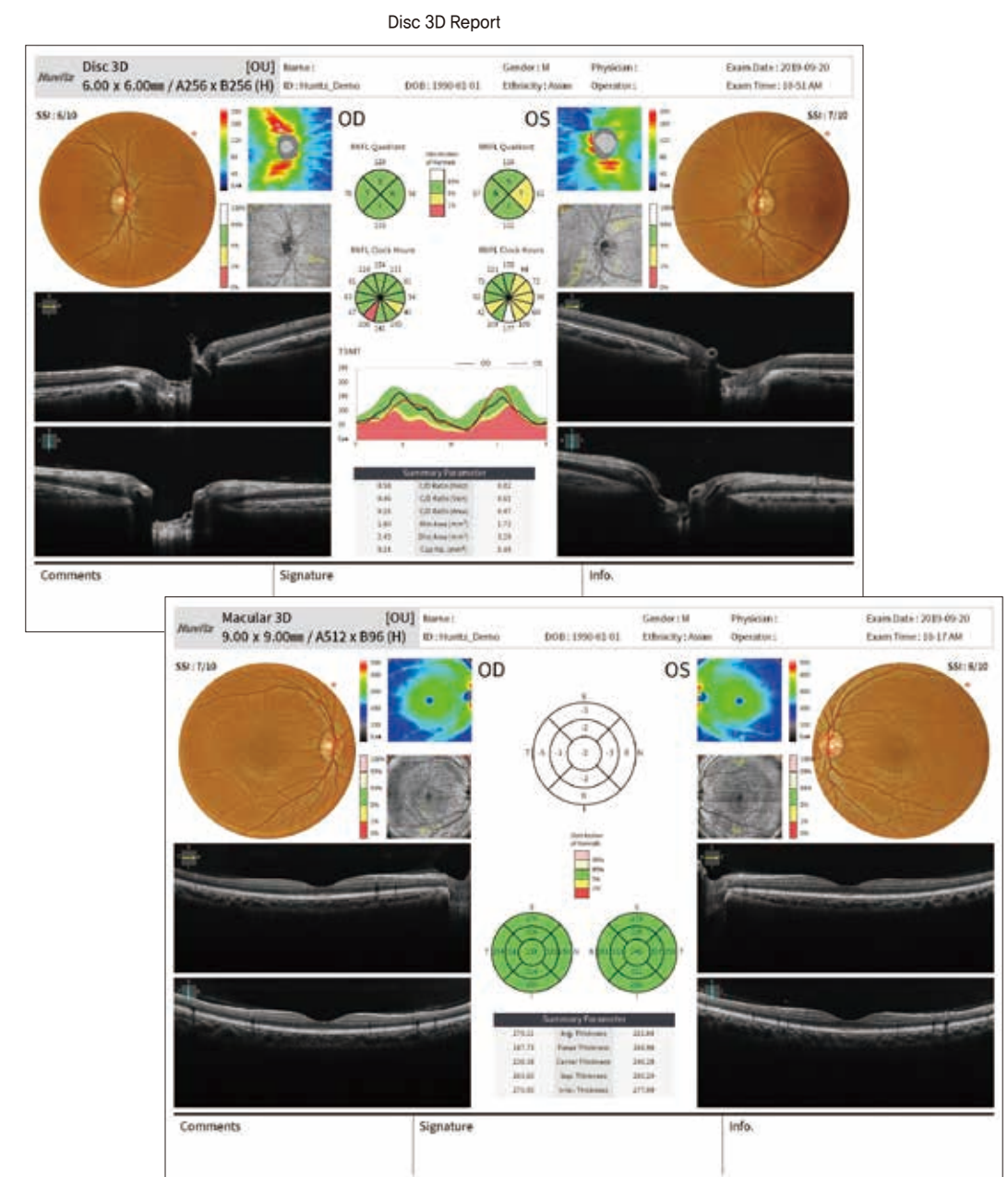


Detailed Report

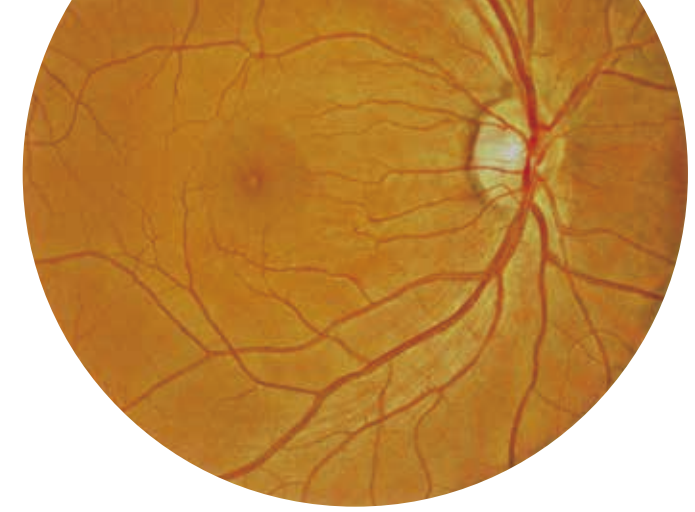
From quick summary to simple comparison and complex evaluation : Complete a perfect report

Provides patient's pathological structure and relevant & important data in easy-to-read format and also can print out the report on analysis screen.

Analysis results can be viewed via Web Browser and printed out with different types of report.



Macular 3D Report



Anterior Measurement

One Single System :
Start and finish in one place, making patient more comfortable

Anterior Segment Module allows measurement and analysis of cornea thickness, angle and 3D image. It helps users work more efficiently by acquiring both anterior and posterior in one place.

9mm (16mm)* Wide Chamber View

Measurement of ACA(Anterior Chamber Angle) between cornea and Iris allows diagnosis and management of angle-closure glaucoma patients.

*9mm & 16mm of Anterior Segment Lenses are optional.

9mm High Resolution Cornea Thickness Measurement

9mm High Resolution Cornea Scan provides an objective view of the structure of the eyeball. It displays a cross-sectional image of the measured corneal thickness.

Corneal Thickness Map

Corneal's irregularity, Thinnest point can be identified with a corneal thickness map to visualize the patient's corneal thickness at a glance.



ACA Measurement

Corneal Thickness Measurement

Full Color Fundus Image

Insight of Posterior Segment of Eye :
for Comprehensive diagnosis

Color Retinal Images optimized with high-resolution and contrast are very useful in analysis and clinical diagnosis.

Best images are provided by Low intensity of flash, fast capture speed, quiet operation, small pupil mode and automatic flicker detection.

High resolution and performance 12 Megapixel Camera

High performance camera with Motion Artifact Suppression Technique provides high resolution images and also its low intensity of flash, fast & quiet operation maximize measurement quality.

Auto-Detection Of Pupil Size and Auto Flash Level Function

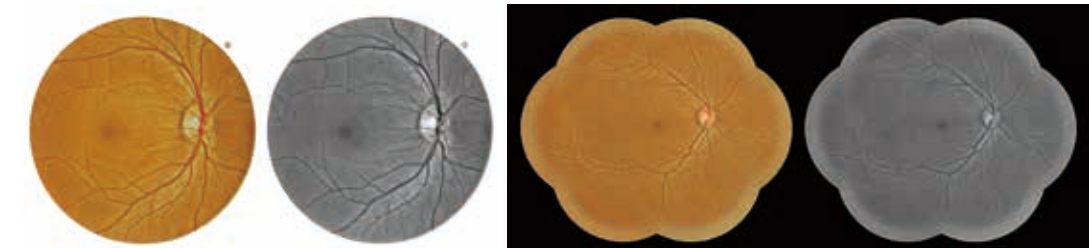
It accurately measures the pupil size and automatically adjusts the intensity of light according to pupil size. Even patients with small pupil sizes can be easily measured without switching mode. Small Pupil Mode can be an option to adjust more intensive light for the small pupil size.

Fixation Target for flexible configuration

Fixation target can be set on the display for fine adjustment of a specific part of the eyeball.

Panorama function for wide range of peripherals

Multiple built-in capture color fundus images at different positions and automatically stitch them to optimized total overview. By providing high-resolution images with minimal distortion, you can immediately see key information for a comprehensive assessment of patient' eye.



Fundus Image

Panoramic Image(Non-Mydriatic Composite Retinal Image)

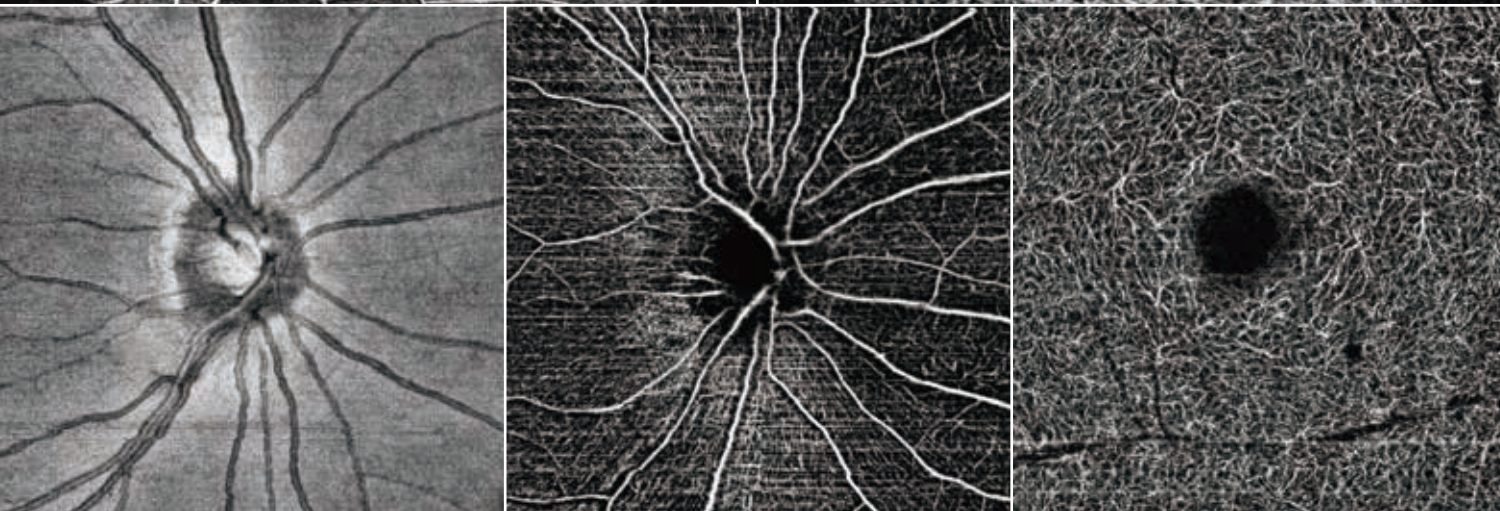
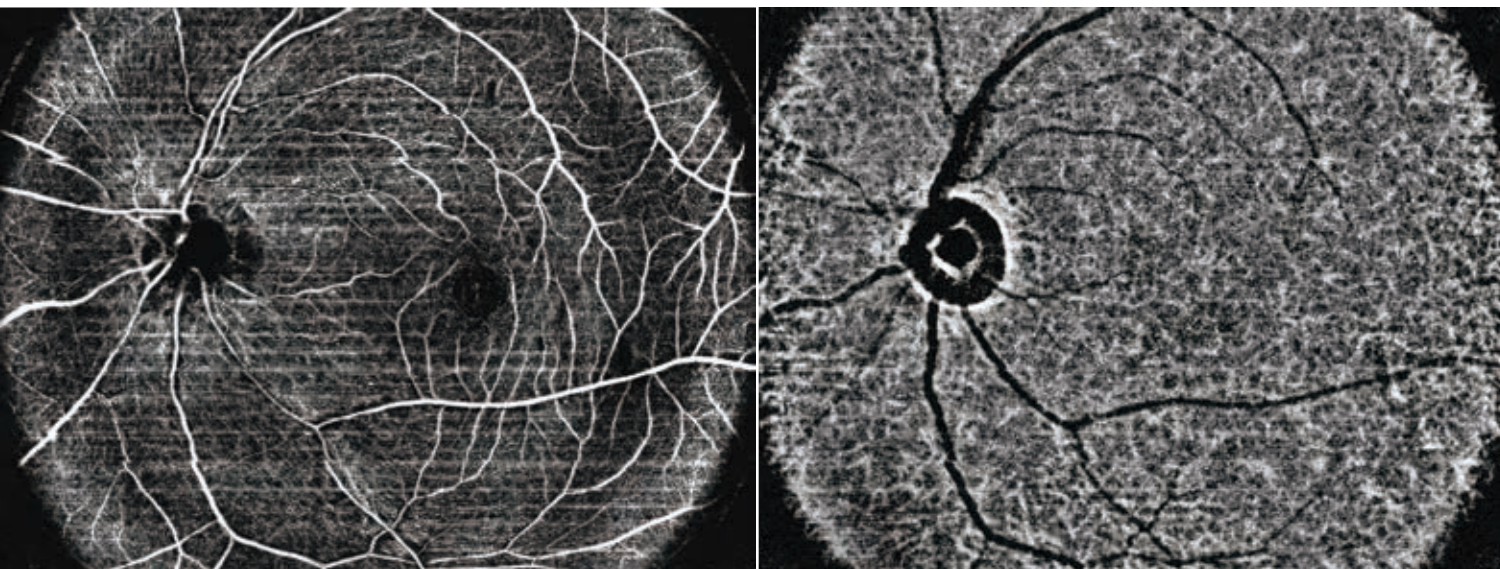
Innovative Angiography

Auto-Analysis of Retina & Microvessel of Choroid : Customized Treatment per Patient with Details

Huvitz's own optical technologies, Real Time Tracking / Noise Cancelling / Motion Correction are inter-operating, and automatically analyzing & visualizing Retina, Microvessel of Choroid.

12mmx9mm Superficial

12mmx9mm Choriocapillaris



6mm Disc Enface

6mm Disc Superficial

4.5mm Retina Deep

The Innovation of Optical Technologies : Faster & More Convenient Analysis is Now Able

HOCT provides reliable results by minimizing measurement errors with combination of Huvitz' own optical technologies which are called as TAT(Triple Angiography Technology).

Three Innovative Optical Technologies – TAT(Triple Angiography Technology)

Real Time Tracking

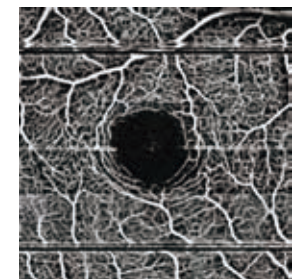
With A-scan 68,000/per second, Real Time Tracking technology creates connecting vessel images by minimizing Motion Artifact caused by eye blinking, movement of eyeballs.

Noise Cancelling

Visual Processing Algorithm refines details of images in an instant. Therefore, it visualizes vessel conditions of Retina' s layers as high quality images.

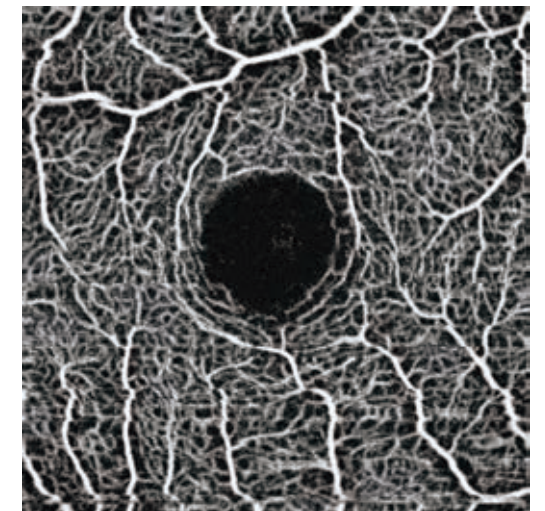
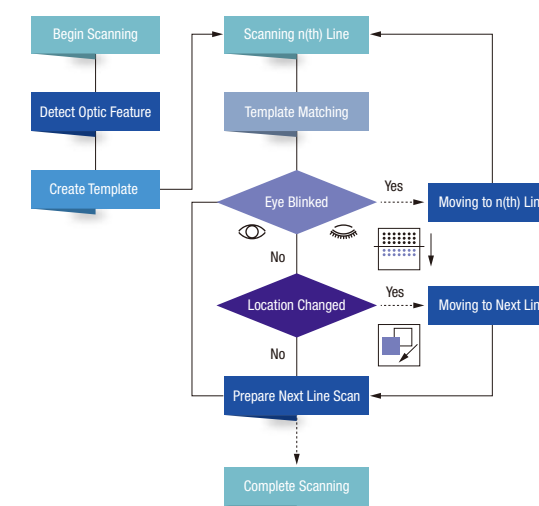
Motion Correction

Motion Correction Technology helps to make the Angiography images without distortion by fine correction of vessels' dislocation.

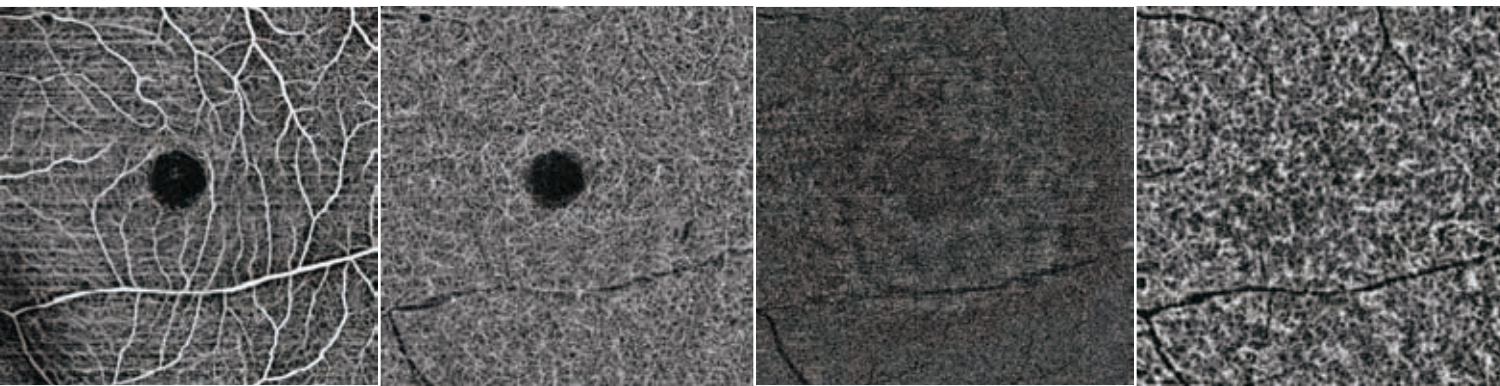


Unapplied Real Time Tracking

Real Time Tracking Technology Algorithm



Applied Real Time Tracking



6mm Superficial 6mm Deep 6mm Outer 6mm Choriocapillaris

Innovative Angiography

68,000 scan/sec by One Button :
High-Resolution Images with Quantified Index

By One-Button, accurate details are provided with high-resolution images for vessels of retina & choroid and data of FAZ, flows, density.

Retina Layer Auto-Analysis

The function provides high-resolution images for vessels of retina & choroid with quantified index. It can be utilized with early diagnosis & treatment progression for macular degeneration, diabetic retinopathy, glaucoma, hypertensive retinopathy and retinal vein occlusion.

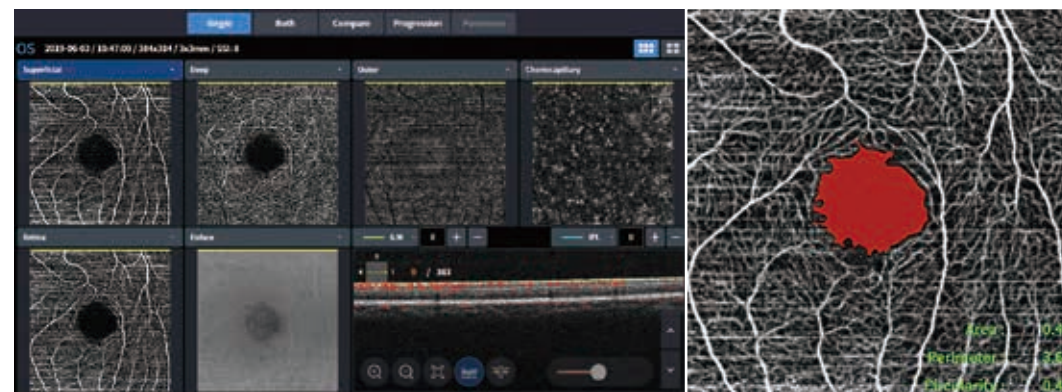
Also, users can check abnormal vasculature in Custom View.

Since the analysis shows index for FAZ, Flows, Density, it's easy to establish treatment plan.

Detail Display for Accurate Index and Evaluation

In Detail Mode, users can specifically observe vascular network per layer.

Using analyzing tool, details of FAZ can be acquired conveniently.



Retina Layer Auto-Analysis

FAZ Auto-Detection

Progression

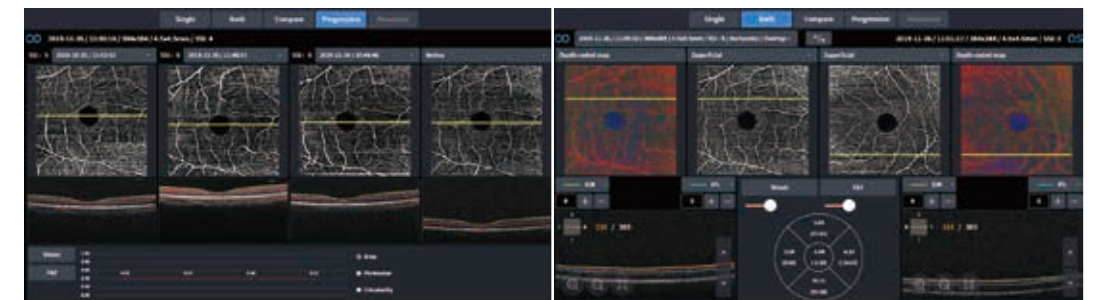
The Progression mode helps users to follow up the pathology of a disease.

Binocular Comparison(OU)

In the Comparison Mode, users can check vascular network by layer in detail.

By indicating layers in different colors, it's easy to check and understand the pathology of a disease.

In case of comparison for diabetic retinopathy, the mode helps to track the pathology and establish treatment plan.

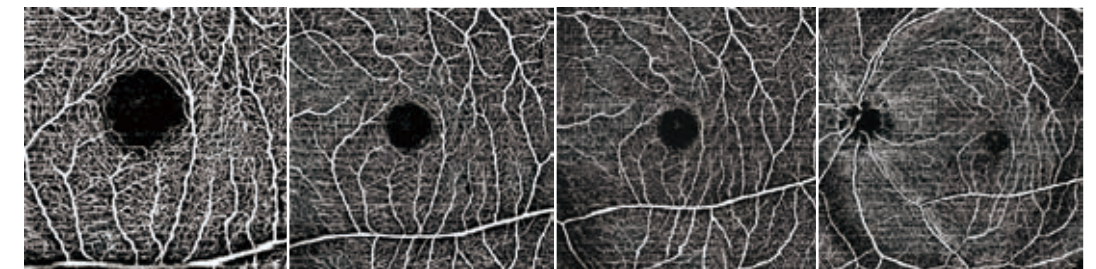


Progression

Binocular Comparison

A Variety of Scan Sizes : 3mm / 4.5mm / 6mm / 9mm

HOCT-Angiography supports a variety of scan sizes, users can choose and observe per needs & cases.

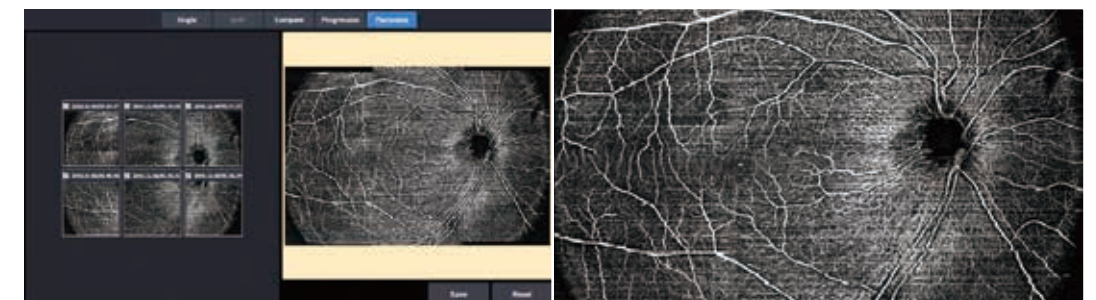


Various Scan Sizes : 3mm / 4.5mm / 6mm / 9mm

Angio Panorama

In case of checking Angiography image with large size, it is convenient to utilize the Angio Panorama function.

*3mm(Max. 12mmx9mm), 4.5mm(Max. 13.5mmx9mm) & manual mode are available



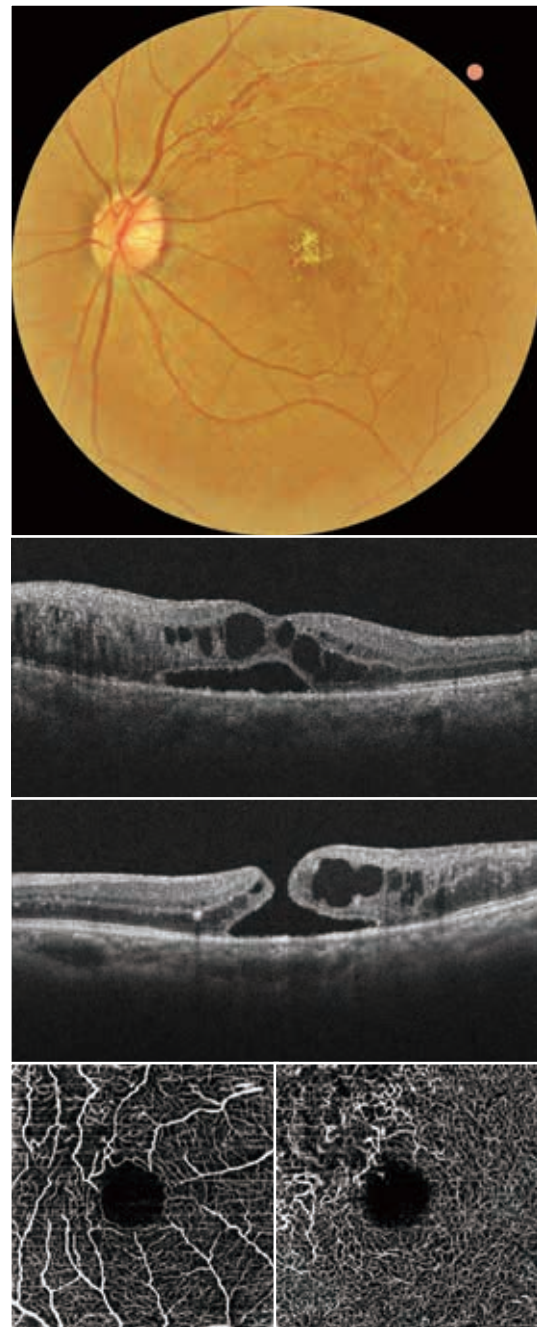
Panorama Mode / Panoramic Image

1TB Storage

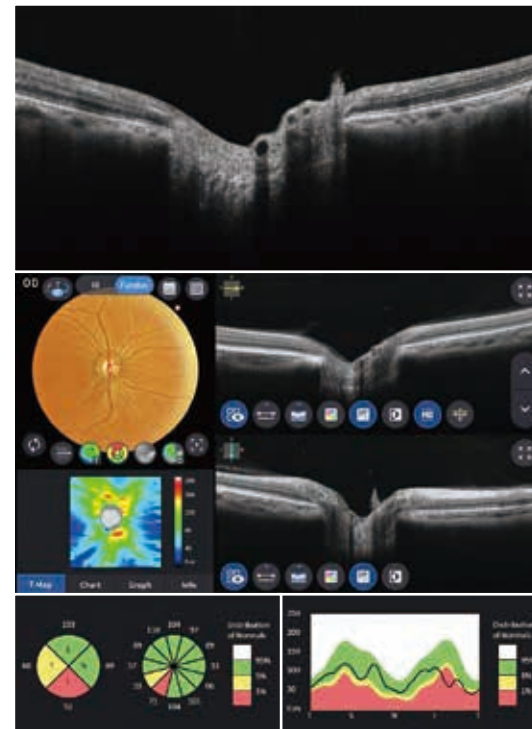
By internal 1TB Storage of HDD, users can manage data with enough space.

Clinic Exams

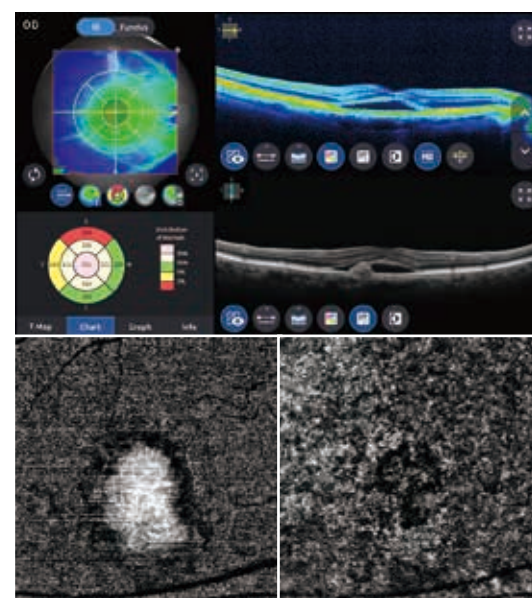
High-quality, high-resolution OCT and color fundus images from HOCT are extremely useful for analysis and clinical diagnosis as the pathologic structure and status of each layer are accurately observed and recorded.



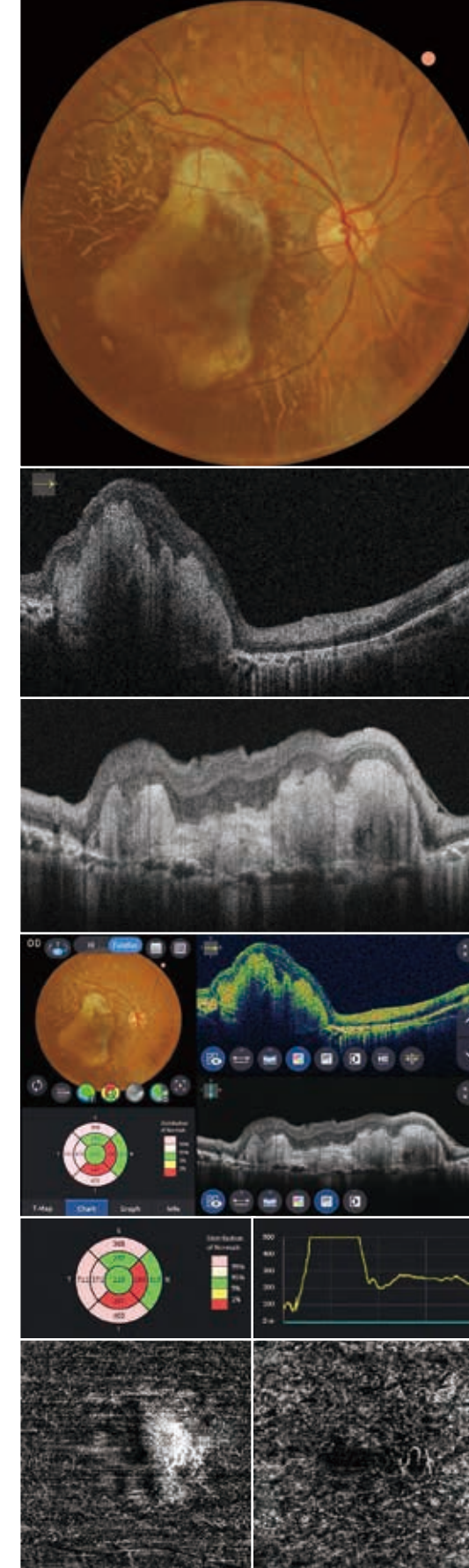
Macular Hole (MH), RVO (Retinal Vein Occlusion)
A macular hole is a retinal break commonly involving the fovea. Severe stage of RVO progressed to a macular hole.



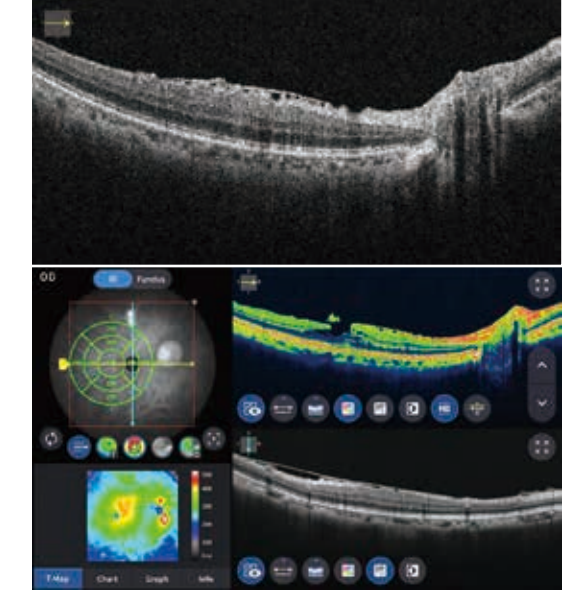
Glaucoma
Glaucoma is a disease that damages your eye's optic nerve. The same symptoms are found at Thickness map, Fundus, TSNIT chart, Clock chart.



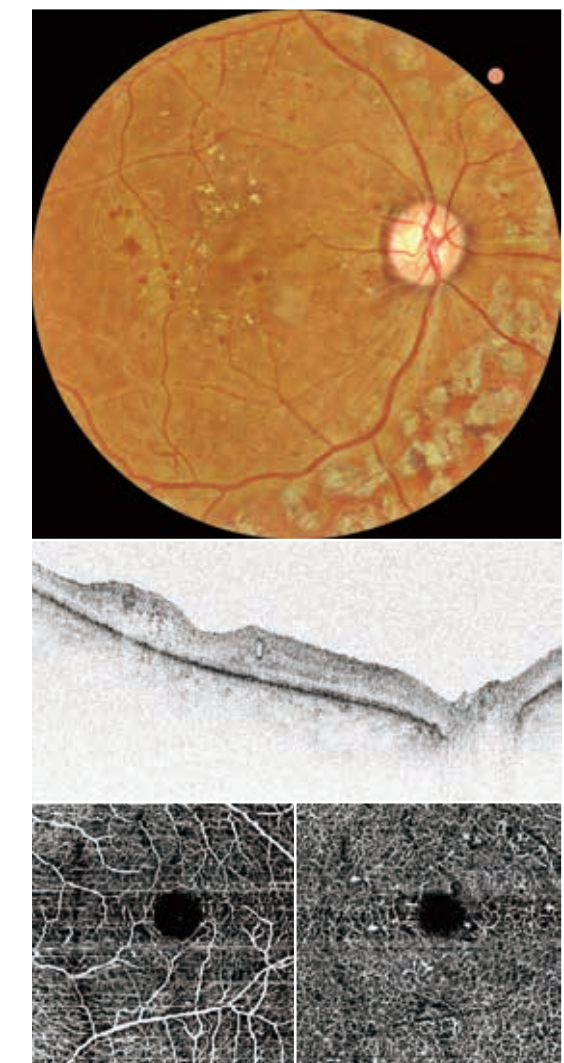
Macular Degeneration (MD)
Age-related macular degeneration is a disease that blurs the sharp, central vision you need for straight-ahead activities.



Choroidal Neovascularization (CNV)
Choroidal neovascularization refers to condition that new blood vessels created in the choroid layer. In this case, because of huge choroidal neovascularization, distort the normal alignment of the overlying retina. It can be seen that the overlying photoreceptor layer is not clearly delineated from the other retinal layers, and the temporal retina also has the geographic atrophy of the photoreceptor layers and retinal pigment epithelial layers. This results is also visible on the Fundus photograph and Outer retina of angiography.



Epiretinal Membrane (ERM)
Epiretinal membrane is a disease of the eye in response to changes in the vitreous humor or more rarely, diabetes.



Diabetic Retinopathy (DR)
Diabetic retinopathy is when high blood sugar levels cause damage to blood vessels in the retina. These blood vessels can swell and leak. Or they can close, stopping blood from passing through. Sometimes abnormal new blood vessels grow on the retina.