Chronos

Automated Binocular Refraction System

With Chronos Automated Binocular Refraction System, spend more time on what matters most, your patients.

TOPCON Healthcare

Topcon Chronos is the **all-in-one*** digital refraction solution

Chronos combines binocular autorefraction, keratometry and subjective refraction in a single, compact device that can be placed anywhere in the practice. SightPilot® guided refraction software allows objective and subjective refraction to be delegated to a trained technician, so all refractive data can be captured as part of the pre-test process and exported to your EHR. When you enter the exam room, you can review the results and, if desired, quickly confirm the refraction.

*All-in-one system combines binocular autorefraction and keratometry with subjective binocular testing and visual acuity.

Time well spent.

Transform the time you spend on refraction into quality time with your patients.

Features and Benefits

DELEGATE DATA COLLECTION

SightPilot software guides the operator through the entire process, so you can delegate the upfront refraction and acuity testing to a technician.

MAXIMIZE DOCTOR-PATIENT TIME

Enter the exam room with all refraction data at your fingertips to make the most of your time with each patient.[1]

SAVE SPACE

Chronos puts an entire refractive lane into a single instrument with a compact footprint that can be placed anywhere in the practice.

GROW YOUR PRACTICE

Use the time saved to see more patients, add a new specialty to the practice or spend more time counseling patients about their eye health.[2]

Practice Workflow

with **Chronos** + SOLOS[3] Automated Lens Analyzer

1. RECEPTION AREA

Patient Check In

2. RECEPTION AREA OR PRE-TEST ROOM

Perform Lensometry with SOLOS Automated Lens Analyzer

3. PRE-TEST ROOM

Previous Prescription is Automatically Populated into Chronos
Perform Objective and Subjective Refraction (instead of Autorefraction) with Chronos

4. EXAM ROOM

Refractive Data and Previous Spectacles Automatically Loaded into CV-5000S[4]. Confirm Refraction, Perform Eye Health Exam, Counsel Patient

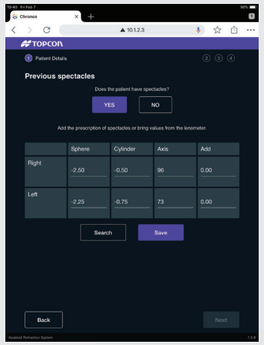
1. Refractive data and previous spectacles loaded into Chronos before doctor enters exam room.
2. Chronos streamlines the refraction process to deliver time savings that may be used at the discretion of the doctor/practice.
3. Topcon SOLOS, Automatic Lens Analyzer
4. Topcon CV-5000, Phoropter

SightPilot

Simplify Refraction

SightPilot software guides operators through the objective and subjective refraction process with a simple user interface and on-screen prompts.
Questions for the patient are given to the operator at each step, and the patient's response prompts the next step in the guided refraction process.

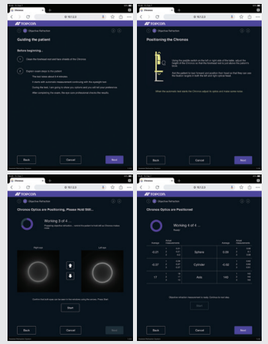
1



Patient Details

Enter the patient information including importing the previous spectacle prescription and begin the refraction.

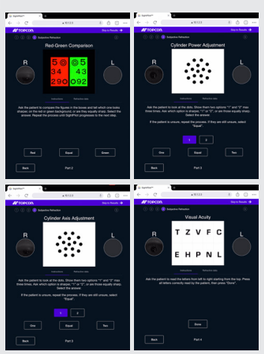
2



Objective Refraction

Chronos provides step-by-step instructions to position the patient and then automatically aligns the optics to complete the objective refraction.

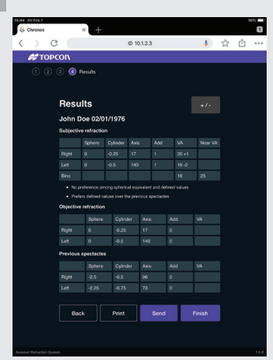
3



Subjective Refraction

Chronos walks the operator through a variety of subjective refraction tests including visual acuity charts, red-green comparison, cylinder axis adjustment, binocular balancing and near addition charts. On-screen prompts enable quick input of patient response to advance to the next step in the process.

4



Results

When the refraction is complete, the results are displayed on screen and may be printed or sent to the patient's EHR file.

Specifications

Objective measurement		
Refraction measurement range	Spherical refractive power	-25D – +22D *1, 2
	Cylindrical refractive power	-10D – 0D *1, 2
	Cylinder axial angle	1° – 180°
Corneal curvature measurement range	Corneal curvature radius	5.00mm – 10.00mm
	Corneal refractive power	67.50D – 33.75D (Conversion value when the corneal refractive ratio is 1.3375) Corneal principal meridian direction: 1° - 180°
	Corneal principal meridian direction	1° – 180°
Minimum measurement unit	Spherical/cylindrical refractive power	0.12D
	Cylinder axial angle	1°
	Corneal curvature radius	0.01mm
	Corneal refractive power	0.12D
	Corneal principal meridian direction	1°
Display of measured value	Displayed on the screen of the operation controller.	
Minimum measurable pupil diameter	Φ2.0mm	
PD measurement range	50mm – 80mm	
Minimum PD measurement unit	0.5mm	
Subjective measurement		
Refraction measurement range	Spherical refractive power Cylindrical refractive power These must meet all the conditions mentioned at the right.*5	-18.00D ≤ Equivalent spherical power ≤ +18.00D *3 -8.00D ≤ Cylindrical refractive power (Cylindrical power) ≤ 0.00D *4
	Cylinder axial angle	1° – 180°
	Horizontal prism (One eye movable range)	±15.0Δ *6
	Vertical prism (One eye movable range)	±2.5Δ
Minimum measurement unit	Spherical/ADD refractive power	0.25D
	Cylindrical refractive power	0.25D
	Cylinder axial angle	1°
	Prism refractive power	0.1Δ
Test distance	Far-/Near-point test distance can be set between 25cm and 6.096m	
Visual acuity measurement range*7	0.05 – 1.6	
Chart	Visual acuity test chart, spherical power correction test chart, astigmatism test chart and binocular function test chart	
Background luminance	155±15cd/m²	
Display of measured value	Displayed on the screen of the operation controller.	
Record of measured value	Printing by thermal printer/external printer, data output	
Measuring head movement	Right-and-left direction	Inside 9mm to Outside 12.5mm
	Up-and-down direction	Down 15mm to Up 15mm
	Back-and-forth direction	Forward: 20mm - Backward: 20mm
Measuring head rotary angle	Convergence 17.5° to Divergence 8.5° (Eyeball torsion axis center)	
Other Specifications		
Dimensions and Weight	Main unit	Dimensions: 20.1-21.2in (H) x 26.4-30.2in (W) x 10.9-14.1in (D)/ 510-540mm (H) × 671-766mm (W) × 278-357mm (D) Weight: 68.8lb/31.2 kg
	Power supply unit	Dimensions: 10.9in (H) x 4.6in (W) x 7.8in (D)/ 276mm (H) x 117mm (W) x 197mm (D) Weight: 7.7lb/3.5 kg
Electric Rating	Source voltage	AC100 - 240V
	Frequency	50 - 60Hz
	Power input	160VA

*1 The dioptric powers are indicated with reference wavelength λ_d = 587.56 nm
*2 Spherical refractive power + Cylindrical refractive power ≤ +22D or Spherical refractive power + Cylindrical refractive power ≥ -25D
*3 The conversion value with "VD=12mm" is described here.
*4 The conversion value with "VD=-3mm" is described here.
*5 The value described here is the maximum value. The measurement range is smaller according to the test distance setting for executing a test or the setting conditions of VD during measurement.
*6 The value described here is the maximum value. The measurable range is smaller according to the combination of the patient's PD and the test distance.
*7 0.1 – 1.6 complies with ISO 10938. ETDRS chart using Landolt Ring (visual acuity 0.25 – 1.6) complies with ANSI Z80.21.

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EC97J1081
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CLASS 1 LASER PRODUCT
(IEC60825-1:2007)
PRODUIT LASER DE CLASSE 1
(CEI60825-1:2007)

CAUTION: Federal law restricts this device to sale by or on the order of a physician.

Not available for sale in all countries. Please check with your local distributor for availability in your country.
Not all products, services or offers are approved or offered in every market, and products vary from one country to another. Contact your local distributor for country-specific information and availability.

IMPORTANT In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.

TOPCON CORPORATION
75-1 Hasunuma-cho, Itabashi-ku, Tokyo 174-8580, JAPAN. Phone:
+81-(0)3-3558-2522/2502
Fax: +81-(0)3-3965-6898
topconhealthcare.jp

TOPCON MEDICAL SYSTEMS, INC.
111 Bauer Drive, Oakland, NJ 07436, U.S.A.
Phone: +1-201-599-5100
topconhealthcare.com

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