Technology for Life Science

Automatic Perimeter Kowa AP®-7000

Specifications

Stimulus presentation method	Projection
Stimulus color	White, red, blue, green
Stimulus size	Goldmann I, II, III, IV, V
Maximum stimulus intensity	3,183 cd/m²(10,000 asb): white
Stimulus presentation time	0.2 sec.
Stimulus presentation interval	0.6~3.3 sec. (automatically adjusted)
Background intensity ＊Automatic light adjustment	White: 10 cd/m²(31.5 asb) Yellow: 100 cd/m²(314.2 asb)
Examination distance	300 mm
Measurement range	80°
External interface	USB, ethernet
Fixation target	Orange LED Center 1 point, auxiliary 4 point, fovea examination 4 point
Eye fixation monitoring	Heijl - Krakau method, eye fixation monitor, gaze monitor
Printout	USB-connected printer〔separately available〕
Operation screen	Touch panel color LCD monitor
Data save	Built-in flash memory
Operation support	Oral instruction
Chin rest operation	Motor-driven
Power supply	Input : AC 100-230 V 50/60 Hz Power consumption : 200 VA
Dimensions	730(W)×430(D)×700(H) mm
Weight	26 kg

Examination

Screening	Program	Standard, Precision, Center, Periphery, Glaucoma, V.Meridian, Center #1, Center #2
	Method	2zone, 3zone, 4zone, Quantify Scotoma Intensity step : 5dB / provability variable (p-value) Quick mode is available.
Supra	Program	Standard, Macula, Mariotte, Optional, D-Test
	Method	Same intensity 2 zone
Threshold	Program	Center 1, Center 2, Meridian, Macula 1, Macula 2, Periphery
	Method	All Threshold, Quick 1, Quick 2, Super quick
Isopter (Kinetic)	Program	Standard, Isopter + Screening 1, Isopter + Screening 2, Isopter + Threshold
	Method	Auto, Manual
Custom	Program	Circle threshold, 1 point threshold, Quadrant threshold, Optional threshold#, Optional threshold○, Screening#, Screening○
Perimetry on fundus		Perimetry combined fundus image.
Fovea examination		It is available in the Threshold Center examination (Threshold - Center 1, Center 2, Isopter + Threshold).

Analysis

Analysis for threshold	Each examination	Gray/Color scale, 3D display (Hill of Vision), Total value of quadrant, Glaucoma staging (8 steps) GHT, Anderson's Criteria, Anderson, Classification, AGIS, CIGTS, VFI, Total deviation, Pattern deviation, MD (Mean Deviation), PSD (Pattern Standard Deviation), Bebie Curve (Total deviation, Pattern deviation, MD, and shown with actually measured values and p-values.)
	Chronological changes	All analysis data (Scale, Threshold, Total deviation p-value, Pattern deviation p-value, Bebie Curve) Graphically displays (MD, PSD, VFI, AGIS, CIGTS, Quadrant TD, Classification, Anderson, Boxplot)
Comparing		Comparison can be made between results of the Threshold, Screening, or Supra examination executed twice.
Combination		Center and Periphery examinations can be combined in Threshold and Screening Center examinations. Isopter examination can be combined with Threshold Center or Screening Center examination.
Display	Both eyes	Results of the examination of both eyes of the same patient executed on the same day are displayed side by side.
	Multi	Results of the examination executed four times (both eyes/either eye) of the same patient are displayed side by side.
Patient Information		ID, Name, Date of birth, Sex, Correction, Visual Acuity, Diagnosis, Doctor, Comment
Normal eye database		Ver.1.0.0.0 issued on 2011/06/09 〔Age range〕20s to 70s 〔Samples〕612 persons 〔Criteria〕Questioning, visual acuity, reflection, eye pressure, visual field, and fundus

Database

Database	Patient ID list display, all list display, search function, ID extraction function
Data save	Built-in flash memory Capacity: For approx. 20,000 patients (40,000 examinations)

Images in the LCD monitor are compositions.
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Specifications and appearances are subject to change without notice.

Distribution name: Kowa AP-7000

CE

REF FT10_1299300CO
Printed in Japan.

Kowa

Technology for Life Science

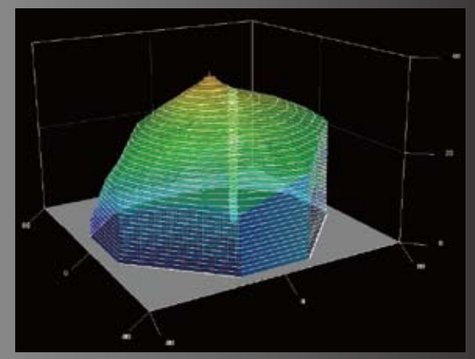
Automatic Perimeter

Kowa AP®-7000

Installed Database of Normal Eyes over 600 People

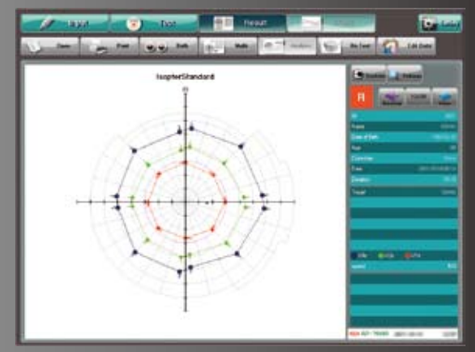
Database of Normal Eyes

Database of normal eyes measured periphery 60° enables more precise judgment of periphery test results.



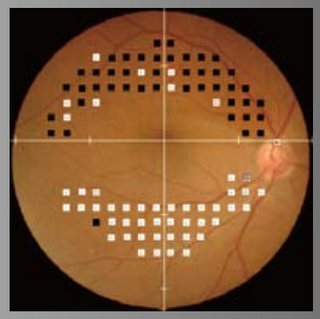
Kinetic Perimetry

This instrument is equipped as standard specification.



Fundus Oriented Perimetry

Static perimetry test can be applied to abnormal sites on a fundus images, such as a fundus photograph, OCT or SLO.



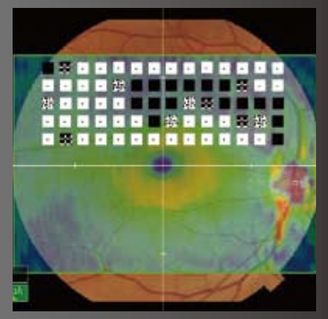


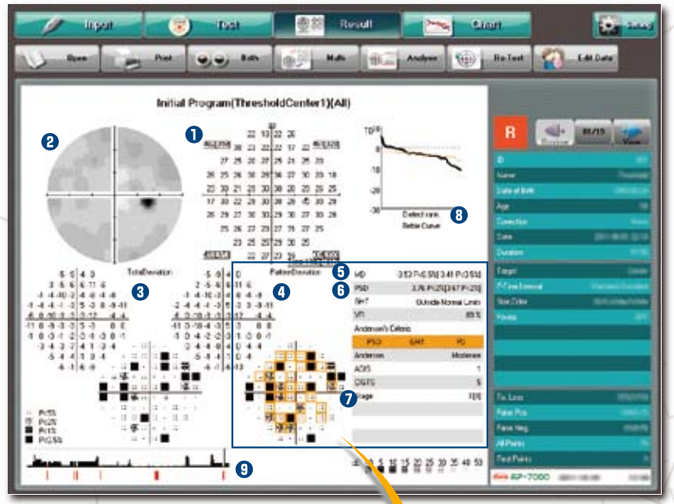
Photo: Kanazawa University Department of Ophthalmology (Sinji Okubo,M.D. and Kazuhisa Sugiyama,M.D.)

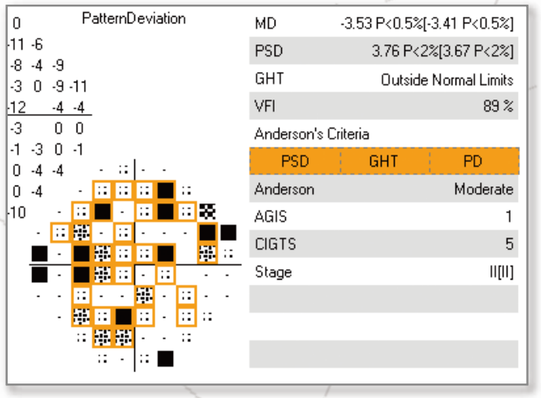
Equipped with Analytical Indices in Line with Guidelines for Glaucoma

Threshold

In addition to test within the central 30° that can observe the progression of glaucoma, test is possible in a wide variety of ranges, including central 10°, which can identify visual field abnormalities in the macula.

Clear Display of Analytical Results





❶ **Threshold (Measured Values)**

❷ **Gray Scale**
Expressing threshold values in ten levels of gray scale

❸ **Total Deviation**
Deviation from the normal value for each age range

❹ **Pattern Deviation**
Deviation from the pattern of the normal visual field pattern

❺ **MD**
Averaged degree of loss of visual field, across the whole field

❻ **PSD**
Degree of deviation from the normal visual field pattern

❼ **Analytical Indices**
Display of various analytical indices

❽ **Bebie Curve**
All total deviation values expressed as a curve

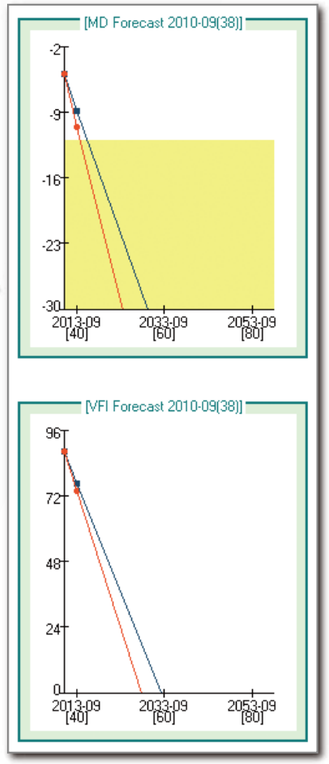
❾ **Gaze Monitor**
Monitoring of eye fixation state from the relative positional relationship between pupil and corneal reflection

Analytical Indices

- **GHT (Glaucoma Hemifield Test)**
  For this index, threshold center test points are divided into ten sectors, and corresponding sectors above and below the axis of the horizontal median are compared.
- **VFI (Visual Field Index)**
  A percentage index in which a normal visual field is 100% and total loss of field is 0%.
- **Anderson's Criteria Diagnostic Support Function**
  If one or more of three consecutive points satisfy one or more of the conditions "PSD has p<5%", "GHT outside normal limits", or "patern deviation probability plot shows a cluster of three or more nonedge points that have p<5%,and one of the points has p<1%", this indicator judges the condition to be a glaucoma visual field abnormality. (the physician must judge whether the three points match the NFL movement)

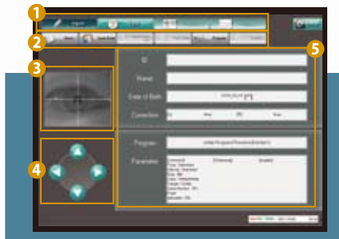
Chronological Change Display

Test result analytical indices can be graphically displayed as time series data to give a clear grasp of changes over time in the tested eyes.



Predictive Display

Predictive graphs are displayed from calculations of linear rates of changes in analytical indices. This function predicts what values of MD and VFI (Visual Field Index) will be reached at what age, if current rates of change in those values continue.



Main operation buttons are grouped at the top of the page, and buttons are laid out to follow the progression of tests, from patient information entry through test program selection to result display.

❶ **Main Menu**
Switch between screens for input, test, result and chronological change.

❷ **Sub Menu**
Run individual operations. Content changes to match the screens of the main menu.

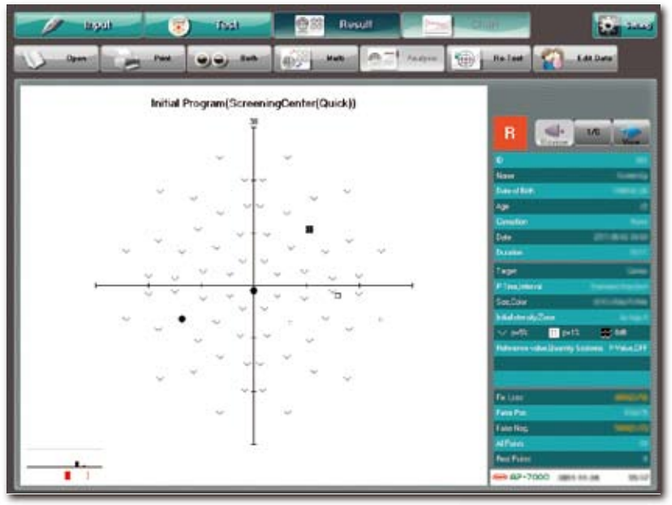
❸ **Eye Fixation Monitoring**
Monitor the tested eye. Touch to get an enlarged image.

❹ **Chin Rest Adjustment**
Move the chin rest up, down, left and right.

❺ **Patient information**
Patient information entry and test program selection.

Screening

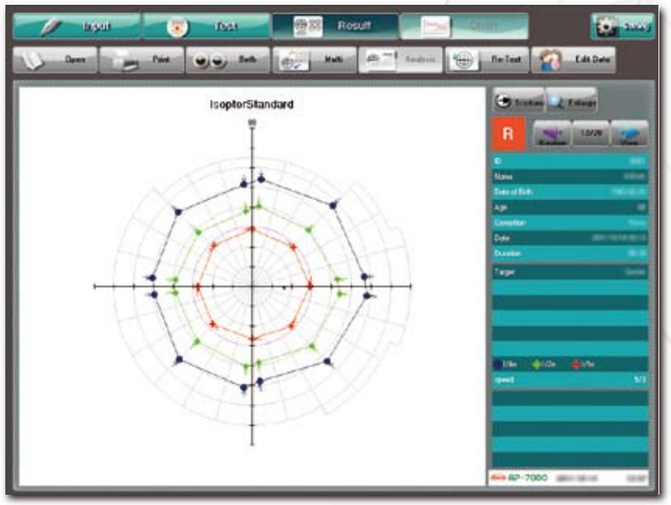
4-zones measurement that goes beyond screening, and programs using probability values (p-values) in intensity steps, are among the features that enable effective test in less time.



Running tests with intensity of probability value (p-value) makes it possible to display the difference between the measured value and the normal value for each age as a p-value, so that evaluation equivalent to total deviation in thresholds can be performed in a shorter time.

Isopter

"Automatic measurement function", using many median patterns, "Manual measurement function", allowing free drawing of isopters, and "auto + manual measurement function", which allows any drawing of median after automatic measurement, are among the diverse measurement method options available.



Fundus Oriented Perimetry

Threshold test within the central 10°, custom optional threshold that allows selection of any desired test point, and custom optional screening tests are available.

The custom optional threshold test can measure test points at intervals of 2°

Photo: Kanazawa University Department of Ophthalmology
(Sinji Okubo,M.D. and Kazuhisa Sugiyama,M.D.)

Network Linkage