

Medical devices



Unparalleled precision & dynamic range

Wide-ranging functionality

Versatile, intuitive & easy to use

Look inside to see how the irx3™ Wavefront Aberrometer can be used in demanding clinical situations to address the growing needs of ophthalmology professionals.

Features

irx3



Figure 1 (left software image) - The irx3 software package provides detailed information on ocular aberrations present in the subject's eye. Figure 2 (right software image) - The objective wavefront accommodation assessment screen.

Designed by professionals for professionals, the irx3™ Wavefront Aberrometer is an FDA registered and CE marked¹ diagnostic tool for clinical practitioners and researchers that want to put the power and precision of wavefront measurement to work for them.

Imagine Eyes' patented technology measures your patient's entire optical system in a single "one-shot" operation that provides superior precision and repeatability when compared to other techniques that measure by progressive scanning. A wealth of patient data is rapidly displayed in a variety of formats including sphere, cylinder and axis of rotation, wavefront and power maps, as well as diopter-based and Zernike coefficients. For scientific users, a complete collection of physical and optical algorithms and displays enables you to customize the irx3 to your unique needs.

Versatile and intuitive, the irx3 combines autorefraction and autokeratometry with high-precision Hartmann-Shack wavefront measurement, infrared pupillometry and wavefront assessment of accommodation into one stand-alone solution that helps practitioners meet today's challenges. Even more, examinations can be performed with optical or surgical corrections in place, allowing you to evaluate and compare their in situ performance to the pre-corrected state.

- Wavefront aberrometer
- Autorefractometer
- Autokeratometer
- Wavefront accommodation assessment
- Objective acuity meter
- Objective contrast sensitivity meter
- Infrared pupillometer
- Retinal image display
- Intuitive, clinically oriented user interface

specifications

- FDA registered and CE marked¹
- Resolution: 1024 true optical measurement points (no software interpolation)
- Dynamic range: -15/+20 D sphere, ± 10 D astigmatism, Zernike coefficients up to 14th order²
- Repeatability: 0.003D RMS²
- Multiple analysis functions including diopter based coefficients, Zernike, MTF and PSF
- Wavefront and power maps
- Simulated retinal image
- Natural pupil analysis (no circular truncation of the wavefront data)
- User controlled fixation distance, wavefront sampling area and scaling of aberration coefficients

The irx3 Wavefront Aberrometer

Below are some examples on how the irx3™ Wavefront Aberrometer is used in demanding clinical situations to address the complex needs of our customers. For more information please visit our website www.imagine-eyes.com or call us on +33 (0)1 64 86 15 66.

Patient screening and follow-up

With the new optical and surgical correction options that you can provide to your patients, the need for precision diagnostic devices has never been greater. The ability to quickly and precisely analyze and characterize your patients' optical system, and the aberrations therein, is essential in deciding if additional tests must be prescribed and developing an effective, well documented course of treatment.

The irx3 allows you to perform a detailed ophthalmic examination on any patient³ within minutes, even with optical or surgical corrections in place. You can readily appraise the objective outcome of the correction versus the expected outcome, and work with your patients to improve the overall quality and comfort of their vision.

Measuring highly aberrated eyes

Effectively measuring and characterizing higher-order aberrations and their bearing on your patient's quality of vision is a difficult task. The irx3's advanced wavefront technology can measure ocular aberrations up to the 14th order over a dynamic range of -15/+20 D sphere and ± 10 D astigmatism with precision repeatability of 0.003 D RMS². This remarkable accuracy can help you provide better vision to your patients by measuring and identifying the source of these aberrations, and their effect on overall visual acuity (figure 1 on the left). This can help practitioners to determine the best course of treatment or choose between different types of optical and surgical corrections.

Wavefront accommodation assessment

Assessing a patient's accommodative response and ability can be a difficult and time-consuming task. With today's ageing population and new treatment options like accommodating IOLs just around the corner, wavefront accommodation assessment, especially for diagnosing and treating presbyopia, is a necessity for practicing ophthalmologists.

The irx3 comes complete with a programmable internal fixation target that enables you to measure the effects of accommodation on the entire optical system at varying distances of vision and states of pupil dilation. During the examination, you instruct the patient to focus on the target which is repositioned at different intervals by the system in order to simulate various viewing distances. At each interval, a complete wavefront measurement is taken. At the end of the examination, you are provided with detailed information your patient's optical system including their accommodative ability (figure 2 on the left).

The irx3's proprietary accommodation assessment method also provides you with information about the changes in aberrations during accommodation and at different states of pupil miosis. This unique feature can help you to choose between different optical and surgical correction options, while working with your patient to balance visual quality and comfort. In cases where the patient is unable to fully participate in the examination process, the elderly or very young for example, the irx3 becomes an even more valuable clinical asset.

Adaptive optics medical devices

Although the principles behind adaptive optics were originally destined to help astronomers get a better view of the universe through ground-based telescopes, the implications and applications of this technology on ophthalmology are not hard to see.

The adaptive optics 'loop' is comprised of 3 core elements – a wavefront sensor, command and control algorithms, and a wavefront correction mechanism (usually a deformable mirror). Imagine Eyes masters the entire production process of these three elements, the science behind them and their applications in the eye health domain.

In the near future, Imagine Eyes will introduce new medical devices based on adaptive optics. In vivo, ultra high-resolution imaging of the retina will allow clinicians to observe the retinal microstructures in fine detail, and may lead to new therapeutic treatments that would remain otherwise impossible. Clinically oriented products derived from our crx1 Adaptive Optics Visual Simulator will enable clinicians to preview the possible visual outcome of optical or surgical corrections before they are applied, opening new horizons in patient care, comfort and confidence.



**18 rue Charles de Gaulle
91400 Orsay FRANCE
Téléphone: +33 (0)1 64 86 15 66
Fax: +33 (0)1 69 07 53 79
www.imagine-eyes.com**

¹ FDA registered (510k exempt) and CE marked for use as an ophthalmic diagnostic device.

² In laboratory conditions using an artificial eye. Individual results may vary.

³ The irx3 functions on 99% of eyes, with or without optical or surgical correction in place.