ALADDIN

Optical Biometry and Topography System





Aladdin addresses the limitations of conventional biometers



The complete picture - enhanced.

With the combination of an optical biometer and full corneal topographer, Topcon pioneered the concept of "the complete picture" in IOL power calculation. Now the complete picture has been enhanced with the addition of the Barrett Universal formula as a standard component of the Aladdin.*

The final optical result and patient's satisfaction are paramount in today's cataract surgery. With the incorporation of the latest in IOL calculation formulae, the Aladdin remains at the forefront of IOL calculation technology.

1 Instrument; 9 Functions

- » Axial Length
- » Keratometry
- » Anterior Chamber Depth
- » Central Corneal Thickness*
- » Lens Thickness*
- » Corneal Topography
- » Corneal Wave-front Analysis
- » Pupillometry
- » White-to-white

Aladdin features

Fully integrated patient database

- » Patient search function
- » Input post refraction data

Easy acquisition 9-in-1

» Pre-op input of lens and vitreous body

Conventional IOL calculation formulae

- » SRK II, SRK/T , Hoffer Q, Holladay 1, Haigis
- » Multiple surgeon pre-settings
- » Export to Olsen PhacoOptics® PC software
- » ULIB database compatible
- » Database customizable

Post refractive IOL calculation formulae

» Camellin-Calossi, Shammas (no history)

Generic toric IOL calculation

- » Toric IOL rotation simulator
- » Abulafia-Koch Astigmatism Formula

Barrett IOL Calculator Suite*

» With the Barrett Rx, the Barrett Toric Calculator Formula, the Barrett True K and the Barrett Universal II formulae.

Topography

- » Full featured corneal mapping
- » Accurate corneal radii
- » Keratoconus probability index

Corneal wave front (Zernike) analysis

- » Maps (pupil size 2,5 7.0 mm)
- » Simulation graphs

Interferometer graphs

- » Axial length
- » Central corneal Thickness*
- » Anterior chamber depth
- » Lens Thickness*

Pupillometry

- » Dynamic, Photopic, Mesopic
- » Decentralization and Latency graph

White-to-white measurement

Reports

- » Biometry report (AL, K, ACD, LT*, CCT* WTW)
- » To USB, shared folder and printer
- » Topography report
- » IOL report
- » Pupillometry

DICOM™ Compliance

The DICOM panel in the Aladdin Connectivity section allows the user to set the needed parameters for the connections to the available DICOM features:

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





Speed

Point and shoot acquisition, all necessary measurements are taken in under five seconds. Single measurement are supported for even faster ACD, AL or topography, as well as a separate full pupillometry.

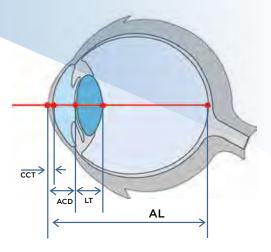
Accuracy

Proven interferometry accuracy combined with new technology for keratometry, provide extremely accurate Axial Length and corneal radii information for precise calculation of IOL spherical and toric powers.

Posterior & Anterior interferometry

You get the complete picture for all cataract surgeries. Whether you are performing standard cataract surgery or premium IOL implantation, you will be screening for corneal aberrations, Keratoconus and previous corneal refractive surgery procedures all at once. The Aladdin only requires just one acquisition.

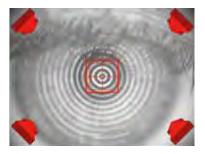
Biometry results are complemented with anterior topography, Zernike analysis and pupillometry. Aladdin also provides anterior measurements such as the Central Corneal Thickness (CCT)*, Anterior Chamber Depth (ACD) and Lens Thickness (LT)*

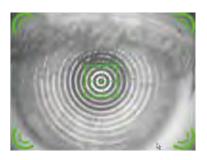


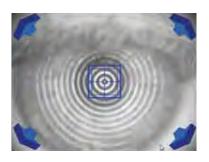
Ease of use

The operator is only three clicks away from printing the Aladdin report. The 10.1 inch full colour touchscreen monitor is very responsive and comfortable to use. The user-friendly interface guides you through the main functions with ease.

Making an acquisition has never been easier. To ensure complete accurate biometry, the Aladdin guides you in focus and alignment with visual color coded signs while taking the acquisition.







Onboard Barrett Formulae*

Dr. Graham D. Barrett developed the Barrett Formula Suite in 2013. The formulae take into account the posterior cornea, calculate the lens position for each individual patient including consideration of the measured lens thickness rather than an estimation based on patient's age. The Universal II formula developed by Dr Barrett, is a method of predicting IOL power based on Gaussian optics and utilizes this information to calculate the effect of the cylinder power at the cornea.

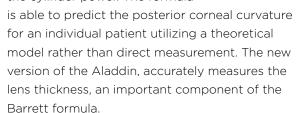




The Aladdin's Barrett Formula Suite includes the Barrett Rx, the Barrett Toric Calculator Formula, the Barrett True K and the Barrett Universal II formulae.

Abulafia-Koch astigmatism cylinder correction for Toric IOL calculations incorporated

The Abulafia-Koch correction formula calculates the estimated total corneal astigmatism based on standard keratometry measurements. Dr. Barrett's formula considers the thickness and shape of the IOL implant as well, which provides a more sophisticated way of predicting and translating the cylinder power. The formula







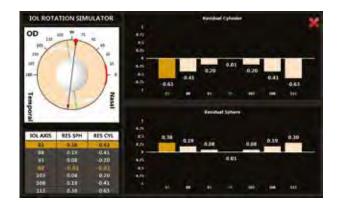




Dr. Adi Abulafia

Dr. Douglas Koch





Precise Toric IOL calculation

A robust generic Toric IOL calculator is incorporated into the Aladdin software. This integrated toric IOL calculator saves time and avoids unnecessary mistakes when manually entering data online. IOL toric rotation simulation software calculates the induced spherical and cylindrical power for every five degrees that the toric IOL rotates. Surgically Induced Astigmatism (SIA) and Incision Location (IL) can be inserted by the surgeon and are taken into account for the Toric IOL calculation.

Axial length

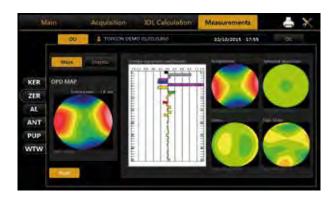
Using a low-coherence interferometry system with a super luminescent diode of 830 nm and signal processing, the Aladdin achieves axial length measurement with high signal-to-noise ratio and is able to penetrate even high grade dense cataracts. Axial length measurements can be done on normal eyes as well as on aphakic, pseudo-aphakic and silicone oil-filled eyes.



Anterior biometry

Anterior biometry with the Aladdin makes it possible to measure Central Corneal Thickness*, Anterior Chamber Depth and the Crystalline Lens Thickness*. ACD is measured through interferometry* providing high precision and reproducibility. All interferometry measurements are shown in a single graph quick reference.





Aberrometry analysis (Zernike)

Zernike analysis of the topographic data provides the Optical Path Difference (OPD) and information on astigmatism, spherical aberrations, higher order aberrations and Coma for pupil sizes of 2.5mm to 7.0mm When using the actual Spherical Aberration provided by Zernike analysis, you can select the appropriate aspherical IOL with standardised spherical aberration correction according to the patient's individual required spherical aberration.

Keratometry / Topography

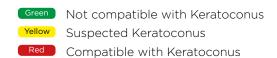
Full corneal topography provides substantially more information than conventional central keratometry. Corneal topography data is especially useful in the selection of toric IOLs to quickly differentiate regular and irregular astigmatism as well as corneal aberrations. The Aladdin provides accurate corneal topography obtained from the reflection of a set of 24 Placido rings in combination with a low coherence interferometer.





Keratoconus screening

The Aladdin is capable to screen the corneal surface for keratoconus probability. This information provides the surgeon in detail the corneal keratometric indices to assist in making the correct toric IOL selection. The Keratoconus Probability Index is shown in percentage as well as in colour codes.



Pupillometry

During Placido evaluation, pupillary response is observed to assess a pseudo Photopic and pseudo Mesopic pupil size, indicating response and normal range of the pupil. Full pupillometry screening assists to evaluate eyes for multifocal IOL implantation or refractive surgery. For any refractive procedure it is important to carefully

evaluate the pupil size in different light conditions to address cases of extremely small or decentered pupils. The Aladdin can perform pupillometry in three different modes:

- » Dynamic
- » Photopic
- » Mesopic





White-to-white

The Aladdin automatically measures white-to-white length which can be manually edited. Reliable white-to-white measurement is used for anterior chamber intraocular lens and sulcus fixated posterior chamber intraocular lens calculation in highly myopic eyes.





Post refractive IOL

In eyes that have previously undergone refractive surgery such as RK, PRK, Lasik, Lasek, LK and PTK, spherical aberrations are often outside the standard values. In these cases the Aladdin provide the Camellin Calossi and the Barrett



True K formulas. If there is no patient history the Shammas No-history or the Barrett True K formulas can be used for the correct IOL calculation.



Customizable IOL database

The Aladdin provides a full ULIB database which can be easily upgraded and customized. The surgeon can manually upgrade the A- constant for each individual IOL to obtain even a higher accuracy every time a cataract surgery is performed. Favorite IOL's can be selected and programmed for each surgeon, making IOL selection simple and personalized.





IMAGEnet®6 Compliance

IMAGEnet®6 viewer software

IMAGEnet®6 is Topcon's web based digital software platform for ophthalmic imaging, capable of acquiring, displaying, enhancing, analyzing, and saving digital images and reports obtained with a variety of Topcon devices such as the Aladdin. IMAGEnet®6 provides flexibility of viewing Biometry, Keratometry, Pupillometry data and all available Aladdin exported reports in a network environment. There are a variety of software configurations available. Additional components can be added according to your clinic's needs.





Screenshot of Biometry data in IMAGEnet®6

Topcon's Cataract Workstation



KR-800S Auto kerato-refractometer with subjective function

- 1 VA check far vision
- ² VA check near vision
- 3 VA check glare condition
- 4 VA check contrast condition
- Grid test (AMD screening)
- 6 VA simulation Premium IOL



*TORCON ALADON

KR-800S



Pre-Operative Subjective Refraction and Pre-OP-diagnostics

Cataract surgery quality control

Topcon's Cataract Workstation

Visual acuity (VA) is the most common clinical measure of the quality of cataract surgery. It is how the success of surgery is measured and it is therefore, critical that it is measured correctly. Measurement of VA must be standardized and systematic. Topcon's KR-800S Auto Kerato-Refractometer with subjective VA check will do exactly that. With the KR-800S the VA can be subjectively tested before and after cataract surgery. With the unique features of the KR-800S such as "Glare" test and "Contrast" test, the progression and differentiation of nuclear cataract from cortical cataract can be evaluated.

Premium IOL simulation

The KR-800S offers a Spherical Equivalent mode, which can simulate the benefit of a premium (toric) IOL, to encourage the patient to reach an even higher post-operative VA. The subjective VA test for near vision will demonstrate to the patient the benefits of a Multifocal IOL.

ALADDIN



Pupillography Topography Biometry inkl. K1 & K2 IOL Calculation



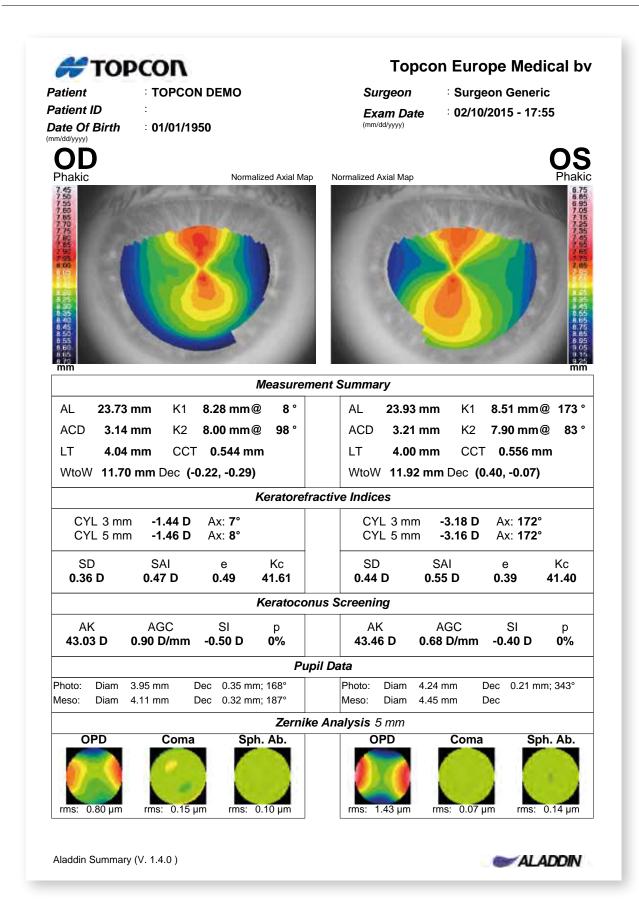
Cataract Surgery

KR-800S



Post-Operative Subjective Refraction and Post-OP-diagnostics

Reports measurement summary



Reports IOL calculation



: TOPCON DEMO **Patient**

Patient ID

Date Of Birth : 01/01/1950

Phakic

Data Measurements n: **1.3375**

Aladdin Optical

AL : 23.73 mm K1 : 8.28 mm @ 8° ACD : 3.14 mm K2 : 8.00 mm @ 98° LT 4.04 mm CYL : -1.45 D ax 8°

CCT 0.544 mm

Target Refraction:

Oculentis L-313		Oculentis LS-313 MF30			
SRK/T		S	SRK II		
IOL(D) REF(D)		IOL(D)	REF(D)		
20.50	0.83	21.00	0.77		
21.00	0.47	21.50	0.37		
21.50	0.10	22.00	-0.03		
22.00	-0.27	22.50	-0.43		
22.50	-0.64	23.00	-0.83		
IOL @ Target	A = 118.100	IOL @ Target	A = 118.600		
21.64		21.97			

Oculentis LU-313 MF30T

0 0 10 Wil 00 I					
Ha	Haigis				
IOL(D)	REF(D)				
21.50	0.58				
22.00	0.21				
22.50	-0.16				
23.00	-0.54				
23.50	-0.92				
IOL @ Target	A0 = 0.870				
22.28	A1 = 0.400				
22.20	A2 = 0.100				

Oculentis LS-412Y

Hoffer Q				
)				
070				

Oculentis **LU-800 RZI**

_0 000 .	`				
Holla	Holladay I				
IOL(D)	REF(D)				
19.00	0.90				
19.50	0.52				
20.00	0.13				
20.50	-0.25				
21.00	-0.65				
IOL @ Target	SF = 0.310				
20.17					

Topcon Europe Medical by

: SURGEON GENERIC Surgeon

Exam Date : 02/10/2015 - 17:55

n: 1.3375

Data Measurements Aladdin Optical

: 23.93 mm K1 : 8.51 mm @ 173 ° ACD : 3.21 mm K2 : 7.90 mm @ 83 ° LT 4.00 mm CYL : -3.06 D ax 173 °

CCT 0.556 mm

Target Refraction: 0

Oculentis	Oculentis
L-313	LS-313 MF30

SRK/T		SRK II		
IOL(D)	REF(D)	IOL(D)	REF(D)	
20.50	0.67	21.00	0.62	
21.00	0.31	21.50	0.22	
21.50	-0.06	22.00	-0.18	
22.00	-0.43	22.50	-0.58	
22.50	-0.81	23.00	-0.98	
OL @ Target 21.42	A = 118.100	IOL @ Target 21.77	A = 118.60	

Oculentis LU-313 MF30T

Haigis				
IOL(D)	REF(D)			
21.00	0.81			
21.50	0.45			
22.00	0.08			
22.50	-0.30			
23.00	-0.67			
IOL @ Target	A0 = 0.870			
22.10	A1 = 0.400			
	$\Delta 2 - 0.100$			

Oculentis LS-412Y

Hoffer Q				
IOL(D)	REF(D)			
21.00	0.72			
21.50	0.37			
22.00	0.01			
22.50	-0.35			
23.00	-0.71			
IOL @ Target	pACD = 5.070			

22.02

Oculentis **LU-800 RZI**

Holladay I				
IOL(D)	REF(D)			
19.00	0.76			
19.50	0.38			
20.00	-0.01			
20.50	-0.40			
21.00	-0.80			
IOL @ Target	SF = 0.310			

19.99

IOL Calculator (V. 1.4.0)



TOPCON

Topcon Europe Medical BV

Patient: TOPCON DEMOSurgeon: Surgeon GenericPatient ID: ~Exam Date (dd/mm/yyyy): 10/02/2015 - 17:55

Date Of Birth : 01/01/1950

OS Phakid

Measures (Aladdin Optical)

K1: 39.64 D AL: 23.93 mm LT: 4.00 mm WTW: 11.98 mm K2: 42.71 D ACD: 3.21 mm CCT: 0.556 mm WTW Dec (0.40,-0.07) mm

CYL: **-3.06 D** @ **173°** n: **1.3375**

Toric IOL

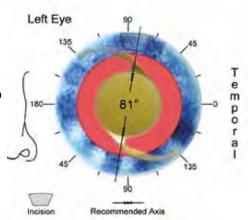
Target Refraction: 0.00 D SIA: 0.00 D IL: 83°

Toric IOL: Oculentis LS-313 T3 21.50 D (S.E.) 3.00 D @ 81°

LF = 1.412, A constant = 118.100

Cylinder Power: IOL Plane 3.00 D ~ Corneal Plane 2.20 D

Predicted refraction: 0.07 D sph. -0.03 D @ 81°



IOL Power (S.E.)	Refraction (S.E.)	IOL submodel	IOL toricity	Residual astigmatism
20.50 D	0.81 D	LS-313 T1	1.50 D	-1.07 D @ 171°
21.00 D	0.43 D	LS-313 T2	2.25 D	-0.52 D @ 171°
21.50 D	0.06 D ≺	LS-313 T3	3.00 D	-0.03 D @ 81°
22.00 D	-0.33 D	LS-313 T4	3.75 D	-0.58 D @ 81°
22.50 D	-0.71 D	LS-313 T5	4.50 D	-1.13 D @ 81°

BarrettUniversalIIToric (v1.6.0 RC) 2017/01/20 11:45:31







Patient Information			
Patient TOPCON DEMO	Surgeon SURGEON GENERIC		
Patient ID	Clinic Topcon Europe Medical bv	os	
Date of Birth 01/01/1950 mm/dd/yyyy	Exam Date 02/10/2015 - 17:55 mm/dd/yyyy		

Biometry Data							
AL (mm)	23.93	LT (mm)	4.00	K1 (mm)	8.51	CYL (D)	-3.06@173°
ACD (mm)	3.21	CCT (mm)	0.556	K2 (mm)	7.90	n	1.3375

	Surgical Pre Op Data		
SEQ (D)	23.00	SIA (D)	0
Formula	Holladay I	IL (°)	83

Expected Post Op Cornea

K1 Post (mm) **8.51** K2 Post (mm) **7.90**CYL Post (D) **-3.06** @ **173**°

Formula	Holladay I	IL (°)	83
			SF = 1.980
	Toric I	OL	

Lens Model Alcon AcrySof SN6AT6

Spherical Power Cylindrical Power

21.50 D 3.75 D

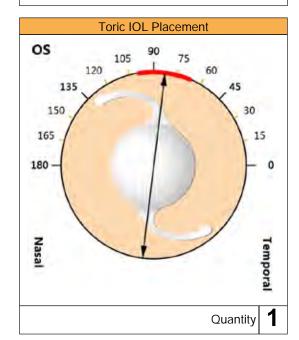
Sph. Equiv. Power Axis Of Placement

23.38 D 83°

Expected Refraction

-0.02D -0.44 D @ 173°

Lens	Residual Astigmatism
AcrySof SN6AT4 (22.00D 2.25C)	-1.48 D @ 173°
AcrySof SN6AT5 (21.50D 3.00C)	-0.96 D @ 173°
AcrySof SN6AT6 (21.50D 3.75C)	-0.44 D @ 173°
AcrySof SN6AT7 (21.00D 4.50C)	-0.08 D @ 83°
AcrySof SN6AT8 (20.50D 5.25C)	-0.60 D @ 83°



Notes

1.4.0

TOPCON

Topcon Europe Medical bv

 Patient
 : TOPCON DEMO
 Surgeon
 : Surgeon Generic

 Patient ID
 : Exam Date (mm/dd/yyyy)
 : 02/10/2015 - 17:55

Date Of Birth : 01/01/1950

OD

OS Phakic

Phakic			Phakic
		Axial length values	
Comp. AL: 23.73 m	m	Comp. AL: 23.93	mm
AL	AL	AL	AL
23.79 mm		23.95 mm	
23.77 mm		23.91 mm	
23.72 mm		23.85 mm	
23.73 mm		23.93 mm	
23.73 mm		23.96 mm	
23.72 mm		23.94 mm	

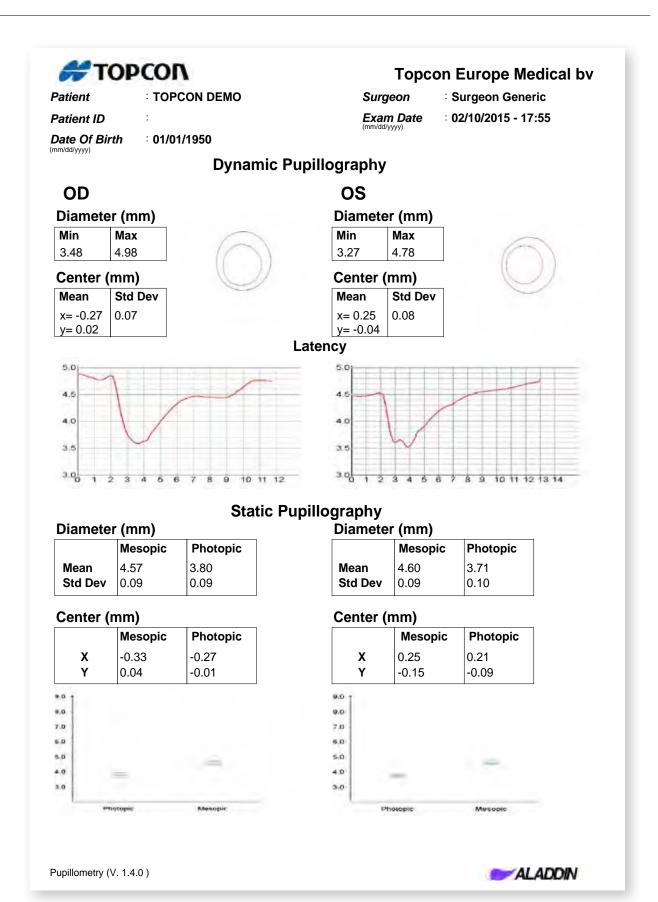
25.72 11111		20.94 11111		
	Value Cor	neal Curvature		
KER: 8.28/8.00 mm CY	L: -1.45 D Ax 8°	KER: 8.51/7.90 mm CYL: -3.	.06 D Ax 173°	
K1: 8.28 mm @ 8°	40.74 D	K1: 8.51 mm @ 173°	39.64 D	
K2: 8.00 mm @ 98°	42.19 D	K2: 7.90 mm @ 83°	42.71 D	
CYL: -1.45 D ax 8°		CYL: -3.06 D ax 173°		
	ACD value			
ACD: 3.14 mm		ACD: 3.21 mm		
3.14 mm		3.21 mm		
	LT value			
LT: 4.04 mm		LT: 4.00 mm		
4.04 mm		4.00 mm		
CCT value				
CCT: 0.544 mm CCT: 0.556 mm				
White to White				

WTW 11.92 mm Dec (0.40 mm, -0.07 mm)

Overview Biometer Measurements (V. 1.4.0)

WTW 11.70 mm Dec (-0.22 mm, -0.29 mm)





Measurement range for IOL		
Axial Length (Interferometry)	Super luminescent diode 830r	nm, 15,00mm - 38,00mm
Corneal Radii	3,30mm - 37,50mm / 9,00D - 101,50D	5,00mm - 12,00mm / 28,00D - 67,50D
Anterior Chamber Depth measurement	slit illumination 1,50mm - 5,50mm	interferometer 1,50mm - 6,50mm
White-to White measurement	6,00mm - 18,00mm	8,00mm - 14,00mm
Pupillometry	Dynamic, Photopic & Mesopic, pu	ıpil size 0,50mm - 10,00mm
Lens Thickness (interferometry)	no	1,50mm - 6,50mm (phakic) 0,50mm - 3,50mm (pseudo-phakic)
Central Corneal Thickness measurement (interferometry)	no 0,300 mm - 0,800 mm	
On-board calculation formulas		
IOL formulas	Haigis, Hoffer Q, Holladay 1, SRK*II & SRK*T, Barrett, Universal II	
Post Refractive IOL formulas	Camellin Calossi & Sha	mmas No History Olsen PhacoOptics® connectivity, Barrett True
Placido Topography specifications		
Keratoscopic Cone (topographic map)	24 rings on a 43 dpt sphere, v	vorking distance 80 mm
Points analysed	over 100.	000
Points measured	over 6.0	00
Cornea coverage	up to Ø 9,8 mm (on a 8 mm sph	ere) 42,20D with n=1.3375
Guided focus system	yes	
Keratoconus screening		
Apical Curvature	yes	
Apical Gradient of Curvature	yes	
Symmetry index	yes	
Kpi (Keratoconus probability index)	yes	
Software features		
Toric IOL calculator	Generic Toric IOL, Oc	
Zernike analysis	Pupil size 2,5 mr	
Print to	USB printer, Network printer, PDF to share	d network folder & PDF to USB drive
Instrument Specifications		
Display	10.1" touch :	
Storage	At least 320 GB HDD	At least 320 GB HDD + 32 GB SSD
Operating system	Windows 7 Embedded OS	
Processor	AMD G-T56N	
Internal memory Power input	2GB RAM	
Dimensions	AC 100 - 240V 50 - 60Hz	
Weight	320 mm (W) x 490 mm (H) x 470 mm (L)	
Connections	18 kg 1 x LAN, 2 x USB	
Supports	I X LAN, 2 X USB USB Barcode scanner, External USB keyboard / mouse	
Marking	CE, ETL	
Reports	CL, E1	
Aladdin report	yes	
Measurement overview	yes	
Pupillometry	yes	
IOL	yes	
Generic Toric IOL	yes	
Oculentis Toric IOL	yes	
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Subject to change in design and/or specifications without advanced notice.

In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.





Topcon Europe Medical B.V.

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