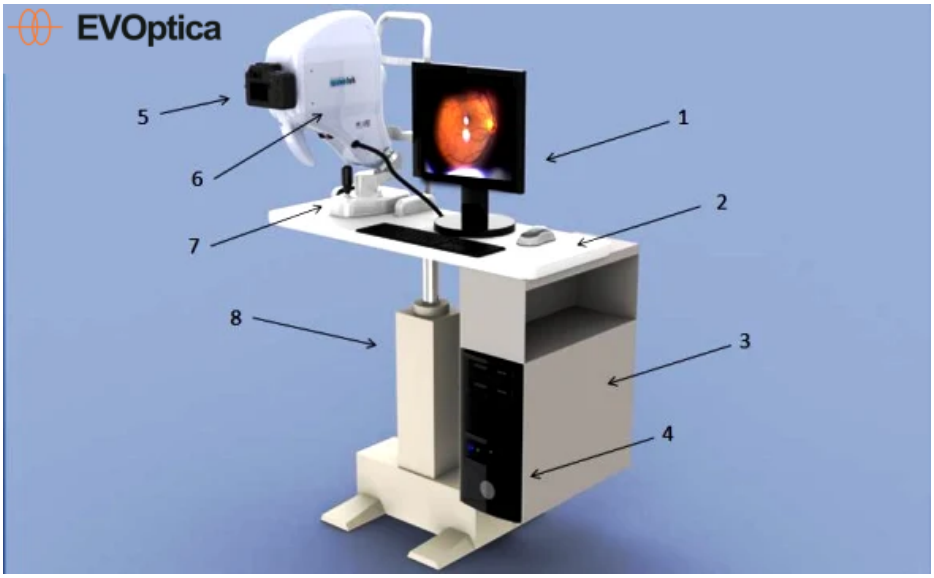
HOLTZ

Optic-disc imaging and quantitative analysis

EVOptica

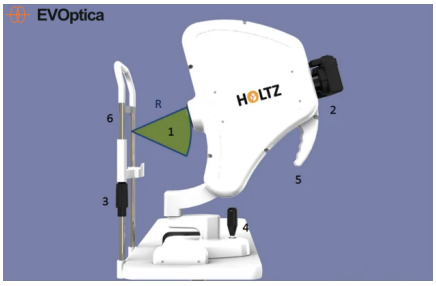


HOLTZ - Optic-Disc Imaging

HOLTZ combines high-definition retinal imaging with quantitative optic-disc measurements. Its Windows 7-based software and hardware support detailed printed reports, manual or automatic measurement of the optic disc and other retinal features, and selection of as many image regions as the examiner wishes to process.

3D Visualization

The original development team worked with a U.S. company and the computer-science department at the University of California, Berkeley, where one founder studied and maintained research links, on a system for calculating optic-cup depth and displaying it in 3D. The archived video demonstrates this module as part of the HOLTZ optic-disc analyzer.



Supplied Components - Figure 1

- LCD monitor.
- Tabletop.
- Computer support.
- Standard DELL computer running Windows.
- High-resolution Canon camera.
- HOLTZ optical head.
- Joystick positioning system with movable base.
- Electrically height-adjustable table support, 110/220 V.

Historical source status: when the archived page was published, the instrument was undergoing development/testing and ANVISA approval and was not yet available for sale. This describes the source period only. Current U.S. clearance is in progress; the company's earlier products had South American clearances.

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HOLTZ

Retinal imaging, measurements and examination review

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Figure 2 - Nonmydriatic image of the left optic nerve of a 32-year-old volunteer.

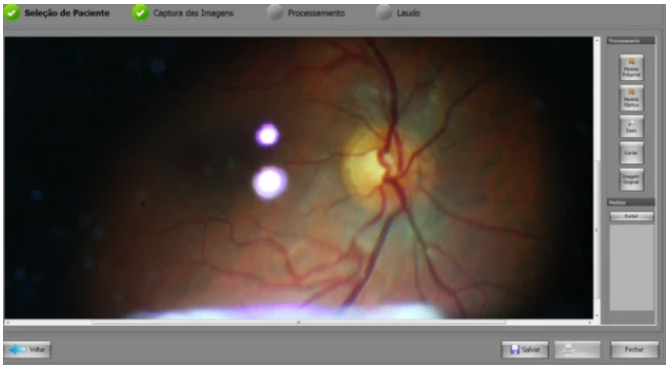


Figure 3 - Right optic nerve of a healthy 40-year-old volunteer, photographed with HOLTZ without dilation.

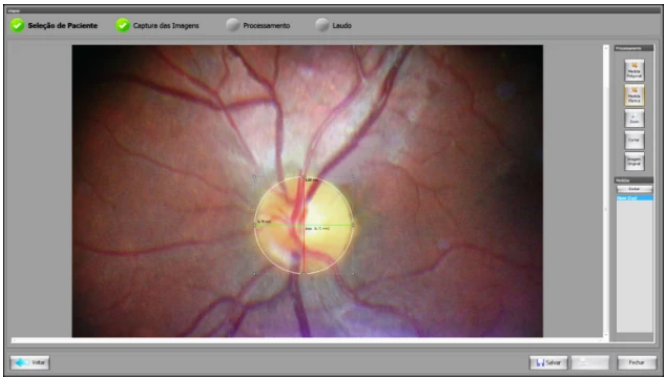


Figure 4 - HOLTZ image-processing screen showing optic-disc and optic-cup areas and horizontal and vertical diameters. Image-processing tools support detailed optic-nerve measurements.

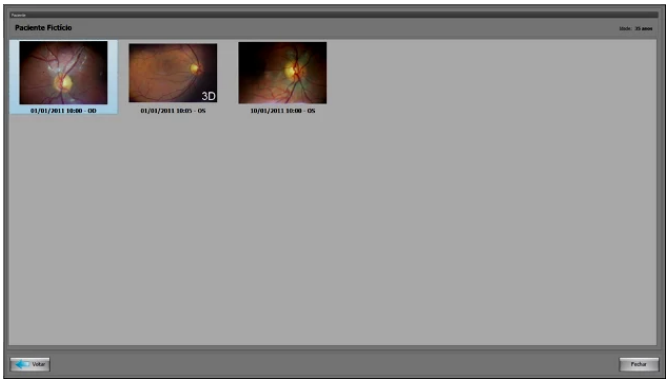


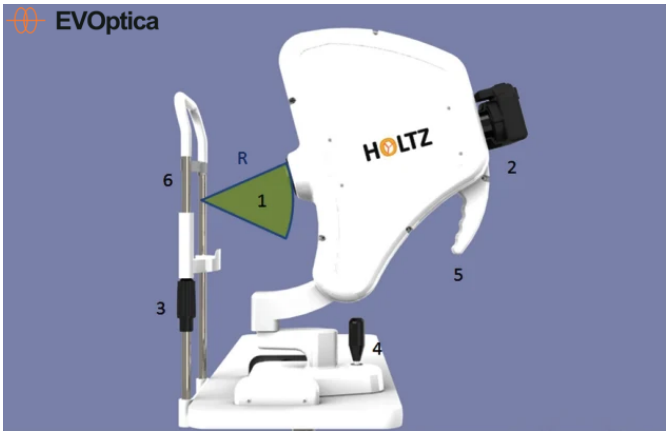
Figure 5 - Image database screen. Stereoscopic image pairs are marked with a small white “3D” at the lower left. Stereo images are saved as linked pairs to avoid confusion during later review or report reprinting.

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Positioning, stereo acquisition and optic-disc parameters

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Positioning and Stereo Acquisition

Figure 6 - Side view of the instrument. The tilt system allows a vertical sweep along a circular arc at distance R from the eye, through angles of ±15°. The mounting axis also permits optical-head rotation described here as ±20° (Figure 7).

Quantitative Optic-Disc Parameters - Table 1

Parameter	Source unit or description
Mean optic-disc diameter	mm
Total disc area	mm^2
Cup area	mm^2
Cup shape	Shape
Cup volume	Volume
Cup-to-disc area ratio	Ratio
Horizontal cup-to-disc diameter ratio	Ratio
Vertical cup-to-disc diameter ratio	Ratio

These optic-disc analysis measurements appear on the processing screen, report screen and printed report. The original text identifies them, with literature references [1, 2], as key parameters for optic-disc assessment. The archived page includes HOLTZ software screens and a link to a technical-specification PDF.

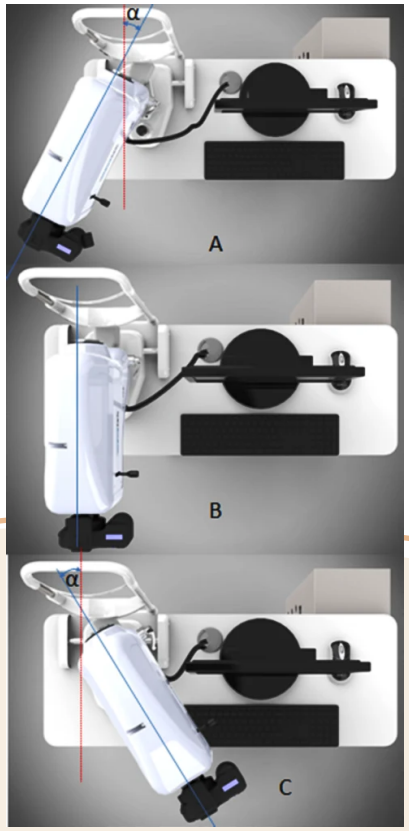


Figure 7 - Three optical-head rotation positions relative to the main red axis. This caption instead gives a maximum angle of 60° and says the user can rotate 60° to each side (A, C). Rotation supports 3D acquisition and wider-field images. These original ±20° and 60° descriptions are inconsistent; neither has been substituted for the other.

A Computer Platform That Can Be Updated

In the source's comparison, dedicated consoles tightly integrate hardware and software, making updates difficult and sometimes requiring replacement of the entire instrument. HOLTZ uses a personal computer platform that allows computer software and hardware updates over time while retaining its database. This supports maintenance and extension of system life.

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