GALILEI G4

ziemer
OPHTHALMOLOGY

THE BEST OF BOTH WORLDS

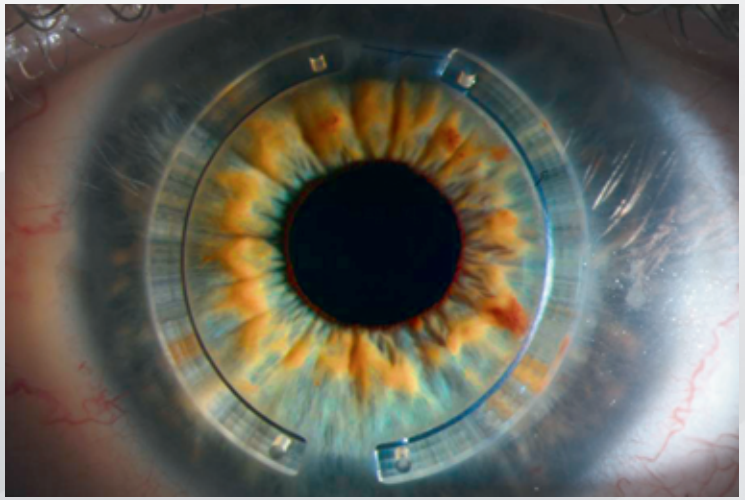
Dual-Scheimpflug and Placido
Reaching a new level in refractive screening

GALILEI G4
Clinical Applications

Corneal Implant Planning

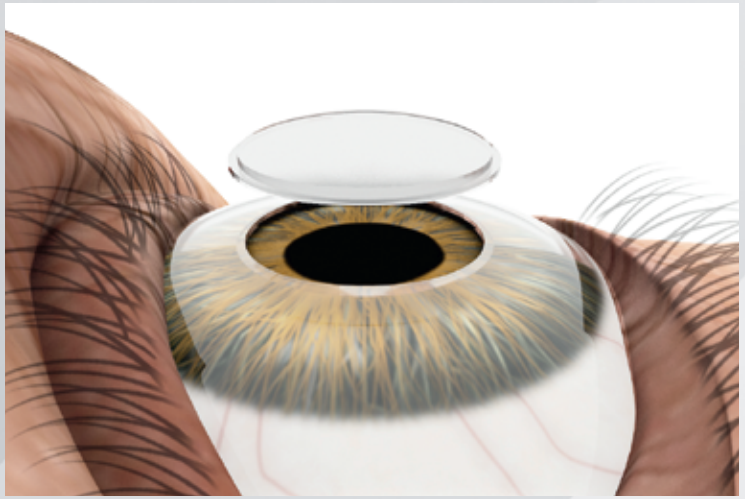
The GALILEI G4 comes with a licensable corneal inlay software module which is optimized to patients with implanted corneal inlays. This ensures an accurate and reliable post-op follow-up of those patients.

When planning an intracorneal ring surgery, corneal pachymetry, high order aberrations, curvature maps and total corneal astigmatism deliver the information needed to decide on the right ring and corneal position for the treatment.



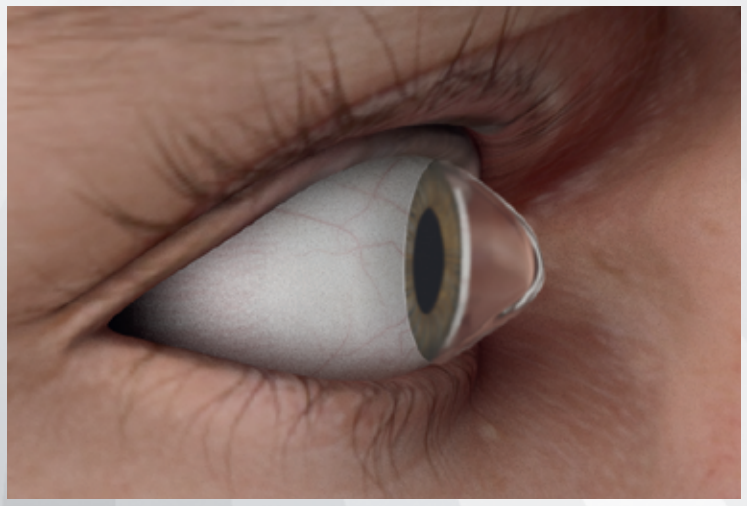
Planning and follow-up of Keratoplasty

With the GALILEI anterior and posterior corneal astigmatism can be closely controlled. This can be particularly helpful when planning a selective suture removal or in order to follow-up on DSAEK surgery outcomes. High definition corneal pachymetry maps deliver important information about donor tissue cut quality and later visual acuity.



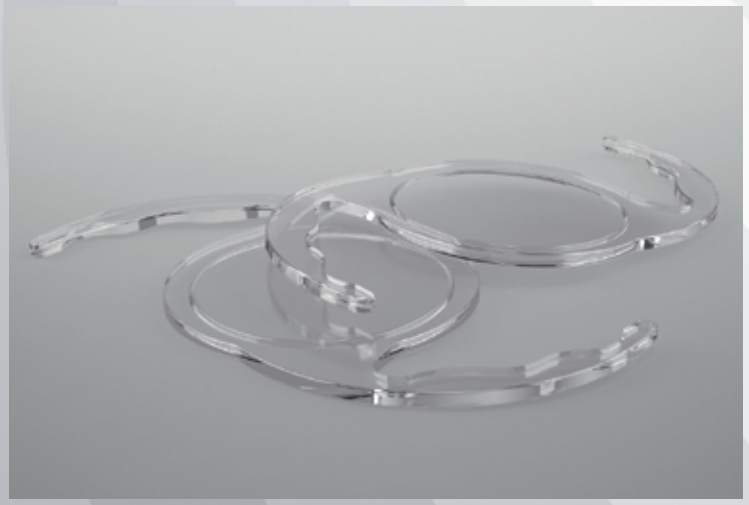
Keratoconus Screening

The GALILEI G4 offers a complete dataset for Keratoconus screening. Precise posterior corneal curvature and elevation data make it easy to detect posterior corneal bulging and signs of corneal asymmetry even in very early stages.



IOL Calculation

The GALILEI G4 is a comprehensive tool for IOL planning and calculation. In one measurement, both anterior and posterior corneal data is captured. Data displayed includes anterior and posterior astigmastism, higher order aberrations as well as total corneal power.[1] A licensable IOL calculator integrates the renowned Shammas no-history formula which allows for reliable IOL prediction in post-refractive cases where a patient's clinical history is no longer available.[2]



GALILEI G4

Santhiago PTA Report™

Santhiago PTA Report™
Simulate the impact of your LASIK surgery

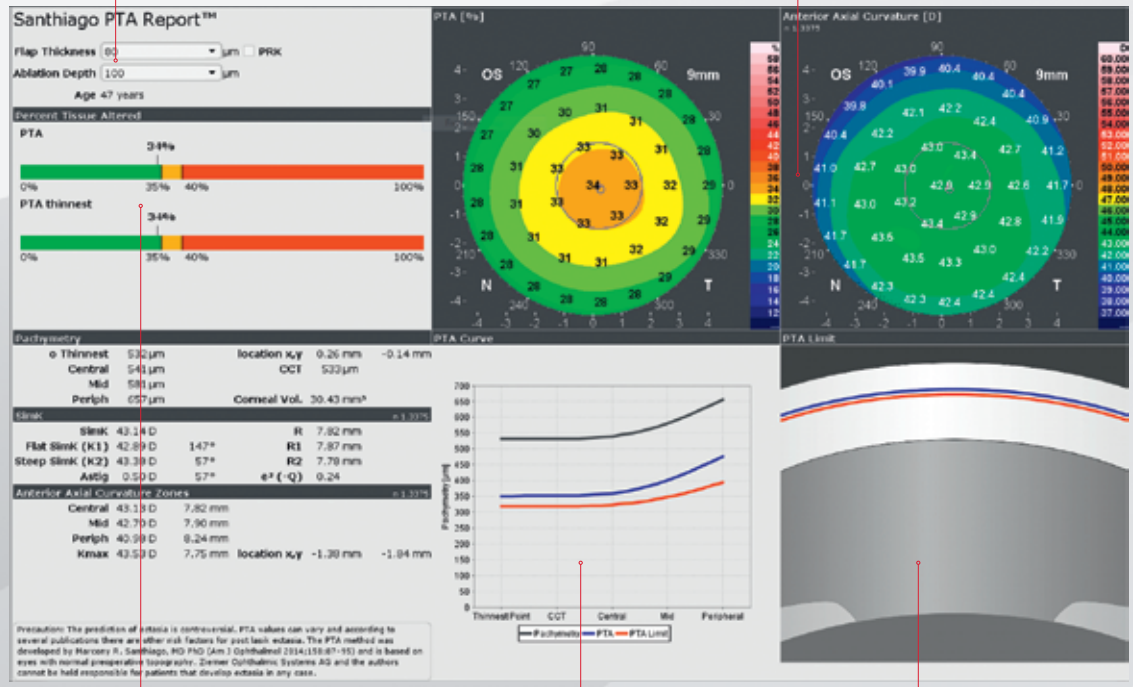
Preoperative corneal thickness, ablation depth and flap thickness are all known to play a role in biomechanical change after a LASIK procedure[3]. But how do these individual factors interact to contribute to post-LASIK ectasia?

The Santhiago PTA Report™ in the GALILEI is a new licensable module to simulate and predict the probability of ectasia after LASIK by taking into account all these factors.

The PTA Curve shows in a simple way whether or not the patient's PTA is situated below or above the PTA threshold of 40%. A simulation of the cornea helps to see at first glance if the patient is a LASIK candidate or shows a high probability of creating post-LASIK ectasia.

Patient specific parameters for PTA calculation

Cuvature and PTA Maps



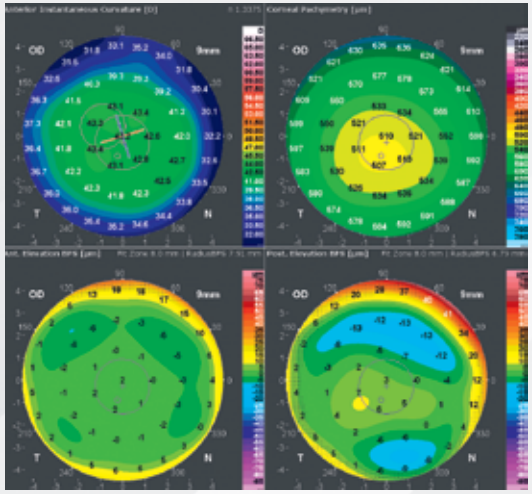
Percent Tissue Altered
PTA = (FT+AD) / CCT
Color bar visualizing actual PTA values.

PTA progression dependent on local pachymetry

Simulation of PTA in the cornea

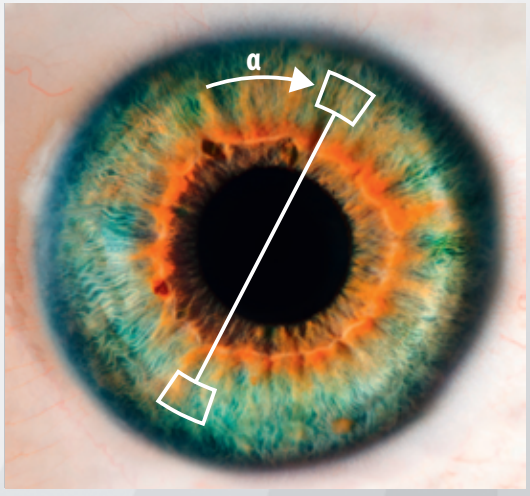
Precaution: The prediction of ectasia is controversial. PTA values can vary and according to several publications there are other risk factors for post lasik ectasia. The PTA method was developed by Marcony R. Santhiago, MD PhD (Am J Ophthalmol 2014;158:87–95) and is based on eyes with normal preoperative topography. Ziemer Ophthalmic Systems AG and the authors cannot be held responsible for patients that develop ectasia in any case. Please note: The Santhiago PTA Report™ is not available for sale in the US.

GALILEI G4
Unique Technology



Reliable surface data for refractive and corneal surgery

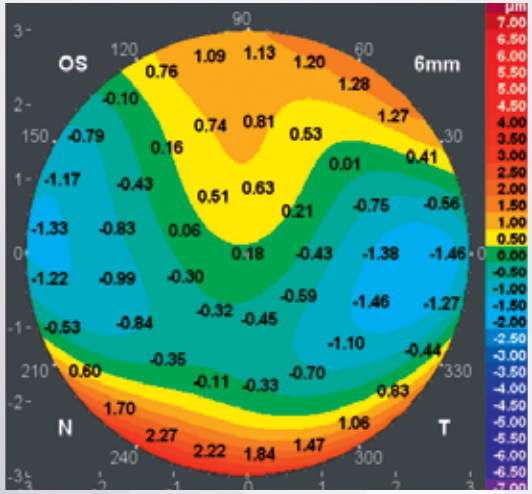
The GALILEI G4 integrates Placido disc topography and Dual-Scheimpflug tomography in one device. This combination of technologies allows for a complete analysis of both the anterior and the posterior corneal surface. The simultaneously recorded Dual-Scheimpflug images produce reliable pachymetry and posterior curvature data, whereas the Placido ring images provide highly accurate and central anterior corneal curvature data fitted to the anterior corneal surface.



Patented iris-based eye motion compensation

Small to moderate eye motions which can lead to clinically relevant surface curvatures cannot be prevented especially in elderly patients or children. The GALILEI G4 comes with a patented iris tracker which compensates for eye motion.

Different than other topography and tomography devices that align data to the pupil or the apex of the cornea, the GALILEI G4 aligns all data to the visual axis using the 1st Purkinje image. This ensures consistent alignment when comparing a series of consecutive measurements over time.



Ray-traced Total Corneal Wavefront solution

With its powerful ray-traced Total Corneal Wavefront solution, the GALILEI G4 precisely measures high order aberrations for highly predictable outcomes in cataract surgery. The high order aberration display helps identifying the most suitable IOL for every patient.

GALILEI PRODUCT FAMILY

The modular solution for your needs

Refractive Software Package	GALILEI G4	GALILEI G4 Advanced	GALILEI G6
Refractive Report	•	•	•
Keratoconus Report	•	•	•
IOL Power Report	•	•	•
Total Corneal Wavefront Report	•	•	•
Curvature Topography	•	•	•
Elevation Topography	•	•	•
Densitometry	•	•	•
Eye Metrics Report	•	•	•
Map Comparison Report	•	•	•

Cataract Software Package	GALILEI G4	GALILEI G4 Advanced	GALILEI G6
Biometry Report (including CCT, ACD, LT, AL)	×	×	•
IOL Calculator*	○	•	•
Advanced IOL Report	×	×	•
Images Report	×	×	•

Optional Software Licenses	GALILEI G4	GALILEI G4 Advanced	GALILEI G6
IOL Calculator*	○	•	•
Corneal inlay module	○	•	•
DICOM/EMR connection	○	•	•
Remote workstation	○	•	•
CSV export for clinical studies	○	•	•
Z-LASIK Report	○	•	•
Santhiago PTA Report™	○	○	○
PhacoOptics / Okulix Connector**	×	×	○

• Standard software package
○ To be purchased separately
× Not available for this device

Please note: The Santhiago PTA Report™ and the Z-LASIK Report are not available for sale in the US.

*IOL Formulae: Shammas no-history (post-refractive), Haigis, Holladay I, Hoffer Q, SRK II, SRK/T

**IOL Calculation Software: The GALILEI G6 connects to the third party ray-tracing software PhacoOptics (phacooptics.com) and Okulix (okulix.de).

Disclaimer: The GALILEI G6 Lens Professional is pending FDA approval and is not available for sale in the US. For some other countries, availability may be restricted due to local regulatory requirements. Please contact Ziemer for details.

All in One: Optical Biometry, Dual Scheimpflug Tomography and Placido Topography

The GALILEI G6 Lens Professional comes with the capabilities of the G4 and adds an optical biometer to measure lens thickness, anterior chamber depth and axial length for IOL calculation. The new Cataract Software Package is optimized to your clinic workflow.

GALILEI G4
System Information

Measurement Ranges

Central Corneal Thickness:	250–800 µm
Keratometry:	25–75 D (4.5–13.5 mm)

In-vivo Repeatability

Parameter	SD specified	SD measured
Central Corneal Thickness:	3.00 µm	1.13 µm
Simulated Keratometry (SimK):	0.25 D	0.05 D
Angle of flattest meridian:	10 °	3 °

Study Design

Internal study of 24 normal eyes in 12 subjects, age range 26–53 years (mean = 38 years).
Repeatability as estimated by the mean standard deviation of consecutive measurements averaged over all subjects and eyes.

Abbreviations

Mean	Arithmetic mean of consecutive measurements
SD specified	Specified repeatability as defined by the mean standard deviation
SD measured	Measured repeatability as estimated by the mean standard deviation
SimK	Keratometry corneal curvature over central area of diameter 1–4 mm

Technical Data

Placido disc:	20 rings
Measurement speed:	60 images in 1 second
Number of measurement points – Scheimpflug/Placido:	up to 100 000 measurement points
Displayed map coverage:	max. 10 mm

Measurement unit characteristics

Measuring principle:	Rotational Scan of Dual Scheimpflug slit images combined with Placido and top view images
Observation illumination:	NIR (near-infrared) LED 810 nm
Scheimpflug illumination:	Blue LED (UV-free) 470 nm
Placido illumination:	NIR (near-infrared) LED 750 nm

Electrical conditions

Power requirement:	100–240 VAC, 50/60 Hz, 400 W
Fuses (110/230 V):	2×T6, 3 AH, 250 VAC

Classification according to IEC 60601-1

Type of protection against electric shock:	Class 1
Degree of protection against electric shock:	Type B applied part
Degree of protection against damaging penetration of water:	IP20

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Actual product characteristics, specifications, and prices are subject to change.

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References

1 Zhang L, Sy ME, Mai H, Yu F, Hamilton DR (2015). "Effect of posterior corneal astigmatism on refractive outcomes after toric intraocular lens implantation" Journal of Cataract and Refractive Surgery 41(1): 84–89.

2 Shammas HJ, Shammas MC (2007). "No-history method of intraocular lens power calculation for cataract surgery after myopic laser in situ keratomileusis." Journal of Cataract and Refractive Surgery 33 (1): 31–36.

3 Santhiago M, Smadja D, Gomez BF, Mello GR, Monteiro MRL, Wilson SE, Randleman JB (2014). "Association Between the Percent Tissue Altered and Post-Laser In Situ Keratomileusis Ectasia in Eyes With Normal Preoperative Topography." Am J Ophthalmol 158 (July): 87–95.