

# SL-D Series

Digital slit lamp



# Excellent optics, high quality digital slit lamp series



## Digital slit lamp SL-D series

The Topcon SL-D series is a digital slit lamp series that combines high optical performance with versatile digital capability. The concept of the high quality digital slit lamp is based on the extensive range of optional digital capture devices that can be mounted on these outstanding clinical instruments. Paramount among these is the dedicated digital camera DC-4 with compact body that provides easy-to-capture and high quality digital images. These premium diagnostic instruments offer superior clinical performance with digital capability.



# SL-D701 digital slit lamp

LED light source,  
sharp, bright and  
homogeneous  
illumination

## SL-D701 with LED or halogen light source\*

### Features

- | Illumination boost
- | Optional DC-4 digital camera
  - High resolution
  - Smart capture function
  - Still image with auto exposure function
  - Seamless integration
  - Infrared sensitivity
- | Blue Free Filter™ system for superior  
fluorescent viewing\*\*
- | Optional BG-5 LED background illumination
  - Meibomian gland observation capability



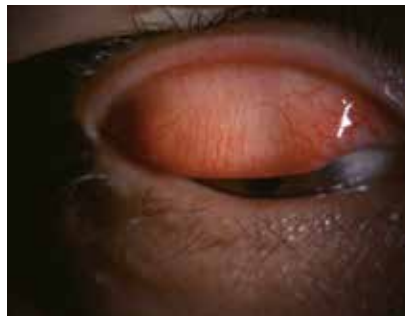
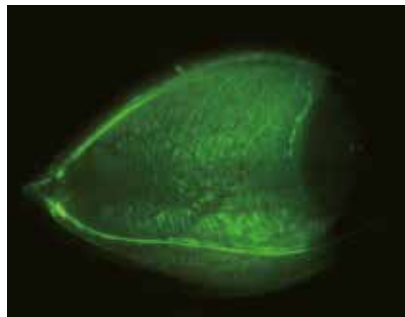
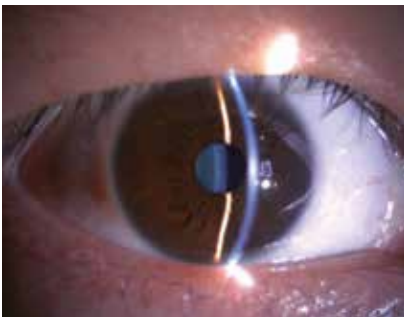
\* Factory option \*\* Fluo model



## LED light source

The LED illumination source allows observation under a brighter, more homogeneous condition than the conventional halogen bulb source. The short wavelength of the LED spectrum enables

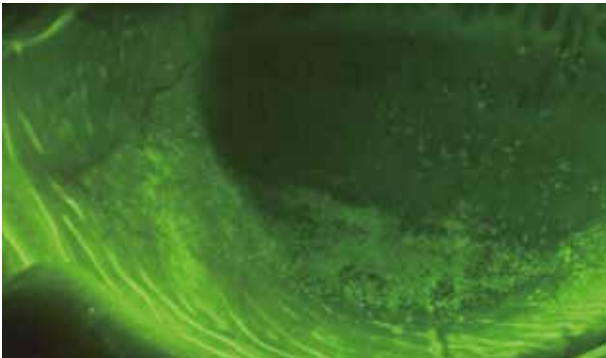
the operator to see minute details such as flare in the anterior chamber and vitreous. Color temperature remains uniform when adjusting light intensity ensuring consistent viewing results throughout the entire eye's optical path.



## LED Features

- | Illumination boost
- | Brighter illumination enhances observation of the eye structures
- | LED wavelength characteristics allow for easy visualization of subtle details such as flare & inflammation
- | Consistent color temperature throughout the entire light intensity adjustment
- | Substantial reduction in bulb replacement
- | Energy efficient & cost saving
- | No tearfilm vaporization due to low temperature of LED illumination

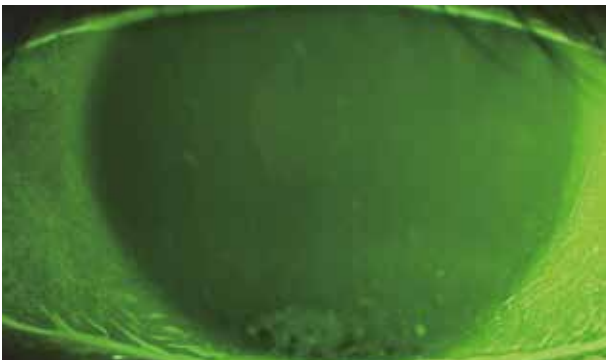




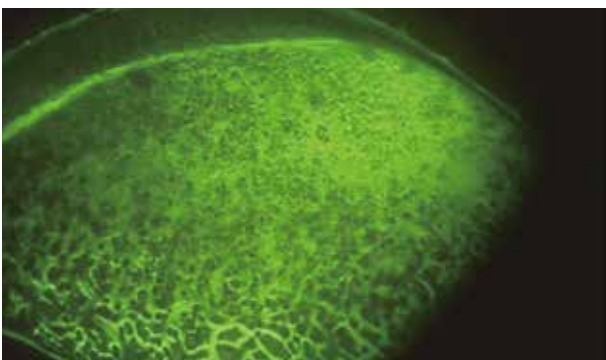
Blue Free Filter™



Cobalt Blue Filter



Blue Free Filter™



Blue Free Filter™

### Blue Free Filter™ system

Topcon Blue Free Filter™ system can be carried out using the exciter filter and barrier filter. Tear flow details and scars can be clearly viewed with less glare or pooling.

The Blue Free Filter™ system is only available on the SL-D701 Fluo model. This Blue Free Filter™ system consist of the combination of a special Exiter filter and Barrier filter which has special wavelengths different from the conventional cobalt blue filter and yellow filter.

This unique Exiter filter / Barrier filter combination ensures a homogeneous fluorescein observation which is 1.6x brighter than the conventional cobalt blue / yellow filter combination.





Amber



Non Amber

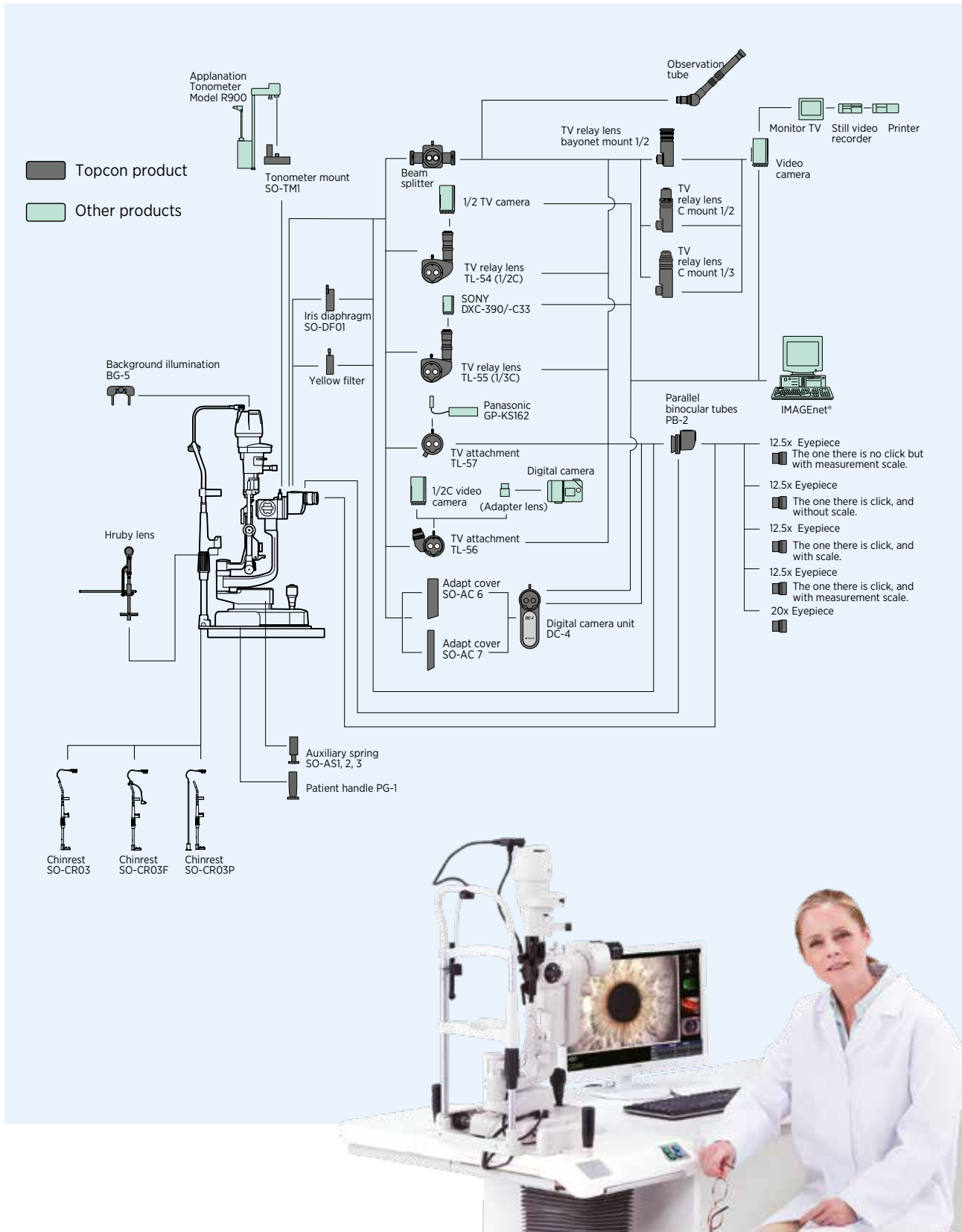
### Amber filter

A warmer, more pleasant tone of the skin and eye structures can be obtained by inserting the amber filter. This color correction filter produces a pleasant coloration that is especially useful in slit lamp imaging.



# SL-D701

## System configuration



# High performance, affordably priced SL-D301 slit lamp

The SL-D301 is a classic slit lamp ideal for all basic clinical examinations. With the halogen illumination and the 10/16/25 times magnification the SL-D301 is a high performance affordably priced slit lamp. The optional integrated digital camera DC-4 provides high quality imaging and video acquisition, making the SL-D301 a truly versatile digital slit lamp.



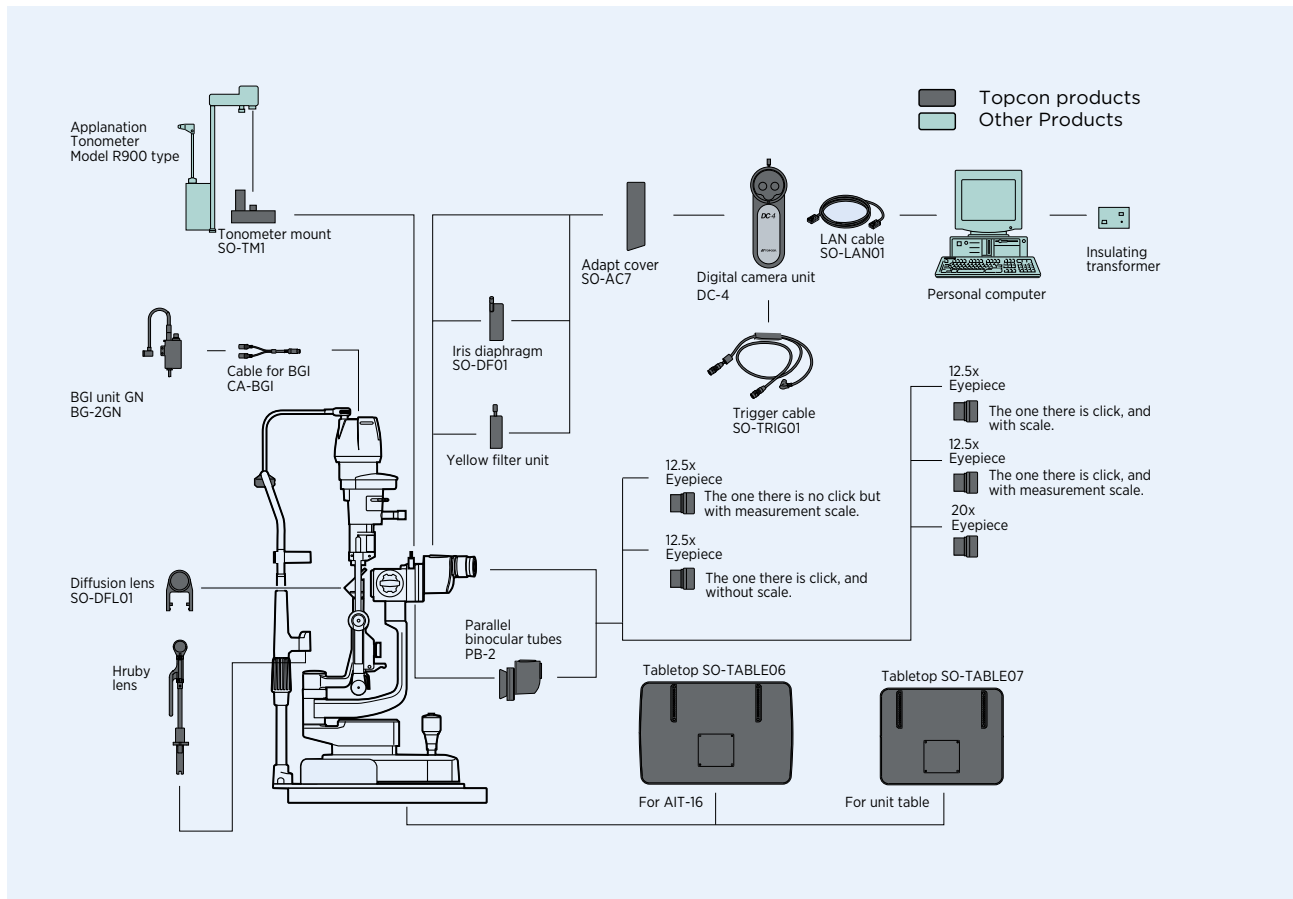




**Features**

- | A classic slit lamp ideal for all basic clinical examinations
- | Smooth movements and time proven durability
- | Optional integrated digital camera provides simple image & video acquisition

**System configuration**



# SL-D2 / SL-D4 digital slit lamp

A complete range of digital-ready slit lamps is available to meet the clinical needs of every eyecare specialist. From the versatile SL-D2 and SL-D4 to the premier SL-D301 and SL-D701 photographic slit lamps.

The SL-D series provide unprecedented image clarity, color fidelity image definition and light transmission. All SL digital slit lamps allow the DC-4 digital camera to be easily attached at any time, and all models incorporate an amber filter for high contrast fundus observation.



**SL-D2**

**Three magnifications digital slit lamp**

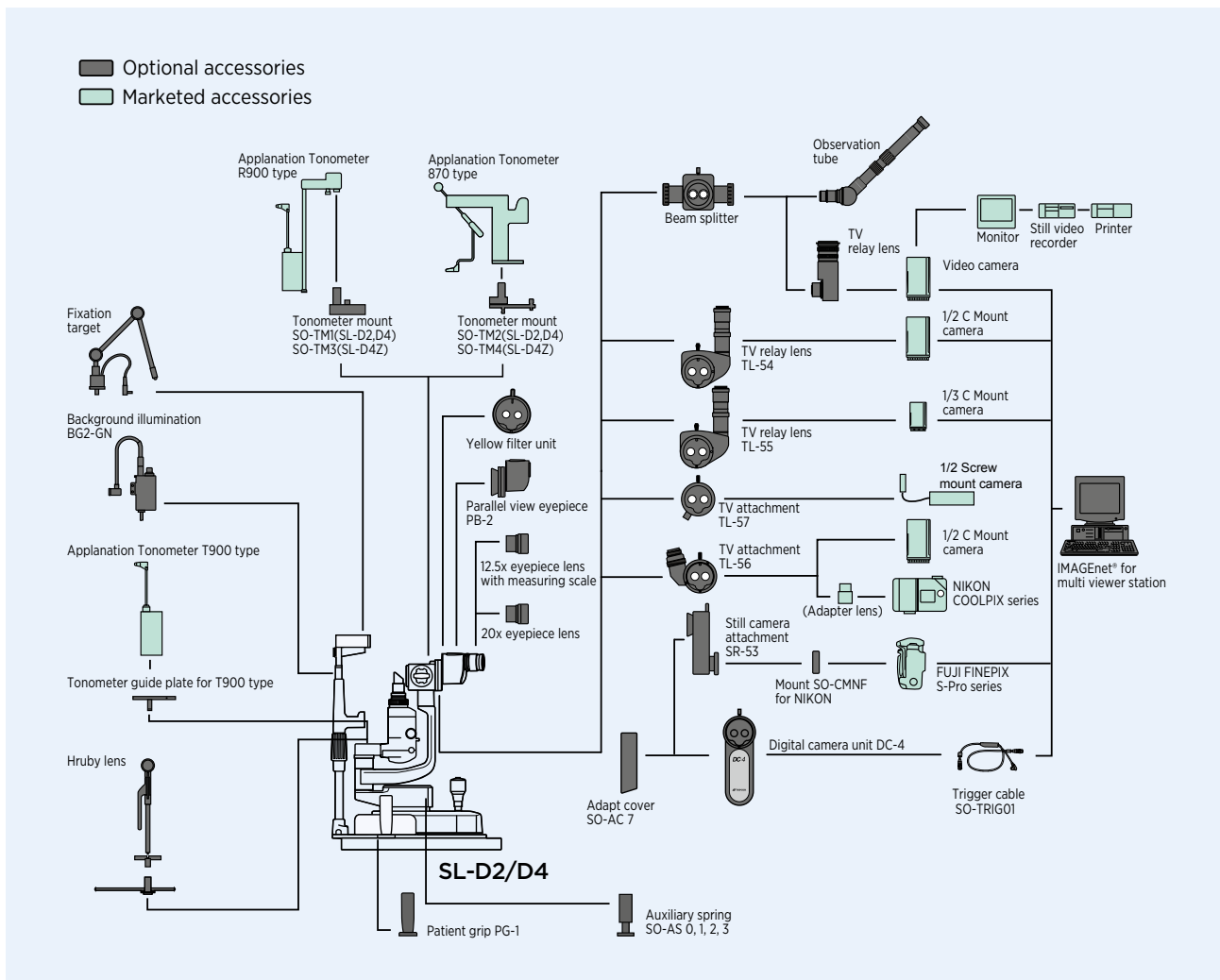
The SL-D2 incorporates a parallel drum magnification changer that allows for quick and easy selection between three convenient magnifications of 10x, 16x, and 25x. The SL-D2 offers the most cost-effective digital imaging solution with optimal clarity, color resolution and depth of field.

**SL-D4**

**Five magnifications digital slit lamp**

Where the SL-D2 has three magnifications, the SL-D4 has a parallel drum changer with five magnifications: 6x, 10x, 16x, 25x and 40x. The 40x magnification is especially useful for corneal Endothelium observation. Suitable for a variety of ophthalmic applications, the demanding eyecare specialist can produce excellent images of both the anterior and posterior structures of the eye.

**System configuration**



# DC-4 digital camera



The DC-4 digital camera is built exclusively for the SL-D series to provide superb digital documentation. A variety of image capture modes can be employed including still or video images.

The DC-4 integrates the beam splitter and the high-resolution digital camera into one unobtrusive compact system. The images captured by the DC-4 can be quickly downloaded to any PC imaging software package via a LAN cable.

For more efficient patient database management, all SL-D digital slit lamps can be connected to Topcon IMAGEnet® Systems.



### Smart capture function

With a simple push of the joystick trigger the operator can obtain a rapid series of images that are quickly saved for later revision and selection.

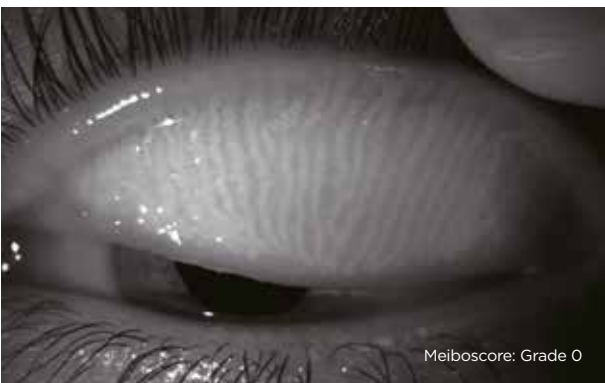
The smart capture function minimizes failed images or blurry pictures, especially with children and non-cooperative patients.



### Live view

When using the Capture software in conjunction with the DC-4, a real time live image will be seen on the monitor to facilitate centering and focusing.

The live image can be used to show the eye condition to third party individuals for teaching and education. Sensitivity, shutter speed and white balance can be adjusted from the PC.



### Still image with Auto Exposure (AE) function

By adjusting the shutter speed and sensor gain, the brightness of the image will be automatically compensated. As a result the live image used for alignment and the final picture will have the same color balance.



### Video capability

The DC-4 makes it easy to obtain videoclips of the eye movements without interfering with the examination.



**Meibomian gland observation**

Meibomian gland observation can be performed and documented using the optional meibomian gland observation system\*. Because of the high

resolution of the DC-4, fine detail of glandular acinus and subtle changes of meibomian glands can be seen and photographed for a better understanding of its condition.

**Meiboscore: grade 0 ~ 3**



Grade 0



Grade 1



Grade 2



Grade 3

**Meibomian gland close-up**



**Right / Left eye indicator**

When in photography mode, the SL-D701 automatically recognizes the patient's right and left eye, simplifying the photographic procedure.

**More than just the basic function**

Versatile lens coatings, including a preservative layer, and the use of apochromatic optics enhance the observation and require less maintenance.

Images and meiboscore provided by: Reiko Arita, MD, PhD, Itoh Clinic, Department Ophthalmology, the University of Tokyo School of Medicine  
 \* System of SL-D701 +DC-4 (optional) + BG-5 (optional)

## Specifications DC-4 digital camera



<b>System</b>	Beam flux division by beam splitter
<b>Focus distance</b>	Operator side: 50%, Camera side: 50% (R eye)
<b>Sensor type</b>	1 / 2.5 inch CMOS, 5.04M Pixels
<b>Pixel size</b>	2.2 x 2.2 $\mu$ m
<b>Image resolution</b>	2592 x 1944
<b>Movie resolution</b>	1294 x 970
<b>Frame rate</b>	24 fps
<b>Resolution</b>	125 line pair / mm (40X)
<b>Filter</b>	Infrared cut filter
<b>Power input</b>	12V DC, 2.4W
<b>Output</b>	LAN (GigE) (Cat6)
<b>Dimensions</b>	76 mm (W) x 163 mm (D) x 304 mm (H)
<b>Weight</b>	430 g
<b>Power supply</b>	100-240V AC, 50-60Hz, 110VA

## Specifications picture magnification and field of view

SL-D701, SL-D4		
Displayed magnification	Picture magnification	Picture field (mm)
6x	0.135	31.8 x 42.3
10x	0.211	20.4 x 27.2
16x	0.336	12.7 x 17.0
25x	0.537	7.97 x 10.6
40x	0.839	5.10 x 6.81

SL-D301, SL-D2		
Displayed magnification	Picture magnification	Picture field (mm)
10x	0.211	20.4 x 27.2
16x	0.336	12.7 x 17.0
25x	0.537	7.97 x 10.6

## Optional accessories SL-D Series



Background illumination



Patient grip



Observation tube



Yellow filter unit

# Specifications

Slit lamp	SL-D701	SL-D301	SL-D4	SL-D2
Type	Galilean magnification changer with converging binocular tubes (optional parallel binocular tubes)			
Magnification selection	5 steps by drum rotation 6x, 10x, 16x, 25x, 40x	3 steps by drum rotation 10x, 16x, 25x	5 steps by drum rotation 6x, 10x, 16x, 25x, 40x	3 steps by drum rotation 10x, 16x, 25x
Eyepiece magnification	12.5x			
Eyepiece diopter range	-5D to +5D			
Binocular tubes PD range	55 mm to 78 mm (converging binocular tubes)			
Magnification ratio (Field of View)	6.37x (35.1 mm) 9.94x (22.5 mm) 15.87x (14.1 mm) 25.37x (8.8 mm) 39.62x (5.6 mm)	10.00x (22.5 mm) 15.98x (14.1 mm) 25.53x (8.8 mm)	6.37x (35.1 mm) 9.94x (22.5 mm) 15.87x (14.1 mm) 25.37x (8.8 mm) 39.62x (5.6 mm)	9.94x (22.5 mm) 15.87x (14.1 mm) 25.37x (8.8 mm)
<b>Slit illumination</b>				
Slit width	Continuous from 0 mm to 14 mm (14 mm circle)	Continuous from 0 mm to 9 mm (9 mm circle)	Continuous from 0 mm to 14 mm (14 mm circle)	
Slit length	Continuous from 1 mm to 14 mm (14 mm circle)	Continuous from 1 mm to 8 mm	Continuous from 1 mm to 14 mm (14 mm circle)	
Aperture diameter	14 / 10 / 5 / 2 / 1 / 0.2 mm	9 / 8 / 5 / 3 / 2 / 1 / 0.2 mm	14 / 10 / 5 / 2 / 1 / 0.2 mm	
Slit angle	0° to 180° with horizontal scanning capability			
Slit direction	Vertical to horizontal, can be altered gradually inclination 5° / 10° / 15° / 20° Side swing		Side swing	
Filters	Blue, Red-Free, Amber UV Cut (normal use), IR Cut (normal use) ND filter (13% transmission) Exit & Barrier filter for Fluo type slit lamp	Blue, Red-Free, ND (13% transmission) UV cut (normal use) IR cut (normal use)	Blue, Red-Free, Amber UV Cut (normal use), IR Cut (normal use)	
Illumination halogen type	12V, 30W		6V, 20W	
Illumination LED type	3A, 10W		-	
<b>Base unit</b>				
Forward-backward movement				90 mm
Right-left movement				100 mm
Vertical movement				30 mm (spring supported)
<b>Chinrest unit</b>				
Vertical movement				80 mm
Fixation target				Fixation target with diopter adjustment Luminous fixation target
Fixation lamp				RED (Red)
<b>Power &amp; weight</b>				
Input (primary)				100-120V, 220-240V AC
Frequency				50/60Hz
Power consumption	160VA	80VA		160VA
Weight w/o chinrest	11.5 kg	12 kg		9.5 kg

## IMPORTANT

Subject to change in design and/or specifications without advanced notice.  
In order to obtain the best results with this instrument, please be sure to review  
all user instructions prior to operation.  
Medical device Class I. Manufacturer Topcon Corporation.



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