ADAPTICA

2WIN Binocular Mobile Refractometer and Vision Analyzer

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.

The solution: 2WIN

The majority of diagnostic instruments in eye-care are currently stationary, expensive, invasive, complicated to use and rather time consuming. Screening populations for vision impairment becomes possible by taking the eye tests to the underserved patients in the field through mobility, efficiency and lower process costs.

To be effective, the screening device must be easy to use, be fast, non-invasive and very cost effective. The 2WIN is a mobile binocular refractometer and vision analyzer that measures both eyes at the same time, in real life vision conditions.

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 (e.g., keratoconus) as well as ocular media opacities such as cataracts.

Measurements

Refractive errors

Refractive errors - Myopia, hyperopia, astigmatism and other amblyogenic factors.

Sight anomalies

Sight anomalies such as anisometropia, anisocoria, strabismus, tropia and phoria.

Pupil parameters

Pupil parameters - pupil size, pupil distance and head tilt.

Benefits

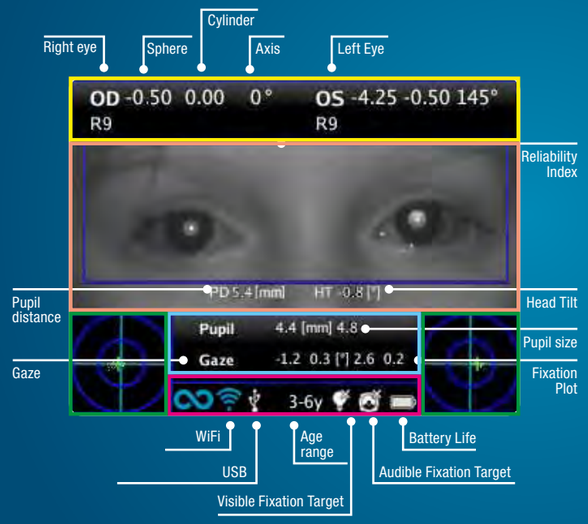
- 100% mobile
- Binocular, 1 meter working distance
- Hand-held, small, light weight
- Battery operated (long battery life)
- Easy, quick, non-invasive
- Cost effective

Ideal with infants, children and non-cooperative patients. It measures refraction and correction in natural vision conditions.

How to use the 2WIN

- Ambient light: a uniform dim light environment is necessary (not totally dark nor too bright) to achieve 3+ mm pupil size; in addition make sure that no direct light hits the patient's face and ensure uniform light on both eyes.
- Stand or sit at 1 meter distance from the patient and firmly hold the 2WIN horizontally with both hands. Instruct the patient to keep his/her eyes wide open, clear of eyelids or eyelashes, and to fixate on the center of the camera.
- The 2WIN operates as a photo camera, thus proper focusing is necessary.
- The green bar in the display indicates when the ideal focal distance of 1 meter has been reached. Make sure the corneal reflexes appear as small and bright as possible.
- Press and hold the START button to enter the focusing phase. Slightly adjust the distance looking at the corneal reflexes until the image comes into focus and the focus bar is green.
- Release the START button and the 2WIN automatically displays the measurements on the screen within approx. 3 seconds.

How to read the display



Screening Result:

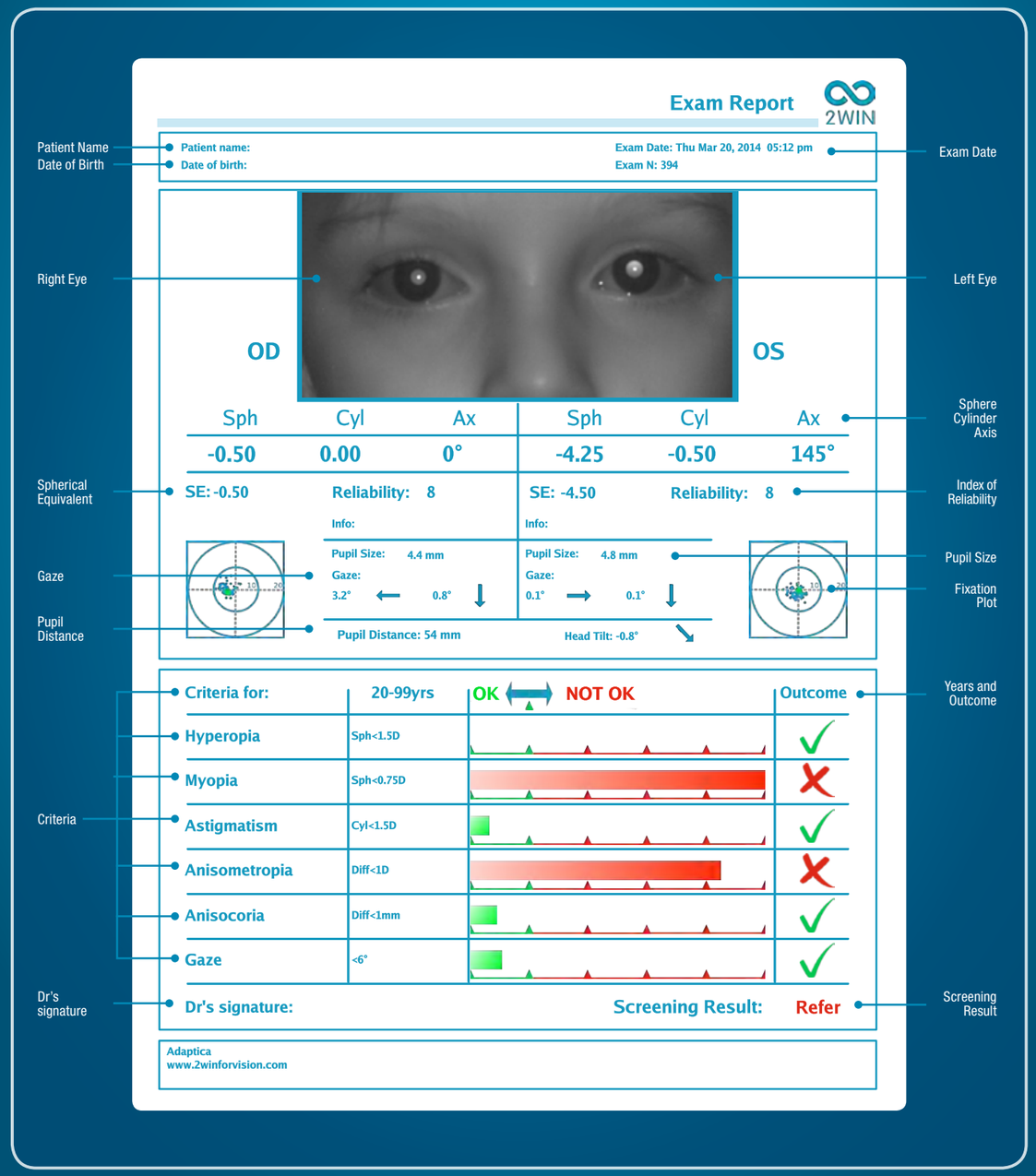
- Measurement Window
- Live Display
- Fixation Plot
- Pupil & Gaze
- Status Bar

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.



Additional features

Connectivity

The 2WIN is equipped with a WiFi module and can be connected to a computer network.

2WIN exams and patient data can therefore be downloaded and visualized on external devices such as smartphone, tablet, pc by using a secure file transfer client software.

The external smart device can be used to input patient information and/or other data and commands.

Download and visualize patient data from the 2WIN to an external device.

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.

Reading Distance application

The 2WIN measures the patient's refraction while reading at a distance of 66 cm (24")

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

The reading distance application requires the use of an additional lens that is inserted in the central aperture of the 2WIN; the additional lens together with a near point reading card completes the kit.

Complete and objective assessment of the visual function. Early detection of refractive errors.

Analysis of corneal reflexes

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

- 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: therefore a reliable cover test is made possible.
- When a manifest asymmetry of the corneal reflexes is detected without cover test the output is ET: esotropia; XT: exotropia.
- When an asymmetry of the corneal reflexes appears only under "infrared" cover test the output is EP: esophoria; XP: exophoria.
- When a vertical deviation appears the output follows the same rules above exposed (HT: hypertropia; IT: ipotropia; HP: hyperphoria; IP: ipophoria;).

Technical specifications

Operating mode: Binocular/monocular	Working distance: 1 m ± 5 cm
Refraction Measurement: Automatic	Data Interface: Wi-Fi, USB, microSD card
Sphere range: ±5 D, precision 0.25 D	Printer interface: USB, Infrared (irda)
Cylinder range: ±5 D, precision 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, step 0.1 mm	Size: 165x130x98mm
Pupil distance: Automatic detection, 30-120 mm, step 1 mm	Display: 3.5''
Fixation target: Built-in	Weight: 840 g (30 oz)
Acoustic target: Built-in	Options/Accessories: Portable wireless printer, supplementary battery, battery-charger, metal case, WiFi connectivity

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