



Optical Coherence Tomography / Fundus Camera  
**Retina Scan Duo™ 2**

FAF model  
Standard model



THE ART OF EYE CARE

*Retina Scan*  
**Duo<sup>TM</sup> 2**

Next Gen dual mode retinal imaging

- D**rive clinical efficiency
- U**tilize advanced analysis
- O**ptimize clinical workflow in 3 quick steps
- 2** The 2nd version - faster single shot capture

Quick capture with 2 modalities

2



Simple explanation

1

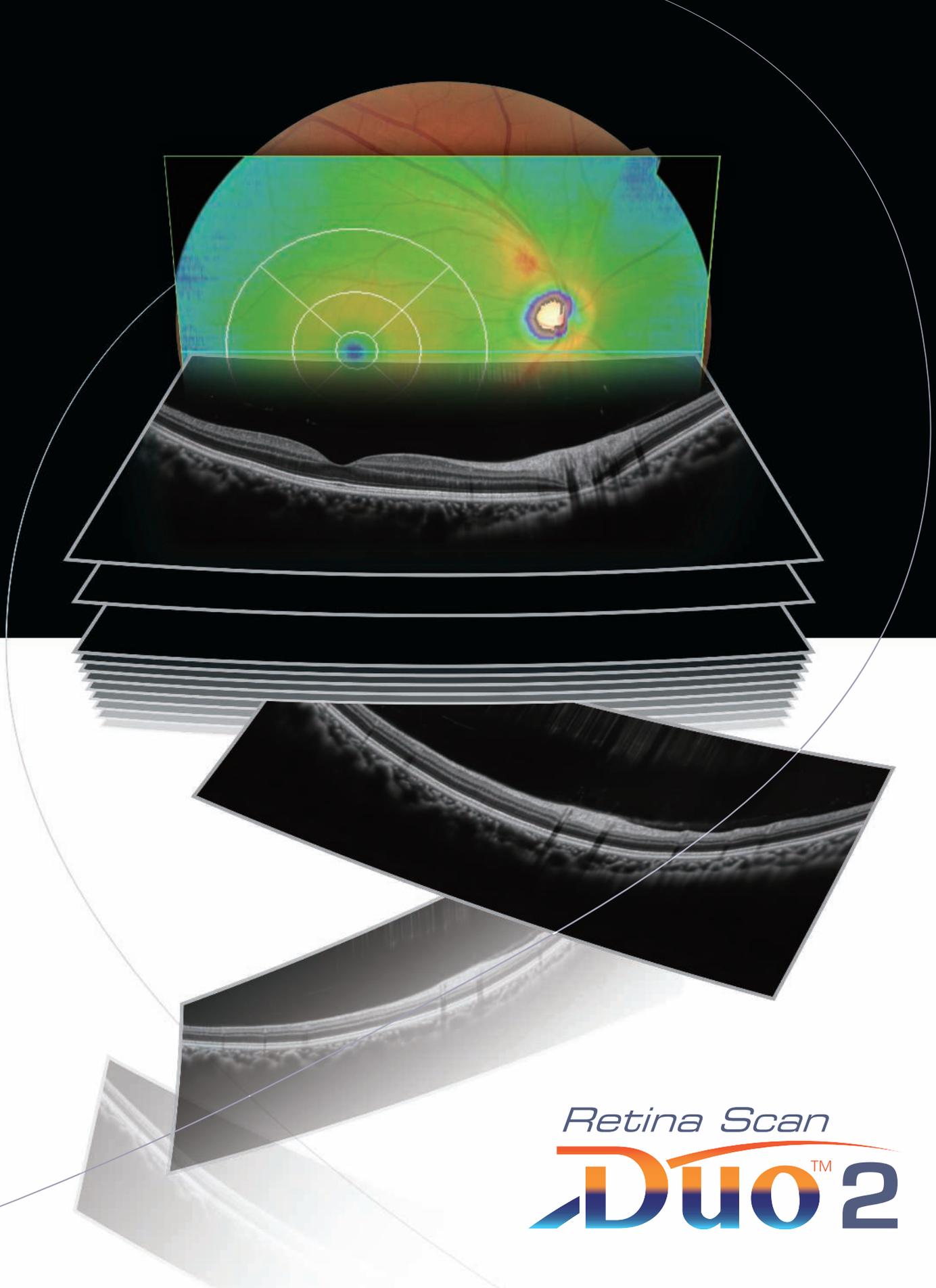


For faster screening and efficient clinical workflow

One diagnosis with the retina map

3

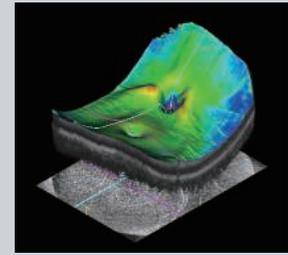
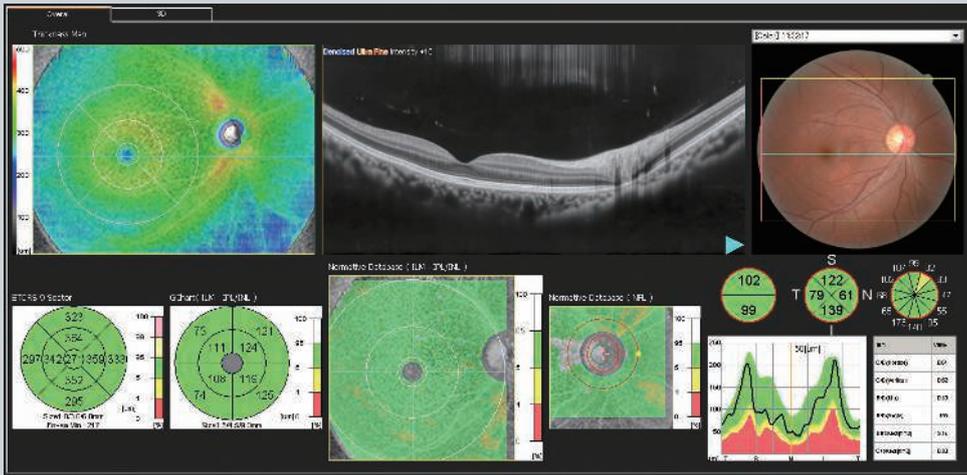




*Retina Scan*  
**Duo<sup>TM</sup> 2**

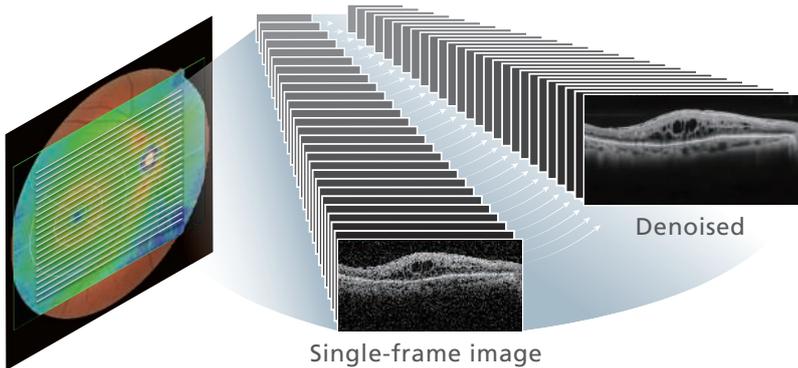
Fundus image acquisition with  
macula and disc capture in one image on OCT,  
for enhanced screening and clinical efficiency

# Retina map



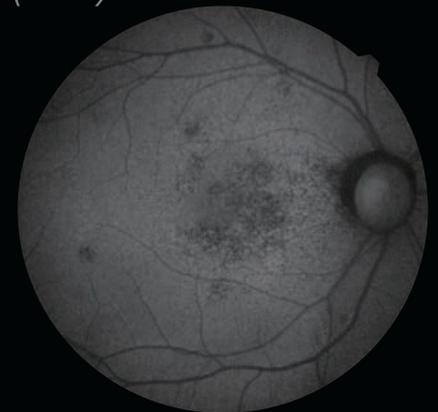
Combined diagnosis of macular and disc pathologies

Widefield image capture in a single shot  
High definition OCT image for all scans



*Retina map* × *Denoising technique*

# Fundus autofluorescence (FAF)\*

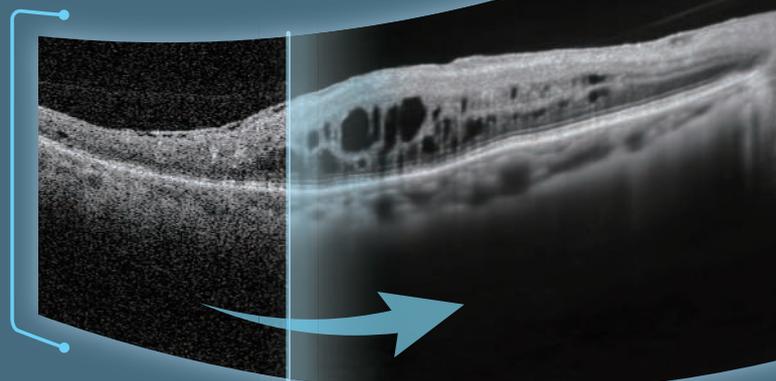


Detect early stage retinal disease

\*Available for the FAF model  
Image courtesy of Kariya Toyota General Hospital

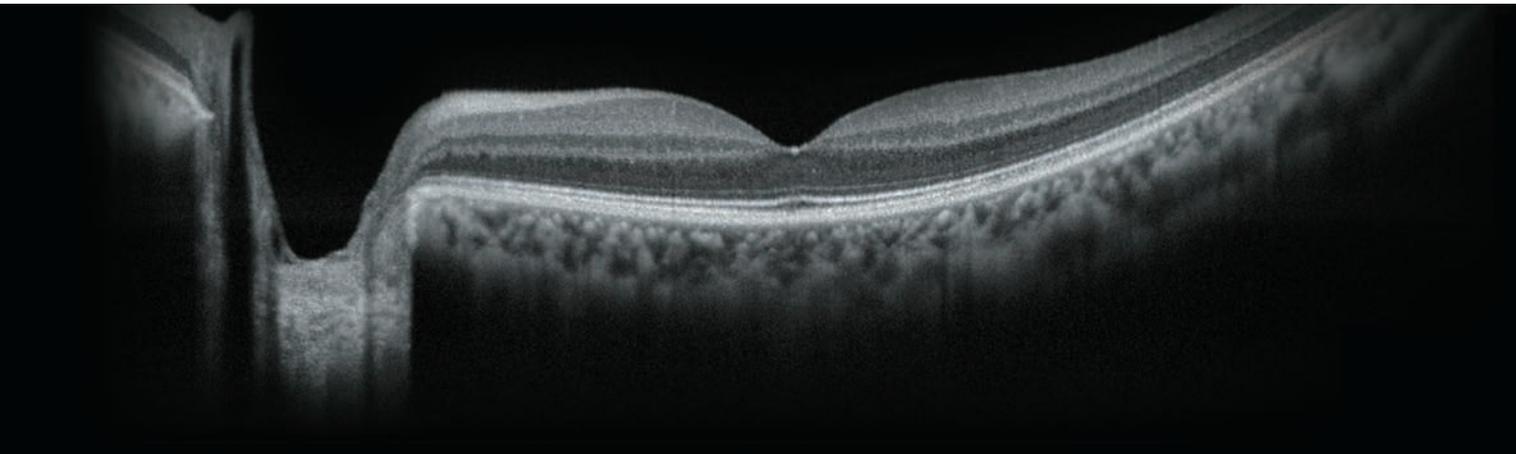
# Denoising technique with deep learning

Quick acquisition of high definition OCT images from a single-frame image



Images courtesy of Rodrigo Abreu González, MD, PhD, FEBO, University Hospital of La Candelaria, Spain

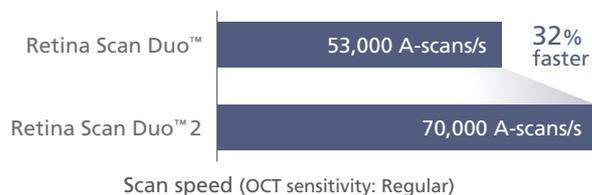
# OCT



## ● High speed image capture

OCT images are captured at scan speeds of 70,000 A-scans/s which is 32% faster than acquisition with the Retina Scan Duo™ using Regular OCT sensitivity\*.

\*Regular OCT sensitivity is used to capture images at high speed, and Ultra fine and Fine OCT sensitivity can be used to capture high definition images.

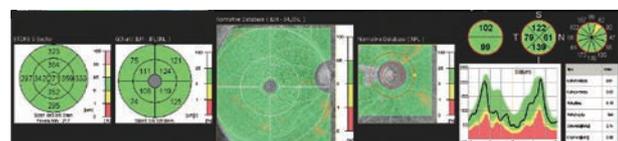


## ● Wide area scan (12 x 9 mm)

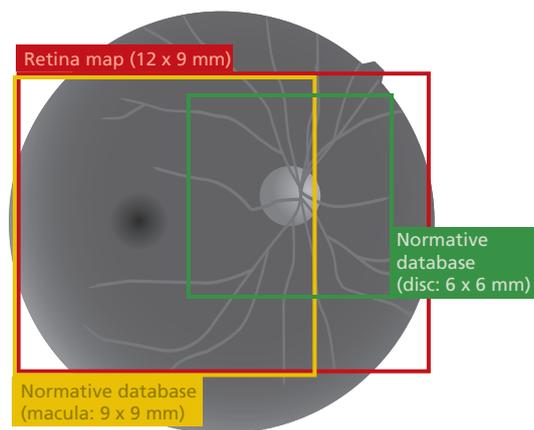
**Wide area normative database (macula: 9 x 9 mm, disc: 6 x 6 mm)**

A 12 x 9 mm wide area image can be acquired. The retina map captures both the macula and disc in a single shot.

The normative database provides a wide area color-coded map comparing the patient's macular thickness to a population of normal eyes.



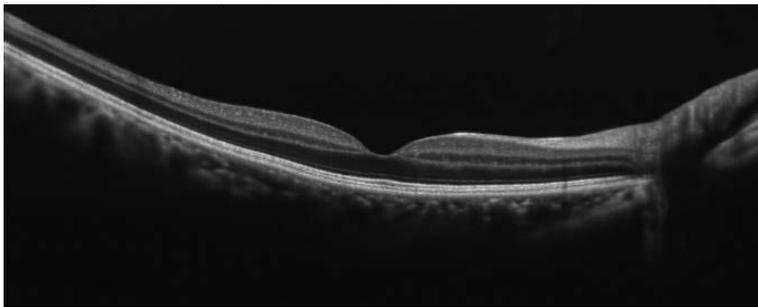
Normative database



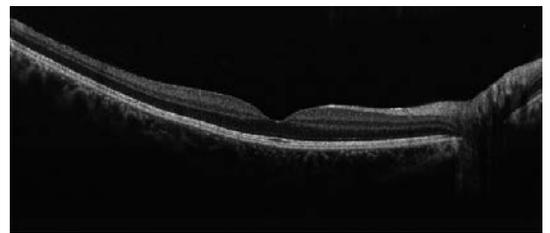
Coverage of the retina map and normative database

## ● Denoising using deep learning

A new image enhancement technique using deep learning automatically displays a denoised image once B-scan acquisition is complete. With deep learning of a large data set of images averaged from 120 images, this denoising technique provides high definition images comparable to a multiple-image-averaging technique. The denoising function generates high definition images from a single frame while decreasing image acquisition time and increasing patient comfort.



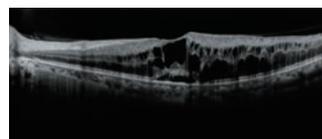
Denoised from a single-frame image



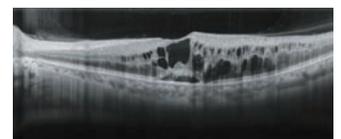
Averaged from 50 images\*1

## ● Enhanced image

The image enhancement function allows adjustment of image brightness for advanced image quality and details.



Original image



Enhanced image

## ● Multiple OCT scan patterns

A wide range of scanning patterns allows selection of scans that suit the retinal region and ocular pathology.

» Macula



» Disc



» Retina



» Cornea\*2



» ACA\*2



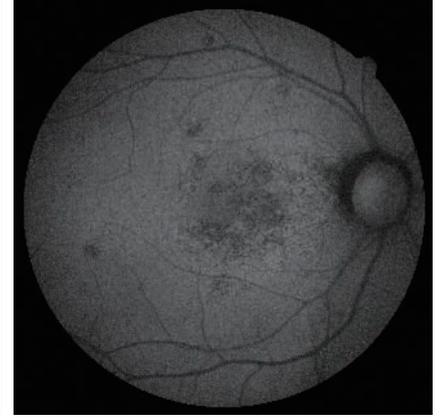
\*1 An image averaging function is available for up to 50 images in the Retina Scan Duo 2.

\*2 The anterior segment adapter is optional.

# Fundus Camera



Color fundus image\*1

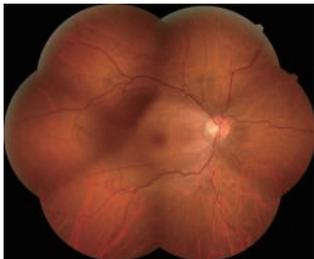


FAF image\*1

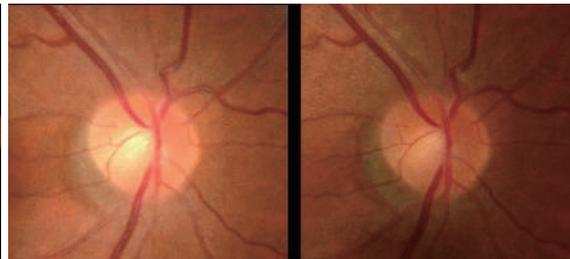
## ● 12-megapixel CCD camera

The Retina Scan Duo™ 2 includes a built-in 12-megapixel CCD camera, producing high quality fundus images with a 45° angle of view.

## ● Stereo and panorama photography



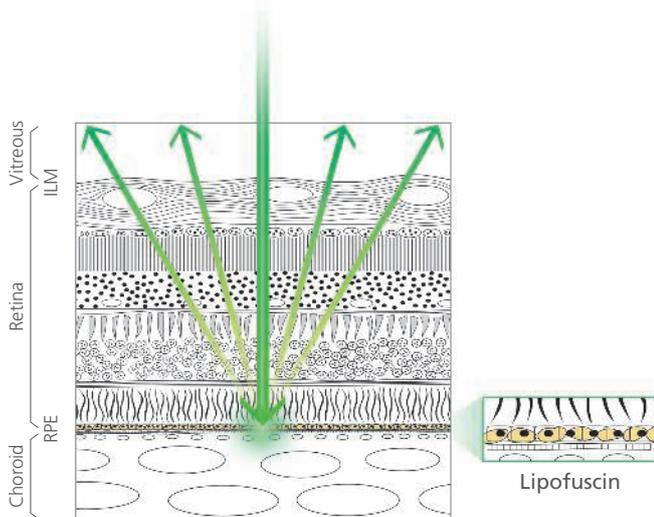
Panorama



Stereo images

The Retina Scan Duo™ 2 navigates stereo and panorama photography with target marks displayed on an observation screen, which enables the operator to easily capture stereo images and a panorama composition.

## ● Fundus autofluorescence (FAF)\*2



The FAF function is an advanced screening feature that allows non-invasive evaluation of the RPE without contrast dye.

FAF is naturally emitted due to the presence of a substance called lipofuscin in the RPE cells. When stimulated with a specific wavelength of light, lipofuscin fluoresces and its distribution can be mapped.

\*1 Images courtesy of Kariya Toyota General Hospital

\*2 Available for the FAF model

# User Friendly Features

## ● 3D auto tracking and auto shot

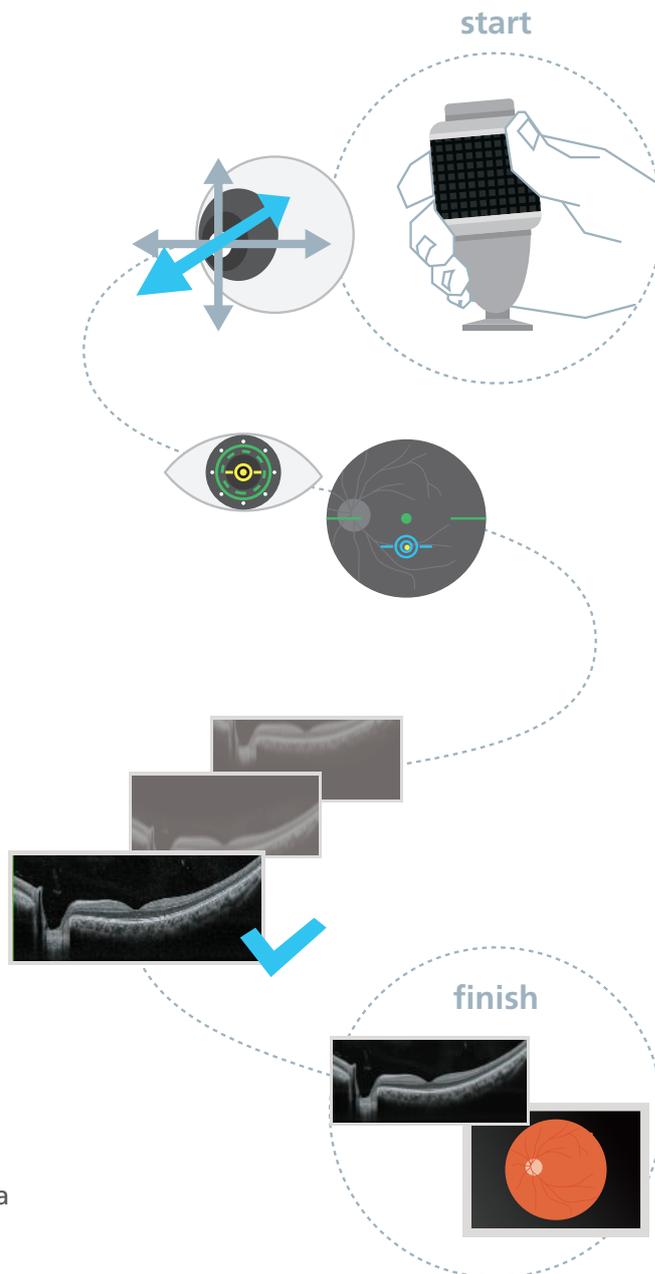
The acclaimed 3D auto tracking and auto shot functions allow easy imaging of the fundus. Once alignment is completed, both the OCT and fundus images can be captured in a single shot.

## ● Operation with joystick for flexible alignment

The joystick helps the operator make fine adjustments during alignment and is especially useful in cases of poor fixation that cannot be tracked with automated tracking systems.

## ● Space-saving unit

The small footprint replaces an OCT and a fundus camera with a combined unit.



## ● NAVIS-EX

NAVIS-EX is image filing software, which networks the Retina Scan Duo™ 2 and other NIDEK diagnostic devices. This functionality enhances the capability of the diagnostic device with additional features and increases clinical efficiency.

- Analysis and report
- Normative database
- Long axial length normative database\*
- DICOM connectivity
- B-scan denoising software
- OCT image screening software\*

\*Optional

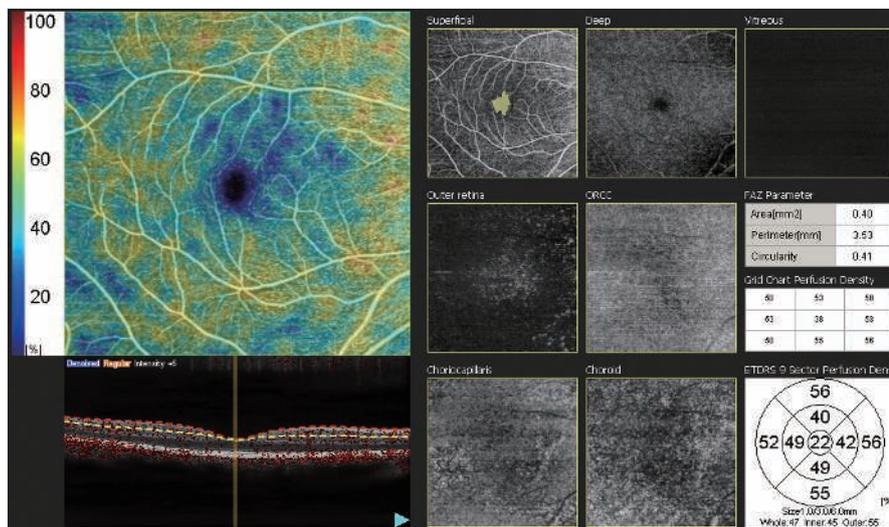


NAVIS-EX Viewer

# Optional Features

## ● AngioScan

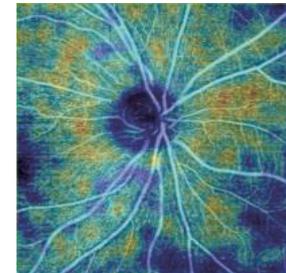
The optional AngioScan is available for OCT-Angiography imaging and diagnostics. The easy to use interface provides seven slabs for the macula map and four slabs for the disc map. This interface has intuitive functionality and removes projection artifacts. Segmentation into multiple slabs allows enhanced assessment of retinal microvasculature at specific depths and regions of interest. The effect of pathology can be evaluated in greater detail at each retinal depth.



Macula map

## Scan pattern

- Macula map (6 x 6 mm, 9 x 9 mm)
- Disc map (4.5 x 4.5 mm, 5.1 x 5.1 mm, 6 x 6 mm)

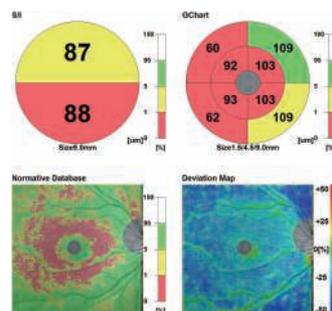
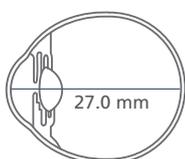


Disc map

## ● Long axial length normative database

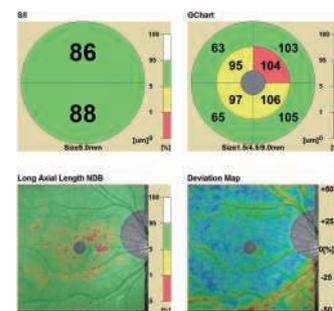
The optional long axial length Database normative database assists in diagnosing macular diseases and glaucoma in patients with long axial lengths. Data was collected from a sample of Asian patients.

Sample analysis of a patient with long axial length (27.0 mm)



Normative database

Axial length compensation



Long axial length normative database

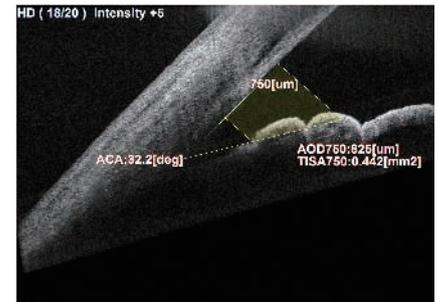
## ● Anterior segment adapter

The optional anterior segment adapter enables observation and analyses of the anterior segment.



## Angle measurement

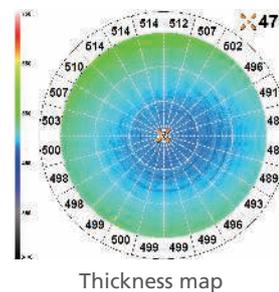
- ACA  
Angle between posterior corneal surface and iris surface
- AOD500 (AOD750)  
Distance between iris and a point 500  $\mu\text{m}$  (or 750  $\mu\text{m}$ ) from the scleral spur on the posterior corneal surface
- TISA500 (TISA750)  
Area circumscribed with AOD500 (or AOD750) line, posterior corneal surface, line drawn from scleral spur in parallel with AOD line, and the iris surface



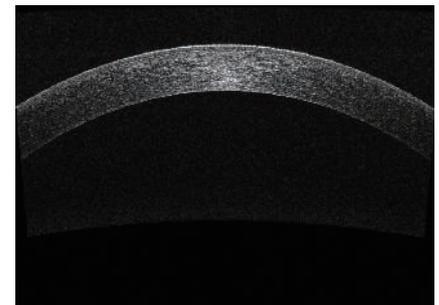
Angle measurement

## Corneal measurement

- Corneal thickness  
Corneal thickness of the apex and user selected sites
- Corneal thickness map  
Map of corneal thickness plotted radially



Thickness map



Corneal measurement

## ● OCT image screening software

The optional OCT image screening software\* categorizes OCT images from all models in the NIDEK OCT series, increasing efficiency when reviewing numerous OCT images.

Screening result

- A large difference from normal eyes
- Moderate difference from normal eyes
- Minor difference from normal eyes

Screening condition

- 1) Scan pattern: Macula cross, Macula multi cross, Macula radial 6/12 and Macula map (only if cross scan is used)
- 2) Scan length: 6.0 mm
- 3) Scan position: 0 or 90 degrees
- 4) Image centered on the fovea

\*Analysis is performed with a software module created by CRESCO Ltd.

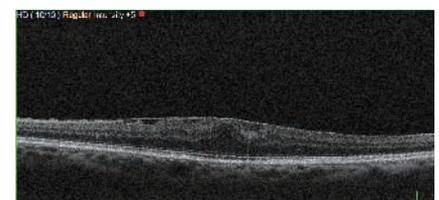


Image of retina denoted by ●

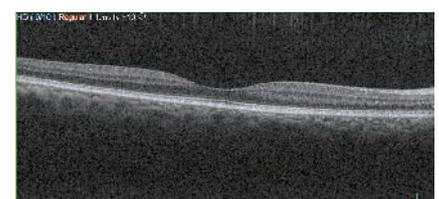


Image of retina denoted by ○

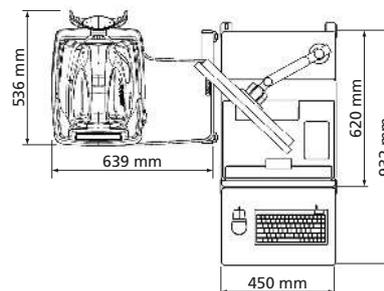
# Retina Scan Duo™ 2 Specifications

<b>OCT</b>	
OCT scanning	
Principle	Spectral domain OCT
Optical resolution	Z: 7 µm, X-Y: 20 µm
Scan range	X: 3 to 12 mm Y: 3 to 9 mm Z: 2.1 mm
Digital resolution	Z: 4 µm, X-Y: 3 µm
OCT light source	880 nm
Scan speed	70,000 A-scans/s (OCT sensitivity: Regular)
Auto alignment	Z direction
Minimum pupil diameter	ø2.5 mm (ø3 mm or larger is recommended.)
Scan patterns	Macula line, macula cross, macula map, macula multi, macula radial, disc circle, disc map, disc radial, retina map
<b>Fundus surface imaging</b>	
Principle	OCT phase fundus
Angle of view	40° x 30°
<b>Fundus camera</b>	
Type	Non-mydratiac fundus camera, color, FAF*
Angle of view	45° (33° for small pupil image capture)
Minimum pupil diameter	ø4 mm (ø3.3 mm for small pupil image capture)
Light source	Xenon flash lamp 300 Ws
Flash intensity	17 levels from FL1 (F4.0 +0.8 EV) to FL17 (F16 +0.8 EV) 0.25 EV increments
Camera	Built-in 12-megapixel CCD camera
<b>Common specification</b>	
Working distance	45.7 mm
Display	Tilttable 8.4-inch color LCD
Dioptric compensation for patient's eyes	-33 to +35 D total -12 to +15 D without compensation lens -33 to -7 D with minus compensation lens +11 to +35 D with plus compensation lens
Internal fixation lamp	LED
Horizontal movement	36 mm (back/forth) 85 mm (right/left)
Vertical movement	32 mm
Chinrest movement	62 mm (up/down, motorized)
Auto tracking	X-Y-Z directions
Auto shot	Available
PC networking	Available
Power supply	100 to 240 V AC 50/60 Hz
Power consumption	350 VA
Dimensions/mass	370 (W) x 536 (D) x 602 (H) mm / 38 kg (standard model) 39 kg (FAF model) 14.6 (W) x 21.1 (D) x 23.7 (H)" / 84 lbs. (standard model) 86 lbs. (FAF model)
Optional accessories	Anterior segment adapter, external fixation lamp, isolation transformer, motorized optical table, PC rack, OCT image screening software, long axial length normative database, OCT-A retina map dongle

\*Available for the FAF model

## Anterior segment adapter (optional)

Scan patterns	Cornea line, cornea cross, cornea radial, ACA line
Software analysis	Corneal thickness measurement, corneal thickness map, angle measurement



More clinical information available online at the NIDEK Education page

For more clinical information, please visit the Education page on the NIDEK website. This site allows access to case reports, journal articles, and video presentations.



<https://www.nidek-intl.com/education/>

Product/model name: Optical Coherence Tomography RS-330  
Brochure and listed features of the device are intended for non-US practitioners.  
Specifications may vary depending on circumstances in each country.  
Specifications and design are subject to change without notice.

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