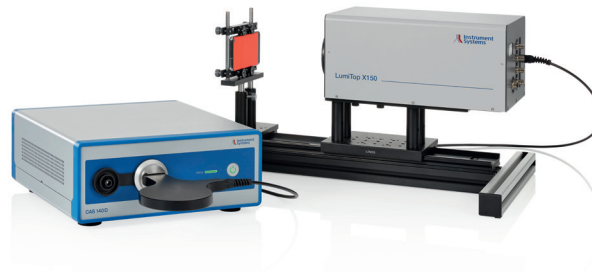


LumiTop X150

Spectrally enhanced imaging colorimeter

Key features at a glance

- ▲ Ultra-high resolution camera with 151 MP to provide single pixel evaluation for state-of-the-art DUTs
- ▲ Proven concept of LumiTop – spectrally enhanced imaging colorimeter
- ▲ Combination of 2D-RGB sensor with spectroradiometer and flicker sensor



TECHNICAL SPECIFICATIONS

LumiTop X150				
Measurement quantities				
2D	Luminance, color			
Spot	Spectrum, luminance, color, flicker			
General specifications				
Operating system	Windows 7/10 (64 bit)			
Dimensions (l x w x h) ¹⁾	365 mm x 230 mm x 160 mm			
Weight ²⁾	10.4 kg			
Power supply	24 V			
Operating temperature range	15 – 35 °C			
Camera specifications				
Effective resolution (h x v)	14,192 x 10,640 (151 megapixels, CMOS)			
Pixel size	3.76 µm x 3.76 µm			
Dynamic range	80.8 dB			
AD converter	14 bit			
Size sensor	2.6" (66.8 mm diagonal)			
Interface camera	Gigabit Ethernet, M12 12-Pin Female, Quad CoaXPress (4 x 6.25 Gbit/s)			
Measurement range 2D ^{3) 4)}	L = 0.003 cd/m ² – 50,000 cd/m ²			
Accuracy and precision	Luminance		Color	
Accuracy of camera (rel. to CAS) ⁵⁾	±0.2 %		±0.001	
Instrumental precision camera ⁶⁾	±0.04 %		±0.0002	
Camera uniformity (RNU) ⁷⁾	±0.15 %		±0.0006	
Measurement time ⁸⁾	Single image	Region of interest	2x2 image	Region of interest
Measurement time hybrid mode	3.5 s	1.9 s	8.3 s	5.5 s
Measurement time camera only	3.2 s	1.1 s	7.5 s	4.7 s

TECHNICAL SPECIFICATIONS

CAS specifications	CAS 140D	
Interface CAS	USB, Gigabit Ethernet	
Measurement range CAS ^{3) 9)}	L = 0.0004 cd/m ² – 5 x 10 ⁶ cd/m ² (250 μm slit size)	
	L = 0.0013 cd/m ² – 1.2 x 10 ⁷ cd/m ² (100 μm slit size)	
Accuracy and precision	Luminance	Color
Accuracy of CAS	±3.0 % ¹⁰⁾	±0.0015 ¹¹⁾
Instrumental precision CAS ⁶⁾	±0.1 %	±0.0002
Polarization sensitivity ¹²⁾	±2.0 %	±0.002

Available lenses					
Number	Focal length and magnification β	FOV size	FOV diagonal	CAS spot diagonal	Working distance ¹³⁾
1	97 mm f/3.2 β = 1.35 – 1.54	max. 40 mm x 30 mm	1.9"	2.4 mm	~ 90 mm
		min. 35 mm x 26 mm	1.7"	2.1 mm	~ 100 mm
2	104 mm f/4 β = 0.28 – 0.38	max. 193 mm x 145 mm	9.5"	11.6 mm	~ 400 mm
		min. 137 mm x 103 mm	6.7"	8.2 mm	~ 300 mm
3	100 mm f/4.1 β = 0.05 – 0.2	max. 847 mm x 635 mm	41.7"	50.8 mm	~ 1600 mm
		min. 276 mm x 207 mm	13.6"	16.6 mm	~ 550 mm
4	92 mm f/3.3 β = 0.16 – 0.24	max. 331 mm x 248 mm	16.3"	19.9 mm	~ 560 mm
		min. 226 mm x 170 mm	11.1"	13.6 mm	~ 380 mm

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¹⁾ Not including external fiber and mode mixer.

²⁾ Without CAS, with mode mixer.

³⁾ Contact us for extended measurement range options.

⁴⁾ Lower measurement limit based on a signal to noise ratio of 10:1 for maximum exposure time (60 s). Upper measurement limit based on a defocused measurement with signal level < 80 % of a white (non-modulated) LED light source at minimum exposure time (80 μs).

⁵⁾ Typical value for maximum deviation over the FOV relative to the CAS spot; calculated for an image with 72 pixels cropped at each edge and 12 by 12 pixels binning (34 averages) immediately after calibration with reference used for flat-field correction.

⁶⁾ 2σ of repeated measurements of one instrument (L ≈ 100 cd/m², autoexposure, 3h warm up time).

⁷⁾ RNU (response non-uniformity) is defined as 99.7 % percentile of the deviation of the mean image value; calculated for an image with 72 pixels cropped at each edge and 12 by 12 pixels binning (34 averages) immediately after calibration with reference used for flat-field correction.

⁸⁾ Time between beginning of two subsequent measurements using the SDK; determined with a camera exposure time of 20 ms and CAS exposure time of 200 ms for a white LED (L ≈ 500 cd/m²). Depends mainly on PC processing capability.

Single image refers to a one shot 151 MP demosaiced RGB image. 2x2 image refers to a 2x2 pixel shifted image with 151 MP resolution per color channel and is only available with optional pixel shifter hardware.

ROI-Region of Interest refers to an image size filling only 50% of the camera sensor in each dimension.

⁹⁾ Lower measurement limit based on a signal to noise ratio of 10:1 for maximum exposure times 65 s for CAS 140D. Upper measurement limit based on a signal level < 80 % for a white (non-modulated) LED light source using a CAS internal optical density filter OD4 and minimum exposure time 4 ms (CAS 140D).

¹⁰⁾ Immediately after calibration relative to calibration standard.

¹¹⁾ Immediately after calibration.

¹²⁾ Maximum deviation from average of repeated CAS measurements with a linear polarized light source and varying polarization angle.

¹³⁾ Distance between DUT and front plate of LumITop.

Sales & Support (North America)

Radiant Vision Systems | 18640 NE 67th Court | Redmond, WA 98052 USA | ph: +1 (425) 844-0152
 fax: +1 (425) 844-0153 | info@RadiantVS.com | www.radiantvisionsystems.com

Design & Manufacturing

Instrument Systems GmbH | Kastenbauerstr. 2 | 81677 Munich, Germany | ph: +49 (0)89 45 49 43-58
 fax: +49 (0)89 45 49 43-11 | info@instrumentsystems.com | www.instrumentsystems.com