



ADVANCED REFRACTION TABLE  
**HRT-7000**



ADVANCED REFRACTION TABLE

# HRT-7000



Power Arm

40 degree soft movement and up & down multi sequence adjustment will enable to accommodate any patient comfortably.



Up & Down Function

Up & Down feature is added in order to provide convenience for measuring position of patient's eyes.



Keypad

Visible location of keypads enables you to control the power arm and chair precisely with ease.

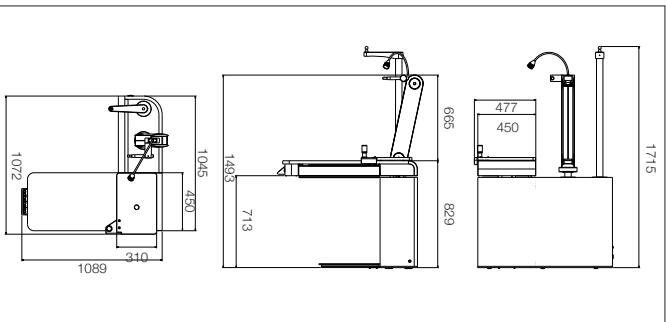


Refraction Chair

Ergonomic design guarantees the best comfort of examinees with embedded sensor to avoid the contact between examinee and table during height adjustment. (Chair is included as standard)

Specification

Head Stroke	400mm(R-L)
Power Arm Up-Down Range	200mm
Chair Up-Down Range	150mm
Lamp	LED Lamp 3W
Powe Supply	AC 100~120/200~240V, 50/60 HZ
Power Consumption	7A/4.5A
Dimensions	1089(W) X 1072(D) X 1493(H)mm
Table Size	1089(W)X 450(D) X 25(T) mm
Table Rotating Angle	90°



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

Intelligence in your vision!

Huvitz is always striving to reflect all your questions and demands through state-of-the-art refraction system.  
Finally we introduce HDR-9000 reinforced with systematic customizable refraction entailing 21 point exam and curvilinear design.  
A brand new refractor, this is another challenge Huvitz will overcome.

Huvitz Digital Refractor HDR-9000

Specification

Measurement Range	
Spherical Lens	-29.00~-+26.75D (Regular) -19.00~-+16.75D (During XC or Prism Tests) (0.12/0.25/0.5/1/2/3/4D increments)
Cylinder Lens	0.00~-+8.75D (0.25/0.5/1/2/3D increments)
Cylinder Axis	0°~180° (1/5/15° increments)
PD	48~80mm (0.5/1mm increments) Near PD : 50~74mm Near Working Distance : 35~70cm
Rotary Prism Lens	0~20 (0.1/0.2/0.5/1/2 increments)
Cross Cylinder	±0.25D ±0.50D ±0.25D Prism Split Lens (Dual Cross Cylinder)
Retinoscopic Lens	+1.5D, +2.0D (Measurement Distance 67cm, 50cm)
Auxiliary Lenses	
Occluding Aperture	
Pinhole Lens	ø 2mm
Maddox Rod	Right Eye (Red, Horizontal), Left Eye (Red, Vertical)
Red / Green Filter	Right Eye (Red), Left Eye (Green)
Polarizing Filter	Right Eye (135°, 45°), Left Eye (45°, 135°)
Split(Dissociation) Prism	Right Eye (6 BU) Left Eye (10 BI : up to 5 complement)
PD Check Lens	
Fixed XC Lens	(±0.50D, with the axis fixed at 90°)
Visual Field	40° (VD=12mm)

Hardware Specification	
Digital Refractor	329(W) X 103(D) X 296(H)mm, 4.20kg
Operation Panel	249(W) X 245(D) X 248(H)mm, 2.75kg (including internal printer)
Junction Box	240(W) X 141(D) X 71(H)mm, 1.24kg
Power Supply	100-240VAC~, 1.0~0.5A, 50/60Hz

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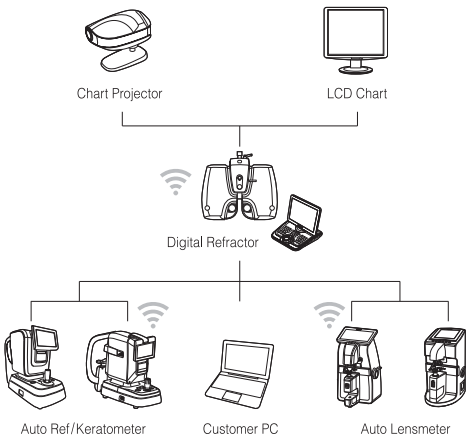
Tomorrow with Huvitz

What is achieved is not a future, but a history.  
Striving future achievement and future satisfaction will always motivate Huvitz to redefine and recreate our history.

Huvitz  
Digital Refractor  
HDR-9000



System Networking







## The More Exam Options You Have, The More You See [All New] HDR-9000 Digital Refractor

Here HDR-9000 with all new technologies is waiting for you.  
HDR-9000 helps those who suffer from visual acuity problems with advanced refraction customizable for individual preference and satisfaction.  
A beautiful curvilinear design speaks emotional stability in you.  
With HDR-9000, take satisfaction which you have ever enjoyed before.

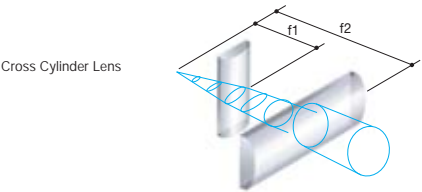
### 21 Point Exam Package

21 Point Exam removes complex knowledge or experience and now everyone can perform refraction easily.  
No more headache-explanation is needed, but all results appear on display for easy reading for both examiners and patients.





“Experience 21 Point Exam”  
 Accuracy, Systemization and Customization,  
 All in 21 Point Exam.



PD Adjustment Automatic Convergence Function

**Tiltable Body**  
 Highly advanced near vision exam is enabled with tiltable body from 0° to 45° delivering feeling of reading a book.

**LCD Chart Compatibility**  
 Compatibility with polarized LCD chart provides even economical efficiency.  
 (Both linear and circular polarization)

**Fast and Silent Lens Loading**  
 Fast lens loading helps to minimize accommodational interference and fatigue of examinees’ eyes. Silent operation offers more comfort during exam.

**Slimmer Design**  
 Slimmer design even prevents minimum mechanical interference during exam and enables easy monitoring over patients.

**21 Point Exam**  
 21 Point Exam removes complex knowledge or experience and now everyone can perform refraction easily. No more headache-explanation is needed, but all results appear on display for easy reading for both examiners and patients. Guidance with prism, addition power prescription and visual function test in accordance with exam results are available for easy use.

**Cross Cylinder Lens**  
 Dual cross cylinder lens as well as Jackson cross cylinder lens supports highly accurate exams over astigmatism axis and visual acuity. Improved speed of lens movement prevents accommodation interfering exam and guarantees accurate astigmatic exam.

**Monocular Height Adjustment**  
 Customized exam is available for those who have different monocular heights within adjustment +/- 3mm.

Illuminated Vertex Distance Check Window Illumination / Detachable Near Chart Rod



Tiltable Refractor Body



Various Charts and Contents

Diversification of near vision exam is realized through highly reliable near vision test charts, visual function test and various refraction charts along with vision therapy-related contents.

Real Time Guide

Graphical representation displayed on screen guides test process easier and faster in real time.

Easy Explanatory Images

Various near vision charts for incomplete color blindness test, amsler grid and many other tests such as anatomy image, refractive power readings and progressive lens guidance help patients understand results easily.

Tablet PC Control (Optional)

Exam can be carried out with not only basic OP panel, but also Tablet and PC for examiners' preferences.  
(Tablet PC OS : Win 7 or 8 / Resolution 1366x768)



Displaying the Result in Tables and Graphics



Built-in Printer



Tilting and Swiveling Display

Regardless of examinees' positions, information on display is recognized easily by tilting and swiveling display.

Wireless Communication

Wireless Communication with HRK-9000A and HLM-9000 via Wi-Fi allows perfect data transmission regardless of working environment. Classic communication via RS-232 cable is available for data transmission with previous models.

Built-in Printer

Built-in printer on operation panel supports easy use of printer and even replacing paper at one go.



“Going Beyond Display”

New design of display not only conveys results, but also presents results and exam charts.

Essence

Newly designed, Huvitz continues to lead in product development combining innovation with value and performance

# HLM-1

Huvitz Lensmeter with  
Wavefront Analysis Tech





## Faster and More Accurate Results Comes with HLM-1

### Internationally-Certified Measurement Method

The new HLM-1, from Huvitz, has a slim and modern design. Its Hartmann Sensor Wavefront Analysis Technology makes the measured values more accurate and reliable with Class B certification, the international safety standard of medical equipment.

Surprisingly great economical value for the new standard features brought to you by Huvitz in the HLM-1.



Our New Generation of Lensmeter with  
the Hartmann Seonsor Wavefront Analysis Technology



The concept image shows Hartmann Sensor Wavefront Analysis Technology.

Wavefront Analysis Technology with the  
Hartmann Sensor

Providing more accuracy in the measured values utilizing the Hartmann Sensor Wavefront Analysis Technology with more measurement points than our previous generations.

Expanded Prism Measurement Range

Prism measurement range has been expanded up to 20Δ, measuring from all directions of: BU, BD, BI, BO.

Wide Range for Measuring Small or Large  
(Blank) Lenses

It is easy to measure all lens diameters from Ø15mm to Ø120mm.

Easily Measures Sunglasses

While measuring the refractive power of darkly-tinted or mirrored sunglasses, the HLM-1 will calculate the refractive power of the lens by automatically amplifying the amount of light without requiring any additional key strokes, the same way it measures normal lenses.



Hartmann Sensor



Prism Measurement



Mirror Lens Measurement

Classified as Class B, Medical Equipment  
Certificate to Protect Your Safety

Class B, Medical Equipment Certificate

HLM-1 meets or exceeds this standard  
• IEC60601-1(4th Edition) Class B

Slim and Compact Design

Measuring only 182x415x235mm, the HLM-1 works well in today's compact office designs.

Auto Lens Recognition

Single Vision, Progressive and other lenses are recognized and the HLM-1 automatically enters the appropriate measurement mode.

Improved Progressive (Multifocal) Lens Measurement

Measurement is fast and easy by simply moving the target and following the guides on the screen.

User-Friendly Graphical Interface

New bright and easily visible Graphical User Interface(GUI) that gives feedback and guidance for easy-to-use operation.

Higher Capture Rate,  
and Faster Processing Speed

5.7" Color & High-Resolution IPS Panel(LCD)

Performance has been improved with processing information, enabling high speed data flow and response time.

The HLM-1 screen also features an anti-glare coating giving you a sharp image, and also has a hardened coating to protect the screen from scratches.

Adjustable brightness function, for comfortable use in all room light conditions.

Enhanced Camera Performance

Providing faster response when measuring refractive power of lenses and improved lens detection, when compared to previous generation models.

50% Faster Processing Speed

High performance(processing speed per frame: 65ms) with more frames per second(15FPS) can be incomparable measurement speed.

Minimize the Distance between PD Bar and Lens Support

Able to measure small-sized progressive multifocal and bifocal lens as well as exquisitely measuring the power of near position.



Auto Lens Recognition

Progressive Lens Measurement



Minimize the Distance between PD Bar and Lens Support





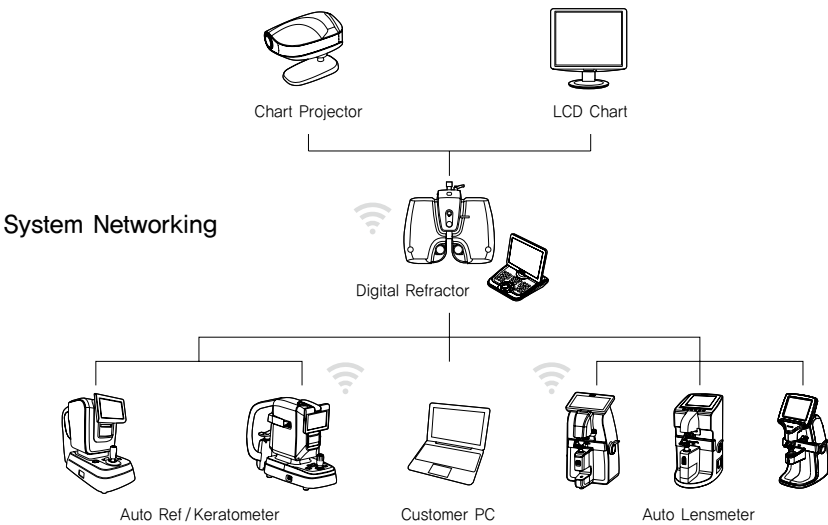
HLM-1

Huvitz Lensmeter with  
Wavefront Analysis Tech

Specification

Measurement Range	Spherical Power	0D~±25D (0.25/0.12/0.06/0.01)
	Cylinder Power	0D~±10.00D (0.25/0.12/0.06/0.01)
	Cylinder Axis	0°~180° (1° step)
	Progressive Power	0~10D (0.25/0.12/0.06/0.01)
	Prism	0~20Δ (0.25/0.12/0.06/0.01)
Measurement Mode	Cylinder	±, +, -
	Prism	Rectangular / Pole / Displacement
	LED Wave	525nm (Green)
	Contact Lens	Hard / Soft Contact Lens
	Abbe Value	Manual Revision
	Wave	e-Line, d-Line
	Screen	5.7" Color LCD Panel (640x480)
	Interface	RS-232
	Communication Speed (bps)	9600, 57600, 115200bps
Product Size / Weight	182(W) x 235(D) x 415(H)mm / 4.0Kg	
Power Supply	AC100~240V, 50/60Hz, 0.3~0.2A	

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



HUVITZ Co., Ltd. 38, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do, 14055, Republic of Korea  
Tel:+82-31-442-8868 Fax:+82-31-477-8617  
<http://www.huvitz.com>

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Intelligence in your vision!

Huvitz is always striving to reflect all your questions and demands through state-of-the-art refraction system.

Finally we introduce HLM-9000 reinforced with Hartmann sensor and curvilinear design.

A brand new lensmeter, this is another challenge Huvitz will overcome.

## Huvitz Auto Lensmeter HLM-9000



**Huvitz** Re:define. Re\*create

Tomorrow with Huvitz

What is achieved is not a future, but a history.

Striving future achievement and future satisfaction will always motivate Huvitz to redefine and recreate our history.

# Huvitz Auto Lensmeter HLM-9000



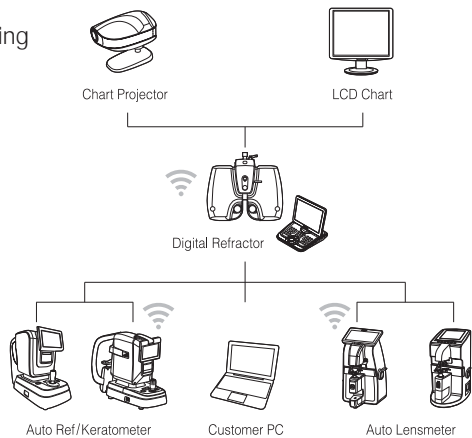
### Specification

#### Measurement Specification

Sphere	0D~±25D (0.01/0.06/0.12/0.25)
Cylinder	0D~±10D (0.01/0.06/0.12/0.25)
Axis	0°~180° (1° step)
Add	0~10D (0.01/0.06/0.12/0.25)
Cylinder Mode	0 to ±10.00D (Mix/-/+)
Prism	0~20 (0.01/0.06/0.12/0.25)
Measurable Lens Diameter	Ø 20 to 120mm (Contact Lens : Ø 5 mm over)
Wavelength	545nm (Green)
Measurement Method	Hartmann Sensor
Contact Lens Measurement	Hard / Soft
UV Transmittance	0~100%
Blue Light Transmittance	0~100%
Display	Tilttable 7" Color LCD IPS panel (800x480) / Touch panel
Printer	Auto Cutting Printer
Interface	RS-232C / USB 2.0 Port / Wi-Fi(802.11b, 2.4GHz)
Dimensions	222(W) X 240(D) X 370(H)mm, 5.4kg
Power Supply	100-240VAC~, 0.5-0.3A, 50/60Hz

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### System Networking



**Huvitz**

Huvitz Bldg., 298-29, Gongdan-ro, Gunpo-si,  
Gyeonggi-do, 435-862, Korea  
Tel:+82-31-442-8868 Fax:+82-31-477-8617  
<http://www.huvitz.com>

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## Change in Core Technology, Different Way of Measurement [All New] HLM-9000 Auto Lensmeter

Striving both accuracy in measurement and efficiency in operation at a time leads you to HLM-9000.

HLM-9000 welcomes you to enjoy its superiority in wavefront analysis technology of Hartmann sensor and automatic lens recognition.

A beautiful curvilinear design speaks emotional stability to you.

With HLM-9000, take satisfaction which you have ever enjoyed before.

### Wavefront Analysis Technology of Hartmann Sensor

Implementation of Hartmann Sensor Wavefront Analysis Technology with more measuring spots maximizes accuracy in measurement even for multi-focal and high curved lenses.



Hartmann Sensor / Green Light Beam(540nm)

Progressive Lens Measurement



“Another Jump in Accuracy, Wavefront Tech”  
Reliable Data with Maximized Satisfaction



Blue Light Hazard and UV Measurement

#### Multi-focal Lens Measurement

Automatic recognition of multi-focal lenses supports easy measurement with measurement guidance on display and even measurement of sunglasses and prism multi-focal lenses is simple.

#### Improved Accuracy with Green Light Beam

Green light beam(545nm), which is nearly same as Fraunhofer e-line(546.1nm) of ISO standards, speaks higher accuracy in measurement than general infrared light.

#### Auto Lens Recognition

Single vision, progressive and other lenses are recognized automatically and turns into corresponding measurement mode.

#### Contact Lens Measuring Kit

Hard and soft contact lenses are measurable.  
(Soft Contact Lens Jig : Optional)

#### Hartmann Sensor Wavefront Analysis Tech

Implementation of Hartmann Sensor Wavefront Analysis Technology with more measuring spots maximizes accuracy in measurement even for multi-focal and high curved lenses.

#### Blue Light Hazard Measurement

As usage of smart phones, LCD monitors and many electric devices increases, blue light hazard emitted from LED displays is recognized as one of noxious rays.  
HLM-9000 measures blue light transmittance of blue light blocking lens.

#### UV Measurement

Easy operation and easy display of UV transmittance allow easy understanding of UV transmittance level from single vision lenses and sunglasses.



Contact Lens Measurement

Contact Lens Measuring Jig



### 7" Color LCD Display

Wide display with unlimited viewing angle (178°) minimizes work fatigue and maximizes work efficiency.

### Wide Tilting Angle

Clear and bright display is readable from any direction with wide tilting angle.

### Intuitive Prism Direction

Moving directions of both actual lens and lens on display are in same direction to avoid any confusion during measurement.

### Wireless Communication

Wireless communication via Wi-Fi allows perfect data transmission with HRK-9000A and HDR-9000 regardless of working environment. Classic communication via RS-232 cable is available for data transmission with previous models.

PD Bar and Measurement Nose

Auto Cutting Printer



User-friendly Graphic Interface



Intuitive Prism Direction



### Simple GUI

GUI readable at the first glance is user-friendly with easy operation and anyone can easily conduct measurement without expert knowledge.

### Minimized Gap between PD Bar and Nose

Bi- or multi-focal lenses of small sizes are measurable and accurate measurement is possible over entire spot of lens.

### Auto Cutting Printer

Fast and quiet printer with automatic cutting function shows all data to customers quickly. Replacement of paper roll is in one touch action.

### Extra Storage

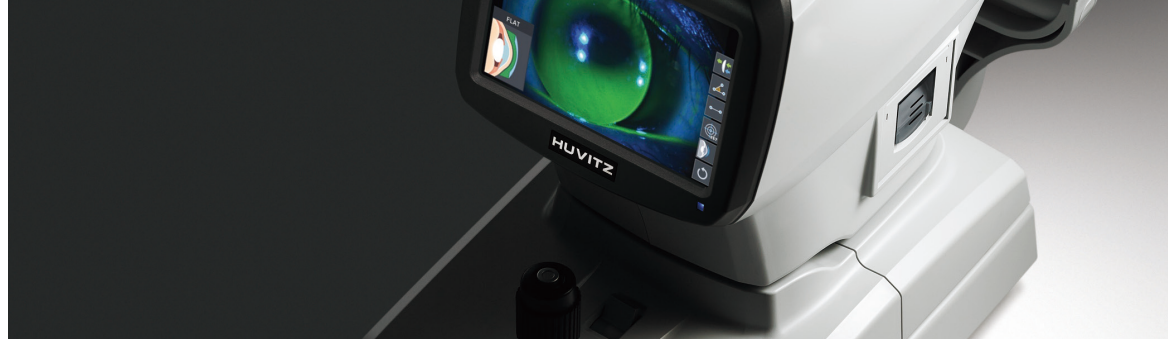
Extra storage on upper section allows small accessories to be stored without any dust penetration by cover of rubber material.

“ Improved Interface means Improved Efficiency ”

Experience intuitive and easily accessible design







Essence

Newly designed, Huvitz continues to lead in product development combining innovation with value and performance

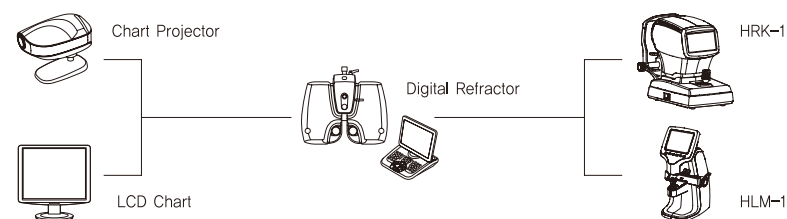
# HRK-1 Huvitz Auto Ref/Keratometer with Smart Assembly Moving Control Tech

## Specifications

Measurement Mode	K/R Mode	Continuous Keratometry & Refractometry
	REF Mode	Refractometry
	KER Mode	Keratometry
	Color View Mode	Color View & Contact Lens Fitting Assitance (White & Blue LED Light)
Refractometry	Vertex Distance (VD)	0.0, 12.0, 13.75, 15.0
	Sphere (SPH)	-30.00~+25.00D (VD=12mm) (Increments : 0.01, 0.12, 0.25D)
	Cylinder (CYL)	0.00~±12.00D (Increments : 0.01, 0.12, 0.25D)
	Axis (AX)	0~180° (1° unit)
	Astigmatism Indication	-, +, ± (Mixed)
	Pupil Distance (PD)	10~85mm
Keratometry	Minimum Pupil Diameter	Ø2.0mm
	Radius of Curvature	5.0~13.0mm (Increments : 0.01mm)
	Cornea Power	25.96D~67.50D (Increments : 0.05, 0.12, 0.25D) (When cornea equivalent refractive index is 1.3375)
	Cornea Astigmatism	0.00~15.00D (Increments : 0.05, 0.12, 0.25D)
	Axis	0~180° (Increments : 1°)
	Pupil, Iris Diameter	2.0~14.0mm (Increments : 0.1mm)
Auto Tracking Distance	Memory of Data	10 measurements for each eye
	Up and down	±15mm
Others	Display	7 inch Wide Color TFT LCD Resistive Touch Panel
	Interface	RS-232C
	Internal Printer	Thermal Line Printer
	Power Supply	100-240VAC, 1.0-0.6A, 50/60Hz
	Dimensions / Weight	261(W) X 513(D) X 433(H)mm / 16kg

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## System Networking



**Huvitz**

HUVITZ Co., Ltd. 38, Burim-ro 170beon-gil, Dongan-gu,  
Anyang-si, Gyeonggi-do, 14055, Republic of Korea  
Tel:+82-31-442-8868 Fax:+82-31-477-8617 <http://www.huvitz.com>

A9ARAA-17-00001-1-170907

# HRK-1

Huvitz Auto Ref/Keratometer with  
Smart Assembly Moving Control Tech



**Huvitz** Re:define, Re+create





The technology behind may not be seen, but the results are clearly visible. HRK-1

Professionals also admire HRK-1's commitment to its fundamental foundation as a quality Auto Ref / Keratometer, now featuring Smart Assembly Moving Control Technology, and high-performance light source.

As eye-diseases and ophthalmologic disorders are increasing, Huvitz is devoting its efforts to think more deeply about the essence of its technology offerings. Equipped with advanced technologies such as a high-performance light source, an intuitive interface and Smart Assembly Moving Control Technology (SAMC Tech), for a faster and more accurate movement in accordance with the refractive error of the patient, and ultimately providing highly accurate and stable measurements.

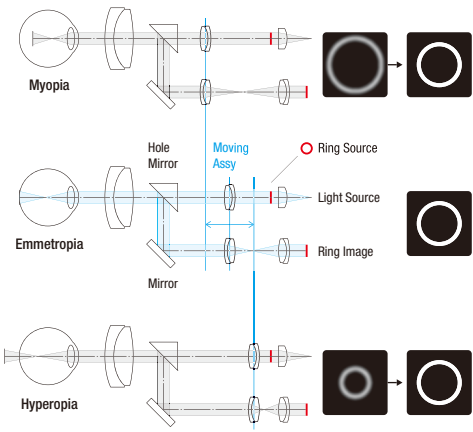


The advanced REF optical system provides accurate measurements.



**Huvitz’s Smart Assembly Moving Control Technology**

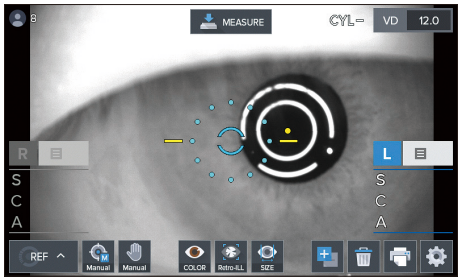
The invisible technology behind Huvitz’s REF optical system can be seen in the accuracy and stability of the measurement results. Considering the refractive error of the patient, the measurement ring is projected on the retina, and is adjusted automatically by Smart Assembly Moving to secure a stable signal. HRK improves the effect of uneven light reflection in normal and cataract eyes with the results being more accurate refractive power REF data.



Smart Assembly Moving Control (SAMC) Tech

**Quick Virtual Aiming Dot Function**

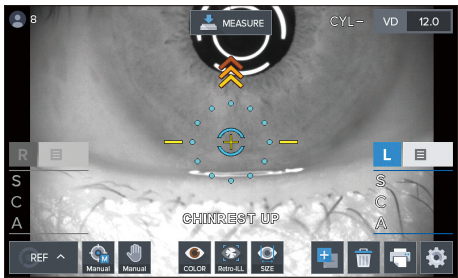
The Aiming Dot quickly guides you to easily find the patient’s visual apex from any position for fast alignment. Reliable refractive power REF data is then automatically obtained.



Aiming Dot

**Simple up & down Auto Tracking**

The Auto Tracking automatically tracks the eye of the patient making it easier to measure by manipulating the joystick back and forth without having to rotate the joystick.



Chinrest Adjustment

**Familiar User Friendly Interface**

Featuring an icon-based intuitive operating system, the interface is simple for all users.



Measurements, prescriptions and fittings are even more accurate with more vivid detail.



Usability & efficiency, designed by our Users' experiences



**Touch-enabled 7-inch color display**  
Adopting a wide color TFT LCD that provides high quality imaging with real-time processing chip design. It also has a buttonless touch screen that is as familiar and convenient as a smartphone. The magnified optical magnification allows you to observe and measure the eye of the subject in detail with a sharper and larger size.

**Friendly external monitor display**  
By connecting the measurement results to an external monitor, you can easily and accurately communicate and understand the diagnostic results.

**Secure Delete Confirm Dialog**  
Delete Confirm Dialog function prevents the data from being deleted immediately after measurement, to aid in further analysis.

**Easy One-Touch Lock**  
For convenience, the upper moving stage can be easily locked down.

**High-speed printer and convenient paper change**  
The HRK-1 can now print 10 measurement results quickly & quietly in less than 3 seconds. It also has an easy and simple printer paper changing function.

**Lensmeter printer features**  
It can directly connect to our automatic lensmeter (HLM-1) using optional Y-cable for printing HLM-1's measurement result.

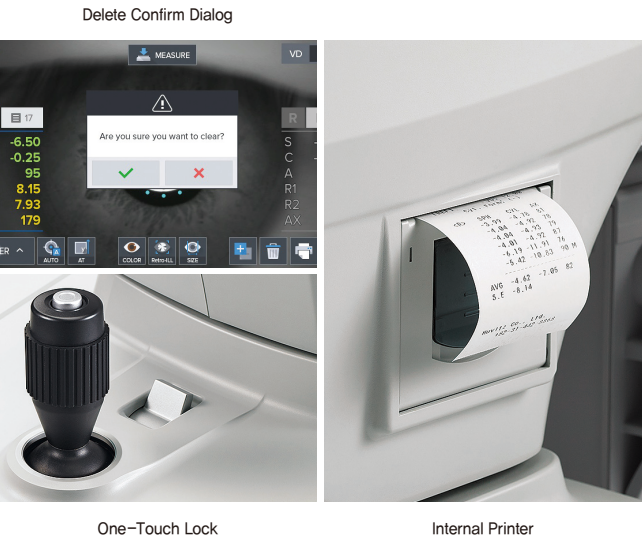
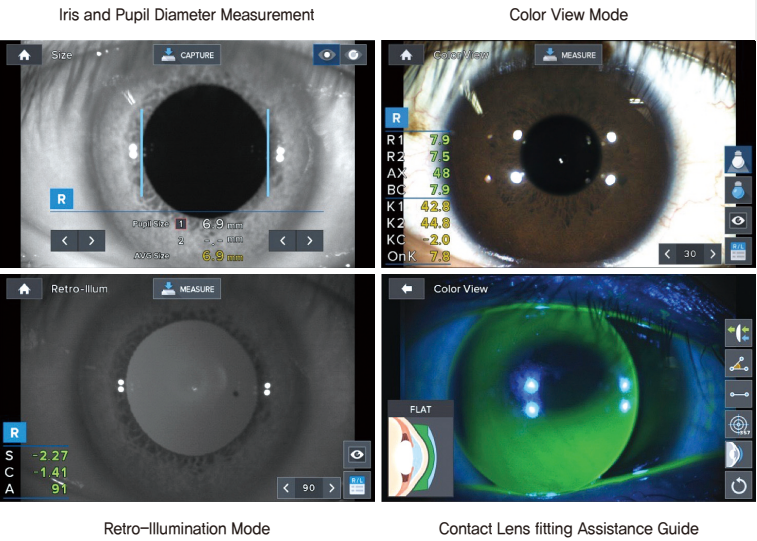
**Intuitive Iris, measurement of pupil size**  
With the image capture function, iris and pupil diameter can be measured up to 14mm, and REF measurement with a pupil diameter as small as 2mm.

**Immediate Color View Mode**  
Full color camera and white LED light is used for color display, overall condition monitoring, contact lens fitting and prescription.

**Clear Retro-Illumination Mode**  
You can observe the eye health & condition, such as lens opacity or corneal damage. SPH, CYL and AXIS measurement data required for eyeglass and contact lens prescriptions are made at the same time.

**Contact Lens fitting Assistance Guide**  
Image processing, using a fluorescence solution and yellow filter, automatically determines the fitting state.

**Convenience for Prescribing Contact Lenses**  
Adjusting and capturing the contrast of the image being observed, HRK-1 automatically calculates and displays the Base Curve value of the lens by the On-K fitting used when prescribing the contact lens from measured KERATO Data (RGP lens only).





Unlike many conventional diagnostic devices, HRK-8000A is based on Hartmann-Shack wavefront sensor, which analyzes many focal spots of a light wavefront.  
It has the ability to measure not just the basic refraction error of a customer, but to obtain a spatially resolved refraction map.

The new HRK-8000A utilizes a unique wavefront analysis algorithm and surpasses conventional and simple refraction offering added values with high order aberration data output for customized lenses and observation of patients before and after refractive surgery.

Experience the whole new wavefront Auto Ref-Keratometer from Huvitz, HRK-8000A!

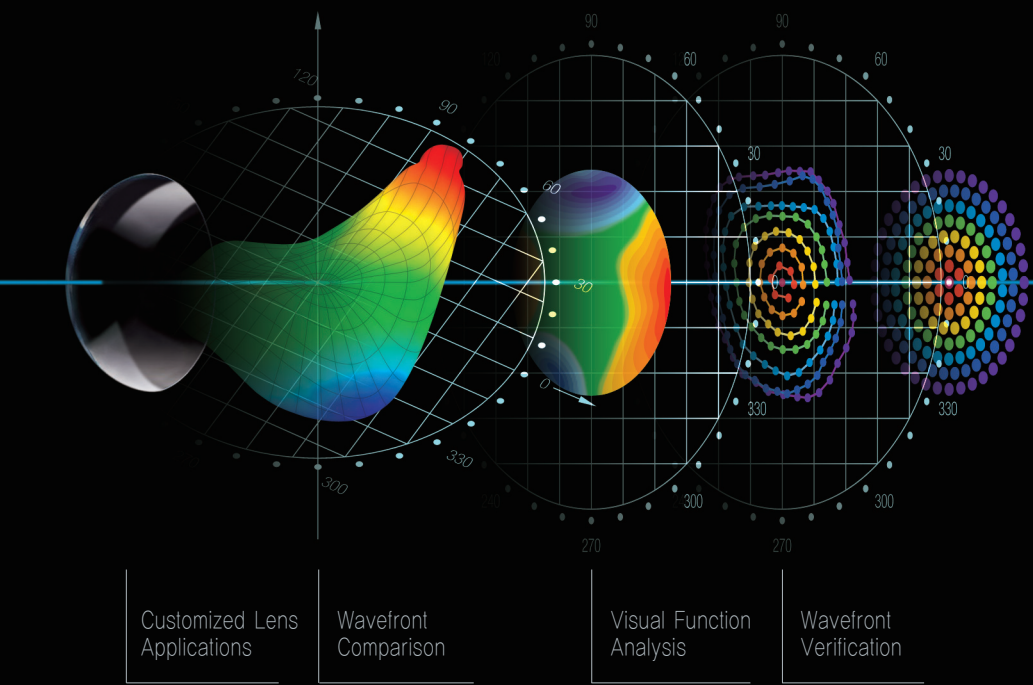


Image showing the Huvitz HRK-8000A connected to an external monitor(optional)

## HUVITZ AUTO REF-KERATOMETER HRK-8000A



Huvitz Building 689-3, Geumjeong-dong  
Gunpo-si, Gyeonggi-do, 435-862, Korea  
Tel : +82-31-442-8868  
Fax : +82-31-477-8617  
http : // www.huvitz.com

### SPECIFICATIONS

MEASUREMENT MODE	
K/R Mode	Continuous Keratometry & Refractometry
REF Mode	Refractometry
KER Mode	Keratometry
CLBC Mode	Contact Lens Base Curve Measurement
KER P Mode	Peripheral Keratometry
Color View Mode	Color View & Contact Lens Fitting Assistance (White & Blue LED Light)

REFRACTOMETRY	
Vertex Distanc(VD)	0.0, 12.0, 13.5, 15.0
Sphere(SPH)	-30.00~+25.00 (VD=12mm) (Increments:0.01, 0.12, 0.25D)
Cylinder(CYL)	0.00±12.00D (Increments 0.01, 0.12, 0.25D)
CLBC Mode	1~180° (Increments:1°)
Cylinder Form	-, +, ±
Pupil Distance	10~85mm
Minimum Pupil Diameter	ø2.0mm

KERATOMETRY	
Radius of Curvature	5.0~13.0mm (Increments: 0.01mm)
Corneal Power	25.96~67.50D (When corneal equivalent refractive index is 1.3375) (Increments:0.05, 0.12, 0.25D)
Corneal Astigmatism	0.00~ -15.00D (Increments:0.05, 0.12, 0.25D)
Axis	0~180° (Increments:1°)
Pupil, Iris Diameter	2.0~14.0mm (Increments:0.1mm)
Memory of Data	10 measurements for each eye

MOVEMENT RANGE	
Up-Down	±15mm
Left-Right	±5mm    ±2mm
Forward-Backward	±5mm    ±2mm

OTHERS	
Display	7 inch Wide Color TFT LCD, Touch panel with Tilting function
Internal Printer	Thermal Line Printer with Auto Cutting function
Power Saving	Automatic switch-off(5min)
Power Supply	AC100-240V, 50/60Hz(Free Voltage), 60W
Dimension/ Weight	262(W) x 518(D) x 441(H)mm / 20.9kg

Desings and details can be changed without prior notice for improvements.

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# HUVITZ AUTO REF-KERATOMETER HRK-8000A

*with Wavefront Technology*



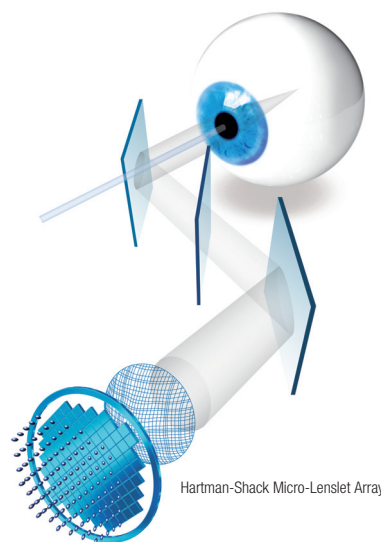


## Extreme Precision & Accuracy! Most Advanced Wavefront Technology, HRK-8000A



High Order Aberrometry Data Output Opens Possibilities for  
High Market Trended Customized Lens Applications!

### Optimized Optical System



Wavefront Technology measures the wavefront of light reflected from the retina and the refractive power with various sensors divided by sectors and analyzes them with extreme precision.

### Micro Lens Array

Huvitz' own developed Micro Lens Array creates a number of separated focal spots, of which the pattern provides valuable information of the customer's ocular system.

### Customized Lens Manufacturing

High order aberration and Zernike map data output function allow premium custom spectacle or contact lens manufacturers to improve vision accuracy and power.

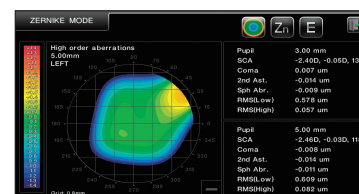
### More Data on Aberration Measurement

Zernike Coefficients (0.0 mm)			
Order	Refract	Name	Mean
2	0	Oblique Astigmatism	0.019
3	0	Oblique	-0.000
3	0	Horizontal Astigmatism	-0.002
3	0	Oblique Trefoil	0.005
3	0	Horizontal Trefoil	-0.005
3	0	Horizontal Coma	0.003
3	0	Oblique Coma	0.003
3	0	Oblique Quadrafoil	-0.007
3	0	Oblique 2nd Astigm.	-0.007
3	0	Horizontal Astigmatism	-0.001
3	0	Horizontal Quadrafoil	-0.007

High order aberration data such as Coma, Trefoil, Spherical Aberration, Secondary Astigmatism, and Tetrafoil, which was only available in wavefront aberrometers, now is available in Huvitz HRK-8000A!

Clinical usage of this data is all in your hands!

### High Order Aberration Map is on!



Besides the conventional data such as Spherical, Cylinder and Axis, the high order aberration data is displayed in a graphical Zernike refraction map for better understanding of patient's eyes and superior clinical decision making.

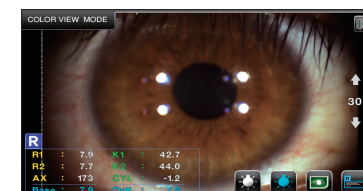
### PSF & Image Simulation



Point Spread Function (PSF) and chart simulation of retinal display can make patients understood in a much better way of their clinical status of eyes and customized lens benefits.

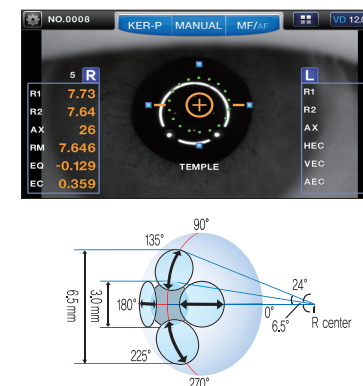
The World's First Contact Fitting Guides and Recommendations!

### Color View Mode!



The Full Color CCD camera and white LED light source in the auto ref-keratometer enable you to see eyes and contact lens fitting status which was previously only possible with slit lamps.

### Peripheral Keratometry Measurement

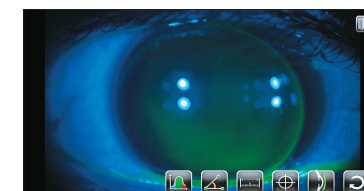


HRK-8000A provides peripheral keratometry measurement data that can be greatly useful for fitting contact lenses.

### Ultra High Precision KER Data

Mire ring and LED sources enable highly reliable keratometry data of the corneal base curve to be obtained.

### Contact Lens Fitting Assistance Guide



The World's First contact lens fitting function in an auto ref-keratometer enables you to see fluorescein liquid with blue illumination.

The HRK-8000A also analyzes and simulates the lens fitting status with automatic calculation and recommendation.

### Contact Lens Prescription Guide

Image capture and contrast regulation is possible.

The HRK-8000A gives you the best On-K fitting guide based on the base curve and KER value measured!

Unmatched Performance & Speed Provides Comfortable  
User Environment.

### Touch & Tilting Color Display Screen



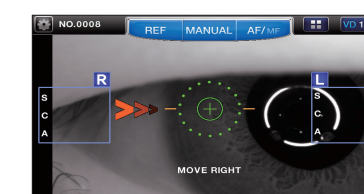
High brightness and contrast VGA 7" wide color TFT LCD screen provides with high resolution video images.

Smooth and free tilting function also offers you a comfortable and clear view at any angle.

### Auto Tracking

The cutting edge auto sensor and 3 dimensional movement mechanism enables you to track down a measuring focus of an eye automatically and complete the measurement perfectly even with an inexperienced user.

### Animated Guide



In case a measuring point is out of auto tracking range, the animated guide on the screen suggests how to operate the joystick in the easiest and most intuitive way.

### Vision Comparison Function

The internal chart provides a vision comparison function of current vision and corrected vision.

### Motorized Chin Rest



Just by pressing the Up & Down buttons, users can set the height of the measuring point comfortably and quickly

### Faster Measurement Speed

Faster measurement speed than any other competitors' equipment!

### Comfortable One Touch Lock

The upper moving stage can be locked easily with the one touch button, making locking smooth and easy.

### Quiet & Speedy Auto Cutting Printer



Automatic paper cutting and one touch paper roll change functions are new advantages of the HRK-8000A.

### Ext. Monitor & Network Connectivity

Full HD video output through the HDMI port provides a differentiated explanation base for clinical consulting with your patients.

HRK-8000A supports network connectivity with Huvitz Digital Refraction System enabling easy and fast refraction in networking.



Intelligence in your vision!

Huvitz is always striving to reflect all your questions and demands through state-of-the-art refraction system.

Finally we introduce HRK-9000A reinforced with subjective VA test and curvilinear design.

A brand new auto ref/keratometer, this is another challenge Huvitz will overcome.

## Huvitz Auto Ref/Keratometer HRK-9000A

with Wavefront Technology



**Huvitz** Re:define. Re\*create

Tomorrow with Huvitz

What is achieved is not a future, but a history.  
Striving future achievement and future satisfaction will always motivate Huvitz to redefine and recreate our history.

# Huvitz

## Auto Ref/Keratometer

### HRK-9000A with Wavefront Technology



#### Specification

##### Measurement Mode

K/R Mode	Continuous Keratometry & Refractometry
REF Mode	Refractometry
KER Mode	Keratometry
KER P Mode	Peripheral Keratometry
Color View Mode	Color View & Contact Lens Fitting Assistance (White & Blue LED Light)
Meibography Mode	Special Mode for Observing Meibomian Gland
TFBUT Mode	Special Mode for Measuring TFBUT (Tear Film Break-Up Time)

##### Refractometry

Vertex Distanc(VD)	0.0, 12.0, 13.5, 13.75, 15.0
Sphere(SPH)	-30.00~+25.00 (VD=12mm) (increments : 0.01, 0.12, 0.25D)
Cylinder(CYL)	0.00~±12.00D (increments 0.01, 0.12, 0.25D)
Cylinder Form	-, +, ± (Mixed)
Pupil Distance	10~85mm
Minimum Pupil Diameter	∅ 2.0mm

##### Keratometry

Radius of Curvature	5.0~13.0mm (increments : 0.01mm)
Corneal Power	25.96~67.50D (increments : 0.05, 0.12, 0.25D) (When corneal equivalent refractive index is 1.3375)
Corneal Astigmatism	0.00~ -15.00D (increments : 0.05, 0.12, 0.25D)
Axis	0~180° (increments : 1°)
Pupil, Iris Diameter	2.0~14.0mm (increments : 0.1mm)
Memory of Data	10 measurements for each eye

##### VA Test - Subjective Refractive Test

VA Measurement	<0.1/0.1/0.25/0.32/0.4/0.5/0.63/0.8/1.0/1.25> <20/200 / 20/200 / 20/80 / 20/60 / 20/50 / 20/40 / 20/30 / 20/25 / 20/20 / 20/16>
Sphere(SPH)	-22D to +22D (increment 0.25D)
Cylinder(CYL)	0 to ±10D (Max, increment 0.25D)
Cyl Axis	0 to 180° (increment 1°/5°)

##### Movement Range

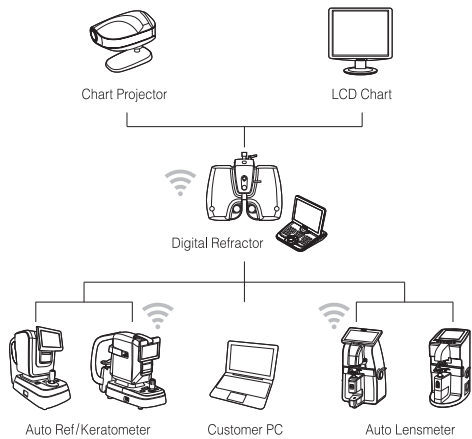
Up-Down	±15mm
Left-Right	±5mm, ±2mm
Forward-Backward	±5mm, ±2mm

##### Others

Display	7 inch Wide Color TFT LCD, Touch panel with Tilting function
Interface	RS-232 x 1, USB(for Service) x 1, Wi-Fi (for Data communication)
Wi-Fi	Band : 2.4GHz, IEEE802.11b/g Security : WPA2-PSK
Internal Printer	Thermal line printer with Auto cutting function
Power Saving	Automatic switch-off (5min)
Power Supply	100-240VAC, 1.0-0.6A, 50/60Hz
Dimension / Weight	262(W) X 518(D) X 441(H)mm, 19kg

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

#### System Networking



**Huvitz**

Huvitz Bldg., 298-29, Gongdan-ro, Gunpo-si,  
Gyeonggi-do, 435-862, Korea  
Tel:+82-31-442-8868 Fax:+82-31-477-8617  
<http://www.huvitz.com>

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## Combining Everything into One

[All New] HRK-9000A Auto Ref/Keratometer

Unceasing efforts for higher accuracy lead to objective refraction followed by standardized subjective refraction with HRK-9000A and in the end, unprecedented accurate results wait for you.

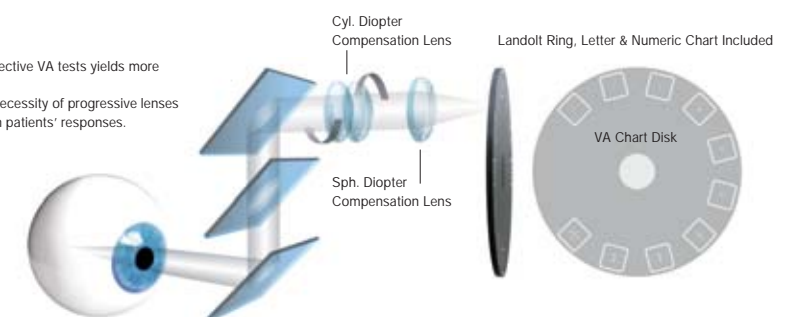
HRK-9000A speaks no compensation, but perfectionism in refraction composed of glare test, superior contrast sensitivity and TFBUT/Meibography which are introduced for the first time in the world.

A beautiful curvilinear design speaks emotional stability in you.

With HRK-9000A, take satisfaction which you have ever enjoyed before.

### Subjective VA Test

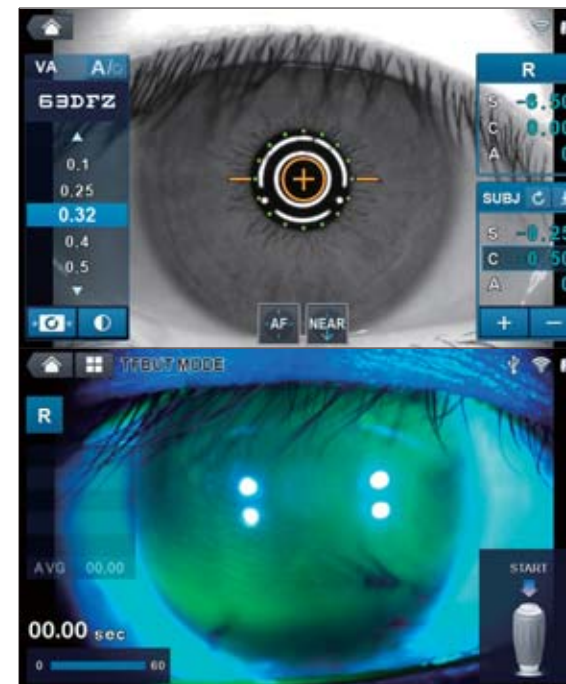
Comparison between subjective and objective VA tests yields more reliable and accurate data. Subjective VA test is useful in deciding necessity of progressive lenses because it checks visual acuity based on patients' responses.





“Subjective VA Test Available? or Not?”  
Experience Difference in Your Vision!

Subjective VA Test - Glare Mode



TFBUT Measurement

#### Wavefront Technology

Huvitz' wavefront analysis algorithm goes beyond general refraction to conclude highly accurate and reliable cornea refractive power and index. Wavefront technology measures the wavefront of light reflected from the retina and the refractive power with various sensors divided by sectors and analyzes them with extreme precision.

#### Micro Lens Array

Huvitz' own developed Micro Lens Array creates a number of separated focal spots, of which the pattern provides valuable information of patients' ocular systems.

#### More Accurate Data

Accuracy of KER data is improved by setting optimal zone diameter on measuring spot and also REF data by standardization of quantity of light of fogging chart and fogging lens position along with complete block of accommodation.

#### Color View Mode

Full color CCD camera and white LED light source in auto ref/keratometer enable you to see eyes and contact lens fitting status which was previously only possible with slit lamps.

#### Subjective VA Test

Comparison between subjective and objective VA tests yields more reliable and accurate data. Subjective VA test is useful in deciding necessity of progressive lenses because it checks visual acuity based on patients' responses.

#### Contrast Sensitivity and Glare Test

Highly reliable night visual acuity is examinable with low contrast sensitivity test and glare test which perfectly reproduces halo effect. Progress after refractive or cataract surgery can be monitored effectively.

#### TFBUT Measurement and Meibography

Conditions of tear film and dry eye can be collected by TFBUT (Tears Film Break-Up Time) are readable for thorough understanding of visual acuity. Degeneration of meibomian gland can be also monitored with enough light source and image enhancement function.

Meibography Measurement



Wavefront Technology / Micro Lens Array

Peripheral Keratometry Measurement

Continuous measurement on periphery of cornea at 90° both vertically and horizontally from center of cornea produces curvature and eccentricity values of all points and allows best fitting of contact lenses.

IOL Mode

Extra measurement mode is available for IOL power or visual acuity after cataract surgery.

Iris and Pupil Diameter Measurement

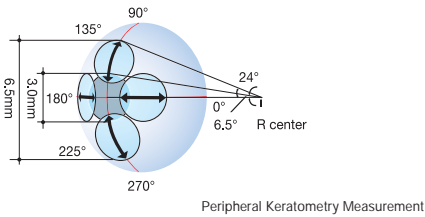
Image capturing function supports highly accurate exam by measurement of iris and pupil diameter with diameter from 2mm to 14mm.

Contact Lens Fitting Assistance Guide

The world’s first contact lens fitting function in an auto ref/keratometer enables you to see fluorescein liquid with blue illumination.

Efficient Contact Lens Prescription

Image capture and contrast regulation are possible. HRK-9000A gives you the best On-K fitting guide based on the base curve and KER value.



Contact Lens Fitting Assistance Guide



Auto Tracking Guide

Auto Cutting Printer



Touch and Tilting 7" Color Display

Wide color TFT LCD supports high-resolution images and real-time image processing to realize afterimage-less image quality. Moreover, swiveling and tilting touch display is readable from any direction for smooth communication between examiners and examinees.

Auto Tracking

Cutting edge auto sensor and 3 dimensional movement mechanism allow you to track down a measuring focus of an eye automatically and complete measurement perfectly even with inexperienced users.

Auto Cutting Printer

Embedded printer allows to print 10 measurement data within 3 seconds without noise at all. Replacement of paper roll is in one-touch action.

Wireless Communication

Wireless Communication via Wi-Fi allows perfect data transmission with HDR-9000 and HLM-9000 regardless of working environment. Classic communication via RS-232 cable is available for data transmission with previous models.

