

## Digital Imaging System for SL 980 and SL 990

The new SL Digital Slit Lamp is placed on the top of CSO slit lamps gamma, by merging high quality optics with a high resolution digital camera and a complete and sophisticated software package.

### The slit lamp

The Digital Slit Lamp gives to the specialist a lot of options and it can provide excellent eye anterior segment images, high definition fluoresceinic and fundus pictures.

The modern optic system included in the SL990 and SL980 series is based on a multilayered antireflection treatment that ensures a more effective light transmission giving a 20% improvement both in optic resolution and contrast. The high quality optic parts gives a 20% increase in optic transmission and 10% in depth of field.

The galileian convergent binocular microscope 5X, by using a 8° binocular tubes convergence, combined to the galileian system, provides a better image fusion with a better user comfort. The standard binoculars 12,5X give 6X, 10X, 16X, 25X and 40X magnification factors.

To get a more contrasted the fluoresceinic image observed with blu light, a Wratten Kodak #12 yellow filter is directly integrated in the microscope box. The CSO system let the user to insert or take off the filter instantaneously.

The halogen 6/12V 20W lamp achieves an excellent luminous efficiency and a high quality colour temperature. The vertical tilting system let the user to light the eye till 20° by a 5° step. This is useful in horizontal optical examination, in gonioscopy and in retinal examinations.

A regulator controls the slit light intensity and is placed near by the joystick that moves both horizontal position and elevation. Operations in this case are easy, fast and sharp.

During slit acquisitions an optic fiber system provides diffused background light to the eye; in this way such parts of the eye placed in dark zone can be examined.

The diagnostic functionalities of the SL990 and SL980 slit lamps are constantly developed with the collaboration of most famous italian and european hospitals, medical institutions, clinics and eye care centres.

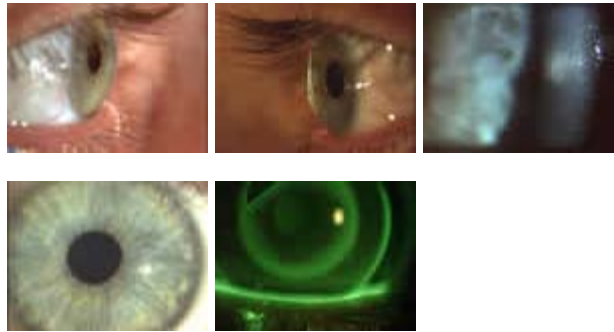
### The digital camera

The Digital Vision System designed by CSO can be added to CSO Slit Lamps SL990 and SL980 models and is composed by an excellent digital camera with a Sony CCD sensor with a maximum resolution of 1392x1040 pixels and a software package.

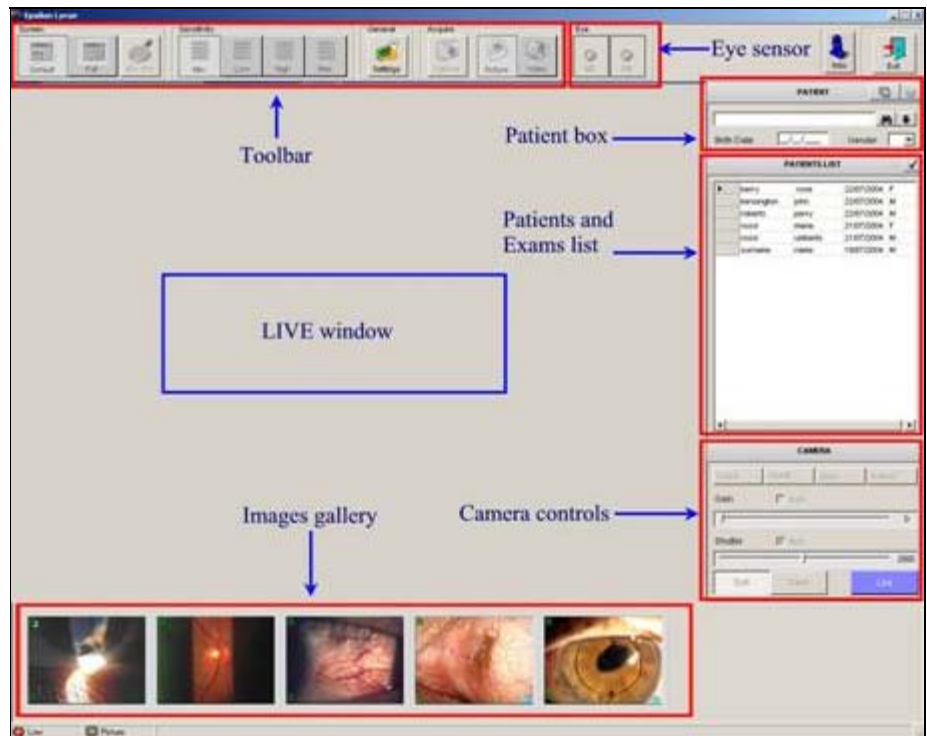
- The sensor is a progressive scan device, thus is a FAST sensor. The progressive scan technology can provide 1280 x 1040 pixels resolution up to 11 fps.
- The system is able to acquire and save high-quality pictures and videos by using a High Quality Color Correction Algorithm.
- Camera performances are maximized by an excellent software and future upgrades of the camera firmware will be simply downloadable from the Internet. CSO constantly keeps in touch with the camera manufacturer to get fast modifications or added features to the camera firmware.
- You can acquire high quality corneal endothelium pictures on CSO system WITHOUT adding any FLASH device!



- You can acquire high quality movies, thanks to the fast Sony progressive scan sensor. Maximum duration is 180 s.



### The software



The software is very fast and easy to use. You can manage your patients database in a very simple way. With just one click you can create a patient, insert a new exam and acquire pictures and video.

The software is also NETWORKABLE, that means that you can create an unique server with the database inside and a lot of clients stations around that work on that database. This solution is very useful in hospitals and clinical institutions.

Camera settings are user-adjustable to get the best performances in every situations.

The software also works with different kind of cameras. You can use analog camera (a video to Firewire converter is needed) or Twain protocol camera.

**Software features:** Patients data and exams management – Easy pictures and video acquisition – live video window – unlimited Images gallery – images comparison - Measurements tools – Drawing tools – Image processing standard tools – User-definable calibrations – Sources: CSO FireWire Camera, Standard analog camera (with optional Video Converter), Twain – Networkable patients database on TCP/IP protocol - Languages: English, French, German, Spanish and Italian – 30 days trial mode option available. The software can be integrated with corneal topography software with contact lens fitting capabilities.

### Software "Epsilon Lyrae"

The digital beam splitter is provided together with a free imaging tool called "Epsilon Lyrae". This tool is useful for patients managing, images and videos acquisition from Slit Lamp.

This tool can NOT work together with the Corneal Topography Software EyeTop2005.

**Software features:** Patients data and exams management – Easy pictures and video acquisition – live video window – unlimited Images gallery – images comparison - Measurements tools – Drawing tools – Image processing standard tools – User-definable calibrations – Standard printable reports - Sources: CSO FireWire Camera, Standard analog camera (with optional Video Converter), Twain – Networkable patients database on TCP/IP protocol - Languages: English, French, German, Spanish and Italian – 30 days trial mode available. The software can be integrated with corneal topography software with contact lens fitting capabilities.

#### Software "Eye Image"

CSO "Eye Image" is a professional imaging software to acquire, process and manage high quality pictures and videos from slit lamps. The Eye Image software includes full database advanced search features and customized printable reports. The software can be integrated with EyeTop topography/pupillography software.

**Software features:** Patients data and exams management – Easy pictures and video acquisition – live video window – unlimited Images gallery – images comparison - Measurements tools – Drawing tools – Image processing standard tools – User-definable calibrations – Sources: CSO FireWire Camera, Standard analog camera (with optional Video Converter), Twain – Networkable patients database on TCP/IP protocol - Languages: English, French, German, Spanish and Italian – 30 days trial mode available. The software can be integrated with corneal topography software with contact lens fitting capabilities.

#### Technical Characteristics

<b>Image Device</b>	1/2 " Type progressive scan Sony IT CCD
<b>Picture Size</b>	Up to 1392 x 1040 pixel
<b>Cell Size</b>	4.65 mm x 4.65 mm
<b>Resolution Depth</b>	8 bit
<b>Digital Interface</b>	IEEE 1394a; DCAM V1.30
<b>Transfer Rate</b>	400 Mb/s
<b>Frame Rates</b>	11 fps
<b>Compression</b>	Bmp, jpg, png, tiff, gif
<b>Movies size</b>	800 x 600, 640 x 480, 320 x 240 pixels ; max duration: 180 s
<b>Gamma Correction</b>	
<b>Gain Control</b>	Manual: 0-20 dB; Auto Gain
<b>Shutter Speed</b>	from 20 ms to 67 sec; Auto Shutter
<b>Advanced Features</b>	Real Time Shading, Built-in FIFO Memory, programmable LUT, 2 programmable Inputs, 2 programmable outputs, Delayed Image Transfer
<b>Operating Temperature</b>	from +5°C to 45° C
<b>Power Requirements</b>	DC 8V – 36V via IEEE 1394 cable
<b>Power Consumption</b>	Less than 3 W (@ 12V DC, directly from Firewire cable)
<b>Dimensions</b>	90 mm (H) x 87 mm (W) x 39 mm (D).

#### Hardware and Software suggested requirements

<b>Processor</b>	Pentium IV, 2 GHz
<b>RAM</b>	512 MB
<b>Video board</b>	ATI Radeon 9200 (128 MB) or similar

<b>Interface</b>	Standard IEEE1394a FireWire Port OHCI 1.1 compatible, with auxiliary power connector *
<b>Color monitor</b>	LCD or CRT, resolution 1280 x 1024** @75 Hz (CRT with 0.24 mm Pitch)
<b>Operative systems</b>	Microsoft Windows XP, Windows 2000 (SP 4) or NT (SP 6) O.S. Microsoft Internet Explorer 6 is needed.

*\*The Firewire camera need an auxiliary 12V power supply if connected to a notebook computer.*

*\*\*The software does NOT run with monitor resolution lower than 1024 x 768 pixels*

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