2WIN Binocular Mobile Refractometer and Vision Analyzer

ADAPTICA

2WIN

The smartest way to detect refractive errors and vision problems

ADAPTICA

Adaptica was founded in 2009 as a spin-off of the University of Padova, Italy specialising in adaptive optics and optoelectronics applied to Industry and astronomical research. Adaptica leverages on its technological know-how and competences in Astronomy to move from a better vision of the universe and its galaxies towards exploring vision and the human eye. Shortly after, Adaptica expanded into health-care with particular focus to vision and eye-care. Adaptica develops and manufactures mobile, smart and ease of use diagnostic pieces of equipment that are currently distributed in 40+ countries around the world.

Device and main applications

The 2WIN is a mobile binocular refractometer and vision analyzer that measures both eyes at the same time, in real life vision conditions.

- Refraction of infants and children from 2 months of age, seniors, impaired and non-cooperative patients.
- Early detection and documentation of multiple amblyogenic factors.
- Un-aided binocular refraction of all other patients.
- Over-refraction of glasses or contact lenses.

Refraction

The 2WIN measurement principle is eccentric photo-retinoscopy. Infrared (IR) light is projected through the patient pupils and onto the retina. Depending upon the refractive error, the reflected light forms a specific crescent-shaped brightness pattern within the pupil. The 2WIN measures spherical power, cylinder power and axis by interpreting the reflected light crescent pattern and position.

The 2WIN infrared exam also provides valuable information about corneal abnormalities as well as ocular media opacities such as cataracts.
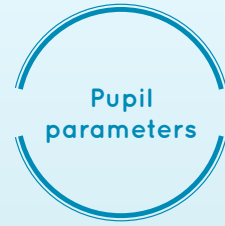
Measurements

Refractive errors	Sight anomalies	Pupil parameters
Refractive errors - Myopia, hyperopia, astigmatism and other amblyogenic factors.	Sight anomalies that may be related to anisometropia, anisocoria, strabismus, phoria.	Pupil parameters - pupil size, pupil distance and head tilt.

Benefits

100% mobile	Binocular, 1 meter working distance	Hand-held, small, light weight	Battery operated (long battery life)	Easy, quick, non-invasive	Cost effective

The 2WIN

The 2WIN works **as a photo camera** and operates at 1 meter distance; it needs ony **3 seconds** to get a complete screening of the patient, it immediately provides a detailed PDF report to print and share.
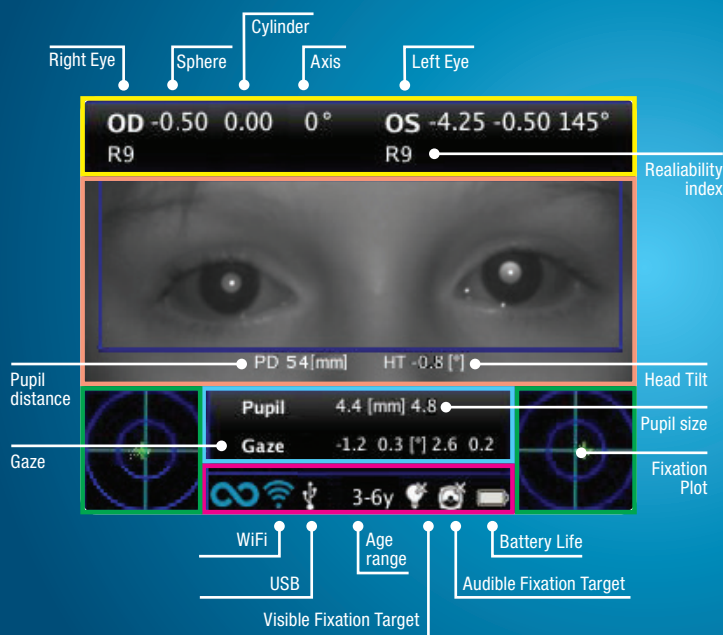
Binocular occluder

The 2WIN standard equipment includes a binocular occluder which has two main functions:
- If used in binocular way (horizontal on both eyes) it increases the pupil diameter size.
- If used in monocular way (vertical on one eye) it allows the use of the CR application to detect phorias and tropias (look at page 6).

Complete and objective assessment of the visual functions in natural vision conditions. Ideal with infants, children and non-cooperative patients.

How to read the display

Right Eye   Sphere   Cylinder   Axis   Left Eye

OD -0.50 0.00   0°   **OS** -4.25 -0.50 145°
R9   R9

Realiability index

PD 54[mm]   HT -0.8 [°]

Pupil distance

Head Tilt

Pupil distance

Gaze

Pupil   4.4 [mm] 4.8
Gaze   -1.2 0.3 [°] 2.6 0.2

Pupil size

Fixation Plot

∞ 📶 ⌁ 3-6y 💡 📷 🔋

WiFi   Age range   Battery Life
USB   Audible Fixation Target
Visible Fixation Target

Screening Result:

🟨 Measurement Window	🟦 Pupil & Gaze
🟧 Live Display	🟪 Status Bar
🟩 Fixation Plot	

Amblyopia screening

TEST	THRESHOLD	RESULT
Hyperopia	Sph < 1.5 d	Ok
Myopia	Sph < 0.75 d	No
Astigmatism	Cyl < 1.5 d	Ok
Anisometropia	Diff < 1 d	No
Anisocoria	Diff < 1 mm	Ok
Gaze	< 6°	Ok

How to read the printout

2WIN measurements can be stored and/or printed. The exams are stored internally in a micro-SD card in .pdf format.

Exam Report — 2WIN

Patient name:
Date of birth:

Exam Date: Thu Mar 20, 2014 05:12 pm
Exam N: 394

- Exam Date
- Right Eye
- Left Eye

OD   OS

	Sph	Cyl	Ax	Sph	Cyl	Ax	
	-0.50	0.00	0°	-4.25	-0.50	145°	Sphere Cylinder Axis

Spherical Equivalent — SE: -0.50   Reliability: 8   SE: -4.50   Reliability: 8 — Index of Reliability

Info: Info:

Pupil Size: 4.4 mm   Pupil Size: 4.8 mm — Pupil Size

Gaze: Gaze:

3.2° ← 0.8° ↓   0.1° → 0.1° ↓

- Gaze
- Fixation Plot
- Pupil Distance

Pupil Distance: 54 mm   Head Tilt: -0.8° ↘

Criteria for:	1-3yrs	OK ⟷ NOT OK	Outcome
Hyperopia	Sph<1.5D		✓
Myopia	Sph<0.75D		✗
Astigmatism	Cyl<1.5D		✓
Anisometropia	Diff<1D		✗
Anisocoria	Diff<1mm		✓
Gaze	<6°		✓

- Years and Outcome
- Criteria
- Dr's signature
- Screening Result

Dr's signature: Screening Result: **Refer**

Adaptica
www.2winforvision.com

2WIN Applications

Analysis of corneal reflexes [CR-App]

This application provides complete information regarding the position of corneal reflexes.

- Measurements are expressed either in prism diopters or degrees.
- A black hand held filter is included and allows the 2WIN infrared rays to pass through while blocking all visible light.
- When a deviation appears in the uncovered eye the output is ET: esotropia; XT: exotropia.
- When a deviation appears in the covered eye the output is EP: esophoria; XP: exophoria.
- When a vertical deviation appears the output follows the same rules above exposed (HT; IT; HP; IP).

Dynamic Pupillometry [DP-App]

Automatic measurement of dynamic pupils response through the use of programmable light stimulations. This function removes subjectivity from the pupillary evaluation and helps the detection of pupillary behavior. The Dynamic Pupillometry application can give information regarding:

- Pupils response time
- Pupils reaction time
- Positive and negative slopes of the pupils response
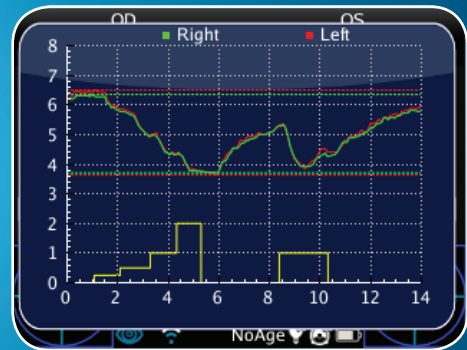
Lens Centering on Frames [LC-App]

This feature allows to accurately center spectacle lenses with reference to the far sight optical axis of the eyes. The Lens Centering application can give information about:

- Semi inter-pupillary distance
- Distance between the optic axis and the upper or lower limit of the frame
- Distances between the optic axis and the corresponding nose pad.
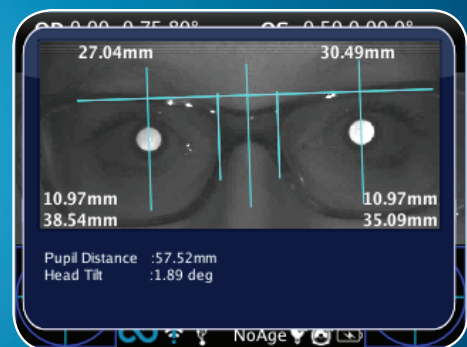
2WIN Applications

Intermediate Distance [66cm-App]

The 2WIN measures the patient's refraction while reading from VDUs, at a distance of 66 cm (2').

In all those cases when reading at such distance proves difficult, the 2WIN calculates the necessary additional power (ADD) to restore best vision.

The application requires the use of an additional lens that is inserted in the central aperture of the 2WIN; the additional lens together with a 66 cm reading chart completes the kit.
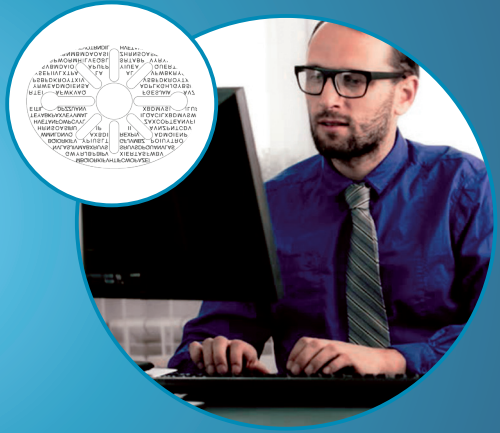
Zoom of InfraRed Retinoscopy Images

The 2WIN Zoom Application helps to detect infrared artifacts due to other eye abnormalities (opacities, foreign bodies etc.).

This function allows you to get an automatic zoom of InfraRed retinoscopy to accurately inspect it.
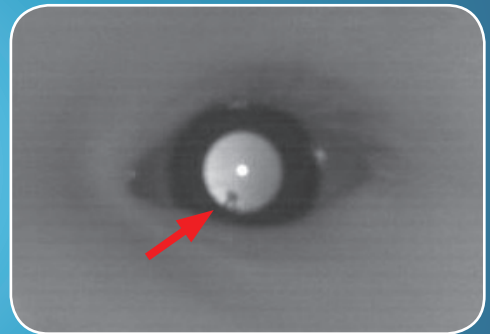
2WINNY

2WINNY mask kit

2WINNY is a funny, attractive and removable mask to help the operators in daily interactions with infants and children. It is an accessory designed to draw kid's attention on the 2WIN before starting the examination and activating the visible and audible fixation targets. Operators select the mask on the basis of child age and apply it on the front side of the 2WIN.

![ADAPTICA logo]

"The 2WIN has been a great addition to our office. It has given me objective data on young children that are often hard to get good co-operation and fixation."

R. Scott Penny, O.D. – Springfield, OH

Technical specifications

Operating mode: Binocular/monocular	Working distance: 1 m ± 5 cm
Refraction Measurement: Automatic	Data Interface: Wi-Fi, USB, microSD card
Sphere range: ±15 D, steps 0.25 D*	Printer inter\face: USB, Infrared (irda)
Cylinder range: ±5 D, steps 0.25 D	Power: Rechargeable battery
Cylinder axis: 1° - 180°, step 1°	Battery charger: 110-220 Vac, 0.5 A
Pupil size: Automatic detection, 4-7 mm, steps 0.1 mm	Size: 165x130x98mm
Pupil distance: Automatic detection, 30-120 mm, steps 1 mm	Display: 3.5''
Fixation and Acoustic target: Built-in	Weight: 840 g (30 oz)
Infrared binocular occluder: Incuded	Accessories: Portable wireless printer (optional), supplementary battery, battery-charger, USB cable, metal case, WiFi connectivity

*0.25D steps in the range +/-5D, 0.50D outside this range

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