Chronos*

Optimize workflow and grow your practice with guided binocular refraction.

It is time to reinvent refraction.

TOPCON Healthcare

REFRACTION SYSTEM

Chronos

Single instrument that occupies a minimal amount of space and optimizes workflow

Chronos offers binocular autorefraction, keratometry measurements and visual acuity with subjective testing in a single instrument.
Moving between measurements and setting the testing distance are no longer needed.

7 Value Propositions Only Possible with Chronos*1

Binocular Objective Testing

Chronos offers simultaneous measurement of binocular autorefraction and keratometry.

Binocular Subjective Refraction

Visual acuity can be measured with both eyes opened, which generates the data for binocular vision.

Seamless Testing

Testing is available with multiple distances and can be adjusted depending on the patient's needs.

Unique Operability *2

Guided refraction system, SightPilot™, facilitates the exam simply by tapping buttons based on the patient's response.

Time Saving

Exam time can be reduced and workflow optimized by removing the need to move patients between instruments.

Tablet Control

All steps for objective and subjective refraction, including distance and near vision testing, can be done on a tablet while maintaining social distance.

Space Saving

3 measurements*3 are available in 1 instrument, which occupies only 120cm of depth*4.

*1 Only applicable with all the functions enabled. (Research done by Topcon Corporation as of October 2021)
*2 Compared with our conventional devices.
*3 Binocular autorefraction, keratometry measurements and visual aquity with subjective testing
*4 The depth varies depending on the size of the chair and wheelchair.

Standard Mode

Equipped with a user interface similar to that of a conventional refractor*1, you can perform the exam following familiar operations. Visual acuity, astigmatism, and binocular visual function tests can be completed without hassle.

Seamless Testing

Testing distance* can be selected seamlessly, and the visual acuity test can be customized based on the patient's needs.

*The testing distance can be selected from 6 to 25cm.

Seamless Vision Comparison

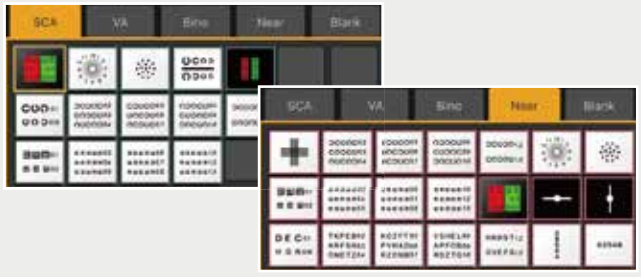
Lens switching is now faster than a conventional refractor. Vision comparison can be done smoothly between measured refractive data, current glasses power, and corrected power after subjective test.

Variety of Charts

Chronos is equipped with various styles of charts including for both distance and near visual acuity tests.

It is easy to switch between charts, and those that are frequently used can be stored under the same tab for seamless access.

The red-green, astigmatism and binocular tests are also available for near visual acuity testing.



*1 Compu Vision CV-5000

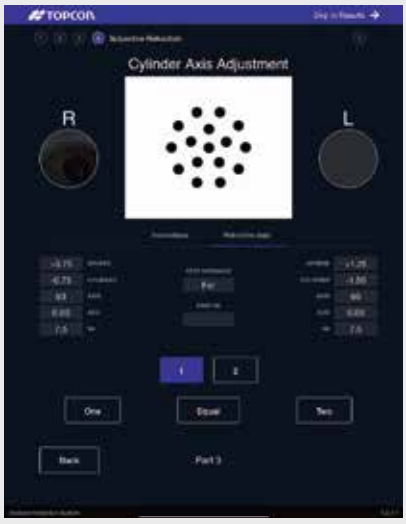
Testing Modes for Your Needs

Standard Mode / SightPilot™

Guided Refraction System - SightPilot™

Exam workflow has been simplified by applying our unique algorithm. Simply tapping buttons based on the patient's response allows you to proceed the subjective refraction testing.

Red-Green Test
Simply tap either
"Red", "Green" or "Equal"



Astigmatism Test
Simply tap either
"One", "Two" or "Equal"

Visual Aquity Test
Visual acuity test can be measured and recorded simply by tapping the letters that the patient recognizes.

Smooth Exam Transition

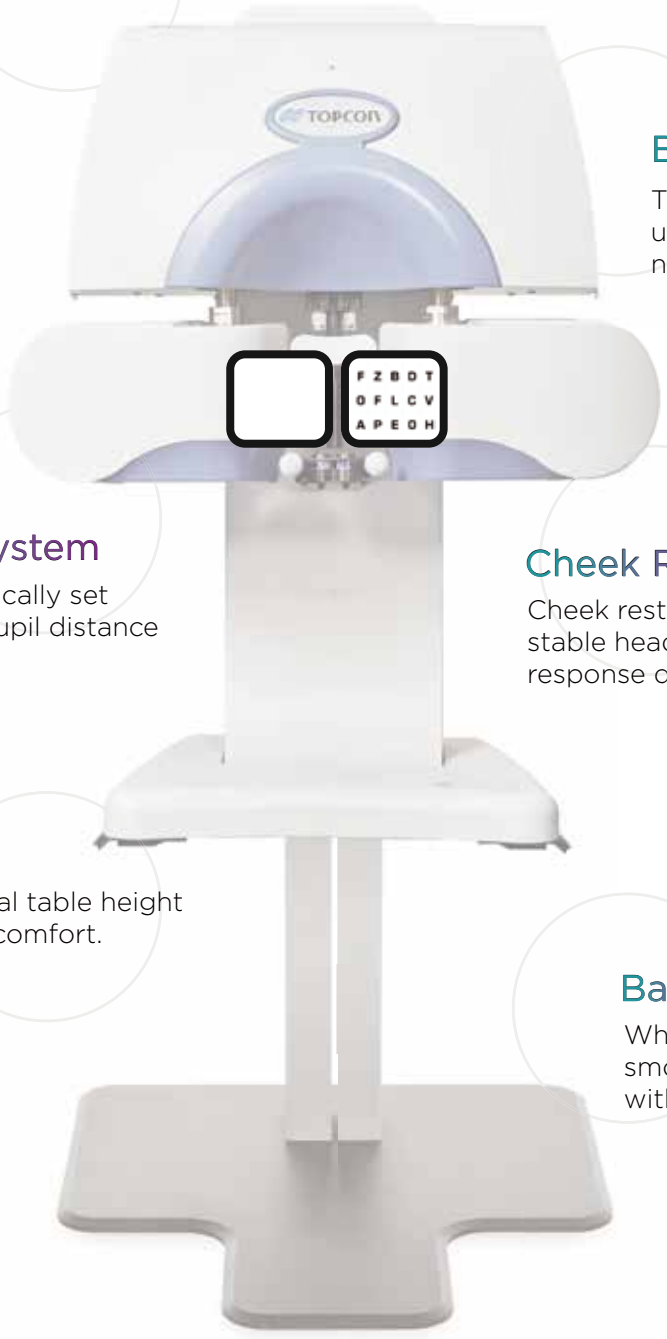
Subjective refraction can be started with the refractive and keratometry data gained from the binocular test automatically.

Chronos is an all-in-one instrument offering autorefractometer, phoropter and vision charts.
Smooth measurement is possible for patients with special access needs without moving between instruments.

Refractive and Keratometry Measurement

Binocular refractive and keratometry measurements are quickly taken by tapping the auto-align camera launcher button.

The patient's eyes are displayed live on the tablet throughout the exam, enabling the operator to check the patient's status from a distance.



Binocular Testing

The measurement can be done under binocular vision for more natural sight.

Built-In Testing System

Convergence is automatically set based on the patient's pupil distance for near vision testing.

Cheek Rest

Cheek rest is equipped to realize the stable head position and the ease of response during the subjective test.

Table

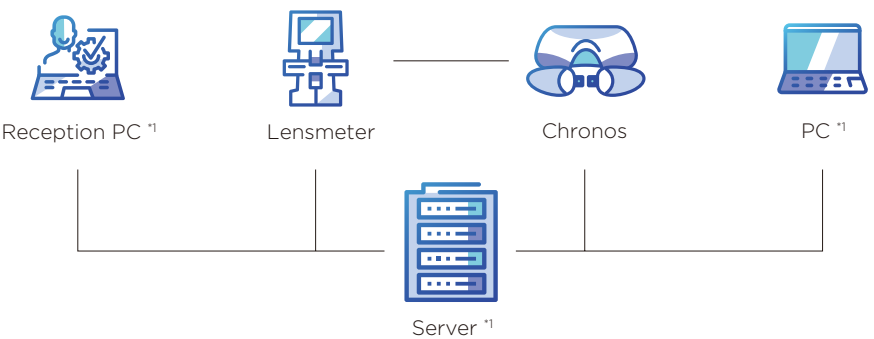
Adjustable vertical table height for the patient's comfort.

Base

Wheelchair accessible for smooth testing of patients with special needs.

System Integration

Chronos can be integrated with lensmeter and other external software for seamless data transfer.



*1 Third-party hardware

SPECIFICATIONS & PERFORMANCE

FEATURE	SPECIFICATION	
Objective measurement		
Refraction measurement range	Spherical refractive power	-25D – +22D [1]
	Cylindrical refractive power	0D – -10D [1]
	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)
Minimum measurement unit	Spherical/cylindrical refractive power	0.12D
	Cylinder axial angle	1°
	Corneal curvature radius	0.01mm
	Corneal refractive power	0.12D
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 power/ADD/ Cylindrical power These must meet all the conditions mentioned at the right [4]	-18.00D ≤ Equivalent spherical power ≤ +18.00D [2]
		-8.00D ≤ Cylindrical power ≤ 0.00D [3]
	Cylinder axial angle	1° – 180°
	Horizontal prism (One eye movable range)	±15.0 ⊿ [5]
	Vertical prism (One eye movable range)	±2.5 ⊿
Minimum measurement unit	Spherical/ADD refractive power	0.25D
	Cylindrical refractive power	0.25D
	Cylinder axial angle	1°
	Prism refractive power	0.1 ⊿
Test distance	Far-/Near-point test distance can be set between 25cm and 6.096m	
Visual acuity measurement range [6]	0.05 – 1.6 decimal	
Charts	Visual acuity charts, spherical power correction charts, astigmatism correction charts and binocular function charts	
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 -9.0mm 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)	
Power supply	AC100 - 240V 50-60Hz	
Power consumption	160VA	
Dimensions and weight (main unit)	525mm (H) × 722mm (W) × 278mm (D), 31.2kg	

*Not available in all countries. Please check with your local distributor for availability in your country.

1. The dioptric powers are indicated with reference wavelength λe = 546.07 nm
2. The conversion value with "VD=12mm" is described here.
3. The conversion value with the pupil power (VD=-3mm) is described here.
4. 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.
5. 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.
6. 0.1 – 1.6 complies with ISO 10938. ETDRS chart using Landolt Ring (visual acuity 0.25 – 1.6) complies with ANSI Z80.21.

CLASS 1 LASER PRODUCT
PRODUIT LASER DE CLASSE 1

IMPORTANT In order to obtain the best results with this instrument, please be sure to review all user instructions prior to operation.
Not all products, services, or offers are available in all markets. Contact your local distributor for country-specific information and availability.

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