Luzerne Optical Laboratories, LTD presents:
i.Scription Lenses & i.Profiler Measurement System by Zeiss

i.Scription® by ZEISS: FAQ

What is i.Scription® by ZEISS?
i.Scription is a revolutionary method of optical calculation that optimizes a patient's prescription based upon the total wavefront aberrations of each eye as measured by the i.Profiler$^{plus®}$.

What is the benefit of i.Scription?
By optimizing the lens for the eye's total wavefront aberrations, including both the "low-order" and "high-order" aberrations, i.Scription can significantly enhance overall visual performance including visual acuity, contrast sensitivity, and depth perception, particularly at night and in low-light viewing conditions.

Do i.Scription wearers really notice improved vision?
Early clinical results from European field trials indicate three areas of enhanced visual performance with i.Scription lenses including:

74% of i.Scription® wearers confirmed better vision at night and in low contrast situations.

4 out of 5 of i.Scription® wearers surveyed stated that they enjoyed greater visual comfort.

More than 3 out of 5 of i.Scription wearers surveyed saw colors more intensively.

Additional results from a field trial conducted with 416 customers in Belgium/Netherlands showed:

70% of the surveyed wearers experienced crisper, sharper vision with i.Scription®.

How is i.Scription different than a standard subjective refraction?
i.Scription is an enhancement to the subjective refraction that should deliver greater accuracy and precision over a range of pupil sizes. It can't replace the expertise and experience of a trained eye care professional, especially with regard to binocular vision, balance of vision and near vision. The combination of subjective refraction, i.Profiler^{plus} measurement of aberrations and i.Scription leads to a higher satisfaction level.

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How does i.Scription differ from other wavefront prescriptions?
i.Scription differs from competing systems in several important ways:

1. i.Scription employs a proprietary prescription optimization algorithm developed by vision scientists at Carl Zeiss Vision (patent pending)

2. i.Scription incorporates the eye care professional's subjective refraction during the calculation process.

3. i.Scription lenses are calculated and manufactured to one-hundredth of a diopter (0.01 D).

4. i.Scription is available on all a full range of customized lens designs and materials from ZEISS.

Do lenses using i.Scription correct the high-order aberrations of the eye?
It is not possible to correct the high-order aberrations of the eyes using spectacle lenses, because the eyes are constantly in motion behind the lenses. However, i.Scription optimizes the refraction values by considering the effects of the high-order aberrations of the patient's eyes on vision quality. The resulting lenses are still defined by standard values such as sphere, cylinder, axis, and add.

What lenses may be ordered with i.Scription®?
i.Scription is available on the Zeiss 100% Customized portfolio; offering a Good, Better, Best selection in progressive designs and a Better and Best design in Single Vision. Most of these lenses have a VSP code associated with them. i.Scription is compatible with all materials and treatments available within this portfolio.

Does i.Scription work with any other brand of lens?
Only Carl Zeiss Vision has the proprietary calculation engine and the proprietary manufacturing process required to create ultra-precise lenses using i.Scription.

What is the difference between a conventional spectacle prescription and i.Scription?
Conventional spectacle prescriptions are typically determined using refractor-head and trial-frame lenses using various subjective refraction techniques that may be influenced by the presence of high-order ocular aberrations, rounding errors due to the use of one-quarter diopter lenses, and normal variations in subjective responses. i.Scription is a "wavefront-guided" spectacle correction that is optimized based upon both the low-order and high-order aberrations of the. i.Scription sphere and cylinder powers are calculated using a proprietary algorithm that maximizes vision quality to the nearest one-hundredth diopter in the presence of both low-order and high-order aberrations in order to deliver vision corrections with greater precision and accuracy in more viewing conditions, including twilight and nighttime vision.

Each i.Scription is also reconciled against the subjective refraction to ensure that deliberate modifications to the objective refraction—to ensure equal stimulus to accommodation for instance—are maintained in the final vision correction. i.Scription lenses are designed and fabricated using precision free-form surfacing equipment and

technology patented by Carl Zeiss Vision.

What is i.Profiler^{plus}®?

i.Profiler^{plus} is a sophisticated, full-featured "3-in-1" system that incorporates the industry-leading ATLAS 9000 corneal topographer, wavefront aberrometer, and autorefractor. The i.Profiler^{plus} quickly and easily measures the ocular wavefront aberrations and refractive status of the eye as well as the topography and aberrations of the cornea. These measurements can also be presented graphically in an extensive array of contour maps and vision simulations.

What is the purpose of i.Profiler^{plus} ?

The i.Profiler^{plus} offers a variety of diagnostic capabilities that are invaluable tools in a variety of clinical applications: evaluating the complete refractive status of the eye, including low- and high-order wavefront aberrations; fitting soft and rigid contact lenses; monitoring ocular disease processes; and managing or co-managing refractive and surgical interventions. Ocular wavefront data captured by the i.Profiler^{plus} is also used to calculate an i.Scription, which is a wavefront-guided spectacle correction that offers enhanced visual performance over a range of viewing conditions.

What are wavefront aberrations?

Wavefront aberrations represent an increasingly common technique for characterizing the focusing errors of the human eye and other optical devices. Wavefront aberrations are generally categorized as either low-order aberrations or high-order aberrations. Low-order aberrations are associated with the traditional refractive errors of the eye, or the sphere power and cylinder power of the prescription. High-order aberrations represent more subtle focusing errors that can also affect vision quality, particularly at larger pupil sizes. Although it is not possible to correct the high-order aberrations of the eye with a spectacle lens, the sphere and cylinder powers of a traditional prescription can be fine-tuned to minimize the effects of high-order aberrations on vision quality.

How do high-order aberrations impact vision?

High-order aberrations create additional image "noise" that degrades vision quality and reduces retinal image contrast, particularly at larger pupil sizes. High-order aberrations can also produce certain glare phenomena around lights and other bright objects at night, including "halo" and "starburst" patterns.

What technology does the i.Profiler^{plus} use to measure the aberrations of the eye and cornea?

The i.Profiler^{plus} measures wavefront aberrations using a Shack-Hartmann wavefront sensor. It measures the corneal topography of the eye using a videokeratography system with an integrated Placido disk.

Why are the results from the i.Profiler^{plus} superior to those of a conventional autorefractor?

Conventional autorefractors can only measure the overall refractive power of the eye, typically over a small, central region of the pupil. They cannot account for local variations in refractive power across the eye due to the presence of high-order aberrations. The i.Profiler^{plus} measures the distribution of the refractive power across the

entire pupil, permitting more accurate calculation of the entire refractive status of the eye.

How long does the measuring process take?
The complete measuring process takes less than 1 minute for both eyes.

How difficult is the device to operate?
The process is fully automatic and can easily be performed by staff with minimal training.

Can the i.Profiler^{plus} be used to measure children?
Yes. Thanks to its measuring speed, the i.Profiler^{plus} is ideal for the measurement of children who are capable of maintaining fixation on the test image for a short period of time.

What data does the i.Profiler^{plus} collect in keratometer mode?
The i.Profiler^{plus} measures the central and peripheral corneal radii as well as the complete corneal topography of the eye by means of a videokeratography system with integrated Placido projector.

Is the i.Profiler^{plus} required to prescribe i.Scription lenses?
Because i.Scription relies on measurements of the wavefront aberrations of the eye, a wavefront-sensing aberrometer is required. Currently, the i.Profiler^{plus} is the only aberrometer that has been qualified by Carl Zeiss Vision to work with the i.Scription calculation engine.