

The Aladdin Biometer HW3.0

Product Description



Product Description

The Aladdin HW3.0 is an instrument designed to calculate the power of the intra-ocular lens (IOL) to be implanted after cataract removal.

The essential measurements for the IOL power are:

- *Axial length of the eye (the distance between the cornea and the retina)*
- *Curvature of the cornea.*
- *Anterior Chamber Depth*

Product Description

The Aladdin HW3.0 is an instrument designed to calculate the power of the intra-ocular lens (IOL) to be implanted after cataract removal.

Depending on the type of IOL and the characteristics of the eye to be implanted, additional measurements may be necessary such as:

- ***Corneal topography***
- ***White to white***
- ***Pupillometry***
- ***Central corneal thickness***
- ***Crystalline lens thickness***

The Aladdin HW3.0 can perform 9 different measurements in one instrument.

1. AXIAL LENGTH
2. ANTERIOR CHAMBER DEPTH
3. LENS THICKNESS
4. CENTRAL CORNEAL THICKNESS
5. KERATOMETRY
6. WHITE TO WHITE
7. CORNEAL TOPOGRAPHY
8. CORNEAL WAVEFRONT ANALYSIS
9. PUPILLOMETRY

Product Description

The measurement of the axial length is called “Biometry”

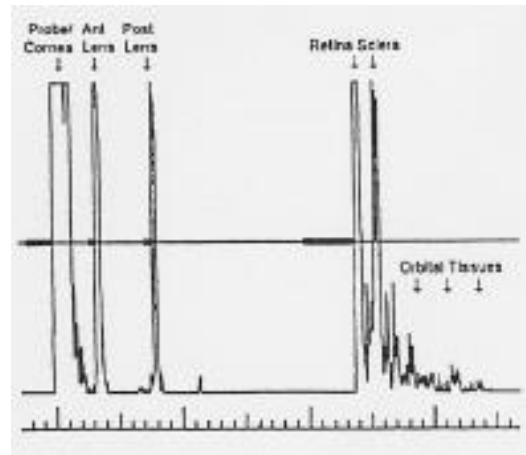
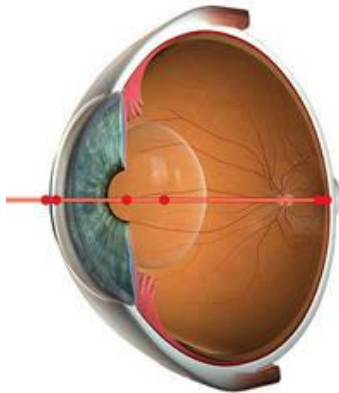
Because the Aladdin accurately measures the axial length of the eye it is called a “Biometer”.



Product Description

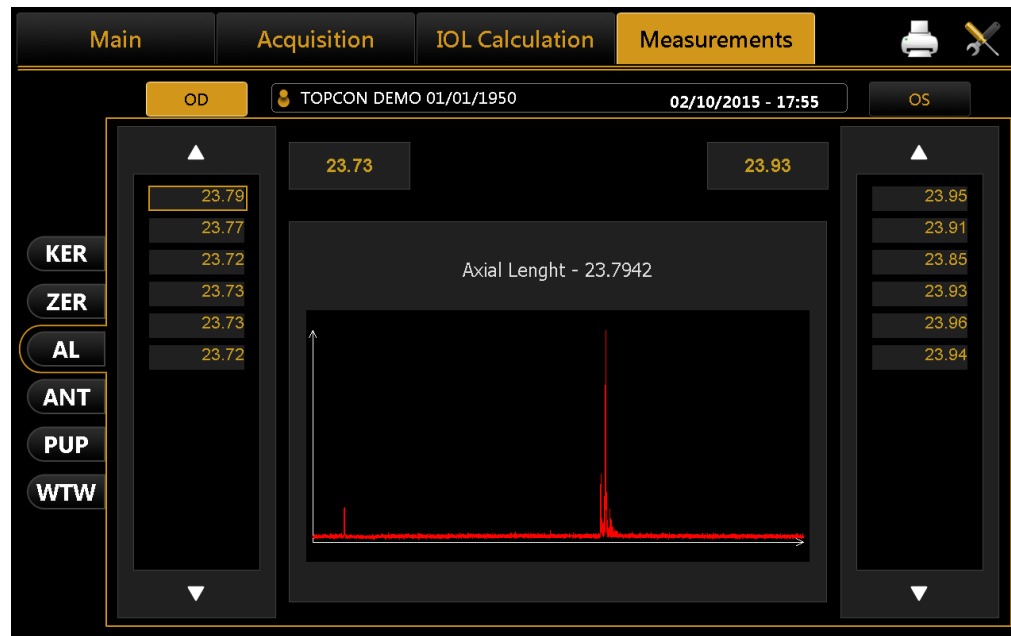
Axial length is the distance between the cornea and the **Inner Limiting Membrane** which is at center of the retina. The axial length can be measured by different methods:

- **Ultrasound** (involves touching the cornea or placing a water container on the eye to measure through the liquid)
- **Low coherence interferometry** (does not touch the eye and it is faster and more accurate)



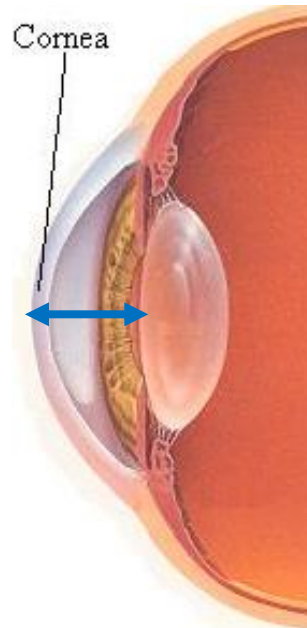
Product Description

The Aladdin HW3.0 uses a low-coherence interferometry system and a *super luminescent diode with a 830nm* wavelength that can measure through dense cataracts with a substantial noise reduction.



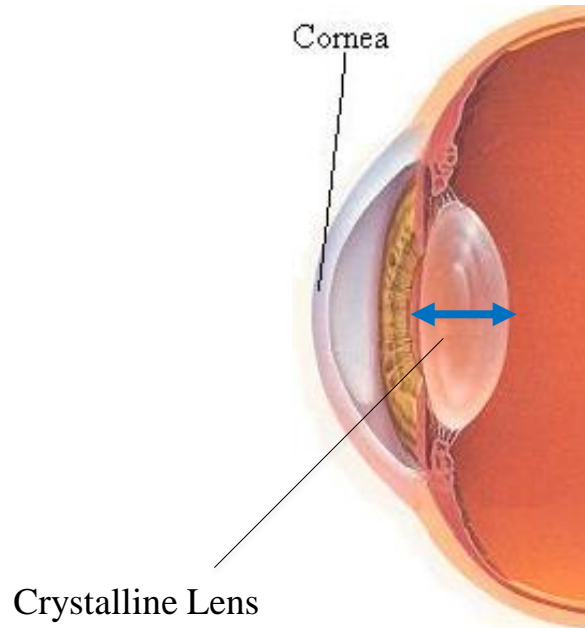
Product Description

Anterior Chamber Depth (ACD) is the distance between the anterior surface of the crystalline (anterior capsule) and the outermost stratum of the cornea (epithelium).



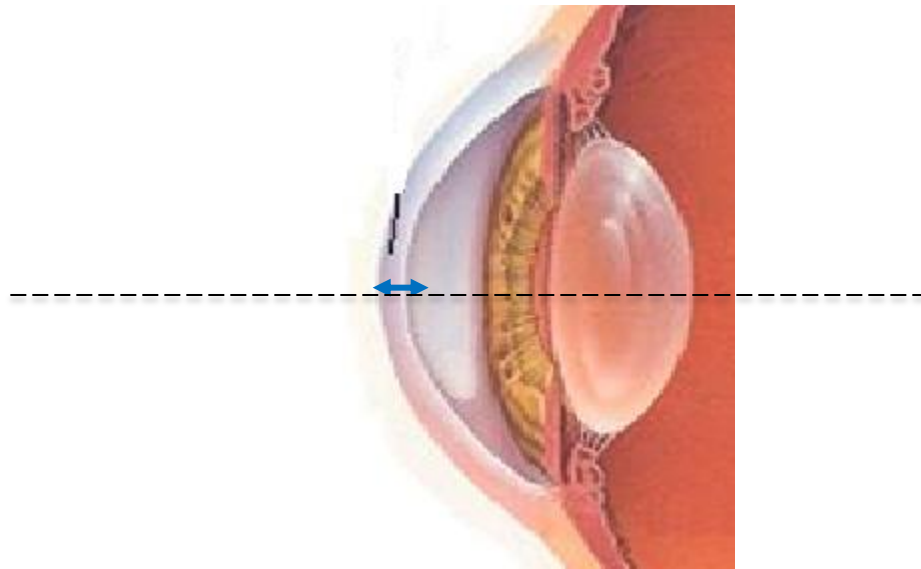
Product Description

Crystalline Lens Thickness (LT) is the distance between the anterior and posterior surfaces of the crystalline.



Product Description

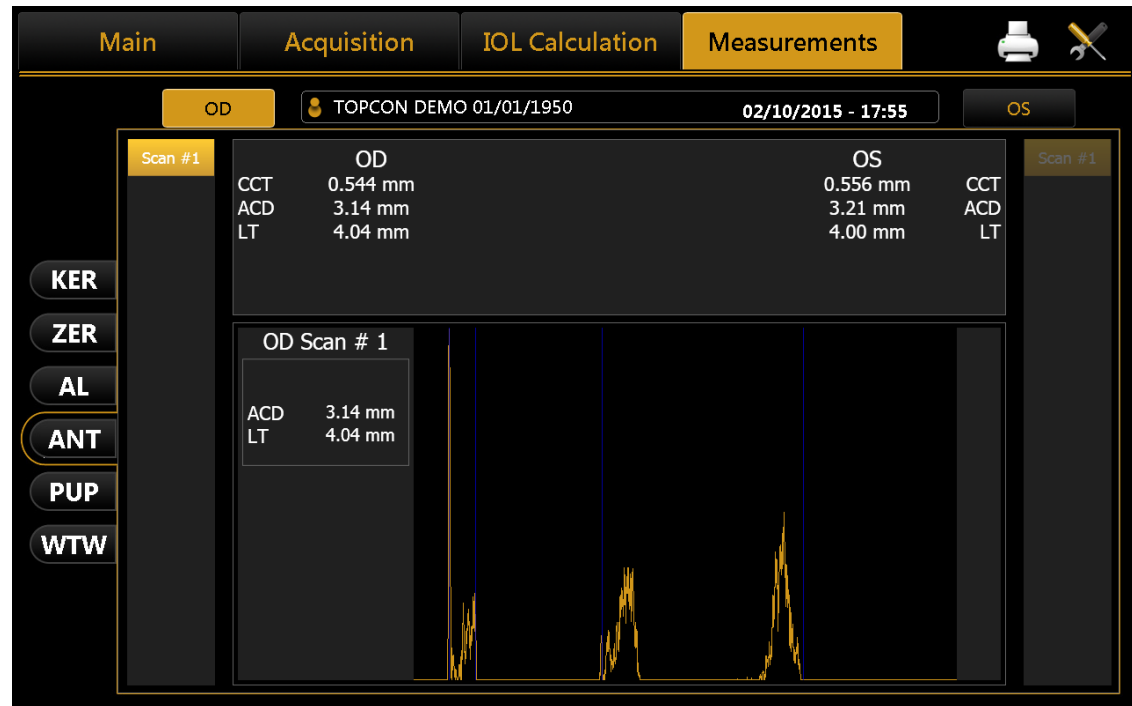
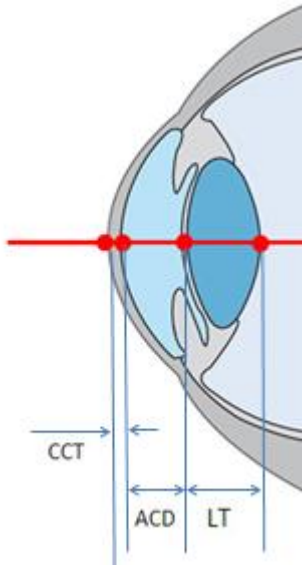
Central Corneal Thickness (CCT) is the distance between the epithelium, -or outermost layer of the cornea- and the endothelium –the innermost layer- measured at the center of the cornea or apex.



Central Corneal Thickness

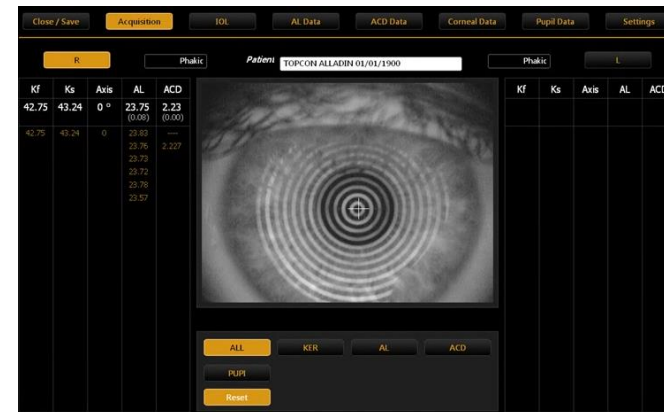
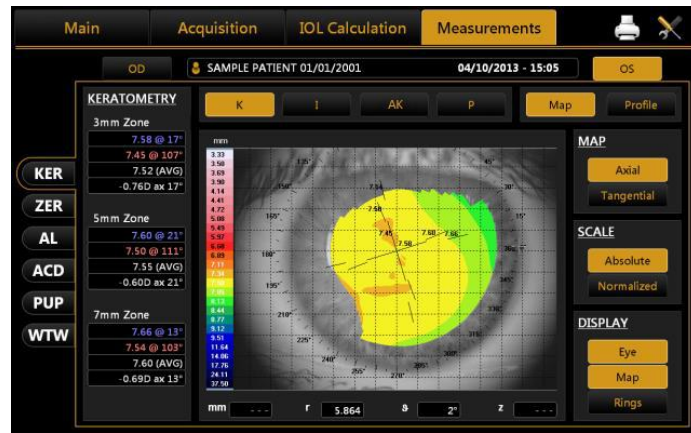
Product Description

In the Aladdin HW3.0 Central Corneal Thickness, Lens Thickness and Anterior Chamber Depth are measured by low coherence interferometry



Product Description

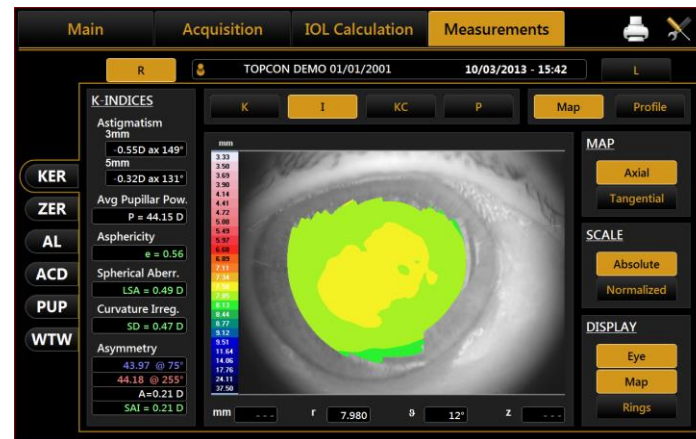
Keratometry is used to measure the corneal curvature. It is based on the reflection of the Placido disk on the eye at a controlled working distance for measuring precision.



By using Placido disk based keratometry the Aladdin provides a more accurate placement of the horizontal (K1) and vertical (K2) axis. Additionally the Placido rings allow for 3-zone keratometry at 3, 5 and 7mm from the center of the cornea.

Product Description

Corneal Topography is the mapping of the anterior surface of the cornea to detect irregularities that may interfere with the vision.

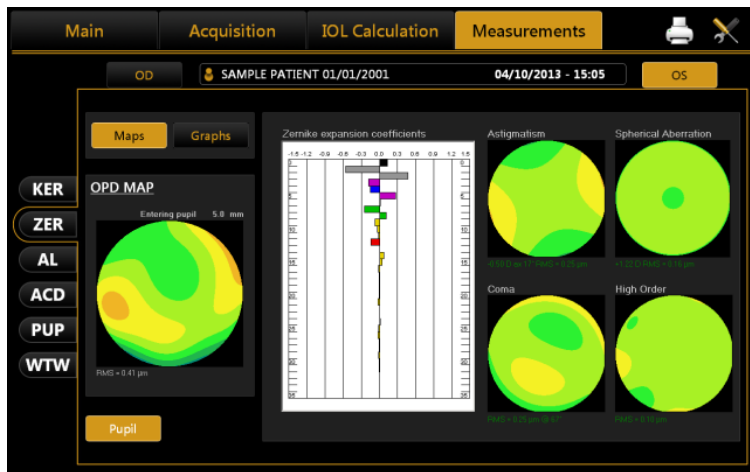


In the Aladdin the corneal map is obtained from the reflection of 24 rings of a Placido disk at a distance of 80 millimeters from the patient's eye. This provides over 6,200 measured points on the cornea and over 100.000 points analyzed by the software.

Product Description

Corneal Wavefront Analysis

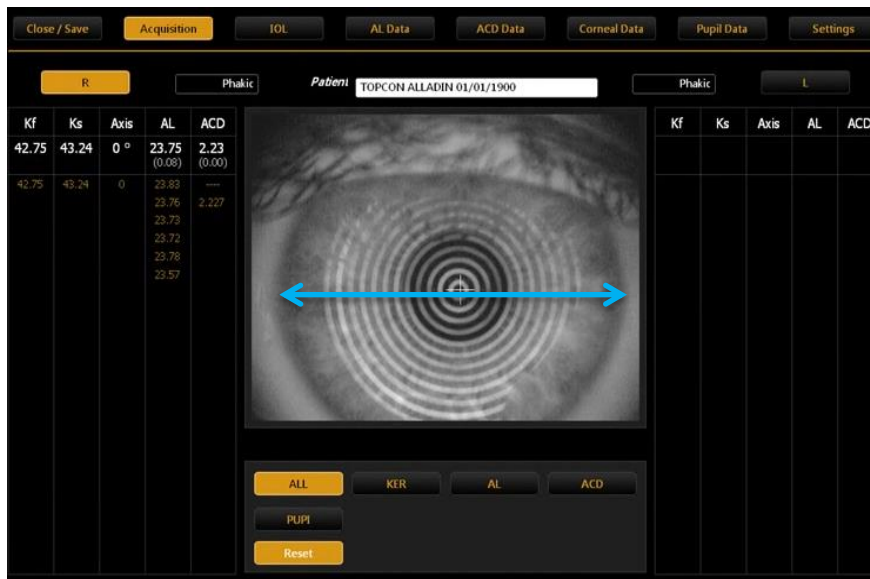
Using the Placido rings, the Aladdin performs a detailed wavefront analysis of the corneal surface showing corneal aberrations at different pupillary diameters.



When implanting certain types of premium IOL's, aberrations at different pupillary diameters are an important factor in the selection of the proper lens model and size.

Product Description

Corneal Diameter (White-to-White) With the acquisition of the corneal topography it is possible to determine the Corneal Diameter, also called "white- to- white" distance because it goes from one scleral border to the opposite. Being the sclera white in color, the distance is called "white-to-white"



White-to-white measurements are important in the calculation of anterior chamber IOL's.

Product Description

Pupillometry is the measurement of the pupil diameter in daylight conditions (photopic) and nighttime conditions (scotopic or mesopic). The results indicate the maximum and minimum pupil diameters the patient's eye can reach under different illumination conditions.



In the Aladdin, pupillometry is performed with LEDs. The instrument uses infrared LEDs to allow the pupil to dilate (scotopic or mesopic) and white LEDs to reproduce light conditions (photopic) and to contract the pupil (dynamic pupillometry).

ALADDIN HW 3.0

Generic Toric IOL Calculator

ALADDIN HW 3.0 – Generic Toric IOL Calculator

Surgeon: TOPCON SURGEON

Target (D): 0 SIA (D): 0.5 IL (°): 30

Measures:

AL (mm)	23.93	K1 (mm)	8.51	CYL (D)	-3.06 ax 173°
ACD (mm)	3.21	K2 (mm)	7.90	WTW (mm)	11.98
LT (mm)	4.00	CCT (mm)	0.556		

IOL (D)	REF (D)	IOL (D)	REF (D)	IOL (D)	REF (D)	IOL (D)	REF (D)	IOL (D)	REF (D)
20.50	0.84	21.50	0.76	21.50	0.71				
21.00	0.48	22.00	0.40	22.00	0.37				
21.50	0.12	22.50	0.04	22.50	0.02				
22.00	-0.25	23.00	-0.33	23.00	-0.33				
22.50	-0.62	23.50	-0.70	23.50	-0.69				

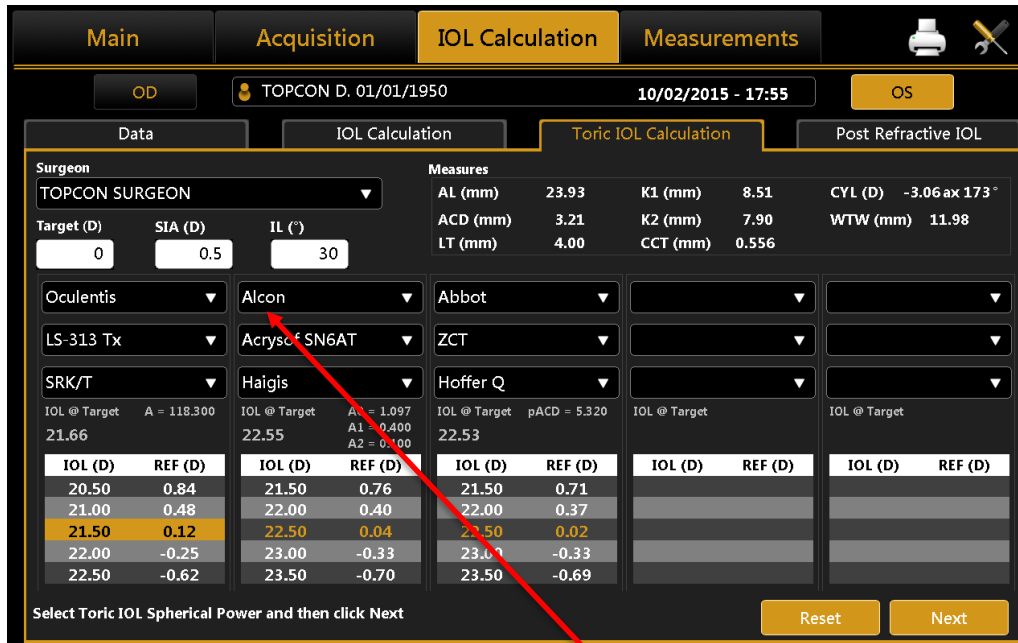
Select Toric IOL Spherical Power and then click Next

Reset Next

All the measurements are reported

The Surgically Induced Astigmatism and the Incision Location are preset by the surgeon

ALADDIN HW 3.0 – Generic Toric IOL Calculator



The screenshot displays the 'ALADDIN HW 3.0' software interface, specifically the 'IOL Calculation' screen. The interface is divided into several sections:

- Navigation:** 'Main', 'Acquisition', 'IOL Calculation' (active), and 'Measurements' tabs.
- Header:** 'OD', 'TOPCON D. 01/01/1950', '10/02/2015 - 17:55', and 'OS'.
- Sub-sections:** 'Data', 'IOL Calculation', 'Toric IOL Calculation' (active), and 'Post Refractive IOL'.
- Surgeon:** 'TOPCON SURGEON'.
- Measures:** AL (mm) 23.93, K1 (mm) 8.51, CYL (D) -3.06 ax 173°, ACD (mm) 3.21, K2 (mm) 7.90, WTW (mm) 11.98, LT (mm) 4.00, CCT (mm) 0.556.
- Inputs:** Target (D) 0, SIA (D) 0.5, IL (°) 30.
- Manufacturer Selection:** Five dropdown menus for selecting manufacturers: Oculentis, Alcon (highlighted with a red arrow), Abbot, LS-313 Tx, Acrysof SN6AT, ZCT, SRK/T, Haigis, and Hoffer Q.
- Tables:** Five tables showing 'IOL @ Target' and 'IOL (D) REF (D)' for each manufacturer. The 'Alcon' table has the value 21.50 with a toric power of 0.12 highlighted in yellow.
- Buttons:** 'Reset' and 'Next' buttons at the bottom.

Every toric IOL manufacturer can be selected for the calculation

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The screenshot displays the 'IOL Calculation' screen for the left eye (OS). The 'Surgical Pre Op Data' section is highlighted with a red box and a red arrow pointing to it from the text 'Surgical Pre Op Data' on the right. The interface includes tabs for Main, Acquisition, IOL Calculation, and Measurements. The IOL Calculation tab is active, showing various input fields and calculated values.

Surgical Pre Op Data		Measures			
SEQ	21.50	SIA	0.5	AL (mm)	23.93
Formula	SRK/T	IL	30	ACD (mm)	3.21
A = 118.300				LT (mm)	4.00
				K1 (mm)	8.51
				K2 (mm)	7.90
				WTW (mm)	11.98
				CYL (D)	-3.06 ax 173°
				CC1 (mm)	0.333
				Expected Post Op Cornea	
				K1 (mm)	8.53
				K2 (mm)	7.89
				CYL (D)	-3.24 ax 177°

Toric IOL		Available Toric Lenses	
Model	Oculentis LS-313 T4	Lens	Res Astigm
Spherical Power (D)	19.50	LS-313 T2	-1.55 C ax 177
Cylindrical Power (D)	3.75	LS-313 T3	-1.00 C ax 177
Axis of Placement (°)	87	LS-313 T4	-0.45 C ax 177
Expected Refraction	0.36D -0.45 C ax 177	LS-313 T5	-0.09 C ax 87
		LS-313 T6	-0.65 C ax 87
		IOL Ideal Toricity	4.37

The summary of the toric IOL calculation is shown with all the data

Surgical Pre Op Data

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The screenshot displays the 'Toric IOL Calculation' screen. The 'Measures' section is highlighted with a red box and a red arrow pointing to the 'Measurements data' text. The 'Measures' section contains the following data:

Parameter	Value	Parameter	Value	Parameter	Value
AL (mm)	23.93	K1 (mm)	8.51	WTW (mm)	11.98
ACD (mm)	3.21	K2 (mm)	7.90	CYL (D)	-3.06 ax 173°
LT (mm)	4.00	CCT (mm)	0.556		

The 'Expected Post Op Cornea' section contains the following data:

Parameter	Value	Parameter	Value
K1 (mm)	8.53	K2 (mm)	7.89
		CYL (D)	-3.24 ax 177°

The 'Available Toric Lenses' section contains the following data:

Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

The 'IOL Ideal Toricity' is 4.37. The 'Expected Refraction' is 0.36D -0.45 C ax 177. The 'Toric IOL' section shows the selected lens: Oculentis LS-313 T4. The 'Surgical Pre Op Data' section shows SEQ: 21.50, SIA: 0.5, Formula: SRK/T, IL: 30, A: 118.300. The 'Post Refractive IOL' section is empty. The 'Back' button is at the bottom right.

The summary of the toric IOL calculation is shown with all the data

Measurements data

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The screenshot displays the 'Toric IOL Calculation' screen. It features several sections: 'Surgical Pre Op Data' with fields for SEQ (21.50), SIA (0.5), Formula (SRK/T), and IL (30); 'Measures' with values for AL (23.93), ACD (3.21), LT (4.00), K1 (8.51), K2 (7.90), CCT (0.556), WTW (11.98), and CYL (-3.06 ax 173°); 'Expected Post Op Cornea' (highlighted in red) with K1 (8.53), K2 (7.89), and CYL (-3.24 ax 177°); 'Toric IOL' with Model (Oculentis LS-313 T4), Spherical Power (19.50), Cylindrical Power (3.75), Axis of Placement (87), and Expected Refraction (0.36D -0.45 C ax 177); and 'Available Toric Lenses' with a table of lens options. A diagram of the eye is shown on the right, with a red arrow pointing to the 'Expected Post Op Cornea' section.

Measures	Value
AL (mm)	23.93
ACD (mm)	3.21
LT (mm)	4.00
K1 (mm)	8.51
K2 (mm)	7.90
CCT (mm)	0.556
WTW (mm)	11.98
CYL (D)	-3.06 ax 173°
Expected Post Op Cornea	
K1 (mm)	8.53
K2 (mm)	7.89
CYL (D)	-3.24 ax 177°

Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

The summary of the toric IOL calculation is shown with all the data

Expected Post Op Cornea

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The summary of the toric IOL calculation is shown with all the data

The screenshot shows the 'IOL Calculation' screen with the following data:

Surgical Pre Op Data

SEQ	21.50	SIA	0.5
Formula	SRK/T	IL	30
A = 118.300			

Measures

AL (mm)	23.93	K1 (mm)	8.51	WTW (mm)	11.98
ACD (mm)	3.21	K2 (mm)	7.90	CYL (D)	-3.06 ax 173°
LT (mm)	4.00	CCT (mm)	0.556		

Expected Post Op Cornea

K1 (mm)	8.53	K2 (mm)	7.89	CYL (D)	-3.24 ax 177°
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Toric IOL

Model	Oculentis LS-313 T4
Spherical Power (D)	19.50
Cylindrical Power (D)	3.75
Axis of Placement (°)	87
Expected Refraction	0.36D -0.45 C ax 177

Available Toric Lenses

Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

IOL Ideal Toricity: 4.37

OS Diagram: Shows a cross-section of the eye with a toric lens. The diagram is labeled 'Nasal' and 'Temporal' with degree markings from 0 to 180.

Available IOL toricities

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The summary of the toric IOL calculation is shown with all the data

The screenshot displays the following data:

Surgical Pre Op Data		Measures					
SEQ	21.50	AL (mm)	23.93	K1 (mm)	8.51	WTW (mm)	11.98
SIA	0.5	ACD (mm)	3.21	K2 (mm)	7.90	CYL (D)	-3.06 ax 173°
Formula	SRK/T	LT (mm)	4.00	CCT (mm)	0.556		
A	118.300	Expected Post Op Cornea					
IL	30	K1 (mm)	8.53	K2 (mm)	7.89	CYL (D)	-3.24 ax 177°

Toric IOL	
Model	Oculentis LS-313 T4
Spherical Power (D)	19.50
Cylindrical Power (D)	3.75
Axis of Placement (°)	87
Expected Refraction	C 36D -0.45 C ax 177

Available Toric Lenses	
Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

IOL Ideal Toricity: 4.37

Toric IOL details

ALADDIN HW 3.0 – Generic Toric IOL Calculator

The summary of the toric IOL calculation is shown with all the data

The screenshot shows the 'Toric IOL Calculation' screen with the following data:

Surgical Pre Op Data		Measures					
SEQ	21.50	AL (mm)	23.93	K1 (mm)	8.51	WTW (mm)	11.98
SIA	0.5	ACD (mm)	3.21	K2 (mm)	7.90	CYL (D)	-3.06 ax 173°
Formula	SRK/T	LT (mm)	4.00	CCT (mm)	0.556		
A	118.300	Expected Post Op Cornea					
IL	30	K1 (mm)	8.53	K2 (mm)	7.89	CYL (D)	-3.24 ax 177°

Toric IOL		Available Toric Lenses	
Model	Oculentis LS-313 T4	Lens	Res Astigm
Spherical Power (D)	19.50	LS-313 T2	-1.55 C ax 177
Cylindrical Power (D)	3.75	LS-313 T3	-1.00 C ax 177
Axis of Placement (°)	87	LS-313 T4	-0.45 C ax 177
Expected Refraction	0.36D -0.45 C ax 177	LS-313 T5	-0.09 C ax 87
		LS-313 T6	-0.65 C ax 87

IOL Ideal Toricity: 4.37

Expected Refraction

ALADDIN HW 3.0 – Generic Toric IOL Calculator

Main Acquisition **IOL Calculation** Measurements

OD TOPCON D. 01/01/1950 10/02/2015 - 17:55 OS

Data IOL Calculation **Toric IOL Calculation** Post Refractive IOL

Surgical Pre Op Data

SEQ	SIA	AL (mm)	23.93	K1 (mm)	8.51	WTW (mm)	11.98		
21.50	0.5	ACD (mm)	3.21	K2 (mm)	7.90	CYL (D)	-3.06 ax 173°		
Formula	IL	LT (mm)	4.00	CCT (mm)	0.556				
SRK/T	30	Expected Post Op Cornea		K1 (mm)	8.53	K2 (mm)	7.89	CYL (D)	-3.24 ax 177°
A = 118.300									

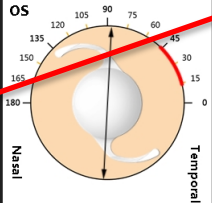
Toric IOL

Model	Oculentis LS-313 T5
Spherical Power (D)	19.00
Cylindrical Power (D)	4.50
Axis of Placement (°)	87
Expected Refraction	0.27D -0.09 C ax 87

Available Toric Lenses

Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

IOL Ideal Toricity 4.37



Back

Click here for the IOL Rotation Simulator

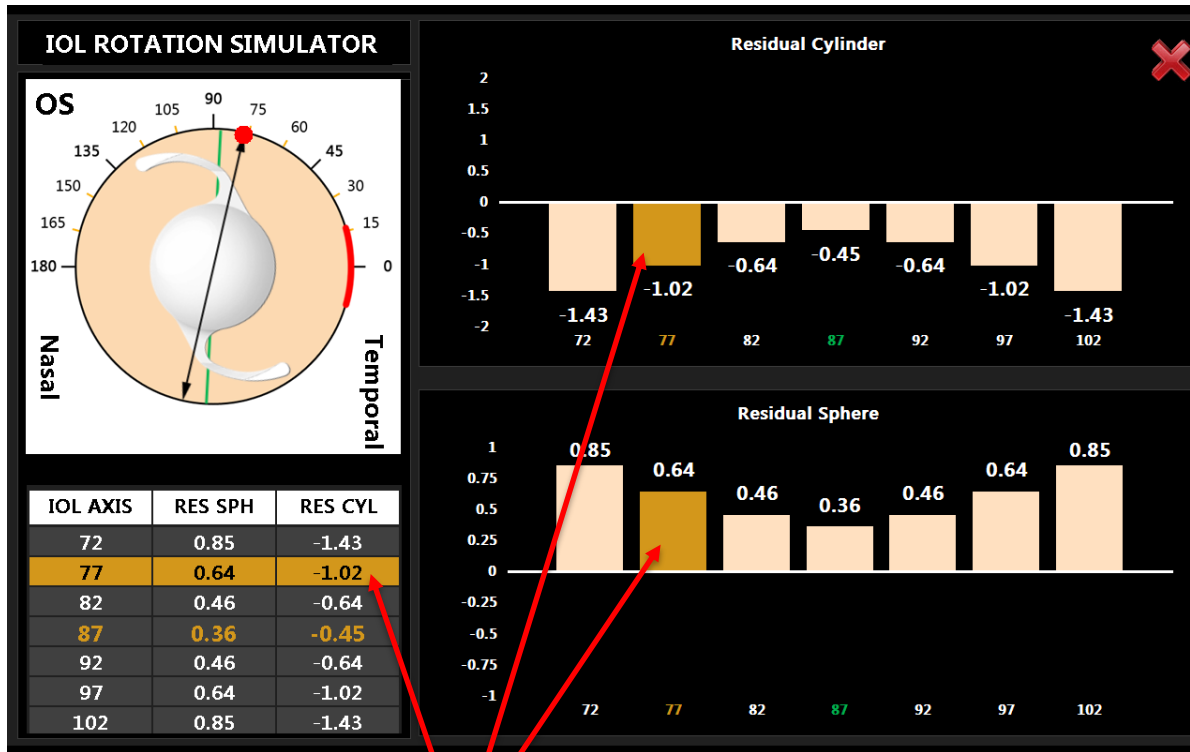
ALADDIN HW 3.0 – Generic Toric IOL Calculator

The screenshot shows the 'IOL Calculation' screen for the right eye (OS). The 'Toric IOL Calculation' tab is active. The 'Surgical Pre Op Data' section includes SEQ (21.50), SIA (0.5), Formula (SRK/T), and IL (30). The 'Measures' section shows AL (23.93), ACD (3.21), LT (4.00), K1 (8.51), K2 (7.90), CCT (0.556), WTW (11.98), and CYL (-3.06 ax 173°). The 'Expected Post Op Cornea' section shows K1 (8.53), K2 (7.89), and CYL (-3.24 ax 177°). The 'Toric IOL' section shows the selected lens as Oculentis LS-313 T5 with a spherical power of 19.00 D, cylindrical power of 4.50 D, and axis of placement at 87°. The 'Expected Refraction' is 0.27D -0.09 C ax 87. The 'Available Toric Lenses' table lists several options, with LS-313 T5 highlighted. A red arrow points from the 'Expected Refraction' field to the LS-313 T5 lens option. A diagram of the eye shows the axis of placement at 87 degrees.

Lens	Res Astigm
LS-313 T2	-1.55 C ax 177
LS-313 T3	-1.00 C ax 177
LS-313 T4	-0.45 C ax 177
LS-313 T5	-0.09 C ax 87
LS-313 T6	-0.65 C ax 87

Select a different lens toricity and check the expected refraction

ALADDIN HW 3.0 – Generic Toric IOL Calculator



Each row represents 5 degrees of rotation of the IOL

CONCLUSIONS

- **Fully stand alone instrument with connectivity options**
 - **Fast and easy to use**
 - **High accuracy in biometry**
 - **Measures axial length through dense cataracts**
-
- **Corneal Topographer Integrated**
 - **Static and Dynamic Pupillometry**
 - **A good guide for Premium IOL implantation**

Thank You