HENSON 9000

Key product features

Fast, new, accurate algorithms	New ZATA threshold algorithm conforms to Goldmann standard Faster threshold testing using prior data for greater accuracy Fast multiple and single stimuli suprathreshold program
Data collaboration facilities	Fully networkable through control device PDF format printouts available
Standardisation	Fully compliant DVLA estermann test Fully compatible with Henson 8000 Conforms with Goldmann standard
Innovative technology	Degradation-free light source Solid-state technology Low maintenance costs Numerous PC configuration options now available Optional motorised chinrest controlled by PC

Technical specification

Target type (Stimulator screen)	Bowl	
Target distance	25 (cm)	
Maximum stimulus illumination	10,000 (Stimulus intensity) asb	
Background illumination	31.5 (asb)	
Stimulus source	LEDs white	
Stimulus size	Goldmann III	
Presentation time	Stimulus flash time (msec)	200
	Minimum inter-stimulus delay (sec)	0.5
	Patient response time	Adaptive or fixed
Fixation	Fixation target	Single and 4 point
	Heiji-Krakau	Yes
	Video eye monitor	Yes
Test programs	ZATA Standard threshold central	10-2, 30/24-2
	ZATA Fast threshold central	10-2, 30/24-2
	Suprathreshold single stimulus	1-3 Level. Can manually add test locations
	Suprathreshold multiple stimulus	1-3 Level. Can manually add test locations
	Estermann (DVLA driving test)	Binocular
Unit dimensions	W x D x H (mm)	440 x 400 x 452
Unit weight (kg)	13.5kg	
Input voltage	85 - 263	
Chinrest	Yes	
Headrest	Yes	
Database	MS Windows™ compatible, networkable dependant on PC/laptop	
Optional printer	MS Windows™ compatible, dependant on PC/laptop	
Control device	External PC/laptop running Microsoft® Windows® 7 or 8.X Professional (32 or 64 bit)	

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Henson 9000.

Sensitivity. Specificity. Speed.
Now you can have all three.

elektron technology

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Henson. Screening and threshold testing with differences you need to see.

We are aware of the excellent technology available to ophthalmic and optometric professionals.

We are also aware of the frustrations and shortcomings of using this technology, in the context of practical and pragmatic patient care.

So we have created the **Henson 9000** that is designed to offer you a credible choice by offering you more of what you and your patients need. Without trade-offs.

Small footprint, ease of use, performance and speed of operation have all influenced the new Henson 9000 design.

The **Henson 9000** combines fast screening with the latest and fastest threshold test (ZATA) plus standard printouts that match those used in most Hospital Eye Services – see Fig. 1.

The modern and ergonomic design offers a headrest plus an optional motorised chin rest and a reduced footprint compared to previous models. There are multiple PC configuration options, enabling practices of any size to flexibly accommodate the unit.

When thinking about updating your perimeter, you really need to consider the major advantages the **Henson 9000** offers.

9000 with laptop

9000 with standard PC

9000 with touchscreen PC

9000 with wall mounted touch screen PC

9000 with touchscreen PC on arm

9000 with tablet*

Tablet mounted on an arm*

*Not all tablets are suitable for use with the Henson 9000

Screening: Henson introduces advantages impossible before.

We know that when screening for disease, the two statistics determining performance are sensitivity and specificity.

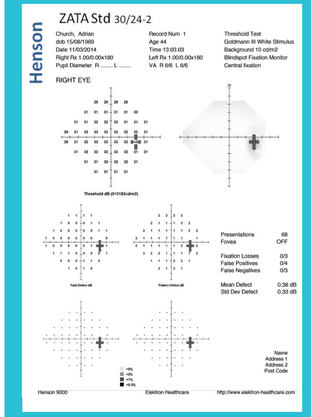
We also know that a screening test needs to be conducted as quickly as possible, for the benefit of your practice and your patient.

Until now, these factors have been interdependent. For example, quicker testing has been achieved but at the expense of accuracy. Or increased accuracy has limited speed.

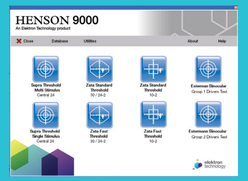
High sensitivity?
We have scientific proof that you don't need large numbers of stimuli to have a test regarded as sensitive when testing for early visual field loss.

To access this paper please visit the Henson Perimeter section of
www.elektron-healthcare.com

High specificity?
Our technology drives down false positive rates and allows clinicians to differentiate between random misses and glaucomatous defects. It enables you to repeatedly test a missed location.



(Fig 1) Test report printout



High speed?
The Henson screening test, in most cases, takes less than one minute per eye.

For a full in-depth explanation of our screening tests please visit the Henson 9000 section of
www.elektron-healthcare.com

Facility	Benefit	Humphrey	Octopus
Multiple and single stimulus presentation options	Multiple is faster, has fewer false positives, is more patient friendly	Single only	Single only
Manual re-test of any stimulus at any stage of examination	Reduces false positives	Not available	Not available
Manually add test locations at any stage of examination	Explore area around any missed stimuli to confirm defect and establish extent of loss	Not available	Not available
Optimised test pattern	Faster test times without loss of sensitivity	Has series of screening patterns	Has series of screening patterns
Extendable screening program	Reduce false positives	Not available	Can further test missed stimuli with threshold routine

(Fig 2) Comparative chart for screening tests

Threshold testing: accuracy and speed are no longer mutually exclusive.

Over and above all the advantages of Henson screening technology, the Henson 9000 also allows you to conduct the standard threshold tests used in the detection and management of glaucoma.

It offers the functionality you would expect from such a sophisticated device – and more.

You get both 30/24-2 stimulus patterns within a single test. There is a simple 'extend' facility that allows you to convert from 24-2 to 30-2 during or at the end of a test.

But the key point of difference is the unprecedented speed, thanks to the ZATA algorithm developed by Professor David Henson. It shrinks test times, without compromising accuracy, which is good for everyone.

ZATA. Different. And better.
For years, the SITA algorithm has been the engine underpinning threshold testing. Although SITA undoubtedly produces accurate test data, the way it works means testing is slow, which is undesirable for both clinician and patient. Attempts have been made to make SITA faster but there was a trade-off in accuracy.

ZATA – Zippy Adaptive Threshold Algorithm – was developed by Professor David Henson to overcome this apparently insurmountable issue. ZATA, although based on similar Bayesian methodology to SITA, manages to produce accurate results in a fraction of the time.

ZATA speeds up threshold testing by, where possible, using prior data. If there is some pre-existing visual field defect, this knowledge is taken advantage of and built upon. Rather than a test starting from scratch.

Secondly, ZATA doesn't just use single terminating criteria. It varies it to give more accurate thresholds at damaged and neighbouring locations.

This accelerates progress, particularly in patients with no visual field loss

Finally, ZATA uses looser determining criteria in severely damaged locations (<10dB). It doesn't even attempt to accurately measure these thresholds because it is impossible to do this with any algorithm.

For each and all of these reasons, the Henson 9000 with ZATA has significant advantages over other threshold testing devices.

For a full in-depth explanation of our ZATA tests, please visit the Henson 9000 section of
www.elektron-healthcare.com

Facility	Benefit	Humphrey	Octopus
Uses Bayesian algorithm, ZATA	Faster, with no loss of accuracy	SITA	No Bayesian-based algorithm but alternative with loss of spatial resolution
Uses prior data	Faster, especially in patients with visual field loss. More efficient	Always starts from the same values (normal)	Not available
Varies the terminating criteria to give more accurate thresholds at damaged and neighbouring locations	Faster, especially in patients with no visual field loss	Uses the same terminating criteria for all locations	Not available
Uses looser terminating criteria in severely damaged locations (<10dB)	Faster, especially in patients who have severely damaged regions (common in hospital populations). Also reduces the number of non-seen presentations	Uses the same terminating criteria for all locations	Not available
30/24–2 stimulus patterns within single test. Operator can extend the 24–2 to a 30–2 test during or at the end of an examination	More efficient as patient does not have to repeat the 24-2 to do a 30-2 test	Has both 24–2 and 30–2 tests but not possible to extend from 24–2 to 30–2. If, at the end of a 24–2 test it is decided that a 30–2 is needed then you have to start again, repeating all the 24–2 test locations	Has both 24–2 and 30–2 tests but not possible to extend from 24–2 to 30–2. If, at the end of a 24–2 test it is decided that a 30–2 is needed then you have to start again, repeating all the 24–2 test locations
At end of test can switch view to threshold, grayscale, or defect values	All three views of the results can be seen on screen without having to print	Can only view threshold values on screen Other indices are only available on the printout	

(Fig 3) Comparative chart for threshold tests