

SPM-700

Specular Microscope



About Us

Rex + Max = Rexxam

Rexxam, which means 'the king of the kings', is a respected and reliable brand.

Rexxam is a Japanese company with a celebrated 60 year history. With over 3,000 employees worldwide, Rexxam manufacture a wide range of products for various industries; from factory automation, automobiles and air conditioning systems, to beer and ski boots.

Since 1986, Rexxam has manufactured various high quality products for leading brands in the eye care industry, including SHIN-NIPPON. Rexxam had developed and manufactured products for SHIN-NIPPON since 1993 and in 2014 the company took over the SHIN-NIPPON brand.

We will be bringing high quality ophthalmic equipment to a global market. By combining precision engineering with industry leading innovation and experience in mass production, Rexxam produce unique products to support eye care specialists across the world.

Quality in vision care, we are Rexxam.



1960

Foundation of Rexxam

1986

Rexxam started the development and manufacturing of ophthalmic devices as an OEM supplier

1993

Rexxam became the main OEM partner for SHIN-NIPPON

SHIN-NIPPON

2014

Rexxam acquired the SHIN-NIPPON brand

SHIN-NIPPON by **Rexxam**

2018

The manufacturer brand Rexxam was inaugurated

Rexxam

Rexxam

Quality in vision care

Proudly  Made in Japan

Message

from

Engineer

Accurate corneal endothelial cell analysis requires high-quality microscopic cell images. The image acquisition should be made easy and able to capture even when the eye moves slightly.

These high expectations required numerous studies, research, and development. We have finally designed the SPM-700 after overcoming many challenges. The SPM-700 is able to capture 16 high-quality images in just 0.75 seconds by one touch on the monitor screen. The highest quality image is then automatically selected and analysed.

To perform image acquisition, the examiner simply touches the centre of the patient's pupil image on the monitor touch-screen. A wide range of images is captured instantly to precisely and speedily zoom onto the image capture focus position.

Our advanced optical measurement system coupled with the complex image processing algorithm have enable the SPM-700 to precisely measures and analyse the endothelial cells and displayed the cell number, size, shape, central corneal thickness, etc. This achievement is made possible by the collaboration between the optical development team and the software development team who worked tirelessly to create Rexxam's own unique image processing algorithm that offers accurate and diverse analysis.

I hope the SPM-700 will contribute to your daily practices in providing better vision care quality to your patients.

T.F.
Research & Development Dept.
July-2017

Flexible, Easy, Fast and Informative

Specular Microscopy is one important tool to evaluate corneal endothelium.

Rexxam SPM-700 Specular Microscope is one device to assist eye-care professionals in their diagnostic and investigation of a patient's cornea health condition.

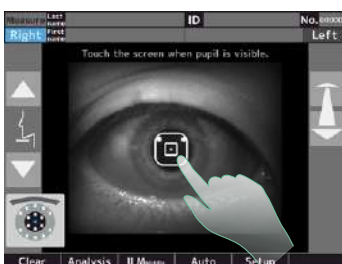
Large 10.4 inch Controller Touch-Screen. 40° vertical and 180° horizontal tilting enables flexible setup and operation.

One touch operation captures 16 images in one measurement, including Central Corneal Thickness (CCT).

Flexible



Easy, Fast & Comfortable



One touch on monitor to start alignment



One shot consists of 16 images in 0.75 sec.



Analysis result

Measurement data

The screenshot shows a software interface for corneal analysis. At the top, patient information is displayed: Last name 'Rexxam', ID '123456789abc', No. '00003', and First name 'Taro'. The eye being analyzed is 'Right'. The main image shows a corneal micrograph with a grid overlay. On the left, there are buttons for 'Photo', 'Trace', 'Area', and 'Apex'. Below the image, the 'CCT' (Central Corneal Thickness) is shown as 506µm. A table of statistics is displayed: Number (292 cells), CD (3098 cells/mm²), AVG (323 µm²), SD (105 µm²), CV (33%), Max (855 µm²), Min (146 µm²), and 6A (57%). Two distribution graphs are shown: 'Polymegethism(Area)' and 'Pleomorphism(Apex)'. The 'Polymegethism(Area)' graph shows a distribution of cell sizes, with the 200-300 µm² range being the most prominent at 46%. The 'Pleomorphism(Apex)' graph shows a distribution of cell shapes, with the hexagonal shape (6) being the most common at 57%. A legend on the right side of the page defines the abbreviations used in the interface.

Abbreviation	Full Name
CCT	Central Corneal Thickness
Number	Number of analyzed cells
CD	Cell Density
AVG	Average cell size
SD	Standard Deviation cell size
CV	Coefficient of Variation of cell size
Max	Maximum cell size
Min	Minimum cell size
6A	Hexagonal cell ratio
Pleomorphism (shape)	Distribution graph
Polymegethism (size)	Distribution graph

Area

This screenshot shows the 'Area' analysis mode. The main image displays a corneal micrograph with cells highlighted in various colors based on their size. The statistics table is identical to the main screenshot: Number (292 cells), CD (3098 cells/mm²), AVG (323 µm²), SD (105 µm²), CV (33%), Max (855 µm²), Min (146 µm²), and 6A (57%). The 'Polymegethism(Area)' distribution graph is highlighted with a dashed orange box, showing that 46% of the cells are in the 200-300 µm² size range.

Polymegethism: Cell Distribution (Area)

The left example figures show cells of 200 to 300 µm² size occupied 46% of the measured area.

Apex

This screenshot shows the 'Apex' analysis mode. The main image displays a corneal micrograph with cells highlighted in various colors based on their shape. The statistics table is identical to the main screenshot: Number (292 cells), CD (3098 cells/mm²), AVG (323 µm²), SD (105 µm²), CV (33%), Max (855 µm²), Min (146 µm²), and 6A (57%). The 'Pleomorphism(Apex)' distribution graph is highlighted with a dashed orange box, showing that 57% of the cells are hexagonal (shape 6).

Pleomorphism: Cell Distribution (Shape)

The left example figures show hexagonal cells occupied 57% of the measured area.

4 Display Modes

1 PHOTO
display simple photo

2 TRACE
display traced grid

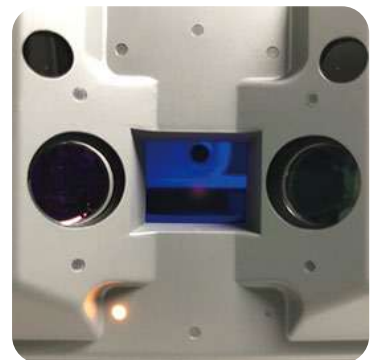
3 AREA
display cell distribution(size)

4 APEX
display cell distribution(shape)

Photo	Trace	Area	Apex
298	Num	292	
2092	CD	3098	
334	AVG	323	
121	SD	105	
36	CV	33	
963	Max	855	
125	Min	146	
53	6A	57	

Multiple measurement fixation points

There are 17 fixation points that includes central position, paracentral and peripheral angles.

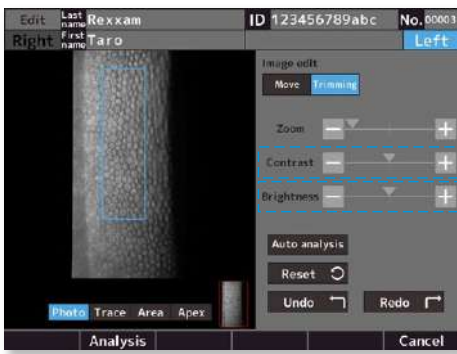


Multiple Fixation Targets

- Central : 1x
- Paracentral : 6x
visual angle of 5°
at 2, 4, 6, 8, 10 & 12 clock positions
- Peripheral : 10x
visual angle of 27°
at 1, 2, 4, 5, 6, 7, 8, 10, 11 & 12 clock positions

Edit Functions

Various edit functions are available to ensure an accurate analysis result:

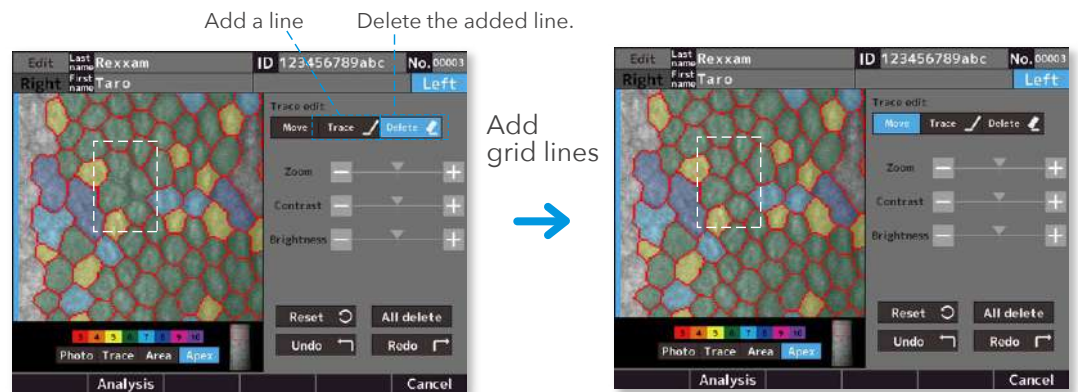


1 Image contrast

2 Image brightness

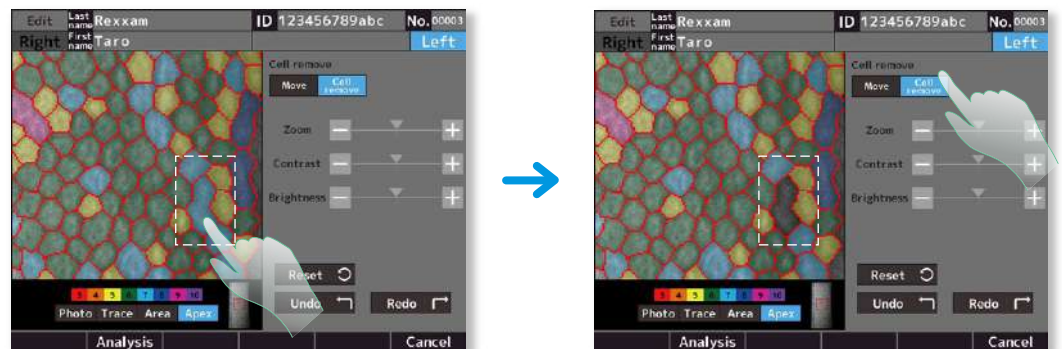
3 Add/Delete automated grid lines

Dividing/merging the cells by adding/deleting lines on the auto analysis result.



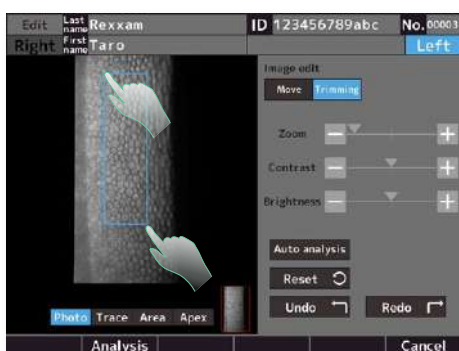
4 Remove cells

Based on the result of the auto analysis, cells can be removed.



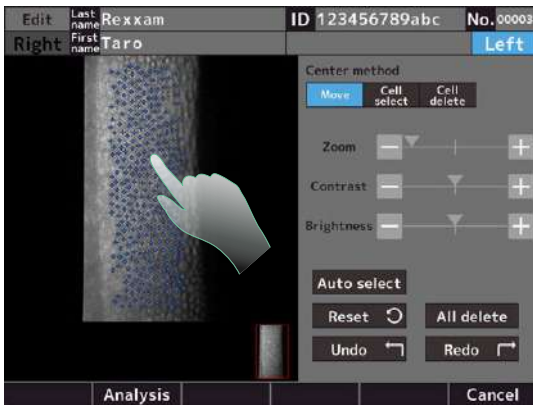
5 Analysed area adjustment

The analysis range on the image can be changed.



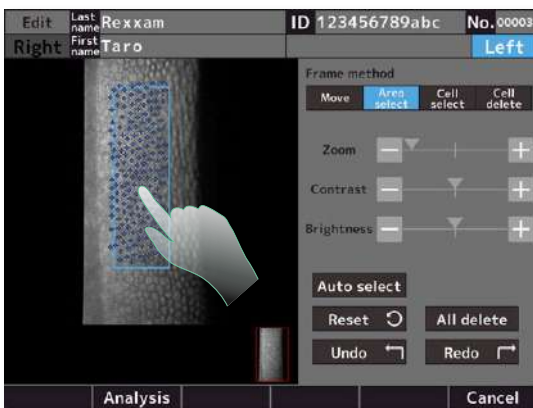
Manual Analysis

Center method



You may manually select or delete Cells. Analysis is performed from the center of adjacent Cell (Min. 100 Cells are required).

Frame method



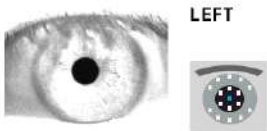
Frame method is suitable when the analysable area is small or narrow. You can manually select Area or Cells or delete Cells. Analysis is performed on cells within the frame area.

Data output

The SPM-700 outputs data in various formats.

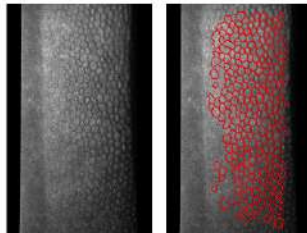
- Built-in thermal printer
- Via LAN and/or USB-A/B
- JPG, XML and RAW (image)

Corneal endothelium analysis report 2022/07/20 08:56
 No. :00003
 ID :1234567890abc
 Last name :Rexxam
 First name :Taro



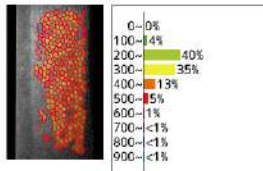
Message

Corneal endothelium Trace endothelium tissue

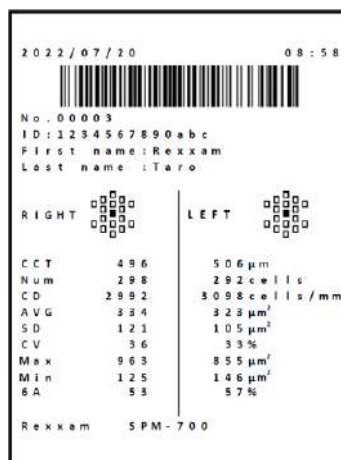
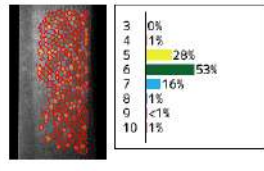


CCT 496 μm
 Num 268 cells
 CD 2992 cells/ mm^2
 AVG 334 μm^2
 SD 106 μm^2
 CV 32 %
 Max 916 μm^2
 Min 161 μm^2
 6A 53 %

Area (Polymegethism)



Apex (Pleomorphism)



Built-in printer output



Capturing of Corneal Endothelial Cell	Capturing Range		0.25mm × 0.55mm (W × H)
	Capturing Position	Center	1 point
		Paracenter	6 points (2,4,6,8,10 and 12 o'clock directions)
		Periphery (optic angle : 27 degrees)	10 points (1,2,4,5,6,7,8,10,11 and 12 o'clock directions)
Measurement of Corneal Thickness	Range of Corneal Thickness Measurement		400 ~ 750 μm (step : 1 μm)
	Measurement Accuracy		±10 μm
Analysis Parameter	Number	[cells]	Number of endothelial cells
	CD	[cell/mm ²]	Density of endothelial cells
	AVG	[μm ²]	Average endothelial cell area
	SD	[μm ²]	Standard deviation of cell area
	CV	[%]	Coefficient of variation of cell area
	Max	[μm ²]	Maximum cell area
	Min	[μm ²]	Minimum cell area
	6A	[%]	Rate of cell hexagonality
Histogram	Polymegathism		
	Pleomorphism		
Working Distance	39 mm		
Printer	Thermal line printer		
Monitor	10.4 inch touch panel color LCD monitor (XGA)		
Movement Range of The Measurement Unit	Forward - Backward : ±20mm Right - Left : ±43mm Up - Down : ±20mm		
Movement Range of The Chin Rest	±30mm		
External Interface	USB-A × 2, USB-B × 1, LAN × 1		
Power	Power Voltage	AC100V - 240V , 50/60Hz	
	Power Consumption	90VA	
	Sleep Mode	OFF , 3 , 5 , 10 min (selectable)	
Size	Weight	approx. 21kg	
	Dimensions	271mm(W) × 459mm(D) × 503mm(H)	

Included Items

- Printer roll paper
- Spare fuse
- Dust cover

Design and specifications are subject to change without notice.

Manufacturer



Quality in vision care

Rexxam Co.,Ltd.
Kagawa factory

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Takamatsu-shi, Kagawa-ken,
761-1494 Japan

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