DEVICE
OPHTHALMIC
TECHNOLOGY

TOPCON Healthcare
SEEING EYE HEALTH DIFFERENTLY

CA-800

Corneal Analyser

PIONEERING ***OPHTHALMIC TECHNOLOGY***

Easy-to-Use Corneal Topography and Dry Eye Workstation

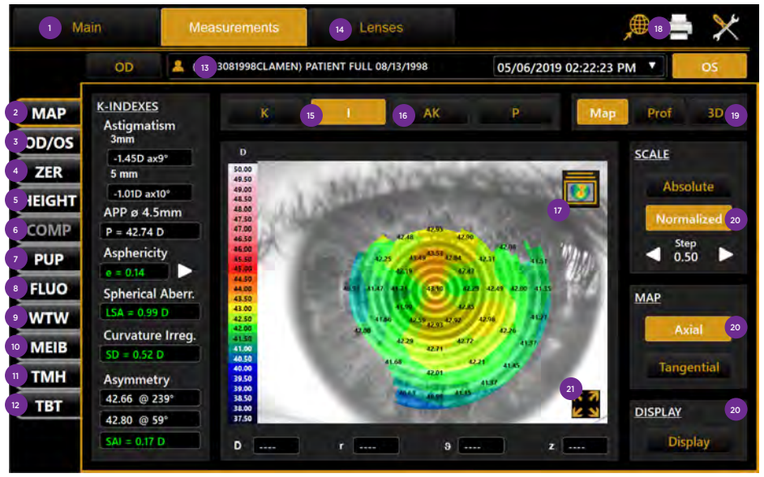
COMPREHENSIVE CORNEAL ANALYSER

The CA-800 allows for complete evaluation of the anterior surface and tear related structures.

Features

- Topography Map, Corneal Wavefront (Zernike) Analysis
- Contact Lens Fitting Simulation
- Keratoconus Screening
- Tear Film Breakup Tear Meniscus Height/ Blink Analysis
- White to White Measurement
- Meibomian Gland Analysis
- Comparison Map, Differential Map, Corneal Height Map
- Pupillometry
- PC Integrated, Space Saving

ALL FEATURES ACCESSIBLE ON JUST ONE SCREEN



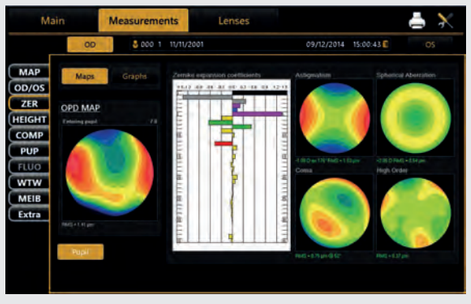
1. Patient database and acquisition
2. Topography
3. OD/OS on one screen
4. Aberrometry
5. Height map
6. Comparison and Differential map
7. Pupillometry
8. Fluorescein imaging
9. White to white
10. Meibography
11. Tear meniscus height/blink
12. Tear film breakup
13. Patient ID
14. Contact lens fitting
15. Keratometry and Indices
16. Keratoconus screening
17. Ring editing
18. Report printing
19. 3D map
20. Display options
21. Full screen mode

Keratoconus screening

With the CA-800, signs of corneal asymmetry of the cornea can easily be detected even at an early stage. By analysing various characteristics of the corneal shape, a keratoconus probability index is calculated, with colour coding to indicate the level of compatibility of each metric with keratoconus. The CLMI (Cone Location and Magnitude Index) is available as an alternative. These metrics along with comparison maps, make it easy to monitor keratoconus and keratoconus-like patterns over time*.

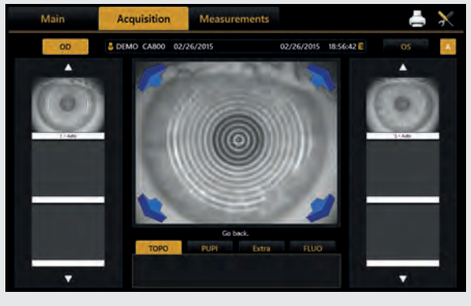
Corneal Zernike analysis

The Zernike analysis module provides 36 polynomials up to the 7th order, giving a clear view of the optical aberrations which can disturb vision. Based on this information, the CA-800 simulates the effect on vision, which is useful for educating patients about their condition. The pupil size can be selected to examine the implications of the corneal aberrations under different light levels.



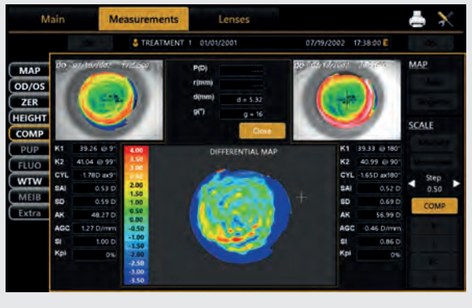
Acquisition

The CA-800 is easy to use. Visual signals support fast and easy alignment and accurate focusing. The CA-800 has Right and Left eye detection, preventing incorrect filing of data to the wrong eye. The automated best image selection mode in the CA-800 software, selects the best focused position and automatically acquires the image.



Corneal comparison & differential map

With the CA-800, it is easy to compare topography maps between two examinations of the same patient to examine changes over time. Parameters such as keratometry, apical curvature and corneal symmetry can be analysed to monitor any corneal surface changes, for example caused by keratoconus. With the differential map, the effect of a procedure such as refractive surgery, can be observed. It is also useful to examine the response of the cornea to an orthokeratology lens.



Pupillometry

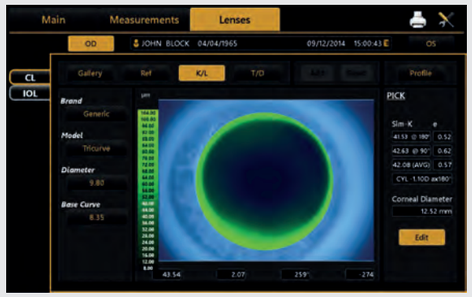
The CA-800 is equipped with different LED lights to support dynamic and static pupillometry under a range of lighting conditions. With the CA-800, the user can check the pupil position and diameter (under photopic through to scotopic lighting conditions) in relation to the position of the optical zone of an Ortho-K treatment, contact lens, intraocular lens or laser treatment. Dynamic pupillometry provides clear information on the reaction time of the pupil along with changes in pupil centre location.

Fluorometry

The CA-800 incorporates eight blue LEDs for fluorescein imaging and real time fluorescein movies which are valuable for contact lens fitting and dry eye assessment. During every measurement, the CA-800 automatically registers the pupil diameter, for comparison with the size and location of the contact lens optical zone. Real time fluorescein movies allow the eye care practitioner to judge the movement of the contact lens on the cornea, the distribution of the tear film under the contact lens as well as the wetting of the anterior surface of the contact lens. Staining of the ocular surface can also be recorded as images or a movie. The tear film condition, corneal artifacts and fluorescein break up time (BUT) can be observed.

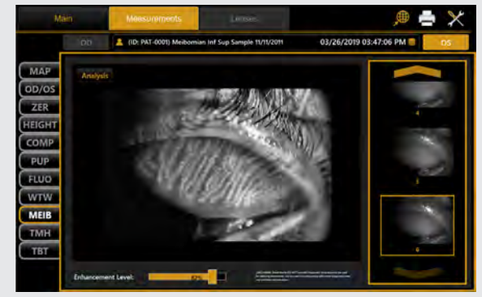
Contact lens fitting simulation

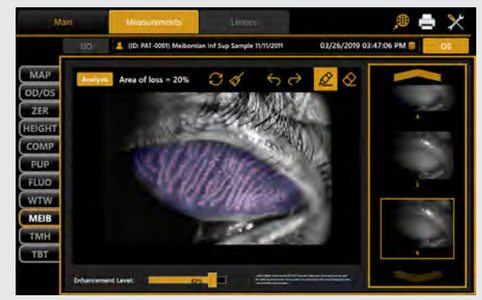
The CA-800 provides a comprehensive platform to optimise contact lens fitting. On-board simulation software automatically selects the best fitting contact lens based on an internal contact lens database for all the main manufacturers (upgradable and customisable by the user). Lens parameters and position can be modified, and the resulting fluorescein simulation saved to a library, to allow rapid comparison between lens options. This minimises the number of lenses that need to be trialed on the patient's eye, saving time and making the process more acceptable for the patient.



Meibomian gland analysis

With the Infra-red illumination of the CA-800, the Meibomian glands of the upper and lower eyelid can be captured and analysed. Posterior blepharitis is the most common form of lid margin disease. MGD (Meibomian Gland Dysfunction) can cause or exacerbate dry eye symptoms and eyelid inflammation. The oil glands become blocked with thickened secretions. Chronically clogged glands eventually become unable to secrete oil which results in permanent changes in the tear film resulting in ocular surface disease. With the CA-800, Meibomian glands can easily be observed, to inform management decisions and encourage compliance with treatment.





DRY EYE SUITE

Blink analysis

The blink analysis function records normal blinking over a period of time to automatically calculate the average blinks per minute and inter-blink interval. Combining this data with the non-invasive tear break up measurement allows the Ocular Protection Index (OPI) to be calculated, identifying eyes at risk of ocular surface damage.

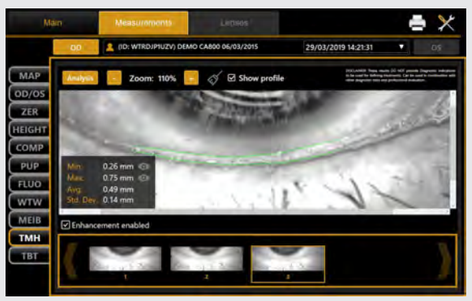
Non-invasive breakup time

The non-invasive breakup time (NIBUT) records the patient's tear film condition while they hold their blink. It is the preferred method for assessing tear breakup, as recommended by DEWS II*. The corneal surface is divided into sectors with breakup defined as the time for 5% of all sectors to demonstrate breakup. Repeat measurements can be averaged, also allowing areas of recurrent first break to be identified. In addition to these informative metrics, the video playback feature allows visualisation of the tear breakup over time, along with associated changes in topography and anterior surface aberrations.

*https://www.tfosdewsreport.org/public/images/TFOS_DEWS_II_Diagnostic_method.pdf

Tear meniscus height

Detailed images of the inferior tear meniscus can be captured with the CA-800. During review, touching the meniscus adds a marker based on automatic detection of the lid margin and the top of the tear meniscus. The position, separation and angle of each marker can be fine tuned if required. The tear meniscus profile is then displayed along with relevant metrics: minimum, maximum, average and variation.



ADDITIONAL FEATURES

i-Map

The optional software i-Map enables delegation of acquisition to support staff while the clinician reviews the data in another room. i-Map allows full manipulation of the data. It contributes to optimising your clinical workflow.

DICOM™ Compliance

The DICOM panel in the CA-800 connectivity settings allows the user to set the required parameters for the connections to the available DICOM features:

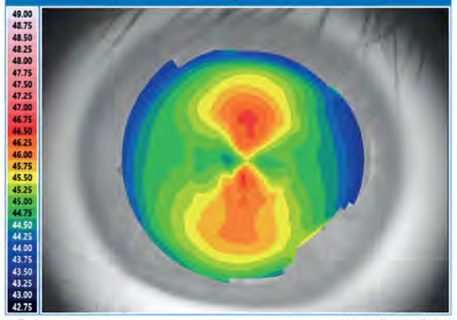
- **Modality Worklist**
- **Patient Root Query**
- **Storage**
- **Storage Commitment**

CA-800 TOPCON

Patient Information			
Patient	CORNEAL ANALYSER	Gender	M
Patient ID	12345678	Exam Date	17/02/2015 13:37:29
Date of Birth	01/01/2000	Surgeon	

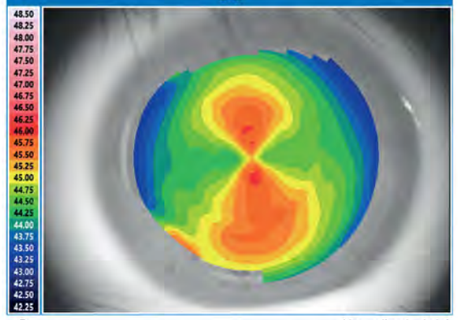
TOPOGRAPHICAL MAP

OD



D Normalized - Axial

OS



D Normalized - Axial

Sim-K

OD K1	OD K2	OD CYL	OS K1	OS K2	OS CYL
44.84 @ 180°	46.27 @ 90°	-1.43D ax180°	44.36 @ 7°	45.78 @ 97°	-1.41D ax7°

Cornea Data

	OD		OS	
Cornea Decentralisation X - Y	-0.23 mm	0.04 mm	0.20 mm	-0.11 mm
Diameter	12.28 mm		12.27 mm	
Pupillar Decentralisation X - Y	H= -0.04 mm	V= 0.11 mm	H= -0.18 mm	V= 0.14 mm
Avg. Pupillar Diam.	3.54 mm		4.88 mm	
Avg. Pupillar Power	45.51 D		45.15 D	

Keratoconus Screening

OD AK	OD AGC	OD SI	OD Kpi	OS AK	OS AGC	OS SI	OS Kpi
45.80 D	0.50 D/mm	0.05 D	0%	46.26 D	0.88 D/mm	0.30 D	0%
Topography not compatible with keratoconus				Topography not compatible with keratoconus			
A	D	Ro - Teta	Rnd	A	D	Ro - Teta	Rnd

Keratorefractive Indices

OD SD	OD SAI	OD e	OD Kc	OS SD	OS SAI	OS e	OS Kc
SD = 0.38 D	SAI = 0.19 D	e = 0.42	45.45	SD = 0.29 D	SAI = 0.34 D	e = 0.36	45.18

Notes

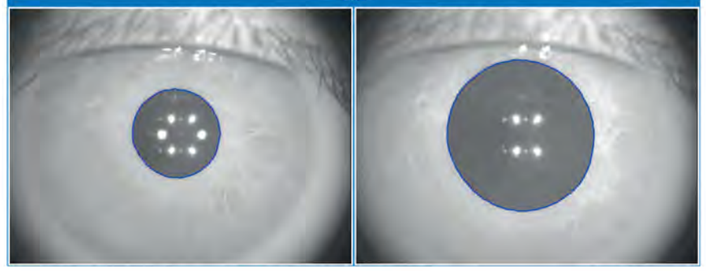
CA800 V.1.0.7 TOPCON

CA-800 TOPCON

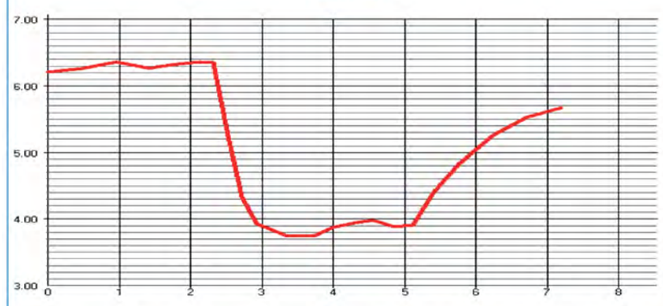
Patient Information			
Patient	CORNEAL ANALYSER	Gender	M
Patient ID	12345678	Exam Date	06/03/2015 18:06:43
Date of Birth	01/01/2000	Surgeon	

PUPILLOMETRY

OD



Latency



Dynamic pupillography

Diameter		Pupil Centre	
Min	Max	Center Mean	Std Dev.
3.74 mm	6.36 mm	-0.22 mm 0.01 mm	0.02 mm

Photopic pupillography

Diameter		Pupil Centre	
Avg. Diam.	Diam. Std Dev.	Centre X - Y	Cen. Std Dev.
3.76 mm	0.06 mm	-0.20 mm 0.03 mm	0.06 mm

Mesopic pupillography

Diameter		Pupil Centre	
Avg. Diam.	Diam. Std Dev.	Center X - Y	Cen. Std Dev.
4.90 mm	0.33 mm	-0.18 mm 0.02 mm	0.33 mm

Scotopic pupillography

Diameter		Pupil Centre	
Avg. Diam.	Diam. Std Dev.	Centre X - Y	Cen. Std Dev.
5.53 mm	0.11 mm	-0.16 mm -0.01 mm	0.11 mm

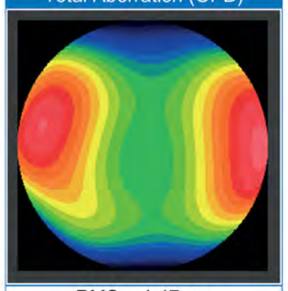
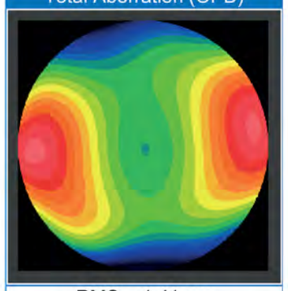
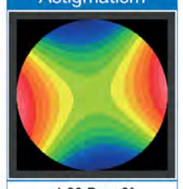
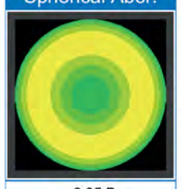
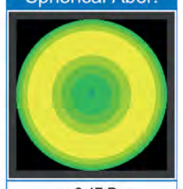
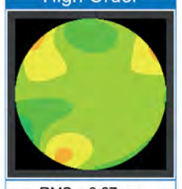
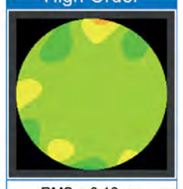
Notes

CA800 V.1.0.7 TOPCON

CA-800 TOPCON

Patient Information			
Patient	CORNEAL ANALYSER	Gender	M
Patient ID	12345678	Exam Date	17/02/2015 13:37:29
Date of Birth	01/01/2000	Surgeon	

ZERNIKE

OD	OS
Total Aberration (OPD)	Total Aberration (OPD)
	
RMS = 1.47 µm	RMS = 1.41 µm
Astigmatism	Astigmatism
	
-1.36 D ax 177°	-1.29 D ax 8°
RMS = 1.29 µm	RMS = 1.23 µm
Spherical Aber.	Spherical Aber.
	
+2.35 D	+2.47 D
RMS = 0.62 µm	RMS = 0.65 µm
Coma	Coma
	
RMS = 0.21 µm @ 5°	RMS = 0.15 µm @ 58°
High Order	High Order
	
RMS = 0.27 µm	RMS = 0.18 µm

Notes

CA800 V.1.0.7 TOPCON

CA-800 TOPCON

Patient Information			
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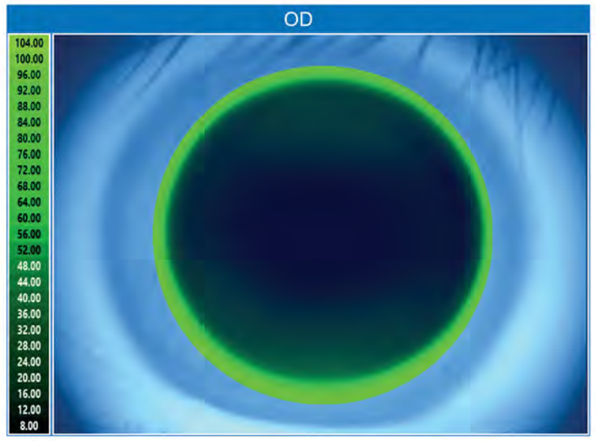
CONTACT LENSES

OD



Sim-K		
K1	K2	CYL
44.84 @ 180°	46.27 @ 90°	-1.43D ax180°

Refraction			
Sphere	Cylinder	Axis	VD
1.25	-0.50	110	12.00

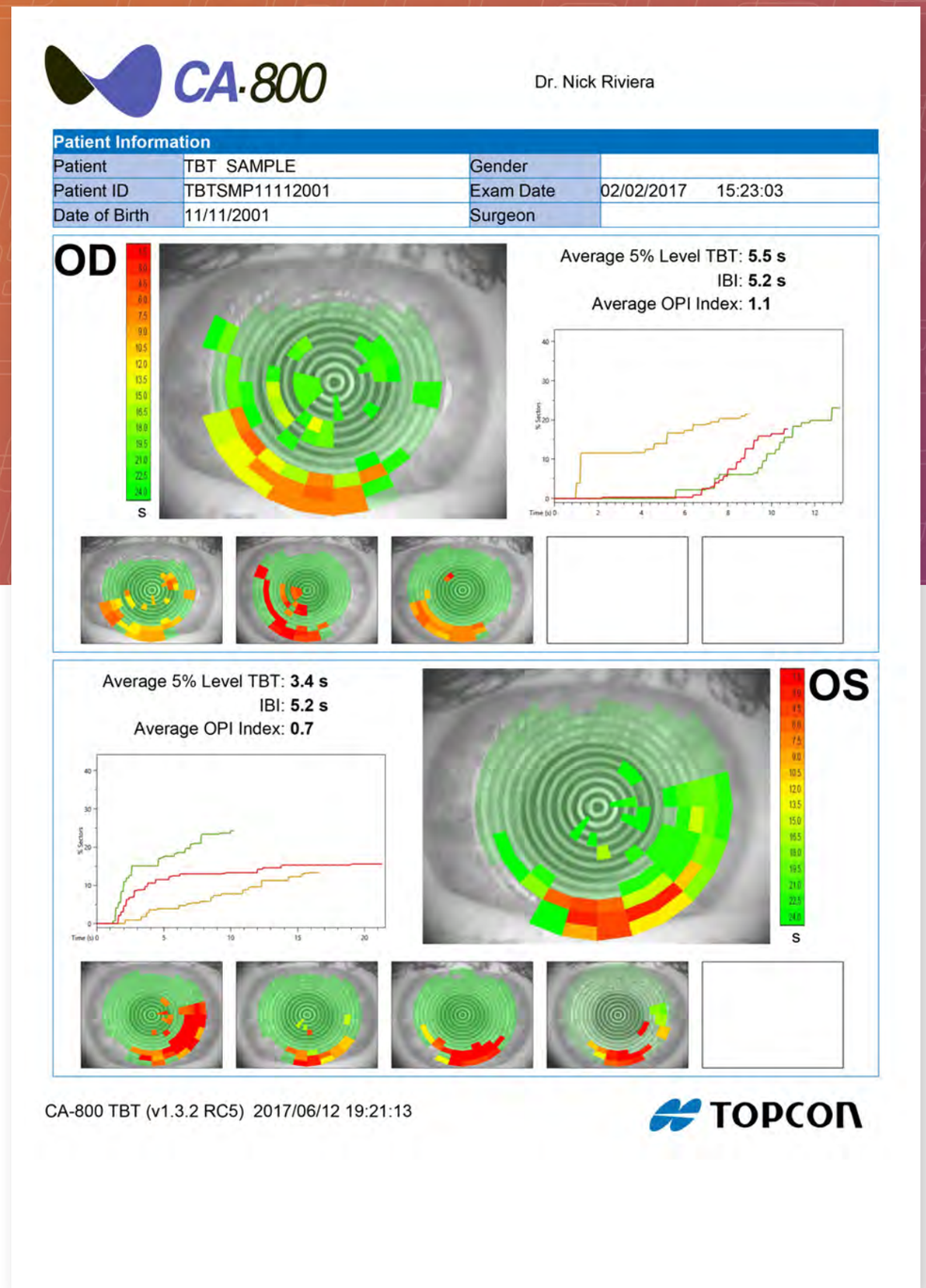
Cornea Data		
Cornea Decentralisation X - Y	---	---
Diameter	12.28 mm	

Lens Data		
Brand	Model	Base Curve
Generic	Tricurve	7.6
Diameter	Power	Toricity
9.8		

Notes

CA800 V.1.0.7 TOPCON

Report Samples



SPECIFICATION OF CA-800

Keratoscope cone	24 rings equally distributed on a 43D sphere
Analysed points	Over 100.000
Measured points	6.200
Corneal coverage	Up to 9.8mm on a sphere of radius 8.00mm (42.2 diopters with n=1.3375)
Diopter power range	From 1D to 120D
Resolution	+/- 0.01D, 1 micron
Accuracy / Precision axial radius	+/- 0.03mm altimetric data, +/- 2µm at 4mm
Capture system	Guided focus with auto-capture
Output ports	2xUSB, LAN
Monitor	LCD 10.1 inch capacitive touch screen
Database	Internal
Pupillometry	Dynamic, Photopic, Mesopic, Scotopic
Fluorescein	Image, Video
Report	Corneal map, Comparison map, Contact lens, Height map, Zernike analysis, Pupillometry, Toric IOL, Screenshot, NIBUT, Meibomian gland analysis, TMH, Fluorescein
Working environment	10°-40°C, Relative humidity 30-75% (no dewing), Atmospheric pressure 700-1060hPa
Power source	AC 100-240V 50/60 Hz
Power consumption	80 VA
Dimensions	320mm (W) x 490mm (H) x 470mm (L), 15 Kg
Connections	Wi-Fi Optional, LAN integrated / iMAP
Printing options	USB printer, Network printer, PDF on network shared folder, PDF on USB
Operating System	Windows 10 Enterprise LTSC (Long Term Support Channel)
RAM	4GB
Hard Disk	At least 500GB SATA Hard drive (database storage) 32 GB Solid State Drive (operating system and application software)

DEVICE TECHNOLOGIES

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