

Digital Slit Lamp Series

SL-D Series



THE DIGITAL SLIT LAMP SERIES



READY FOR DIGITAL IMAGING

SL-D Series

The digital Topcon slit lamp series combines high optical performance with versatile digital capability. The SL-D series incorporates excellent optics that assure optimal visualization of all structures of the eye. The instruments also incorporate unique filters to further enhance their clinical efficiency.

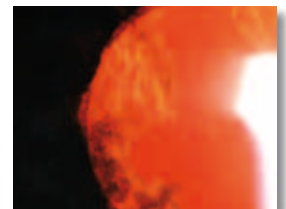
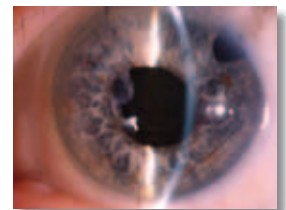
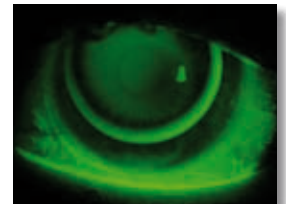
The concept of the digital slit lamp is based on the extensive range of optional digital capture devices that can be mounted on these outstanding clinical instruments. Paramount among these are the dedicated SL-SCAN 1, a Fourier Domain OCT for posterior and anterior segment observation and dedicated digital camera's such as DC-3 and DV-3. To further advance their "digital-ready" attractiveness, an auto left/right eye detection function is incorporated into the slit lamps. The SL-D digital slit lamps are the premier diagnostic instruments that offer superior clinical performance with unmatched digital capability.

The Topcon DC-3 and DV-3 digital cameras are built exclusively for the SL-D series to provide superb digital documentation. A variety of image capture modes can be taken including still images or video images. The DC-3 and DV-3 integrate the beam splitter and the high resolution digital camera into one unobtrusive and compact system. The DV-3 mounts a yellow filter and diaphragm unit for improving image quality.

For more efficient patient database management, all of the SL-D digital slit lamps can be connected to Topcon's IMAGEnet i-base™ Digital Imaging System.

DC -3

- » The DC-3 is the perfect combination for still imaging and live image
- » Integrated imaging solution with a 8.3 Megapixel CCD sensor
- » Equipped with a resolution of 1 Megapixel live image
- » Easy installation plug and play
- » Easy capture with joystick button on slit lamp base
- » The DC-3 comes with free IMAGEnet i-base™ basic software



DV -3

- » The DV-3 incorporates a digital camera designed for high-resolution image acquisition
- » A C-MOS sensor provides a resolution up to 3.14 million pixels
- » “What you see is what you get”. The image on the monitor screen is equal to the image seen through the oculars of the slit lamp. With traditional SLR cameras this is not the case
- » The DV-3 incorporates a yellow filter and diaphragm unit to improve image quality
- » Plug and play installation
- » Easy capture with joystick button on the slit lamp
- » The DV-3 comes with free IMAGEnet i-base™ basic software



SL SCAN-1

SL SCAN-1 is a slit lamp based Fourier Domain OCT which is applicable for posterior and anterior segment OCT imaging. Topcon SL SCAN-1 enables observation, capture and recording of high resolution cross-sectional images of the anterior and posterior pole of the eye with a biomicroscope. The integration of superior imaging technology, OCT with Topcon's leading slit lamp range enhances diagnostic capabilities significantly. With SL SCAN-1 many depth related disorders can be clearly and easily observed using a standard slit lamp examination.

With the SL SCAN-1, OCT examination becomes available from the first consultation. The SL SCAN-1 requires minimal operation to obtain the desired OCT B-Scan images. A simple, compact addition to Topcon's digital range of slit lamps the SL SCAN-1 does not sacrifice a single function of the Topcon slit lamp. The high resolution OCT image provides detailed and precise readings for further treatments such as fluorescein fundus photography, 3D OCT scanning and the follow up of surgery, laser treatment and anti VEGF injection.



FUNDUS VIEWING SYSTEM



Topcon's Fundus Viewing System assures high quality fundus imaging on a biomicroscope. The combination with a digital camera and Topcon's IMAGEnet i-base™ provides basic fundus photography at the click of a button.



The Fundus Viewing System consists of two modular components. The lens holder, FV-1L, is a high quality 60D Double Aspheric Volk lens which gives you a 30 degrees wide fundus image. This unit can be used independently from the aperture selector, FV-1A. The Topcon aperture selector reduces reflection which optimizes fundus observation.

The Fundus Viewer, FV-1L fits on all digital slit lamps. The FV-1A aperture selector can be combined with SL-D7 and SL-D8Z.



FV-1L



FV-1A Aperture selector

FEATURES

The clinician can use a Topcon slit lamp in a versatile way for a broad range of diagnostics. Therefore Topcon offers a wide range of accessories.

Topcon FD-21, flash device and Topcon photo attachment

The FD-21 enables the clinician to make superb photos of posterior and anterior segments in the eye. Excellent clarity, color balance and depth of field enhance the examination. The FD-21 flash device fits on SL-D7 and SL-D8Z.

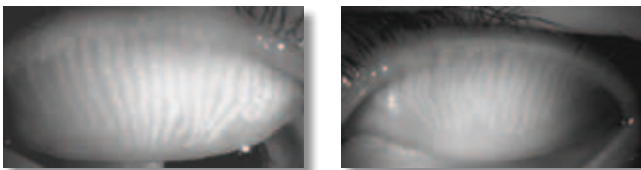
The clinician can choose to connect a Nikon digital still camera or several CCD cameras. Your Topcon advisor can help you select a model.

Topcon background illumination

Topcon offers several Background Illuminations which enable the clinician to have a clear view of the whole cornea, even if the smallest slit is used. It can be used for imaging as well.

Meibography

Topcon BG-4M Meibography attachment enables the clinician to view clearly Meibomian glands in the upper and lower eyelids.



Topcon diaphragm unit

This unit enhances the focal depth in the lower magnifications of the complete anterior segment. Thus the clinician can diagnose faster and digital images have a better focus.

Topcon yellow filter

Topcon yellow filter enhances the view with fluorescein diagnostics. For example small damages of the cornea are easily detected.

IMAGEnet i-base™ (Option)

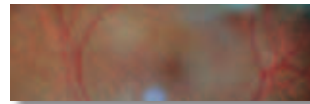
The Topcon SL-D series is capable of implementing images and data into the Topcon IMAGEnet i-base™ System for versatile diagnostic processing and interpretation.

The generated digital images can be captured for use in research, education, and clinical applications.

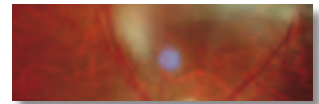
IMAGEnet i-base™ is a full-function, state-of-the-art digital imaging system for faster, more efficient acquisition, storage, retrieval and analysis of all types of ophthalmic images.

Amber filter

The SL-D series incorporates an amber filter which improves the contrast and colour of retinal images. The clinician has a choice whether to use it, or not.



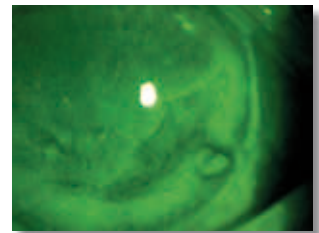
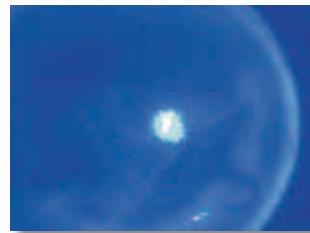
No Amber



Amber

Anterior fluorescein observation

The anterior fluorescein observation helps the clinician to detect corneal epithelium abnormality and conjunctiva epithelium abnormality. The system consists of a combined set of exciter and barrier filters, as used in a retinal camera for FAG, to assure a clear observation of fluorescein dye. You can record and file the image of fluorescein staining on the ocular surface. This feature is a factory option.



Tonometers

Topcon slit lamps can be equipped with all well known contact tonometer models.



A complete range of digital-ready slit lamps is available to meet the clinical needs of every eye-care specialist. From the versatile SL-D2/D4 to the premier SL-D7/D8Z photographic slit lamps, the SL-D series provides unprecedented image clarity, color fidelity, image definition and light transmission. All SL-D digital slit lamps allow the DC-3 or DV-3 digital camera to be easily attached at any time and all models incorporate a new amber filter for clear and high contrast fundus observation.

SL-D2



Three magnification digital slit lamp

The SL-D2 incorporates a parallel drum magnification changer that allows for quick and easy selection among 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 magnification digital slit lamp

The SL-D4 incorporates a parallel drum magnification changer that allows for quick selection among five convenient magnifications of 6X, 10X, 16X, 25X and 40X. The 40X magnification is especially useful for Corneal Endothelium observation. Encompassing a variety of ophthalmic applications, the demanding eye care specialist can produce excellent images of both the anterior and posterior structures of the eye.

The SL-D series employs 12.5x hi-eyepoint eyepieces and Topcon's converging binocular tubes with a parallel magnification body for remarkably sharp and comfortable stereoscopic observation. A wide assortment of optional accessories further expands the clinical efficiencies of the 'D' series.

SL-D7



Five magnification digital slit lamp

The SL-D7 incorporates a parallel drum magnification changer that allows for quick selection among five convenient magnifications of 6X, 10X, 16X, 25X and 40X. When the optional FD-21 Flash Device is incorporated, the SL-D7 converts to a "true" digital photographic slit lamp providing exceptional images of the cornea, endothelium and fundus to enhance accurate documentation.

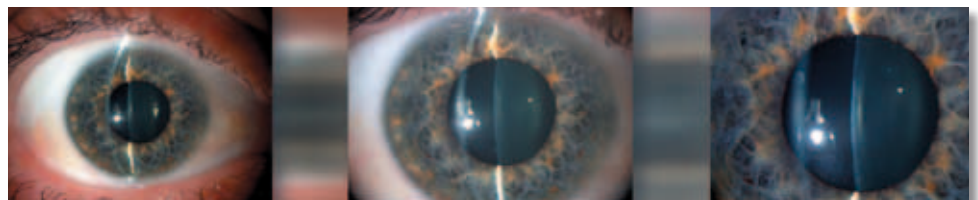
SL-D8Z



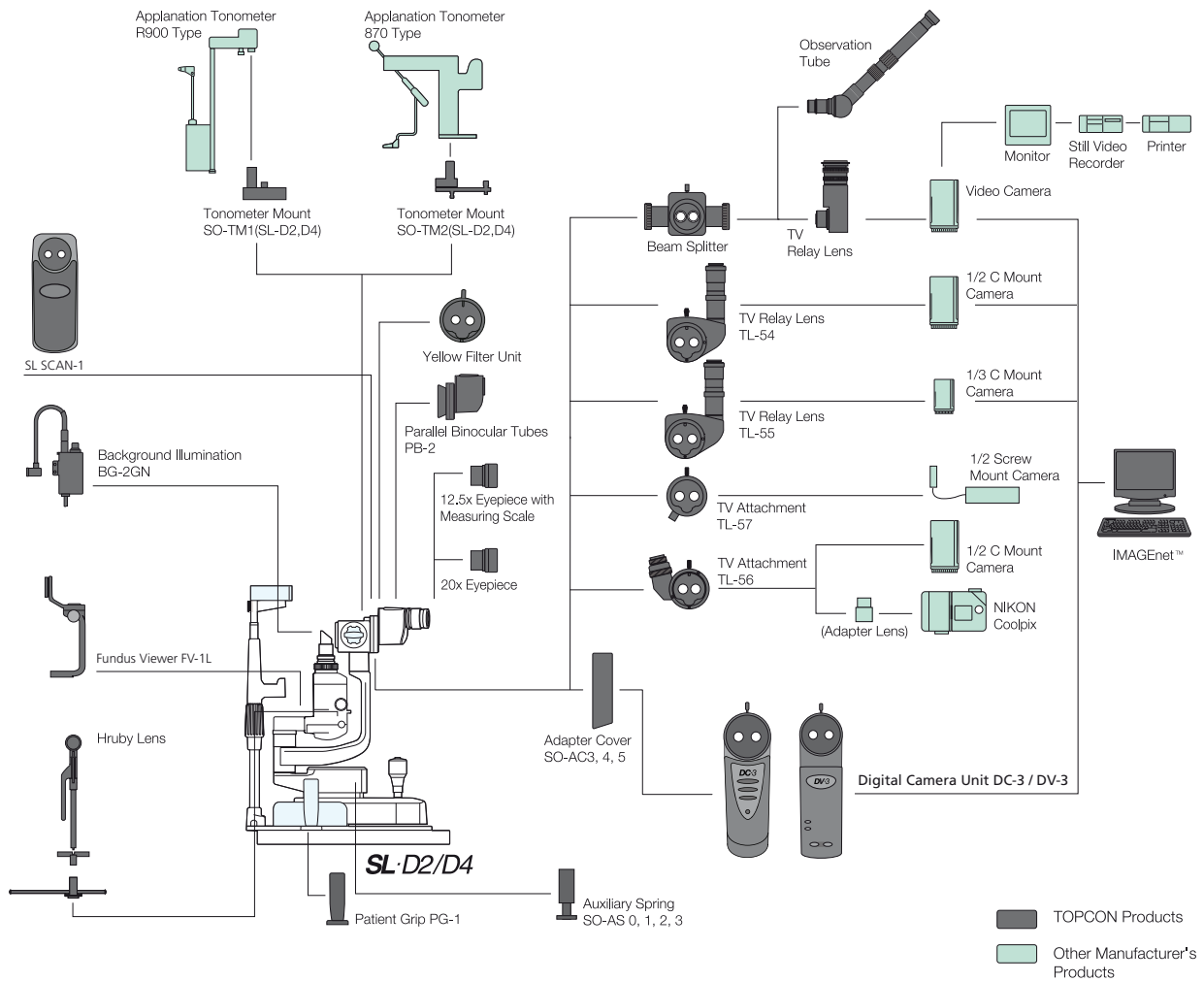
Zoom magnification digital slit lamp

The SL-D8Z offers a zoom magnification changer, which provides continuous observation through the magnification range of 6.35X to 31.75X. The highly efficient zoom optics allow for extraordinary visualization of minute anterior segment conditions. When the optional FD-21 Flash Device is incorporated, the SL-D8Z becomes the premier zoom photographic slit lamp for unparalleled digital documentation.

*All of the above SL-D slit lamps are shown with optional DC-3 and DV-3 digital cameras illuminations.



SYSTEM CONFIGURATION (SL-D2/D4)



Optional accessories



SL-SCAN 1



Fundus viewer

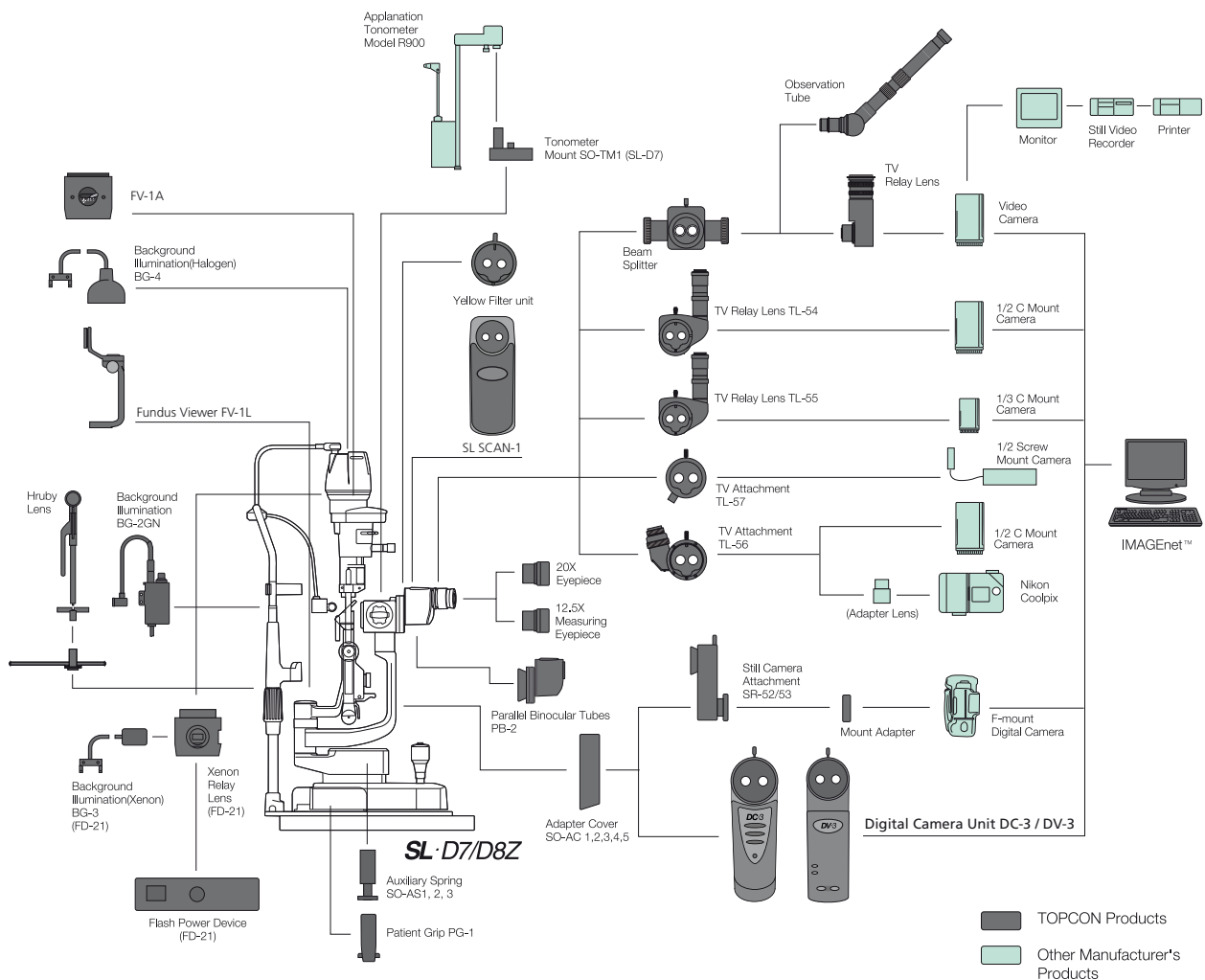


Meibom BG-4M



Background illumination BG-4

SYSTEM CONFIGURATION (SL-D7/D8Z)



Optional accessories



Background illumination BG-2GN



Yellow filter unit



Photo attachment



Flash device FD-21



Patient grip PG-1

Specifications for DC-3 (optional accessory)

System	Light path diverted by beam splitter		
Beam splitter distribution ratio	50% light to operator, 50% light to camera		
Image magnification (with SL-D7)	Displayed magnification	Picture magnification	Picture field
	6	0,17	31,8 x 42,3 mm
	10	0,27	20,4 x 27,2 mm
	16	0,43	12,7 x 17,0 mm
	25	0,69	7,97 x 10,6 mm
	40	1,07	5,10 x 6,81 mm
Working distance	45,50 mm		
Image capturing device	1/1,8 type CCD; Effective pixel number: 8,13 million pixel		
Power	Input DC 12V ± 0,5V 1A		
Dimensions	225 (H) x 71 (W) x 70 (D) mm		
Weight	0,64 kg		
Power Consumption	12 W		

Specifications for DV-3 (optional accessory)

Light-Sensitive Pixels	3.14 million; 2048 x 1536
Sensor Type	Rolling shutter C-MOS
Pixel Size	3,2µ x 3,2µ
Exposure/Integration Control	1ms to 4sec, 1ms step
Gain Control	16 combined Gain/Exposure Presets / Manual: LOW-NORMAL-MEDIUM-HIGH
Digital output	10 bits
Interface	IEEE 1394 FireWire - DCAM V1.30
Transfer Rate	400 Mb/s
Data Format	RGB 24 bit; YUV 422
Colour processing	BAYER CFA on-board processing
Look-up table	2048 programmable entries
Controls	Brightness, contrast, saturation, hue, white balance (auto/man), shutter, gain
Still image recordable pixel	Up to 2048x1536 Tiff (uncompressed) and Jpeg
Real time preview image display	Standard Live mode: 1024x768 at 20 fps High-Res Live mode: 640x480 at 30 fps / High-Res X 2 Live mode: 1280x960 at 30 fps
Movie recording	High Res 1024x768 Mpeg 4 / Zoom 640x480 Mpeg 4
Power supply	8 - 35 V through IEEE1394 cable or external power supply device
Max power consumption	2.5W

Specifications

	SL-D2	SL-D4	SL-D7	SL-D8Z
Type	Galilean magnification changer with converging binocular tubes			
Magnification selection	3 steps by drum rotation		5 steps by drum rotation	Variable via continuous zoom (click 10x 16x 25x)
Eyepiece	12.5X			
Magnification ratio (field of view)	10x (22,5 mm) 16x (14,1 mm) 25x (8,8 mm)		6x (35,1 mm) 10x (22,5 mm) 16x (14,1 mm) 25x (8,8 mm) 40x (5,6 mm)	Continuous from 6x - 32x 35,2 mm-7 mm
Slit width	Continuous from 14mm to 0mm (at 14mm, slit becomes a circle)			
Slit length	Continuous from 14mm to 1mm (at 14mm, slit becomes a circle)			
Slit angle	0 to 180 degree with horizontal scanning capability			
Filters	Blue, Red-Free, Amber UV Cut (normal use), IR Cut (normal use)		Blue, Red-Free, Amber UV Cut (normal use), IR Cut (normal use) ND (13% transmission) Heat insulation Exciter / Barrier (factory option)	
Illumination lamp	6V, 20W halogen lamp		12V, 30W halogen lamp	
Longitudinal movement	90 mm			
Lateral movement	100 mm			
Fine base movement	15 mm			
Vertical movement	30 mm			
Chinrest vertical movement	80 mm			
Chinrest fixation target	Red-LED		Red-LED or White-Bulb	
Power input (primary)	100-120V, 220-240V AC			
Power frequency	50/60Hz			
Power consumption	106VA			
Dimensions				
Table	550 mm x 399 mm x 558 mm		550 mm x 399 mm x 760-790 mm	
Unit table	440 mm x 379 mm x 558 mm		440 mm x 399 mm x 760-790 mm	
Table and chinrest	329 mm x 306 mm x 415-445 mm		329 mm x 306 mm x 652-682 mm	
Weight				
Table	17 kg		19 kg	
Unit Table	16 kg		18 kg	
Table and chinrest	9,5 kg		11,5 kg	



TOPCON CORPORATION

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.

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