

# 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.

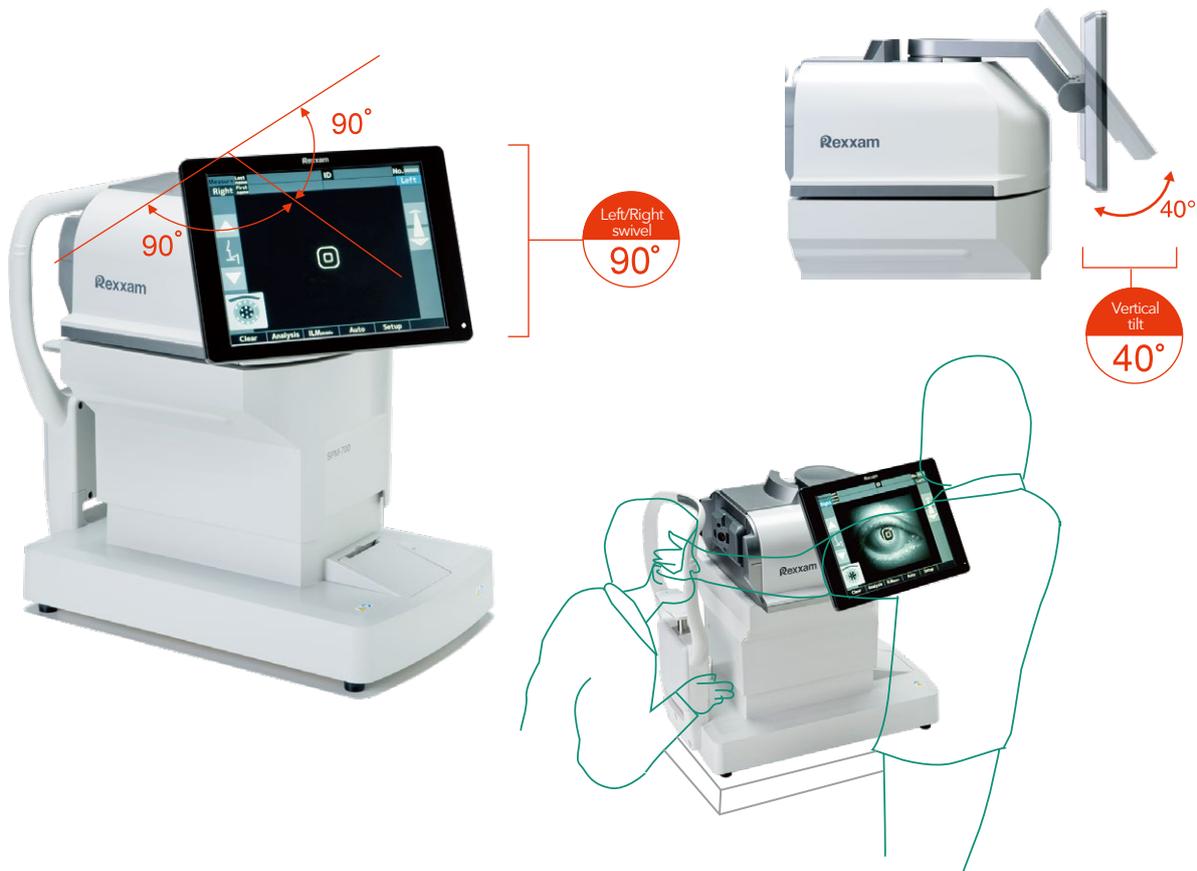
T.F.  
Research & Development Dept.  
July-2017

# Flexible, Easy, Fast and Informative

Rexxam SPM-700 Specular Microscope is a high-performance diagnostic instrument designed for detailed analysis of the corneal endothelium. Compact in design yet powerful in function, it supports eye-care professionals in their diagnostic and investigation of a patient's cornea health condition.

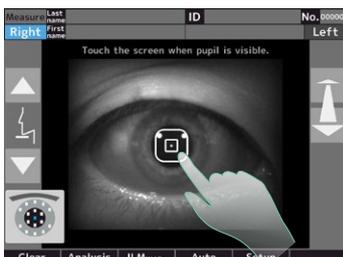
## Flexible

A large 10.4 inch rotatable Touch-Screen monitor enables flexible setup and operation. The screen can turn horizontally up to 180° and tilted up to 40° vertical.



## Easy, Fast & Comfortable

The 3D auto tracking and auto shot features result in user and patient friendly experience. By simply tapping on the center of the patient's pupil displayed on the monitor, the SPM-700 automatically centers, focuses and acquires the endothelial cell image. The entire operation takes a few seconds, and it is fast and smooth, requiring minimum training.



One touch on monitor to start alignment



One shot consists of 16 images in 0.75 sec.



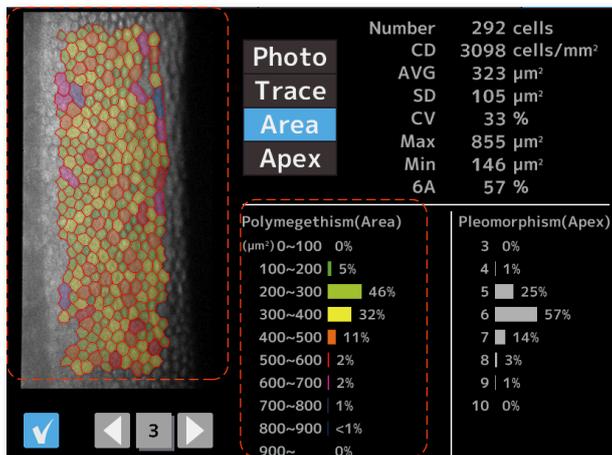
Analysis result

## Comprehensive Analysis

All relevant values such as corneal thickness (CCT), cell density (CD), coefficient of variation (CV) and percentage of cell hexagonality (HEX) are displayed. There are 4 display modes. User can choose to display simple photo, traced grid, cell size distribution or cell shape distribution.

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

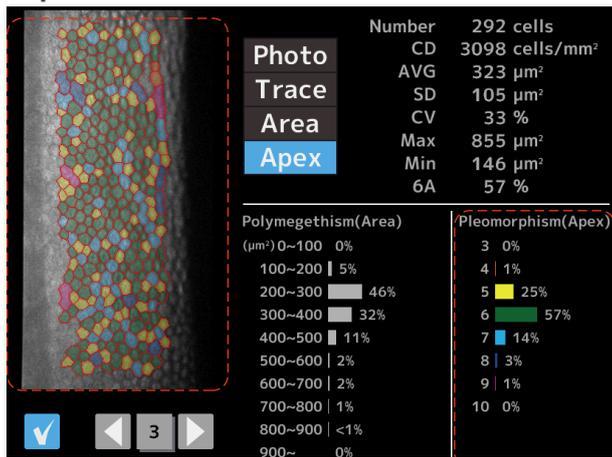
## Area



### Polymegethism: Cell Distribution (Area)

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

## Apex



### 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

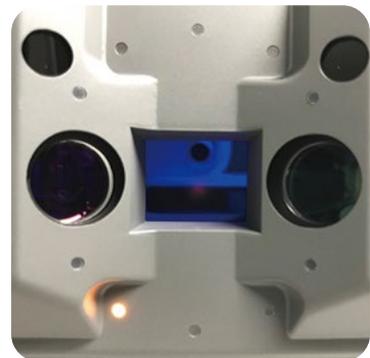
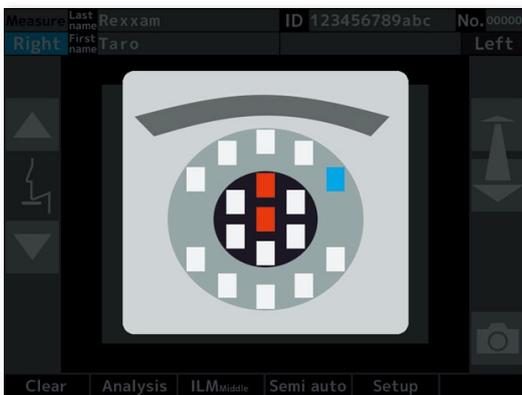
3 AREA  
display cell distribution(size)

4 APEX  
display cell distribution(shape)

Photo	Trace	Area	Apex
298	Num	292	
2992	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.



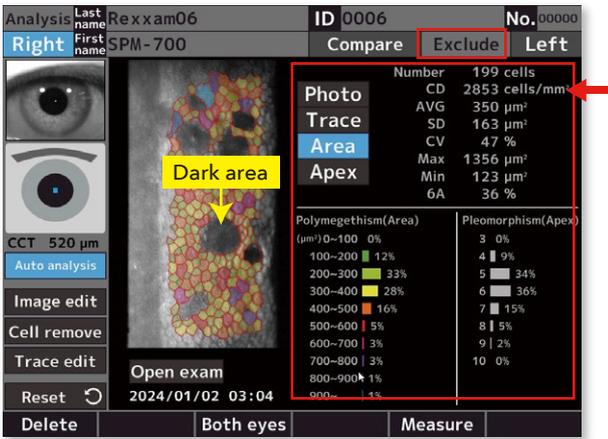
Multiple Fixation Targets

- 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

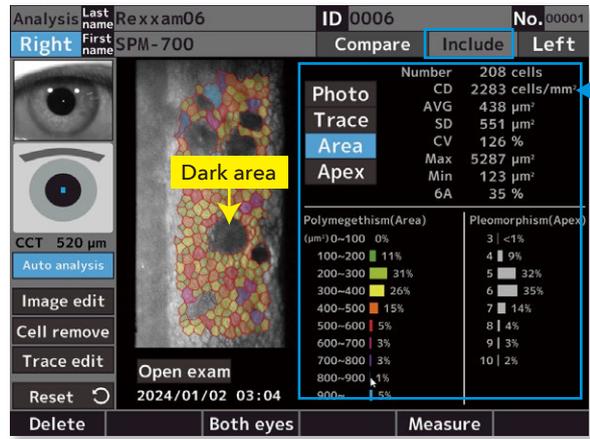
## Analysis Algorithms

2 algorithms are included in the SPM-700. User can freely choose to include or exclude dark area (Fuchs dystrophy, corneal Guttata etc.) in the calculation.

**Exclude** calculation excluding dark area

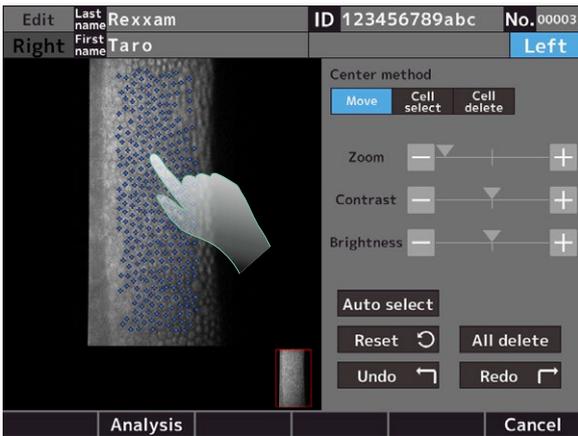


**Include** calculation including dark area



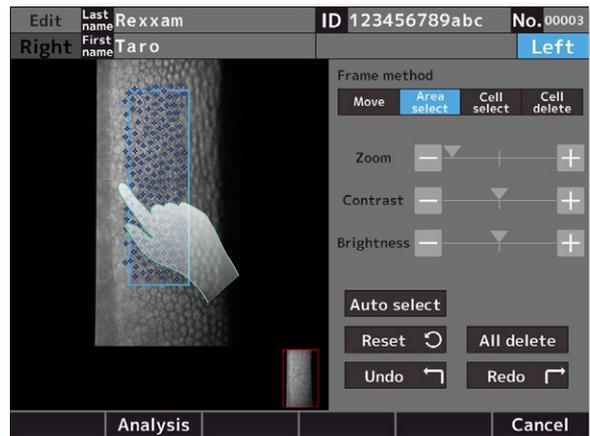
## Advanced Manual Analysis Functions

Center method



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

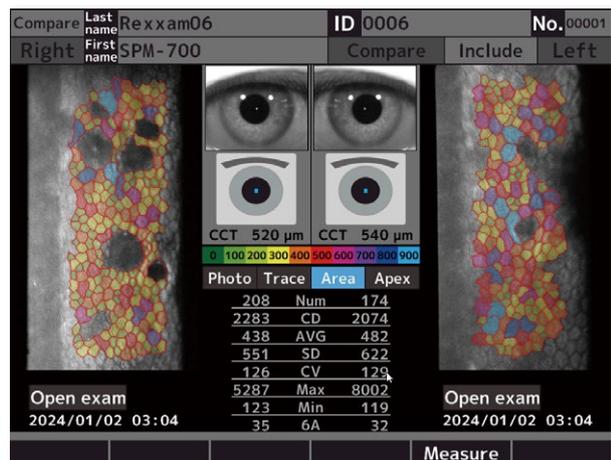
Frame method



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.

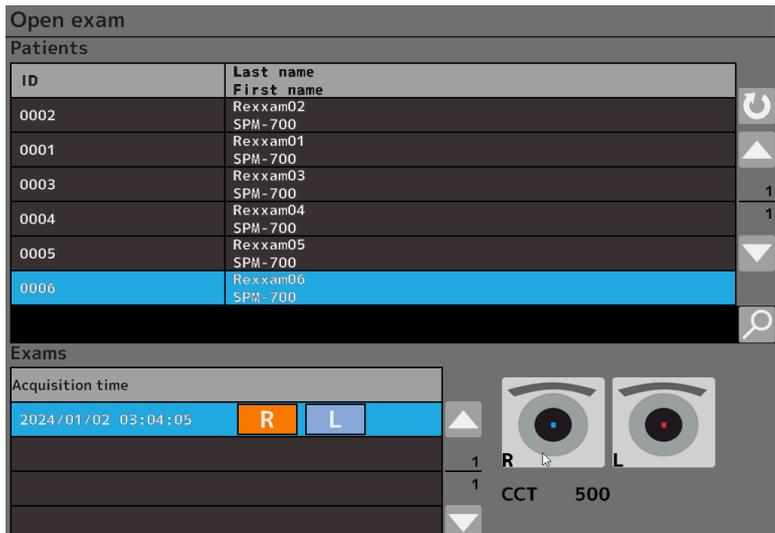
## Progression Follow up and comparison

Two data sets can be displayed in one page for comparison. Endothelial changes can be monitored over time with this function.



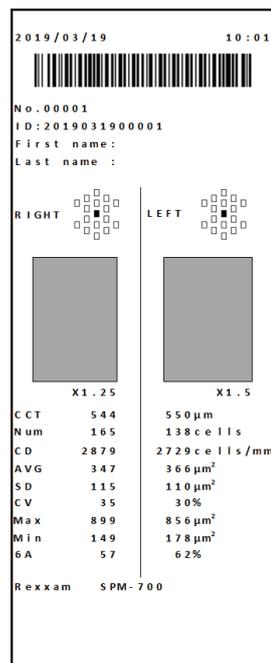
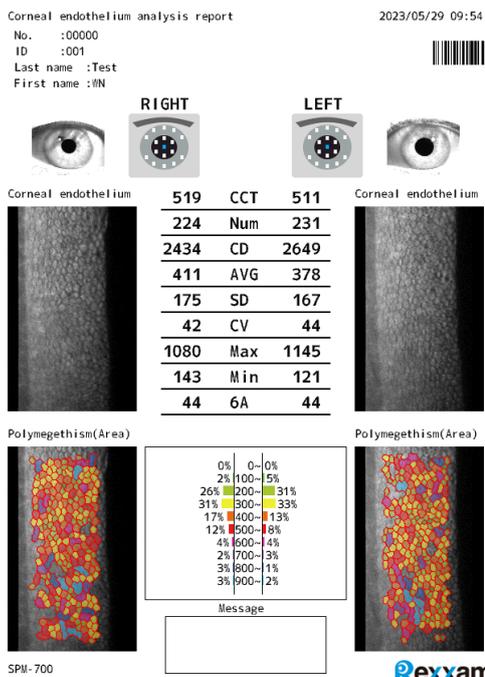
## Database Function

This newly added Database function allows data to be saved internally. The data capacity is 8GB which approximately 15,000 eyes.



## Easy to understand Report and Printout

After measurement, data can directly printout from built in printer. User can also choose to transfer data, raw image or report to PC.





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	Analysis Algorithm		Include / Exclude dark area
	Number	[cells]	Number of endothelial cells
	CD	[cell/mm <sup>2</sup> ]	Density of endothelial cells
	AVG	[μm <sup>2</sup> ]	Average endothelial cell area
	SD	[μm <sup>2</sup> ]	Standard deviation of cell area
	CV	[%]	Coefficient of variation of cell area
	Max	[μm <sup>2</sup> ]	Maximum cell area
	Min	[μm <sup>2</sup> ]	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



**Rexxam Co.,Ltd.**  
**Kagawa factory**

958 Ikeuchi, Konan-cho,  
Takamatsu-shi, Kagawa-ken,  
761-1494 Japan

### Contact

**Rexxam Co.,Ltd.**  
**Eye-care Instruments Sales Dept. Tokyo Office**

2-4-2 Kandatsukasa-machi, Chiyoda-ku, Tokyo,  
101-0048 Japan  
TEL:+81-3-6262-9471 FAX:+81-3-6262-9472  
E-mail:eye@rexexam.co.jp  
Website:https://www.rexxam.co.jp

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