HBM–1

Optical Biometry with Full Corneal Topography System

Specifications

Biometry		
Parameter	Measuring range	SD of Repeatability
Axial Length	14–40 mm	±0.025 mm
Keratometry		
Parameter	Measuring range	SD of Repeatability
Corneal curvature radius	5–13 mm	±0.03 mm
Cornea refractive power	25.96 D–67.50 D (refractive index : 1.3375)	-
Direction of principal meridians	Measuring range : 1° – 180° Accuracy : according to the ISO 10343:2014 R1 - R2 ≤ 0.3mm : ±4° R1 - R2 > 0.3mm : ±2°	-
White-to-white distance	7–14 mm	±0.05 mm
Pupil diameter	0.5–10 mm	±0.05 mm
Corneal Topography		
Working distance	80 - 100mm	
Placido disc	24 rings	
Points Analyzed	Over 100,000	
Biometry (Anterior) - Option		
Parameter	Measuring range	SD of Repeatability
Anterior chamber depth	1.5 – 6.5 mm	±0.04 mm
Central corneal thickness	0.25 – 1.3 mm	±0.02 mm
Crystalline lens thickness	1.5–6.5 mm (phakic), 0.5–3.5 mm (pseudo-phakic)	±0.06 mm
Etc		
Dry eye function - Option	Tear Meniscus, NIBUT, Meibomian, Blink Analysis, Questionnaire	
IOL calculator – Option	General, Post Refractive, Toric	
Common		
Display	Tiltable 10.1 inch, Touch panel color LCD	
Horizontal movement	55 mm (back and forth), 100 mm (left and right)	
Vertical movement	30 mm	
Chinrest movement	62 mm (up and down), motorized	
Auto tracking movement	X,Y for positioning, Z for working distance	
Power consumption	AC 100 - 240 V, 50/60 Hz, 1.6 - 0.7 A	
PC	Built in computer	
Dimensions	312(W) × 553(D) × 518(H) mm	
Weight	22 kg	

※ Specification and design are subject to change without notice. / ※ **Scan the QR code to view detailed options for each model.**

Huvitz CONNECTING SIGHT SUCCESS

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Innovative Ophthalmology Solutions

Optical Biometry with Full Corneal Topography System

HBM-1

Cataract surgery, Myopia management and Dry Eye

Huvitz

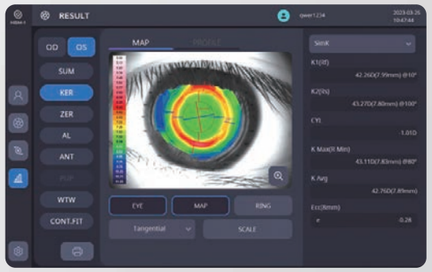
Optical Biometry with Full Corneal Topography System

HBM-1

The HBM-1 integrates optical biometry and full corneal topography into a single platform for precise IOL power calculation in cataract surgery. It measures 10 key parameters quickly and accurately, delivering highly reliable results through advanced IOL calculation formulas, DCM technology, and Placido disc analysis. In addition, its integrated dry eye analysis provides a comprehensive assessment of the ocular surface, supporting more accurate preoperative assessments.



Biometry Measurement



Topography Measurement



Myopia Management



Dry eye Management



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BIOMETRY

Precise Ocular Biometry for Accurate IOL Calculation and Surgical Planning



Streamlined Cataract Surgery Workflow from Examination to IOL Selection

Precise biometry enables the rapid and accurate acquisition of key ocular parameters, seamlessly integrating examination, surgical planning, and lens selection into one streamlined workflow. By leveraging comprehensive data collected during the examination process, the HBM-1 streamlines clinical decision-making while delivering highly reliable measurements without the need for repeated scans. This integrated approach maximizes efficiency from diagnosis to lens selection, supporting safer and more predictable surgical outcomes.

Simultaneous Measurement of 10 Key Parameters

The HBM–1 rapidly acquires 10 essential parameters required for IOL power calculation. By analyzing six axial length (AL) measurements and eight anterior segment (ANT) measurements using standard deviation (SD) analysis, it delivers highly accurate and reliable results. Its rapid measurement process minimizes patient discomfort and helps streamline clinical workflows.

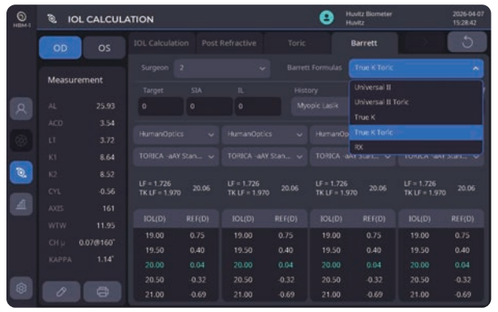


Measurement of 10 Key Parameters

10 Key Parameters Measured :
Axial Length(AL), Anterior Chamber Depth(ACD), Central Corneal Thickness(CCT), Lens Thickness(LT), Keratometry, Topography, Keratoconus, Zernike Coefficients, Pupillometry, White to white

IOL Power Recommendations Using Multiple Formulas

The HBM–1 calculates and presents IOL power values based on measured data, selected formulas, and IOL types. It enables clinicians to compare various combinations of patient characteristics, IOL brands, lens types, and calculation formulas, supporting more informed IOL selection decisions.



True-K Toric

Supported IOL Calculation Formulas :
Barrett* (Universal II, Universal II Toric, True–K, True–K Toric, Rx), Holladay, SRK2, SRK/T, HofferQ, Haigis, Camellin Calossi, Shammas No History
*Optional software module

Premium IOL Selection

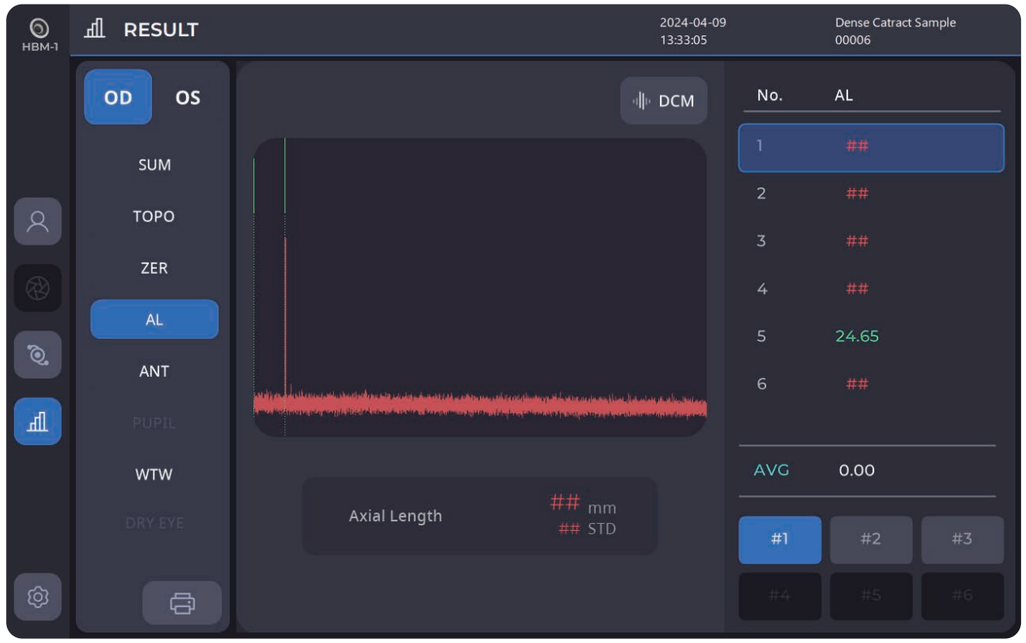
The HBM–1 supports premium IOL selection for cataract patients while simultaneously addressing astigmatism, myopia, and presbyopia. It helps clinicians identify the most suitable IOL for each patient, including Toric IOLs for astigmatism correction, multifocal IOLs for presbyopia correction, and aspheric IOLs for enhanced visual quality.



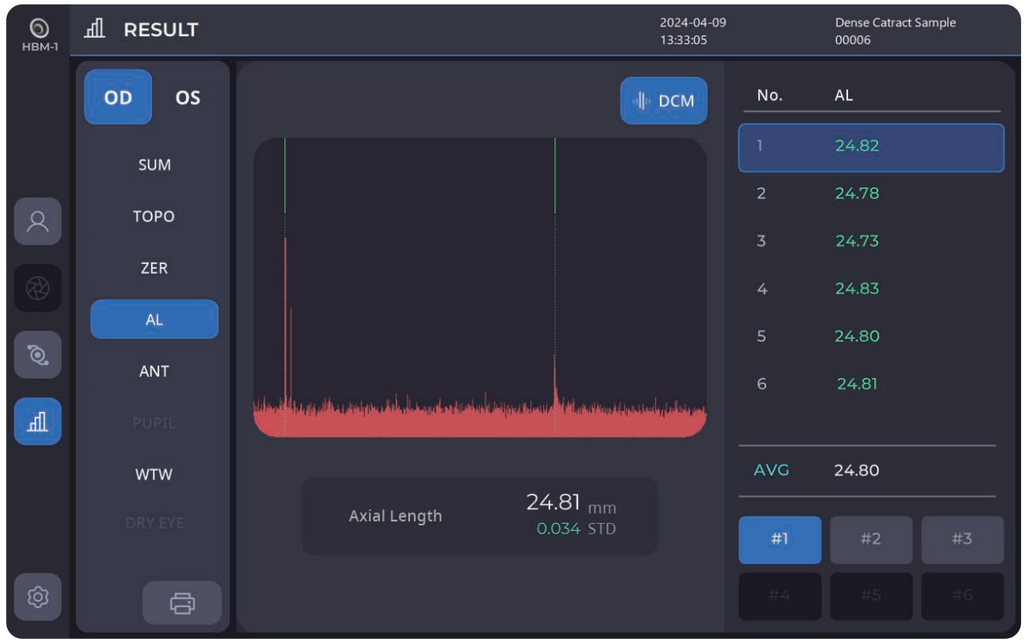
Toric IOL Selection

DCM (Dense Cataract Mode) for Reliable Measurement in Dense Cataracts

For patients with dense cataracts, the HBM–1 utilizes an advanced signal detection algorithm capable of detecting weak optical signals, enabling stable and reliable axial length measurements. This reduces the need for repeated scans while maintaining consistent results. By delivering reliable data across a wide range of clinical conditions, DCM supports the entire workflow from diagnosis through surgical planning.



DCM_Before



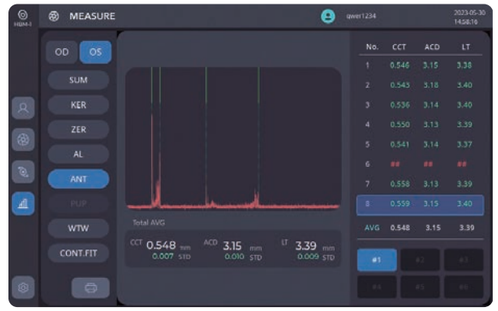
DCM_After



Reliable Biometry Measurements for Cataract Patients

Using proven optical biometry technology, the HBM–1 accurately measures four key biometry parameters essential for cataract surgery planning. It provides highly reliable data with minimal operator–dependent variability, helping ensure consistent and reproducible measurements.

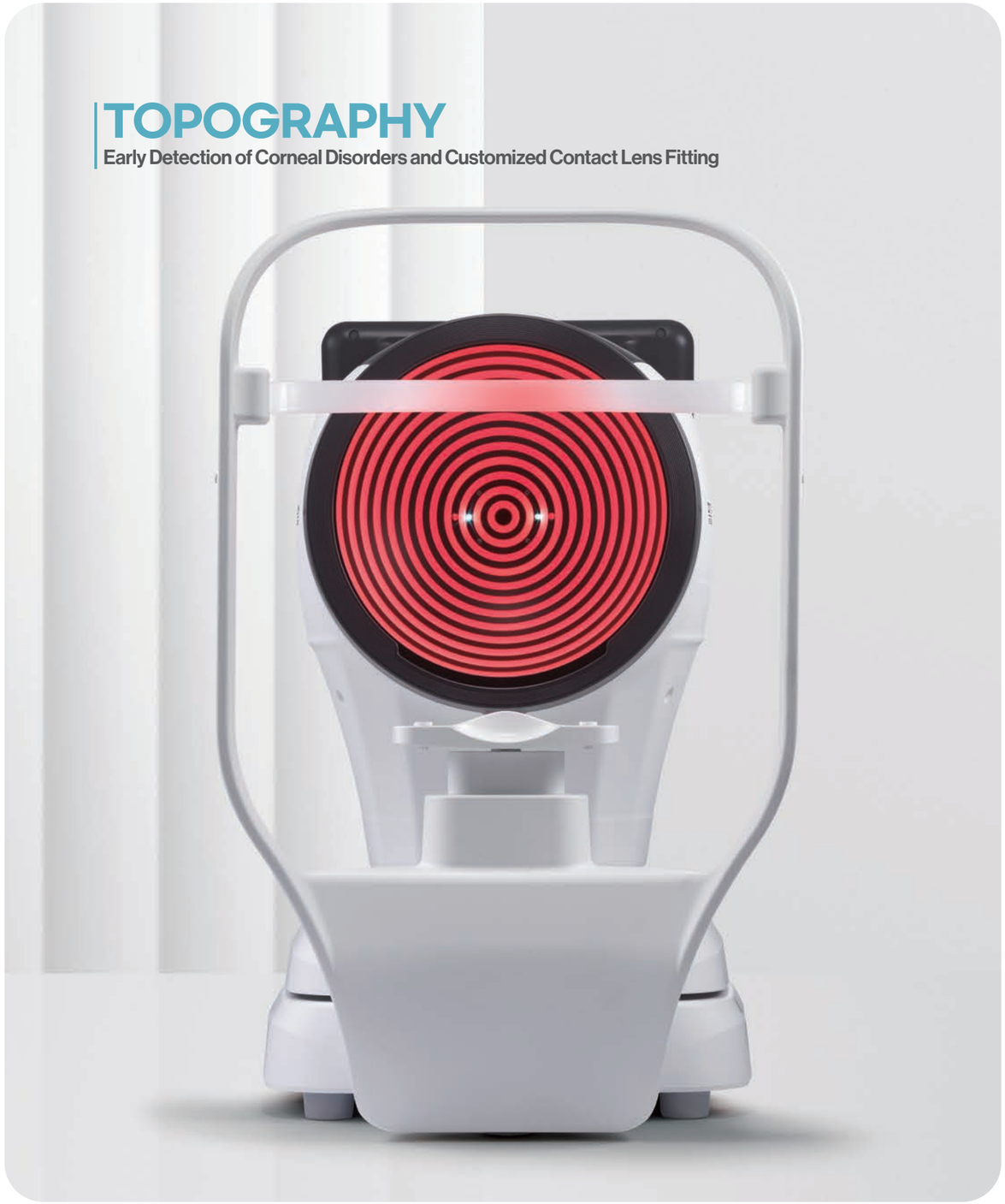
Measured Biometry Parameters :
Axial Length(AL), Central Corneal Thickness(CCT), Anterior Chamber Depth(ACD), Lens Thickness(LT)



CCT, ACD, and LT Measurements

TOPOGRAPHY

Early Detection of Corneal Disorders and Customized Contact Lens Fitting



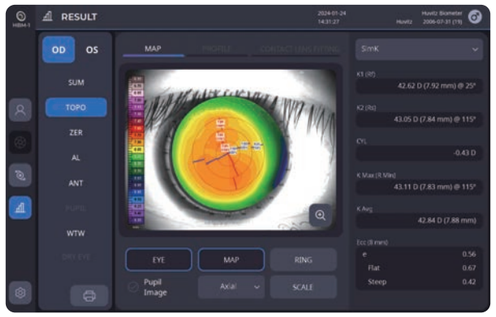
Comprehensive Corneal Analysis in a Single Scan

Using Placido disc-based topography technology, the HBM-1 precisely measures a wide range of corneal parameters, including keratometry, keratoconus indices, Zernike coefficients, pupillometry, and White-to-White. These comprehensive measurements enable accurate assessment of corneal shape and visual quality, supporting contact lens fitting, early keratoconus detection, and refractive and cataract surgery planning.

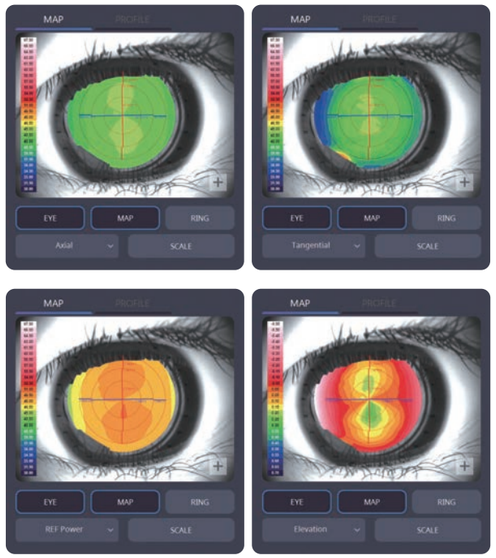
Accurate Keratometry and Comprehensive Corneal Assessment

Leveraging advanced Placido disc analysis technology, the HBM–1 provides precise keratometry values (K1 and K2) essential for IOL power calculation. It also delivers comprehensive corneal maps and measurement data, including axial, tangential, refractive power, and elevation maps, enabling detailed evaluation of the entire cornea.

Measured Parameters :
Keratometry, Topography, Keratoconus, Zernike Coefficients, Pupillometry, White–to–white



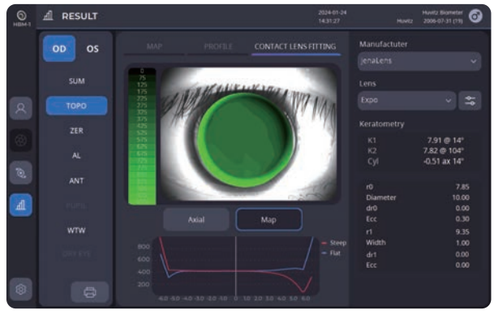
Topography Measurement



Map : Axial, Tangential, Refractive Power, Elevation

Immediate Contact Lens Fitting Evaluation

Using the Fluorescein Image Filter, the HBM–1 simulates fluorescein patterns without requiring the direct application of fluorescein dye to the eye. This enables immediate evaluation of both hard and soft contact lens fitting, improving clinical efficiency and patient comfort.



Contact Lens Fitting

Early Keratoconus Detection

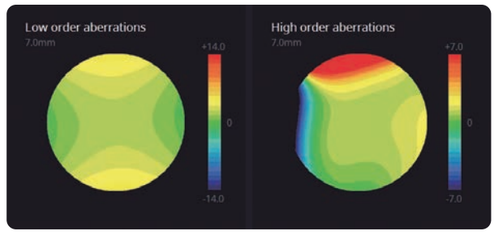
The HBM–1 calculates the Keratoconus Prediction Index (KPI) to assist in the early detection and assessment of keratoconus, enabling timely clinical intervention and management.



Keratoconus

Advanced Zernike Analysis

By analyzing Zernike coefficients and maps, the HBM–1 provides a systematic evaluation of higher–order aberrations, refractive variations, and irregular astigmatism. This comprehensive analysis supports a deeper understanding of visual quality and corneal optical performance.



Zernike Analysis

MYOPIA

Integrated Myopia Management Based on Progression Analysis

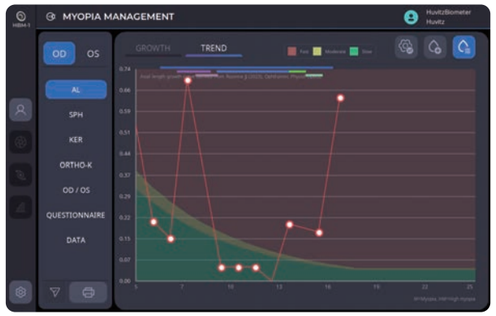


Smart, Data-Driven Myopia Management

The HBM-1 provides a comprehensive approach to myopia management by visualizing changes in axial length (AL) and refraction over time. Longitudinal progression data can be visualized through intuitive graphs, while refraction (Rx) data transferred from Huvitz refractors can be integrated to support clinical decision-making. Clinicians can evaluate and present treatment outcomes, compare pre- and post-treatment changes associated with orthokeratology lens wear and surgical interventions, assess anisometropia, and provide more personalized patient consultations.

Axial Length Progression Analysis

Visualize changes in axial length and growth rates over time to gain a clear understanding of myopia progression and treatment effectiveness.



Axial Length Trend

Ocular Growth Assessment Using Age-Based Growth Curves

Compare patient data with age–specific percentile growth curves to evaluate ocular growth patterns and assess the risk of myopia progression.



Axial Length Growth

Axial length normative data :
European – Axial length growth and the risk of developing myopia in European children, Tideman, J. W. L., DOI: 10.1001/jamaophthalmol.2019.1125
Asian – Normative data and percentile curves for axial length and axial length/cornea curvature in Chinese children and adolescents aged 4–18 years, He, X., DOI: 10.1136/bjophthalmol–2019–315580

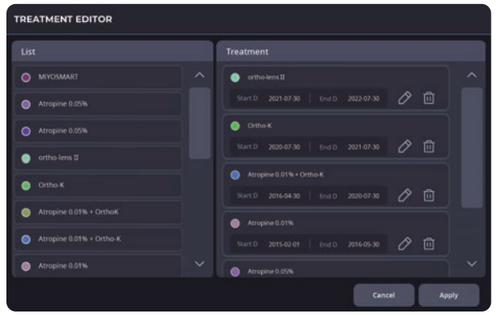


Personalized Myopia Management and Treatment Analysis

Track treatment history and duration while comparing changes before and after orthokeratology treatment. By evaluating anisometropia and lifestyle–related risk factors alongside progression data, the HBM–1 helps clinicians develop individualized myopia management and treatment strategies.



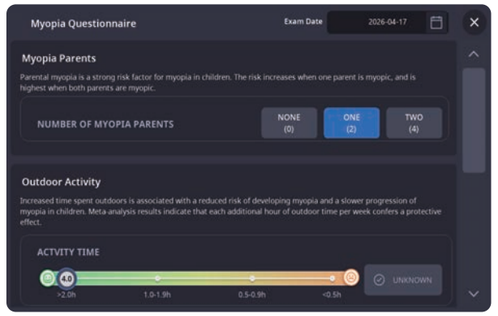
Comparison of Pre–and Post–Orthokeratology Changes



Personalized Myopia Management



Anisometropia Assessment



Myopia Risk Factor Assessment



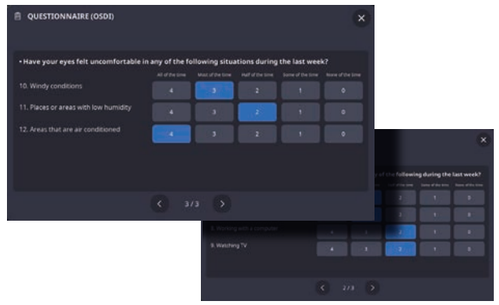
A Three-Step Diagnostic Workflow
OSDI – Advanced Examination – Integrated Reporting

The HBM-1 provides a structured approach to dry eye assessment, beginning with the globally recognized OSDI questionnaire to quantify patient-reported symptoms. Advanced examinations are then performed, including non-contact tear film stability assessment using NIBUT, lipid layer imaging, quantitative tear meniscus height analysis, and meibomian gland function grading. The objective data collected from both the questionnaire and clinical examinations support differential diagnosis, treatment planning, patient counseling, and long-term record management.

STEP 01

Enhanced Diagnostic Efficiency with the OSDI Questionnaire

The Ocular Surface Disease Index (OSDI) is a standardized questionnaire widely used for evaluating dry eye symptoms. It enables the quantitative assessment of patient–reported symptoms and supports multiple languages, helping improve diagnostic efficiency while providing consistent evaluation criteria across diverse clinical settings.

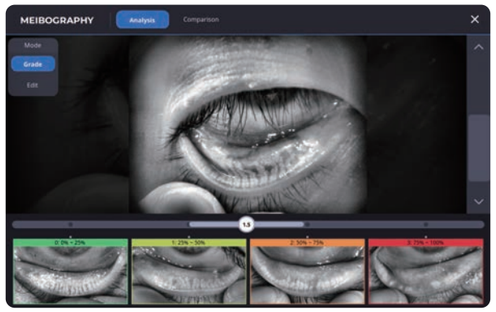


STEP 02

Comprehensive Evaluation Through Four Advanced Diagnostic Assessments

Meibomian Gland Dysfunction Assessment Through Visual Grading

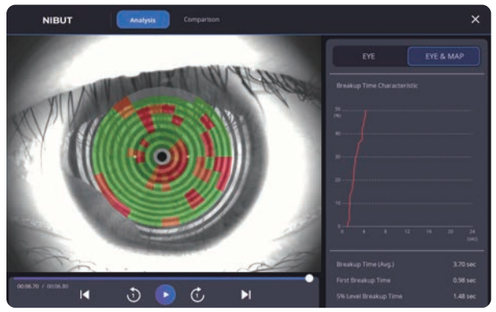
Meibomian gland function can be visually evaluated and graded, providing valuable information for identifying the underlying causes of dry eye disease and establishing appropriate treatment strategies.



Meibography

Non-Contact Tear Film Stability Assessment Using NIBUT

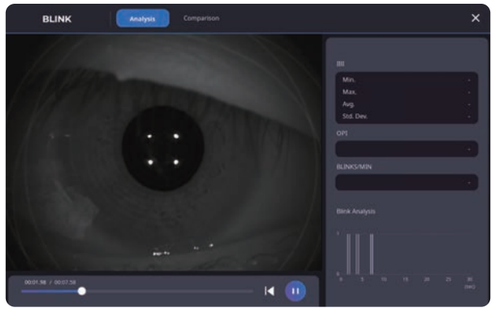
Tear film stability is evaluated using a non–contact method, while areas of tear film breakup are tracked in real time. The results provide quantitative visualization of both the timing and extent of tear film breakup.



NIBUT

Evaporative Dry Eye Assessment Through Inter-Blink Interval Analysis

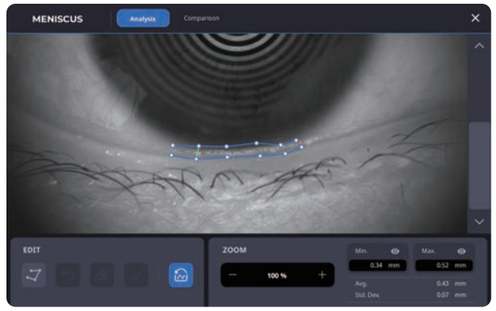
The Inter–Blink Interval (IBI) is measured to evaluate blinking patterns. The results are presented as quantitative indicators of blink frequency and regularity, supporting dry eye assessment and lifestyle–related patient counseling.



Blink Analysis

Tear Meniscus Height Analysis for Tear Volume Assessment

Tear meniscus height is quantitatively measured to objectively assess tear volume. The tear meniscus can be clearly visualized along the eyelid margin and accurately measured using the built–in caliper tool. Once the measurement points are selected, the tear meniscus height is calculated automatically.

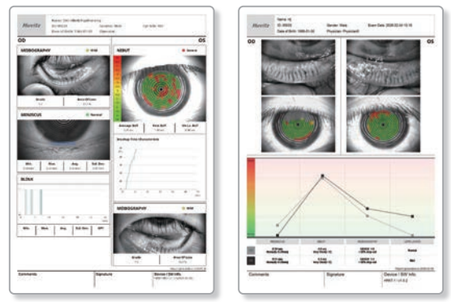


Tear Meniscus Height

STEP 03

Integrated Analysis for Personalized Treatment Strategies

The Dry Eye Report consolidates the results of all assessment categories—including NIBUT, Fluorescein Imaging, Lipid Layer Analysis, Tear Meniscus Height, Meibography, Blink Analysis, and OSDI—into a comprehensive, structured report optimized for diagnosis, treatment planning, and patient communication.



User Convenience

Intuitive Operation from Measurement to Analysis

Seamless Connectivity for an Efficient Clinical Workflow

In addition to full compatibility with the DICOM standard, the HBM-1 integrates with the Huvitz HIIS-1 system, enabling convenient access to measurement data from any connected PC. This enhances both clinical efficiency and data accessibility throughout the diagnostic workflow.



Network in Huvitz Integrated Image Server (HIIS-1)

Comprehensive Reports for Reliable Clinical Evaluation

The HBM-1 generates structured reports that present predicted IOL power along with key data from Biometry, Topography, Myopia, and IOL analysis, supporting reliable clinical evaluation and decision-making.



Report : Biometry, Topography, Myopia

Visual and Voice Guidance for Enhanced Patient Comfort

To improve patient comfort during examinations, the HBM-1 provides visual and voice guidance indicating when patients should open or close their eyes throughout the measurement process.

- Measurement Start Notification (Single Beep) : Indicates when the patient should open their eyes.
- Measurement Completion Notification (Double Beep) : Indicates when the patient may close their eyes.

Auto Tracking for Enhanced Accuracy and Reduced Measurement Errors

The automatic focusing mechanism continuously tracks the measurement target, eliminating the inconvenience of manual focusing while enabling faster and more accurate measurements. An Auto Tracking guide also provides directional guidance for joystick and chinrest adjustments, helping operators position patients more efficiently.

Integrated PC Architecture for Space and Cost Efficiency

With an integrated PC architecture, the HBM-1 eliminates the need for an external computer. All functions—from measurement and analysis to report generation—can be performed directly on the built-in 10.1-inch touchscreen LCD, helping save both workspace and installation costs.

Key Differences

IOL Model & MD Model

Function Category	Functions	IOL Model	MD Model
Measurement	Axial Length	○	○
	CCT	○	X
	ACD	○	X
	LT	○	X
	Keratometry	○	○
	Topography	○	○
	Keratoconus Screening	○	○
	Zernike	○	○
	Pupillometry	○	○
	Kappa Angle , Chord mu	○	○
	WTW	○	○
Dry eye	Meibomian gland	△	○
	Tear Meniscus	△	○
	NIBUT	△	○
	Questionnaire	△	○
	Blink Analysis	△	○
Analysis	Contact Lens Fitting	○	○
	Myopia Management	○	○
IOL Calculation	IOL Calculation	○	X
	Barrett Formulas	△	X
Connectivity	HIIS-1	○	○
	DICOM	○	○

○ : Standard / △ : Available as an optional license / X : Not Supported