



crx1™

Adaptive Optics (AO) Visual Simulator

Technical Specifications

Package contents:

- **crx1 hardware assembly** - includes: HASO™ 32-eye wavefront sensor; mirao 52-d Electromagnetic Deformable Mirror; organic 800x600microdisplay; motorized focus compensation system; optical elements - lenses, doublets, mirrors, beam-splitters, dichroic plates; manual crossed-translation stage with joystick; base plate; chinrest; pedal switch
- **mirao 52-d electronic unit**
- **crx1 software kit** - includes: irx3™ Wavefront Aberrometer software, SVAO target wavefront definition software, CSO adaptive optics software
- **PC computer** - includes: Framegrabber, Fast I/O board, DC power derivation, MS Windows™ XP, and connecting cables
- **User documentation**

Wavefront aberration and accommodation measurements

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|---|---|
| Area of analysis at the eye pupil plane | Φ6.5 mm |
| Number of sub-apertures | 1024 (32 x 32) |
| Spatial resolution at the eye pupil plane | 230 μm |
| Wavelength | 850 nm |
| Spherical defocus & accommodation range | ±10 δ |
| Spherical defocus measurement reproducibility (artificial eye) | 0.003 δ |
| Cylinder range | ±4 δ |
| Cylinder measurement reproducibility (artificial eye) | 0.003 δ |
| Wavefront aberration order range | Zernike order 10 |
| Wavefront repeatability (artificial eye , higher order aberrations) | λ/50 |
| Compatibility with optical corrections | Spectacle lenses, contact lenses and intraocular lenses |
| Database record | Wavefront slope data |
| File (export) record | Zernike coefficients - OSA convention - text format |
| Aberration coefficient display | Zernike - OSA convention - and diopter coefficients |
| Aberration map display | Wavefront and axial power maps |
| Performance measure display | PSF, MTF, Strehl ratio; simulated CSF, VA and retinal image |

Wavefront aberration generation

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|--|-----------|
| Spherical defocus generation range | ±10 δ |
| Cylinder generation range | ±4 δ |
| Third-order Zernike (RMS) generation range - 6 mm pupil | ±10 μm |
| Fourth-order Zernike (RMS) generation range - 6 mm pupil | ±6 μm |
| Residual RMS wavefront error - when 20% of the dynamic range is used | < 0.02 μm |

Ocular wavefront correction

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|---|----------------------------------|
| Residual wavefront error | Typ. 0.04 to 0.10 μm |
| Dynamic correction - normal eye, 6 mm pupil | |
| Residual wavefront error | Typ. 0.06 to 0.20 μm |
| Static correction - normal eye, 6 mm pupil | (depends on alignment precision) |

Pupillometer

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|---|---------------|
| Diameter range | 2.0 to 7.2 mm |
| Diameter measurement reproducibility (artificial eye) | 0.02 mm |

General specifications

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| Dimensions (instrument head only) | L 26.5 x W 13 x H 50 cm (translation stage = L 54 x W 33 cm) |
| Weight (instrument head with translation stage only) | 11 kg |
| Power supply - PC | 110 or 220 V |
| Power supply - Mirao 52-d electronic unit | 110 or 220 V |
| Power supply - instrument head | Supplied through the PC and mirao electronic unit |
| Working temperature | 15 - 35° C |

Classifications

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|------------------------------|--|
| Laser equipment | Class 1 |
| Electric class | Class 1 - Type B |
| Continuous working system | |
| Water penetration protection | Ordinary, except for the pedal switch, protected against temporary immersion |

